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ABSTRACTS OF COMPLETED RESEARCH - 1967



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NAVY MEDICAL

NEUROPSYCHIATRIC RESEARCH UNIT

SAN DIEGO, CALIFORNIA 92152

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ABSTRACTS OF COMPLETED RESEARCH - 1967

Navy Medical Neuropsychiatric Research Unit
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NAVY MEDICAL NEUROPSYCHIATRIC RESEARCH UNIT
SAN DIEGO, CALIFORNIA

ABSTRACTS OF COMPLETED RESEARCH - 1967

These abstracts cover the research reported upon during 1967. Complete copies will be provided by mailing requests to the attention of the senior author.

RANSOM J. ARTHUR
Commander, MC, USN
Officer in Charge

NAVY MEDICAL NEUROPSYCHIATRIC RESEARCH UNIT
SAN DIEGO, CALIFORNIA

ABSTRACTS OF COMPLETED RESEARCH - 1967

MR005.18-0011
Report No. 67-19

On planning psychophysiological experiments: design, measurement and analysis

Laverne C. JOHNSON and Ardie LUBIN

Abstract:

A comprehensive discussion of the important subject and environmental variables that must be considered in psychophysiological research, the problems of measurement, experimental design and statistical analysis is presented.

MR005.18-0011
Report No. 67-25

Fourteen and six cycles per second positive spiking

Michael T. LONG and Laverne C. JOHNSON

Abstract:

Fourteen and six per second positive spikes occurred in 25.2% of a sample of a nonclinical population of 119 seventeen to twenty-five year old men. The two groups could not be differentiated by means of GCT scores, MMPI responses, CMI scores, age, or responses to questions on a personal history questionnaire. Fourteen and six per second positive spikes were not consistently found from one recording time to another in the same individual. Fourteen and six is seen in both stage 1 and stage 2 sleep. It is proposed that a higher prevalence rate would be found if the recording times were prolonged and if several records were obtained from each subject.

MF022.01.01-9001
Report No. 67-7

Hospital ship psychiatry in a war zone

Robert E. STRANGE and Ransom J. ARTHUR

Abstract:

A survey of 143 psychiatric cases admitted during the ship's initial operations in the Viet Nam combat zone from February through August 1966 was recorded. Sixty-seven percent of these patients were classified as character and behavior disorders, 20 percent as psychoneurotic, and 13 percent as psychotic. Similarities and differences on demographic variables were presented and discussed. Fifty-two percent of the character and behavior disorder patients and 75 percent of the psychoneurotic patients were returned to full duty.

The role of the hospital ship as an intermediate echelon of psychiatric treatment in the war area was described.

MF022.01.01-9001
Report No. 67-9

A set of programs for computing multiple correlations and related statistics

Cyril H. NUTE and Donald D. BECK

Abstract:

A stepwise linear multiple regression program, with distinct accretion and deletion phases, has been developed for use with either complete or incomplete data. A companion cross-validation program makes it possible to test the derived regression coefficients by applying them to a different sample obtained from the same parent population. The difference between the multiple correlation and the cross-validity indicates the stability of the regression coefficients. The set of programs offers great versatility and high capacity.

MF022.01.01-9001
Report No. 67-11

Two analysis-of-variance programs for disproportionate cell frequencies

Cyril H. NUTE, Ardie LUBIN and Donald D. BECK

Abstract:

In theory it has been known for many years that by using the general linear model, multiple regression can give results that are identical to those of analysis-of-variance (anova). In particular, multiple regression can give an anova for disproportionate cell frequencies. Program GENIV does this for one-way, two-way, or three-way anova. Program DEVIANCE performs two-way anovas, automatically selecting every possible pair from a given set of predictors. Both programs generate all possible interaction variables. They binarize, (dichotomize), graded or ungraded raw predictor scores, assigning each subject to the specified levels of each factor.

MF022.01.01-9001
Report No. 67-13

Personality and perceptual variables and discriminant GSR conditioning

George A. CLUM

Abstract:

Seventeen normal Ss and 35 psychiatric patients were given a battery of tests which measured drive level, introversion, and cortical excitation. Scores on the Taylor Manifest Anxiety Scale, E and N scales of the Maudsley Personality Inventory, the Lykken Activity Preference Questionnaire, an auditory vigilance measure, and a spiral after effect test were correlated with a measure of discriminant GSR conditioning for each group separately. No relationships were found between introversion, cortical excitation and GSR conditioning. Drive level was negatively related to discriminant GSR conditioning in the psychiatric patient group, but not in the normal group.

MF022.01.01-9001
Report No. 67-28

Psychotherapy of a sexagenarian

John C. DODGEN and Ransom J. ARTHUR

Abstract:

This is a case history presented as evidence that certain patients who are well beyond the usual recommended age limits for analytically oriented psychotherapy actually may be quite amenable to such treatment. Previous authors described several modifications in the technique of geriatric psychotherapy, which we found unnecessary in this case. We were poignantly reminded that the unconscious is timeless and came to appreciate the relevance of this concept in the older person.

MF022.01.01-9002
Report No. 67-1

A longitudinal study of life-change and illness patterns

Richard H. RAHE, Joseph D. MC KEAN, JR. and Ransom J. ARTHUR

Abstract:

The health records of 50 Navy and Marine personnel, who were ultimately disabled and separated from the service for psychiatric illness, were selected at random to study several parameters of life-change and illness patterns. A longitudinal analysis of their total illness experience was made and the results compared to previous documentation of illness patterns of American working men. A similar analysis was made of all changes in a subject's life pattern which were recorded in his health record or in his psychiatric social history. Each year of active duty was analyzed for these life changes, they were scaled and then summed; the same was done for yearly illness experience. Both life-changes and illnesses were seen to cluster during certain years. In general, a cluster-year of life-changes was seen to occur immediately prior to an illness or to a clustering of illnesses. The more severe illnesses were preceded by cluster-years of higher life change magnitude than years prior to minor illnesses. Two instances of death and one instance of near-death were preceded by clusterings of high life-change magnitude.

MF022.01.01-9002
Report No. 67-3

Prognosis for severe psychiatric disabilities incurred in naval service

E. K. Eric GUNDERSON and Ransom J. ARTHUR

Abstract:

Psychotic and neurotic patients who were retired from the naval service with disabling psychiatric disorders were followed up for 5 years by means of medical and Physical Evaluation Board records. The employment records of these patients indicated that a large proportion were able to make constructive work adjustments in the community 3-5 years after retirement. Diagnosis and clinical symptomatology were found to be highly related to rated degree of disability at the time of retirement while employment status and remission of symptoms were highly related to later disability ratings. A number of demographic variables were significantly related to diagnosis. Certain social background factors, such as race and education, appeared to have short-term effects upon the employment records.

MF022.01.01-9002
Report No. 67-4

Life crisis and health change

Richard H. RAHE

Abstract:

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

MF022.01.01-9002
Report No. 67-5

Prognostic indicators in psychosis and neurosis

E. K. Eric GUNDERSON and Ransom J. ARTHUR

Abstract:

Neurotic and psychotic patients who had been temporarily retired from naval service were re-evaluated periodically and rated on degrees of disability by Physical Evaluation Boards. Personal history and symptom variables were correlated with changes in amount of psychiatric disability over a five-year period.

Recovery or improvement was more rapid and complete in neurotics, but improvement was more predictable in psychotics. Significant correlates of improvement for neurotics were: age at time of hospitalization, pay grade (rank), inadequate social life, and medical treatment for other than psychiatric condition. Significant prognostic indicators for psychotics included: diagnostic subtype (paranoid), age at the time of hospitalization, racial group, ideas of reference, delusions, thought disturbance, and anxiety level.

MF022.01.01-9002
Report No. 67-15

Psychological and psychotherapeutic aspects of swim coaching

Ransom J. ARTHUR

Abstract:

The lessons that competitive swimming can impart to those concerned with human behavior are several. Most importantly, swimming teaches that one can always do better than he thinks he can, if he is willing to make the necessary sacrifices. Too often the psychiatric profession expects too little of its patients. They, too, can often do better than either we or they think. It is a challenge in psychotherapy to assess the power of the patient's ego functioning and the limits of what he can achieve and how much he can grow. The danger of overtaxing his resources, particularly in the psychotic, is great. However, so often in psychotherapeutic work we do the patient a disservice by indicating that in view of his wretched past life or upbringing he cannot be expected to do anything well. This can be a self-fulfilling prophecy no less for a patient than for an athlete. Swimming teaches the relationship between effort, meticulous preparation and results. Finally, it teaches that courage, grace, and fortitude, unpopular concepts though they are today, still do credit to the humans who display them.

MF022.01.01-9002
Report No. 67-18

A brief mental health index

E. K. Eric GUNDERSON and Ransom J. ARTHUR

Abstract:

In military psychiatric practice decisions concerning fitness for military duty or the need to hospitalize often must be made rapidly and without the benefits of extended clinical study. A standardized screening instrument obviously could have value in settings with rapid patient turnover, for example, an outpatient clinic, where allocation of the psychiatrist's or physician's time is an important consideration. Also, the specific questions identified as most significant in differentiating "sick" from "well" individuals may suggest particularly useful areas to be explored in brief clinical interviews because these items have a clearly demonstrated relevance for estimating the probability of mental illness.

MF022.01.01-9002
Report No. 67-20

A mental health survey instrument: The Health Opinion Survey

E. K. Eric GUNDERSON, Ransom J. ARTHUR and Walter L. WILKINS

Abstract:

Responses to a 20-item symptom inventory, the Health Opinion Survey, were compared for 1,925 male Navy patients and 2,457 healthy controls. All but two items showed significant differences between patients and controls, and most of these differences were large. Patients considered "fit for duty" by examining psychiatrists were found to differ from those not immediately recommended to return to duty on most of the symptom items. Results of the study suggested that the Health Opinion Survey can provide the basis for an efficient mental health survey instrument in the Navy population.

MF022.01.01-9002
Report No. 67-22

Military status and mental illness

E. K. Eric GUNDERSON, Ransom J. ARTHUR and James W. RICHARDSON

Abstract:

Generally, mental illness incidence rates varied considerably with military status. Overall, the incidence rate for petty officers was approximately twice that for officers, and the incidence rate for unrated enlisted men was more than twice that for petty officers. Variations in incidence rates were large for character and behavior disorder cases and for psychoneurotic cases. Except for unrated enlisted men, rates of psychosis were relatively constant regardless of military status.

MF022.01.01-9002
Report No. 67-23

Life-change patterns surrounding illness experience

Richard H. RAHE and Ransom J. ARTHUR

Abstract:

The Schedule of Recent Experience, a self-administered questionnaire about life crises, was administered to ship's companies of three cruisers deployed at sea, and to a sample of underwater demolition trainees and the data related to illness patterns. Illness increases in periods of significant life change.

MF022.01.02-9001
Report No. 67-29

Predicting the academic performance of Navy hospital corpsmen

Laverne C. JOHNSON, Jo Ann POLLARD and John A. PLAG

Abstract:

This study served as a pilot investigation of the validity of cognitive and non-cognitive variables for predicting academic achievement among Navy hospital corps school students. For a sample of 126 corpsmen, who were considered to be representative of 2500 students attending corps school, San Diego, between June and December 1966, three variables were identified as being uniquely predictive of academic performance. Age, level of civilian education, and General Classification Test score were found to yield a multiple correlation of .65 with the criterion. This validity represents a substantial

improvement over the current selection standard which utilizes only cognitive measures of ability. Scores on the Cornell Medical Index and MMPI were not significantly related to course average.

MF022.01.02-9002
Report No. 67-27

Dimensions of psychiatric illness among first-term naval enlistees

John A. PLAG, Ransom J. ARTHUR and Jerry M. GOFFMAN

Abstract:

A longitudinal study of 11,000 naval enlistees who entered service in 1960 was conducted over a four-year period in order to determine the incidence of mental disorders and to assess the relationship between psychiatric admission to the sick list and pre-service characteristics of enlistees, physical illness, occupational specialty, and military effectiveness. Five and a half percent of the population at risk was admitted to the sick list for psychiatric conditions at some time during the period of their first enlistments, and another 3.2 percent was administratively discharged from service because of emotional pathology without admission to the sick list. When compared with a group of control subjects, psychiatric patients were found to experience more physical illness, to achieve fewer promotions in rate, and to be over-represented in the medical (hospital corpsmen) specialty. A variety of characteristics, including level of schooling, Armed Forces Qualification Test score, family stability, number of expulsions from school, reason for enlistment, etc., were significantly different for psychiatric patients and control subjects.

Of paramount importance in this study was the finding that first-term naval enlistees who are admitted to the psychiatric sick list have only one chance in ten of rendering effective military service.

MF022.01.02-9003
Report No. 67-6

Attitudes and values as predictors of military performance

Walter L. WILKINS

Abstract:

Attitudes of marines toward military life, to discipline, to training, to accomplishment were related to training success and to attitudes toward Corps and superior officers and to ability to finish a four-year enlistment.

MF022.01.03-9005
Report No. 67-14

Mental health problems in Antarctica

E. K. Eric GUNDERSON

Abstract:

Mental health problems are of special concern at small Antarctic stations because of the extreme environmental conditions and because of the complete isolation from the outside world during the winter months. Emotional symptoms, such as insomnia, anxiety, depression, and irritability, were common and tended to increase during the winter months. Such changes in emotional adjustment were predictable to some degree from psychiatric screening information gathered prior to deployment to the Antarctic stations. Emotional adjustment depends importantly upon the man's specific job at the station and upon the appropriateness of his psychological needs, personality traits, and recreational interests for his particular role.

MF022.01.03-9005
Report No. 67-16

Group homogeneity, compatibility, and accomplishment

E. K. Eric GUNDERSON and David RYMAN

Abstract:

The relationships of heterogeneity on personal history and personality variables to group compatibility and accomplishment were studied in 15 groups of scientists and Navy men who manned scientific stations in Antarctica.

Group effectiveness criteria were mean scores on questionnaire items which

described the group as a whole and which were administered to group members after several months of isolation and confinement. Heterogeneity (group standard deviations) on urban-rural residence, importance of hobbies and recreational interests, and personality needs most relevant to group integrity and achievement were significantly related to group performance. These exploratory findings should help develop useful approaches to the group assembly program.

MF022.01.03-9005
Report No. 67-24

Interpersonal compatibility in restricted environments

E. K. Eric GUNDERSON

Abstract:

Likability 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.

MF022.01.04-9006
Report No. 67-2

Stressful underwater demolition training. Serum urate and cholesterol variability

Richard H. RAHE and Ransom J. ARTHUR

Abstract:

Individuals with ultimately middle to low normal-range levels of serum uric acid and cholesterol demonstrated highly significant rises in these serum fractions during specific stages of a four-month underwater demolition training period. Serum urate concentration was elevated during periods of apparent anticipation of a demanding situation while cholesterol levels rose concomitant with a period of particular psychological stress. Serum urate concentration demonstrated a significant fall during a period of quite intense psychological stress.

MF022.01.04-9008
Report No. 67-8

Autonomic correlates of the spontaneous K-complex

Laverne C. JOHNSON and Wayne E. KARPAN

Abstract:

K-complexes, the combination of vertex sharp wave and sigma paroxysm, occur spontaneously and in response to sudden stimuli during sleep, particularly during stage 2 sleep. While the spontaneous and evoked K have similar features, little is known of the significance of the spontaneous K-complex. The present study investigated: (1) the rate of occurrence, time of night effect and consistency of the K-complex over two nights of sleep; (2) amplitude of heart rate response, number of finger vasoconstrictions, number of galvanic skin responses, and number of skin potential responses associated with the spontaneous K-complex. Records from nine young adult male subjects were studied, records for two nights of sleep were available for five of these subjects making a total of 14 nights of sleep. These data indicate that the spontaneous K-complex is a stable phenomenon during stage 2 of sleep. If the K-complex is a response to unknown stimuli these stimuli occur at a constant rate from hour-to-hour and over nights. The autonomic changes support the hypothesis that the K-complex is an indicator of arousal, even though a transitory one. There were no autonomic changes associated with isolated sleep spindles.

MF022.01.04-9008
Report No. 67-10

Autonomic correlates of eye movement bursts

Lawrence F. SPRENG, Laverne C. JOHNSON and Ardie LUBIN

Abstract:

During stage REM sleep eye movements were found to be distributed in dis-

crete bursts of rapid eye movement (REM-bursts). REM-burst time averaged approximately 10 percent of stage REM sleep and the rate within a subject was consistent from epoch-to-epoch and night-to-night. Consistent subjects biases in eye movement direction were also found.

Within subject correlations were obtained between REM-burst time and autonomic activity. Significant positive correlations were found for respiration rate and number of finger pulse responses. There were positive but insignificant correlations with electrodermal activity, heart rate and decreases in respiration amplitude. Autonomic variability was not significantly associated with REM-burst time.

MF022.01.04-9008
Report No. 67-12

Sleep and sleep loss--their effect on performance

Laverne C. JOHNSON

Abstract:

A brief introduction to the field of sleep research and summary of the material presented at a conference held May 1966 on sleep loss and the recuperative effects of the stages of sleep.

MF022.01.04-9008
Report No. 67-26

Performance under sleep loss and fatigue

Ardie LUBIN

Abstract:

Recent research on the effects of acute sleep loss shows greater effects for longer tasks duration, greater monotony, greater signal and response uncertainty, and less knowledge of results. It is presumed that cumulative, chronic sleep loss has similar or more serious effects, and prolonged sleep loss (over 100 hours) may result in psychotic-like states.

M4305.09-3001
Report No. 67-21

Intervening variables in unaware subjects in a verbal conditioning task

George A. CLUM

Abstract:

Thirty-three Ss, judged in a lengthy post-conditioning interview to be unaware of the correct response-reinforcement contingency as employed in a Taffel verbal conditioning task, were compared on the interrelationships of their scores on the Taylor Manifest Anxiety Scale, the E and N scales of the Maudsley Personality Inventory, an auditory measure of vigilance, the spiral after effect test, and a verbal conditioning measure. Verbal conditioning was found to be related to manifest anxiety and neuroticism in a psychiatric subgroup but not in a normal subgroup. Variables affecting verbal conditioning were discussed.

PARTICIPATION IN RESEARCH CONFERENCES AND SCIENTIFIC SOCIETIES
DURING CALENDAR YEAR 1967

The Officer in Charge, on temporary duty at the London Branch Office of the Office of Naval Research for three months, conducted a preliminary survey of Medical Research Council Units in the United Kingdom. He visited units of a size comparable to San Diego's which had research emphases on epidemiology of mental illness, social factors in disease, neurology and psychiatry. During the three months he wrote nine technical reports and four shorter reports for the ONR European Scientific Letter. These reports featured aspects of research in the United Kingdom which had implications for Navy medicine and medical research. He plans to complete the survey in 1968 and 1969.

Staff members participated in research conferences and symposia during the year. These included scientific meetings at universities and scientific conventions and also presentations at naval hospitals. The scientific director read a paper at a NATO conference. Others addressed the DoD Manpower Planning Board, the ONR Symposium on Human Factors, the symposium on Circumpolar Health Related Problems, the NIH Seminar on Computers in Psychopharmacology, and the Committee for Flying Psychologists. Reports of the research of the Unit were presented, upon invitation at Harvard, Michigan, California, Stanford, and Texas Christian Universities.

Papers were presented or discussions led at annual meetings of the American Psychiatric Association, the American Psychological Association, the Southern California Psychiatric Society, the Western Psychological Association, the Association for the Psychophysiological Study of Sleep, the Society for Psychophysiological Research, the Interamerican Congress of Psychology, and the California State Psychological Association.

The Officer in Charge was elected president-elect of the San Diego Chapter of the Southern California Psychiatric Society. Dr. Laverne C. Johnson was elected president-elect of the Society for Psychophysiological Research.