

AD-A047 927

WASHINGTON UNIV SEATTLE DEPT OF PSYCHOLOGY

F/G 5/10

LIFE STRESS, DEPRESSION AND ANXIETY: INTERNAL-EXTERNAL CONTROL --ETC(U)

NOV 77 J H JOHNSON, I G SARASON

N00014-75-C-0905

UNCLASSIFIED

SCS-LS-003

NL

[OF]
ADA047927



END
DATE
FILMED
1 - 78

DDC

AD A 0 4 7 9 2 7

Report SCS - LS - 003

12

Life Stress, Depression and Anxiety: Internal-External Control as a Moderator Variable

James H. Johnson and Irwin G. Sarason
Department of Psychology
University of Washington
Seattle, Washington 98195

DDC
RECEIVED
DEC 21 1977
RECEIVED
E

November 1, 1977

Technical Report

Approved for public release; distribution unlimited

Prepared for
OFFICE OF NAVAL RESEARCH
800 N. Quincy Street
Arlington, Virginia

This research was sponsored by the Organizational Effectiveness Research Program, Office of Naval Research (Code 452), under contract No. N00014-75-C-0905, NR 170-804

Reproduction in whole or in part is permitted for any purpose of the United States Government.

AD No. _____
DDC FILE COPY

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

need contract card for this contract

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 14 SCS-LS-003	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 6 Life Stress, Depression and Anxiety: Internal-External control as a Moderator Variable.	5. TYPE OF REPORT & PERIOD COVERED 9 Technical Report	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) 10 James H. Johnson, Irwin G. Sarason	8. CONTRACT OR GRANT NUMBER(s) 15 N00014-75-C0905	9. PERFORMING ORGANIZATION NAME AND ADDRESS Department of Psychology University of Washington Seattle, Washington 98195 <i>POB 752</i>
11. CONTROLLING OFFICE NAME AND ADDRESS Organizational Effectiveness Research Program Office of Naval Research (Code 452) Arlington, Virginia 22217 11	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR 170-804	12. REPORT DATE 11 Nov 77 13. NUMBER OF PAGES 12 1/2 p.
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report) Unclassified	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release: Distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Life Stress Depression Locus of Control Anxiety Moderator Variables		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) * The present study examined the relationship between indices of life change and measures of depression and anxiety as a function of subjects' locus of control orientation. Based on the assumption that life changes may have their most adverse effect on individuals who perceive themselves as having little control over environmental events 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		

DDC
DEC 21 1977
REGISTERED

387783

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

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.

ACCESSION for	
NTIS	White Section <input checked="" type="checkbox"/>
DDC	Buff Section <input type="checkbox"/>
UNANNOUNCED	<input type="checkbox"/>
JUSTIFICATION	
BY	
DISTRIBUTION/AVAILABILITY CODES	
A	

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

Life Stress, Depression and Anxiety: Internal-External
Control as a Moderator Variable

In recent years many studies have documented a relationship between life stress, as defined by reported life changes, and a variety of dependent variables including myocardial infarction (1,2), sudden cardiac death (3), seriousness of chronic illness (4), academic performance (5), teacher performance (6), depression (7), and measures of neuroticism and social maladjustment (8, 9). An overview of research in this area has recently been presented by Rabkin and Struening (10).

Despite the large number of correlates of life change that have been reported, it is necessary also to examine the magnitude of the correlations obtained. While often statistically significant, these correlations have usually been of low magnitude suggesting that life stress accounts for a relatively small proportion of the variance in the dependent measures employed. It would seem that life stress measures alone may not be sufficient to yield impressive results. An important question is whether this relatively poor ability to predict relevant dependent measures is due to general inadequacies in existing life stress measures or to other factors.

Concerning the first possibility, it is worth noting that several approaches to the assessment of life stress have been employed in the research carried out. These range from measures which consider positive and negative life changes together (assuming that life change per se is stressful), and employ group derived ratings of events in an attempt to quantify the impact of change (11) to measures which assess positive and negative life change separately and allow for the individualized rating of the desirability and impact of events (12,9). This same pattern of low but statistically significant correlations has been found regardless of the measure employed. While existing

measures of life stress are less than perfect, factors other than inadequacies of measurement might be related to the low correlations which have typically been obtained.

A possible reason for the low correlations between life stress scores and other variables is the failure to consider variables which might mediate the effects of life change. Although it is reasonable to assume that high levels of change have a negative effect on individuals it seems likely that these effects vary from person to person and are mediated by specific individual difference variables. Given the fact that individuals may be differentially affected by life changes, it may be unreasonable to expect to find strong correlates of life stress unless such variables are determined and taken into account.

While there has been relatively little research related to the role of moderator variables in the area of life stress, studies by Nuckolls, Cassell and Kaplan (13) and Smith, Johnson, and Sarason (14) suggest the importance of this line of inquiry. For example, Nuckolls et al., designed their study to examine the relationship between life stress and pregnancy and birth complications. They administered the Schedule of Recent Experiences (11) and a specially designed Psychosocial Assets Scale to expectant mothers during the thirty-second week of pregnancy. This scale was designed to assess the degree to which women possess support systems in their environment. Items on this scale were used to measure the "subjects feelings and perceptions concerning herself, her pregnancy, and her overall life situation including her relationship with her husband, her extended family and the community." (p. 433-434).

These investigators found a significant relationship between life stress and complications, but only for subjects who had low levels of psychosocial assets. Given a high level of life stress before and during pregnancy, women

with favorable psychosocial assets had only one-third the number of complications of women with poor psychosocial assets.

Another moderator variable was suggested by the Smith et al., study. These authors investigated the relationship between life stress and neuroticism in subjects differing in scores on the Sensation Seeking Scale (15). This scale assesses the tendency to seek out stimulating, risk-taking, and novel activities. High scorers on the scale are thought to have a high optimal level of stimulation while those scoring low are thought to have a low optimal level. Thus, low sensation seekers might be expected to avoid change and arousing stimulus input. In this study it was hypothesized that low sensation seekers would be more adversely affected by life stress than high sensation seekers and the obtained findings were in line with this hypothesis. While no significant relationship between life change and neuroticism was found for high sensation seekers, a significant relationship between negative life change and the neuroticism measure was obtained when responses of subjects scoring low on the Sensation Seeking Scale were analyzed. There are, then, clues concerning the variables which might mediate the effects of life change. Further efforts designed to determine the possible role of particular moderators is needed.

One important determinant of the effects of life change may be whether stressful events are perceived as being within or outside the control of the individual (16). In line with this it would seem reasonable to expect that locus of control orientation is a significant moderator variable. Rotter (17) has suggested that individuals differ in the degree to which they perceive environmental reinforcers as being under their personal control, with internals perceiving these events as being under their control and externals perceiving reinforcers as being the result of fate, luck, change or powerful others.

As the locus of control construct seems to reflect the extent to which individuals believe themselves capable of exerting personal control over environmental events one might expect internals and externals to respond differently to life change. The present study was designed to provide information related to this issue by examining the relationship between life stress and measures of depression and anxiety as a function of locus of control orientation. It was predicted that life stress would be related to the dependent measures only with subjects displaying an external locus of control orientation. This prediction was based on the assumption that life change may have its most adverse effects on individuals who perceive themselves as having little or no control over such events.

Method

Subjects

The subjects were (34 male, 90 female) student volunteers, drawn from undergraduate psychology courses at the University of Washington. All subjects received course credit for participation.

Materials

The instruments used in the study were the Life Experiences Survey (LES), the Locus of Control scale, the State-Trait Anxiety Inventory, and the Beck Depression Scale.

The LES (9) is a 57 item scale requiring respondents to indicate events experienced during the previous year, whether they considered these events desirable or undesirable, and the degree of impact the events had on their lives. The scale yields both positive and negative life change scores, although previous research (9) has suggested that the negative change score is more highly correlated with stress related dependent measures.

The Locus of Control Scale (17) is a 29 item self-report measure which assesses the degree to which individuals view environmental reinforcers as being under their personal control. As mentioned earlier, internals are

believed to perceive events as being controllable by their own actions while externals tend to view such events as being influenced by factors other than themselves.

The State-Trait Anxiety Inventory (18) is a 40 item self-report measure which assesses anxiety as a trait or relatively stable dispositional variable and as a state. State anxiety refers to the degree to which persons display anxiety in a specific situation.

The Beck Depression Scale (19) is a 21 item self-report measure which taps a variety of characteristics thought to be symptomatic of depression.

Procedure

These four instruments were administered in a group setting. The LES was scored to yield both positive and negative life change scores. Other measures were scored using standard scoring procedures.

As a preliminary analysis suggested a significant correlation between negative life change and locus of control scores, $r(124) = .22$ $p < .01$ partial correlations were employed to determine the relationship between measures of life change and measures of depression and anxiety, with the variance common to locus of control scores partialled out in each case. Separate analyses were accomplished for internals and externals. In this way it was possible to test the prediction that life stress would be significantly associated with the dependent measures only when persons who were external in their locus of control orientation were considered.

Results and Discussion

Partial correlations between measures of positive and negative life change, derived from the Life Experience Survey, and measures of depression and anxiety are presented in Table 1. The correlations for subjects internal ($IE \leq 12$) and external ($IE \geq 13$) in their locus of control orientation are presented separately.

Insert Table 1 about here

As may be seen no significant relationships were found between measures of positive life change and any of the dependent measures. Negative change, however was found to be significantly correlated with measures of both depression $r(55) = .32, p < .005$ and trait anxiety, $r(63) = .31, p < .005$ although these relationships, as predicted, were found only for subjects who were external in their Locus of Control orientation. No significant relationships between life change scores (positive or negative) and measures of state anxiety were found for either internal or external subjects.

These results strongly support the original hypothesis that locus of control orientation may be a moderator variable in the relationship between negative life change and depression and anxiety and provide support for the notion that the effects of life stress may be mediated by the degree to which individuals perceive themselves as having personal control over events. The results suggest that perhaps it is the individual who experiences high levels of change but feels he/she has no control over events that is most susceptible to the effects of life stress. While findings with regard to the state anxiety measure were not consistent with those obtained when indices of depression and trait anxiety were employed, it may be noted that the State Anxiety Scale tends to reflect more transient levels of anxiety which may vary with the situation. Thus the unreliability associated with this state measure may have contributed to the obtained results.

The fact that significant relationships between negative life change and measures of depression and anxiety were found, while no relationships between positive life change and these measures were obtained also provide additional support for the idea expressed by a number of authors (20,9,21)

that life stress may be more fruitfully conceptualized in terms of negative life change than in terms of change per se as was originally postulated by early investigators in this area (11).

In summary, findings of the present study provide support for the view that locus of control, along with sensations seeking (14) and level of psychosocial assets (18) mediates the effects of negative life change.

References

1. Edwards, M.K. Life crises and myocardial infarction. Unpublished master's thesis, University of Washington, 1971.
2. Theorell, T., & Rahe, R.H. Psychosocial factors and myocardial infarction. I: An inpatient study in Sweden. J. Psychosom. Res. 15, 24-31 (1971).
3. Rahe, R.H., & Lind, E. Psychosocial factors and sudden cardiac death: A pilot study. J. Psychosom. Res. 15, 19-24 (1971).
4. Wyler, A.R., Masuda, M., and Holmes, T.H. Magnitude of Life events and seriousness of illness. Psychosom. Med. 33, 115-122 (1971).
5. Harris, P.W. The relationship of life change to academic performance among selected college freshmen at varying levels of college readiness. Unpublished doctoral dissertation, East Texas State University, 1972.
6. Carranza, E. A study of the impact of life change on high school teacher performance in the Lansing school district as measured by the Holmes and Rahe Schedule of Recent Experiences. Unpublished doctoral dissertation, Michigan State University, 1972.
7. Paykel, E.S., Myers, J.K., Dienelt, M.N., Klerman, G.L., Linderthal, T.J., and Pepper, M.P. Life events and depression. Arch. Gen. Psychiat. 21, 753 (1969).
8. Constantini, A.F., Braun, J.R., Davis, J., & Iervolino, A. Personality and mood correlates of Schedule of Recent Experience scores. Psychol. Rep. 32, 416-418 (1973).
9. Sarason, I.G., Johnson, J.H., and Siegel, J.M. Assessing the impact of life change: Development of the Life Experiences Survey. Unpublished manuscript, University of Washington, 1977.
10. Rabkin, J.G., & Struening, E.L. Life events, stress, and illness. Science, 194, 1013-1020 (1976)

11. Holmes, T.H., & Rahe, R.H. The social readjustment rating scale. J. Psychosom. Res. 11, 213-218 (1976).
12. Sarason, I.G., & Johnson, J.H. The Life Experience Survey: Preliminary findings. Technical Report Number SCS-LS-001, Office of Naval Research, 1976.
13. Nuckolls, K.B., Cassel, J., Kaplan, B.H. Psychosocial assets, life crisis and the prognosis of pregnancy. Am. J. Epid. 95, 431-441 (1972).
14. Smith, R.E., Johnson, J.H., and Sarason, I.G. Life change, the sensation seeking motive, and psychological distress. J. Consult. Clin. Psychol. (in press).
15. Zuckerman, M., Kolin, E.A., Price, L., & Zoob, I. Development of a sensation seeking scale. J. Consult. Psychol. 26, 250-260 (1964).
16. Dohrenwend, B.S., and Dohrenwend, B.P. Overview and prospects for research on stressful life events. In B.S. Dohrenwend and B.P. Dohrenwend (Eds.) Stressful Life Events. New York: John Wiley and Sons, 1974.
17. Rotter, J.B. Generalized expectancies for internal versus external control of reinforcement. Psychol. Monog. 80, No. 1 (1966).
18. Spielberger, C.E., Gorsuch, R.L., and Lushene, R.E. Manual for the State-Trait Anxiety Inventory. Palo Alto, Calif.: Consulting Psychologist Press, 1970.
19. Beck, A.T. Depression: Clinical, experimental, and theoretical aspects. New York: Harper & Row, 1967.
20. Mechanic, D. Some problems in the measurement of stress and social readjustment J. Hum. Stress 1, 43-48 (1975).
21. Vinokur, A., & Selzer, M.L. Desirable versus undesirable life events: Their relationship to stress and mental distress. J. Pers. Soc. Psychol. 32, 329-337 (1975).

Footnotes

¹This research was funded by the Organizational Effectiveness Research Program, Office of Naval Research (Code 452), under contract No. N00014-75-C-0905, NR 170-804. The authors wish to express a note of thanks to Dr. Judith M. Siegel who assisted in data analysis, and to Kenneth Hoppe and Irene Pech who assisted in data collection and the scoring of test materials. Thanks also go to Dr. Allen Edwards who served as a valuable statistical consultant.

²Requests for reprints should be addressed to Dr. James H. Johnson, Department of Psychology, University of Washington, Seattle, Washington 98195.

Table 1
Partial Correlations Between Positive and Negative Life
Change and Measures of Depression and Anxiety for Subjects
Differing in Locus of Control Orientation

Locus of Control	Life Change Scores	Dependent Measures		
		Depression	Trait Anxiety	State Anxiety
Internals (N=55)	Positive Change	-.02	-.09	.10
	Negative Change	.10	.15	-.10
Externals (N=66)	Positive Change	-.05	-.11	-.15
	Negative Change	.32*	.31*	.10

* $p < .005$

DISTRIBUTION LIST

LIST 1

MANDATORY

Office of Naval Research (3 copies)
(Code 452)
800 N. Quincy St.
Arlington, Va. 22217

Director
U.S. Naval Research Laboratory
Washington, D.C. 20390 (6 copies)
ATTN: Technical Information Division

Defense Documentation Center
Building 5 (12 copies)
Cameron Station
Alexandria, Va. 22314

Library, Code 2029 (6 copies)
U.S. Naval Research Laboratory
Washington, D.C. 20390

Science & Technology Division
Library of Congress
Washington, D.C. 20540

Navy Materiel Command
Employee Development Office
Code SA-65
Room 150 Jefferson Plaza, Bldg. #2
1429 Jeff Davis Highway
Arlington, Va. 20360

LIST 2

Director
ONR
Branch Office
1030 E. Green St.
Pasadena, Ca. 91106

Psychologist
ONR Branch Office
1030 E. Green St.
Pasadena, Ca. 91106

LIST 3

PRINCIPAL INVESTIGATORS

Dr. Macy L. Abrams
Navy Personnel R & D Center
San Diego, Ca. 92151

Dr. Clayton P. Alderfer
Department of Administrative Sciences
Yale University
New Haven, Ct. 06520

Dr. James A. Bayton
Department of Psychology
Howard University
Washington, D.C. 20001

Dr. H. Russel Bernard
Dept. of Sociology & Anthropology
West Virginia University
Morgantown, W.V. 26506

Dr. Harry R. Day
University City Science Center
Center for Social Development
3508 Science Center
Philadelphia, Pa. 19104

Dr. Fred E. Fiedler
Department of Psychology
University of Washington
Seattle, WA 98195

Dr. Samuel L. Gaertner
Department of Psychology
University of Delaware
220 Wolf Hall
Newark, De. 19711

Dr. Paul S. Goodman
Graduate School of Industrial Adminis.
Carnegie-Mellon University, Schenley Pk.
Pittsburgh, Pa. 15213

Dr. Gloria L. Grace
System Development Corporation
2500 Colorado Ave.
Santa Monica, Ca. 90406

Dr. J. Richard Hackman
Dept. of Administrative Sciences
Yale University
New Haven, Ct. 06520

Dr. Thomas W. Harrell
Graduate School of Business
Stanford University
Stanford, Ca. 94305

Dr. Charles L. Hulin
Department of Psychology
University of Illinois
Champaign, Il. 61820

Dr. Arie Y. Lewin
Duke University
Duke Station
Durham, N.C. 27706

Dr. David C. McClelland
McBer and Company
137 Newbury St.
Boston, Ma. 02139

Dr. Elliott M. McGinnies
Psychology Department
American University
Washington, D.C. 20016

Dr. Terence R. Mitchell
School of Business Administration
University of Washington
Seattle, Wa. 98195

Dr. Peter G. Monge
Department of Speech-Communication
California State University
San Jose, Ca. 95192

Dr. Peter G. Nordlie
Human Sciences Research, Inc.
7710 Old Springhouse Rd.
McLean, Va. 22101

Dr. Chester M. Pierce
Harvard University
Nichols House
Appian Way
Cambridge, Ma. 02138

Dr. Paul Wall
Division of Beh. Science Research
Tuskegee Institute
Tuskegee, Al. 36088

Dr. Manuel Ramirez
Systems and Evaluations
232 Swanton Blvd.
Santa Cruz, Ca. 95060

Dr. Karlene H. Roberts
School of Business Administration
University of California
Berkeley, Ca. 94720

Dr. John Ruhe
University of North Carolina
Dept. of Business Admin.
Charlotte, N.C. 28223

Dr. Edgar H. Schein
Sloan School of Management
Mass. Institute of Technology
Cambridge, Ma. 02139

Dr. Barry R. Schlenker
Department of Psychology
University of Florida
Gainesville, Fl. 32611

Dr. Saul B. Sells
Texas Christian University
Forth Worth, Tex. 76129

Dr. Gerald H. Shure
Center of Computer-Based Behavioral
Studies
University of California
Los Angeles, Ca. 90024

Dr. H. Wallace Sinaiko
A & I 3463
Smithsonian Institution
Washington, D.C. 20560

Dr. Richard M. Steers
Graduate School of Management &
Business
University of Oregon
Eugene, Or. 97403

Dr. Richard E. Sykes
Minnesota Systems Research, Inc.
2412 University Ave., S.E.
Minneapolis, Mn. 55414

Dr. Victor H. Vroom
School of Organization and Management
Yale University
56 Hillhouse Ave.
New Haven, Ct. 06520

Dr. Phillip G. Zimbardo
Department of Psychology
Stanford University
Stanford, Ca. 94305

Dr. M. Dean Havron
Human Sciences Research, Inc.
7710 Old Springhouse Rd.
McLean Va. 22101

Dr. Bertram Spector
CACI, Inc.
1815 N. Ft. Myer Drive
Arlington, Va. 22209

Dr. Lorand B. Szalay
American Institutes for Research
3301 New Mexico Ave., N.W.
Washington, D.C. 20016

LIST 4

MISCELLANEOUS

AFOSR (NL)
1400 Wilson Blvd.
Arlington, Va. 22209

Army Research Institute (2 copies)
Commonwealth Bldg.
1300 Wilson Blvd.
Rosslyn, Va. 22209

Coast Guard
Chief, Psychological Research Branch
U.S. Coast Guard (G-P-1/62)
400 7th St. S.W.
Washington, D.C. 20590

Marine Corps
Dr. A. L. Slafkosky
Scientific Advisor
Commandant of the Marine Corps
(Code Rd-1)
Washington, D.C. 20380

Navy
Chief of Naval Personnel
Assistant Chief of Naval Personnel for
Human Goals
Washington, D.C. 20370

Cdr. Paul D. Nelson, MSC, USN
Head, Human Performance Division (Code 44)
Navy Medical H & D Command
Bethesda, Md. 20014

LCdr. C. A. Patin, USN
Director, Human Goals Department
Code 70, Naval Training Center
Orlando, Fl. 32813

Office of Civilian Manpower Management
Personnel Management Evaluation Branch(72)
Washington, D.C. 20390

Chief of Naval Personnel
Assistant for Research Liaison
(Pers-Or)
Washington, D.C. 20370

Assistant Officer in Charge
Naval Internal Relations Activity
Pentagon, Room 2E329
Washington, D.C. 20350

Naval Postgraduate School
Monterey, CA 93940
ATTN: Library (Code 2124)

Professor John Senger
Operations Research & Admin. Sciences
Naval Postgraduate School
Monterey, Ca. 93940

Training Officer
Human Resource Management Center
NTC, San Diego, Ca. 92133

Navy Personnel R & D Center (5 copies)
Code 10
San Diego, Ca. 92152

Officer in Charge
Naval Submarine Medical Research Lab.
Naval Submarine Base, New London,
Box 900
Groton, Ct. 06340

Officer in Charge (Code L5)
Naval Aerospace Medical Research Lab.
Naval Aerospace Medical Center
Pensacola, Fl. 32512

Capt. Bruce G. Stone, U.S.N.
(Code N-33)
Director, Education & Training
Research and Program Development
Chief of Naval Education & Training
Staff
Naval Air Station, Pensacola, Fl.
32508

Dr. H. H. Wolff
Technical Director (Code N-2)
Naval Training Equipment Center
Orlando, Fl. 32813

Human Resource Management Center
Attachment
Naval Support Activity
c/o FPO New York, N.Y. 09521
ATTN: TDC Nelson

Chief, Naval Technical Training
NAS Memphis (75)
Millington, Tn. 38128
ATTN: LCdr. R. R. Gaffey, Jr. N452

Journal Supplement Abstract Service
1200 17th St. N.W.
Washington, D.C. 20036

Division Director for Social Science
National Science Foundation
1800 G St. N.W.
Washington, D.C. 20550

Mr. Luigi Petruccio
2431 N. Edgewood St.
Arlington, Va. 22207

ADDITIONS TO DISTRIBUTION LIST

Cdr. Anthony C. Cajka, USN
Department of the Navy
Human Resource Management Center
Washington, D.C. 20370

Bureau of Naval Personnel
Research & Evaluation Division
Code: Pers-65
Washington, D.C. 20370

Human Resource Management Center, London
FPA, NY 09510

Human Resource Management Center,
Washington
Washington, D.C. 20370

Human Resource Management Center,
Norfolk
5621-23 Tidewater Dr.
Norfolk, Va. 23511

Human Resource Management Center,
Bldg. 304
Naval Training Center
San Diego, Ca. 92133

Office of Naval Research (Code 200)
Arlington, Va. 22217

Personnel Research and Development Center
United States Civil Service Commission
Bureau of Policies and Standards
Washington, D.C. 20415

Human Resource Management Center,
Pearl Harbor
FPO San Francisco, Ca. 96601

Human Resource Management School
Naval Air Station, Memphis (96)
Millington, Tn. 38954

Mr. Richard T. Howday
College of Business Administration
University of Nebraska
Lincoln, Nb. 68588

CDR. J.L. Johnson, USN
Naval Amphibious School
Little Creek
Naval Amphibious Base
Norfolk, Va. 23521

ARI Field Unit - Leavenworth
P.O. Box 3122
Fort Leavenworth, Ks. 66027

Dr. William E. Gaymon
American Institutes for Research
3301 New Mexico Ave. N.W.
Washington, D.C. 20016

Department of the Air Force
Air Force Institute of Technology
(AU)
AFIT/SLGR (LT Col Umstot)
Wright-Patterson Air Force Base,
Ohio 45433