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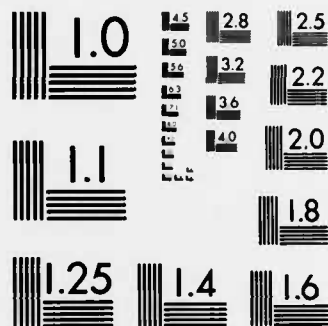
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EXECUTIVE SUMMARY

In July 1981, and again in January 1982, Navy Commanding Officers undertook Project Upgrade, an effort to raise the pride, professionalism, and performance of their units by the expeditious discharge of non-performers. Although feedback from the Fleet was positive, the actual impact of this effort remained unknown, as did the origins of the problem performance by the persons in question.

This present research effort undertook to examine to alternative causal explanations for the problem behavior. The first, the "Bad Apple" theory, was that a number of individuals, unsuited to any structured, demanding environment, had inadvertently slipped through the Navy's extensive screening procedures. If correct, this explanation would predict no particular organizational correlates of Upgrade rate other than a subsequent (to Upgrade) positive impact upon unit performance.

The second possible explanation was more situational and complex. It was that the Upgrade cases were persons whose characteristics and abilities combined with the jobs to which they were assigned and/or the treatment they received to result in poor discipline and poor performance. If this explanation were correct, at a unit level subsequent Upgrade rates should relate to organizational characteristics in the past. In a sense, a unit could be generating Upgrade cases as rapidly as it discharged them.

The research consisted of two complementary streams of inquiry. For the first of these, a large unit-level data file was assembled. For the 174 Fleet units in the sample, there were assembled: two waves of Navy Human Resource Management Survey (NHRMS) data drawn from the period July 1978 to August 1981, plus Upgrade rate and the following performance measures for quarterly or semi-annual intervals over a period variously ranging from July 1978 through September 1982:

- Reenlistment rate (first-term and total)
- Unauthorized absence rate
- Desertion rate
- Non-judicial punishment rate
- Drug and marijuana offense rate
- Unit readiness data (five measures)

The second research stream consisted of case-study interviews of persons familiar with Upgrade cases aboard 14 Fleet units. The data obtained from these interviews was then coded by content analysts for (a) the Upgrade individuals, and (b) the units. The findings were intended to, and did, shed additional light upon the events and conditions surrounding the development of an Upgrade case.

The results from the large-file quantitative analyses were the following:

- . Unit Upgrade rates for 1981 and 1982 were significantly, but moderately correlated.
- . With the exception that extremely small units were likely to have relatively lower Upgrade rates, unit size was unrelated to Upgrade percentage.
- . Unit type/class adds little variance to the prediction of Upgrade rate.

- . Upgrade rate is strongly related to prior unit management practices, with the largest relationships being those over the longest time lag, that is, from Wave 1 NHRMS to Upgrade 1982.
- . The strongest NHRMS predictors were those reflecting work group (peer) behaviors and relationships, not those reflecting command climate.
- . For both these relationships and those apparent from a unit profile-typing procedure, the results were consistent: the better the unit practices were two-to-four years earlier, the lower the subsequent Upgrade rate.
- . Improvement or deterioration in unit conditions and practices also was related to subsequent Upgrade rate. Non-improvement or deterioration was associated with medium-level Upgrade percentages, whereas improvement or non-deterioration was associated with either high or low percentages.
- . Unit readiness indicators were found to be unrelated to Upgrade rate.
- . Both unauthorized absence and desertion rate correlate significantly throughout the preceding three-year period with subsequent Upgrade rate. The peak relationship, however, was more or less concurrent to Upgrade.
- . Similar results, with somewhat lower coefficients, were found for non-judicial punishment and drug and marijuana offense rates.
- . Similar results were also obtained for first-term and total reenlistment rates.
- . Combining selected survey and prior performance measures permits prediction of 56 per cent of total unit Upgrade variance (Mult R = .75.).
- . Special analyses around drug and alcohol measures showed similar lagged effects, with the most effective predictors being those at the work group, not the command, level.

The case study analyses (Bower, Krauz and Denison, 1983) resulted in the identification of five clearly distinct "types" of Upgrade cases, labelled:

Type 1 - "Rebels" - Persons whose outstanding characteristic was an anti-authority stance, with performance and drug or alcohol involvements that were secondary to, or derivative from, that basic characteristic.

Type 2 - "Failures" - Persons seemingly unable to succeed, distinguished by lack of a high school diploma and a high unauthorized absence rate.

Type 3 - "Burnouts" - Chronic drug and alcohol abuse individuals, with concomitant hygiene performance, and interpersonal relations effects.

Type 4 - "Dropouts" - Individuals who have simply exited the system psychologically--who have "turned out and turned off."

Type 5 - "Sociopaths" - Aggressive, often violent persons with a recognized high intelligence or potential, and often a history of having been an abused child.

Several other conclusions resulted from the case study analyses:

- . In a high proportion of cases, the individual was doing well until some event, ordinarily in their personal lives, triggered a profound deterioration.
- . Here, as in the large-file analyses, there was a definite organizational involvement. Units whose top leadership took a more human resources-oriented approach had fewer Upgrades--especially Rebels. Units whose top leadership emphasized immediate tasks had higher Upgrade rates.
- . Once more consistent with the large-file analyses, the key to the prevention of Upgrade behavior appeared to be a structure of cohesive teams, well integrated into the values and mission of the unit.

Perhaps the most stimulating, yet perplexing finding was that of the extremely long time lags involved. Considering the dates and times involved, the organizational practices and conditions which so strongly predict Upgrade percentage appear to have come into existence in these units five to six years prior to Project Upgrade--more than two

complete crew changes earlier, and before the Upgrade cases themselves entered the Navy. An explanation that is proposed is that of "constancy-velocity," the notion that, for example, poor management practices set in motion a set of conditions which pump literally a larger volume of persons (and, therefore, Upgrade vulnerables) through the unit over a period of years. At the same time, these poor practices tend to perpetuate themselves and trigger a higher proportion of vulnerables. A simple analysis in which personnel criteria were partialled out of the NHRMS-Upgrade relationship tended to add credence to this explanation.

INTRODUCTION AND STATEMENT OF THE PROBLEM

In July 1981, at the direction of the Chief of Naval Operations, Navy Commanding Officers undertook the first of what had been, at the time of the start of this research study, two iterations of Project Upgrade. This effort, unique in recent Navy history, attempted to raise the pride, professionalism, and performance of the Navy and its units by permitting the expeditious discharge of persons whose performance was shown in their records to be inadequate and a drain upon both the management time of supervisory personnel and the performance of their units. In January 1982, a second iteration occurred.

Although the intent was clear and the criteria quite specific, the actual impacts upon unit discipline and performance remained unknown. Also unknown were the origins of problem performance by these persons within their units and the decision and organizational processes employed. The purpose of this research was, therefore, to examine such impacts and origins, employing quantitative data from a broad sample of units, and to document the processes actually used through a set of representative Upgrade case studies.

THE ISSUES

That the Navy contained, after its extensive screening procedures, a number of persons in its E1-E3 ranks whose performance and behavior marked them as unsuited to Navy life, seemed on the surface perplexing. Two alternative explanations have some possible currency. The first is what might be termed the "Bad Apple" explanation. It is the simplest and is that a number of unsuitable individuals have inadvertently slipped through the screening procedures. This explanation holds that these were individuals who would very likely have failed in any such structured, demanding environment. They represented, in other words, a hypothetical sum of the "false positives" of the selection process. As such, a more exact personal profile would have permitted screening them out early on.

The other explanation is more situational or interactional. It is also more complex. This explanation presents the possibility that these are persons whose characteristics and abilities have combined with the jobs to which they have been assigned and the supervisory style which they have experienced to result in poor discipline and performance.

If the first explanation, the "bad apple" theory, is correct, no particular organizational correlates, other than a positive impact upon work group and unit performance

should be found. However, if the second explanation were correct, substantial organizational correlates would seem reasonable:

- . There might well be such continuity over time of this effect that differential rates of Upgrade incidence would be related to organizational style and practices in the unit measured at previous points in time.
- . Upgrade incidence might still be related in this way to organizational factors, even after controlling for the available pool of persons fitting the potential Upgrade profile.
- . Impacts upon unit performance and discipline might be minimal, in that the organization processes simultaneously created "replacements" from the pool for each person discharged.

OVERVIEW OF THE DESIGNA. Broad Scale Correlates and Consequences of Project Upgrade Incidence.

A data file was assembled for a reasonable sample of units containing prior Navy Human Resource Management Survey (NHRMS) data, appropriate unit performance data, and Upgrade incidence. The sample, as chosen, reflected high, medium-low, and zero Upgrade incidence. Available NHRMS data for waves prior to July 1981 were merged with past, present, and to the extent that time permitted, subsequent performance data, plus Upgrade incidence. Multivariate analyses were conducted to determine what, if any, across-time relationships existed.

B. Representative Unit Case Studies.

Five were units with relatively high Upgrade rates; six were units with relatively low rates; and three were units with no Upgrade cases at all. Half were drawn from the Atlantic Fleet, half from the Pacific Fleet, and a comparison with Fleet composition by aggregate unit type showed a reasonable match.

METHODOLOGY

The construction of the data file to be used in this study and the formation of the measures comprising it were discussed, some at length, in a previous technical report (Bowers, 1983). Briefly, it involved assembling two waves of NHRMS (survey) data, a number of outcome measures and the rates with which personnel were discharged through project Upgrade, for a sample of 174 Navy units. The units selected, furthermore, were shown to be representative of unit types found in the Navy as a whole.

The information assembled for these units, in the final data file relevant to this study, was:

1. Two waves of NHRMS (survey data).
2. Reenlistment rates (# reenlistments/# eligible) for first termers and total, standardized across units within time periods (to control for such things as seasonal fluctuations) and relativized over 18 time periods determined by each quarter's proximity to the unit's Wave 1 survey date.
3. Unauthorized absence and desertion rates (# of UAs (or DXs/# of E1s-E7s in unit) each standardized and relativized over ten six-month time periods.
4. Rates of non-judicial punishment, drug and marijuana offenses, drug and marijuana discharges, and other discharges. Construction of these measures was not described in the earlier report and will be discussed below.
5. Refresher training (REFTRA) results for the small number of units in the Pacific Fleet for which they were available.
6. Unit readiness data (FORSTAT) broken down into overall, equipment, supply, training, and personnel readiness measures, each standardized and relativized into 24 three-month periods. (See Denison & Bowers, 1983 for a detailed description of the unit readiness measures).

7. Upgrade rates (the number of persons discharged through the Upgrade program divided by the unit's E1-E7 complement) for both the first two Upgrade programs (Summer 1981 and Winter 1982) and for the two Upgrade programs combined.

Three measures were formed from data taken from the units' "Criminal Activity, Disciplinary Infractions and Court-Martial Reports," covering the period July 1, 1978 to September 30, 1982. They were:

1. Non-judicial punishment rates (# of NJPs and Civil Convictions/E1-E7 Complement.)
2. Drug and Marijuana offense Rate ("Total number accused"/E1-E7 Complement.)
3. (Total Discharge Rate Total # of punitive discharges including drug and marijuana discharges/E1-E7 Complement.)

Data were obtained for between 54 and 108 units for any given time period. More data were available for more recent quarters than were present for those in 1978-1980.

These three measures were standardized and relativized over 22 three-month periods. (The standardization and relativization process has been treated in depth in Drexler and Franklin, 1976.)

UPGRADE 1981, UPGRADE 1982, AND UNIT SIZE

The first Upgrade project, from July 4 through August 31, 1981, resulted in the discharge of 3,929 persons. It was followed, less than a year later, by a second Upgrade project, in which 4,958 additional persons were separated from the Navy. The messages received by the units describing the two Upgrade projects were very similar in content and were largely consistent in the specification of the criteria to be used in selecting Upgrade candidates. Differences between the two messages that might have had an impact on the candidate selection process were that the second message stated that "In particular, the non-dependent drug abuser...should receive thoughtful consideration" and that "The discharge of individuals awaiting disciplinary action who otherwise meet the general criteria established below is authorized under project Upgrade 82." The first Upgrade message may have implicitly discouraged the discharge of drug and alcohol abusers and of persons already awaiting disciplinary action (although the Commanding Officer was allowed to waive disciplinary action in some cases).

Unit Upgrade rates for these two efforts were found to correlate moderately and significantly (.39). There was, therefore, a significant tendency for units to array themselves in similar fashion in both Upgrade windows.

Units with high Upgrade rates during Project Upgrade 81 were also likely to be high for the 1982 effort; units with low rates in 1981 tended to remain low in the second effort.

For the purposes of this study, the number of discharges under both Upgrade projects were also combined and divided by units' E1-E7 complement. This "total Upgrade rate" was used in preference to the 81 and 82 rates separately even though, in some cases, it was less suitable than the Upgrade 82 rate alone. The conclusions that are drawn from the total rate are, generally, the same as would obtain for the two projects separately, but are somewhat more cautious.

With few exceptions, Upgrade rates from 1981 were somewhat less closely related to most measures examined in this report than were rates resulting from Project Upgrade 82. By and large, both waves of NHRMS data, reenlistment rates, desertions, unauthorized absences, non-judicial punishments, and drug and alcohol offenses were more strongly related to Upgrade 82 than to Upgrade 81 discharge rates.

Relationship Between Upgrade Rate and Unit Size

Although there is not a linear relationship between Upgrade rate and unit E1-E7 complement ($R = .12$, $p = .13$), there is a significant difference between unit size quartiles and mean Upgrade rates (see Table 1). Briefly, this indicates that extremely small units were likely to have relatively lower Upgrade percentages.

Table 1
Upgrade Rates by Unit Size

El-E7 Complement	Mean Upgrade Rate
18-153	.0076
154-231	.0289
232-268	.0218
269-483	.0277

eta = .44, F = 12.55, df = 3, P ≤ .0001

Beyond this, however, the rates of discharge for larger units vary relatively little with size. Controlling for unit type was also found to not add to the linearity of the unit-size to Upgrade-rate relationship.

RELATIONSHIPS BETWEEN NHRMS DATA AND TOTAL UPGRADE RATES

Summary of Initial Findings

A number of observations about the relationship between NHRMS data and total Upgrade rates (See Table 2) were reported in Bowers (May 1983). They are summarized briefly below:

- . When evaluating the relationships between survey indexes and Upgrade rates, first, for the initial Upgrade program, then for the Winter 1982 Upgrade program, and finally, for the total Upgrade rates for both programs, a clear pattern emerges. With few exceptions in the area of Command, all three Upgrade variables correlate most strongly with the older (Wave 1) NHRMS indexes.
- . Correlations between both waves of NHRMS indexes and the second Upgrade program's percentages are, in all cases, higher than those with the initial Upgrade rates. This, taken with the point above, suggests that these relationships are the strongest over the longest gap in time.
- . The highest correlations found were between Upgrade rates on the one hand and work group relations and outcomes on the other. These were generally in the $-.40$ to $-.50$ range between total Upgrade percentage and Wave 1 survey indexes. Supervisory leadership was also strongly related to total Upgrade rates, with coefficients ranging from $-.29$ to $-.43$. Command Climate's relationships to Upgrade percentages were weaker ($-.17$ to $-.34$). This suggests that Upgrade incidence is more strongly related to the face-to-face conditions within a unit and less directly related to the Command Climate.

Determining Unit Profiles Based on Survey Data

In 1974, as part of an ONR contract, Bowers and Hausser (November 1974) developed a typology of work groups based on the core indexes of the Survey of Organizations, using both civilian and Navy samples. Their study resulted in the

Table 2
Correlations Between Wave 1 and 2 NHRMS Indexes and Total Upgrade Rates

Variables	Wave 1 NHRMS	Wave 2 NHRMS
Climate		
Communication Flow	-.23*	-.34*
Decision Making Practices	-.21*	-.30*
Motivational Conditions	-.23*	-.33*
Human Resource Emphasis	.17	-.29*
Supervisory Leadership		
Supervisory Support	-.40*	-.37*
Supervisory Team Coordination	-.36*	-.36*
Supervisory Team Emphasis	-.29*	-.35*
Supervisory Goal Emphasis	-.43*	-.38*
Supervisory Work Facilitation	-.36*	-.32*
Peer Relations		
Peer Support	-.52*	-.48*
Peer Team Coordination	-.51	-.44*
Peer Goal Emphasis	-.41*	-.35*
Peer Work Facilitation	-.31*	-.42*
Outcomes		
Work Group Coordination	-.52*	-.46*
Work Group Readiness	-.53*	-.29*
Work Group Discipline	-.47*	-.33*
Satisfaction	-.37*	-.35*
Other		
Fair and Equitable Treatment	-.39*	-.31*
Lower Level Influence	-.02	-.31*
Equal Opportunity	-.39*	-.42*
Drug & Alcohol	-.34*	-.30*

* $P < .01$

identification of 17 distinct profiles, each defined by the means of its component indexes. Table 3 presents the index means for those 17 profiles. When compared to the Survey of Organizations data bank, the means on climate, supervisory leadership, peer relations and the outcome measures for the first profile are all at or around the 80th percentile; hence the name 1-80 (indicating a straight-line or "1" profile at the 50th percentile). Index means for the second profile all cluster around the 70th percentile, and the eighth profile, 125, has means which range around the breakpoint below which only 25% of the groups in the data bank fall.

Profiles 9 through 17 are not as congruent among the survey domains, however. Profile 9, for example, is comprised of groups that are high overall but are only in the 40th to 60th percentile range in peer relations. Profile 10 is low overall with only peer relations in that average range.

These profiles have been shown to be valuable in summarizing group attributes and facilitating the comparison of these types on other dimensions (Bowers and Hausser, 1977; Hausser, 1975.) In the present instance, to enable an exploration of the possible impact of units' management practices on their Upgrade rates, each unit in the present sample was "typed", that is classified according to the profile to which it was most similar.

Table 3

Seventeen Profiles Based on Survey of Organizations Data

	I-80	I-70	I-60	I-50	I-45	I-40	I-30	I-25	High Med	Low Peer	Med Supv	High Low	Low Clim	High Peer	Low Supv	Low Supv
Decision Making Pracs	3.94	3.76	3.35	3.03	2.87	2.56	2.57	2.18	3.22	2.64	2.48	2.82	2.82	2.89	1.94	2.36
Communication Flow	3.99	3.67	3.43	3.33	3.02	3.05	2.57	2.28	3.82	2.86	2.81	3.12	3.02	3.24	2.15	2.54
Motivational Conds	4.18	4.02	3.73	3.60	3.39	3.40	2.93	2.72	3.84	3.42	3.36	3.18	3.17	3.53	2.52	2.40
Human Resources Prim	4.22	4.03	3.63	3.34	3.23	3.10	2.67	2.50	3.68	3.22	2.68	3.28	3.20	3.44	2.23	2.51
Lower Lvl Infl Index	3.76	2.98	2.76	2.51	2.48	2.42	2.06	2.00	2.69	2.38	2.24	2.46	2.03	2.69	1.90	1.91
Tech Readiness	4.13	4.09	3.64	3.44	3.30	3.36	2.74	2.91	3.91	3.45	2.66	3.66	3.20	3.80	2.35	9.95
Sup Support Actual	4.83	4.43	4.35	4.02	3.64	3.93	3.40	3.07	4.56	3.76	4.24	3.06	4.43	3.68	2.72	2.94
Sup Wk Facil Actual	4.89	3.56	3.57	3.20	3.05	3.02	2.69	2.52	3.46	2.84	3.41	2.51	3.99	2.76	2.12	1.88
Sup Goal Emph Actual	4.74	4.24	4.15	3.82	3.65	3.61	3.38	2.79	4.31	3.68	4.11	2.98	4.30	3.44	2.47	2.40
Sup Team Bldg Actual	4.73	4.18	3.85	3.63	3.22	2.99	2.86	2.42	3.87	3.60	3.73	2.50	4.22	2.69	2.04	1.80
Peer Support Actual	4.52	4.34	3.92	3.80	3.70	3.43	3.46	2.96	4.10	4.14	3.67	3.66	4.09	3.64	3.81	3.48
Peer Wk Facil Actual	4.28	4.06	3.44	3.03	3.19	2.81	2.86	2.44	2.80	3.72	2.91	3.38	3.80	2.82	3.23	2.56
Peer Goal Emph Actual	4.23	4.13	3.61	3.36	3.26	2.97	2.98	2.56	3.27	4.16	3.03	3.20	3.66	2.98	3.38	2.35
Peer Team Bldg Actual	4.18	4.26	3.46	3.06	3.06	2.36	2.80	2.33	2.90	3.74	2.73	3.16	3.92	2.64	3.16	1.92
Group Process Index	4.29	4.33	3.87	3.59	3.44	3.36	3.25	2.88	3.76	3.93	3.34	3.66	3.91	3.50	3.35	2.97
Satisfaction Index	4.58	4.37	4.12	3.91	3.66	3.55	3.38	3.09	4.15	3.60	3.46	3.37	4.00	3.58	2.98	2.58

"Typing" of the Units in the Present Sample

Although the indexes on which the profiles were originally based were not, by and large, identical to those present in the NHRMS, most of them could be computed, given NHRMS item scores. Table 4 describes how the indexes necessary to typing the Navy units in this present sample were created.

The process that matched the means for each unit on the 14 new indexes (Technological Readiness and Motivational Conditions were eliminated for non-comparability) to the set of means defining each of the profiles involved performing the following test for each profile

$$\Delta = \sum_{i=1}^{14} (X_i - x_i)^2$$

where X = profile mean on a variable and x = the unit mean on that variable.

The profile with the smallest value of D , the distance measure, was identified as the match for the unit, i.e., that unit's profile type. * This formula could only be used in those units for which all fourteen indexes were present. Table 5 presents the results of the typing process.

* This method is based on the algorithm that was originally employed to create the profile clusters (See Veldman, 1967.)

Table 4

Components of Indexes Used in Typing Navy Groups

Index Name	NHRMS Items that were Used to create it
<u>Decision-Making Practices</u>	
How are objectives set in this organization?	
Are decisions made at those levels where the most adequate and accurate information is available?	
When decisions are being made are the persons affected asked for their ideas?	4. 5. 6 **
Is information widely shared in this organization so that those who make decisions have access to all available know-how?	
<u>Communication Flow</u>	
How adequate for your work group is the information it gets about what is going on in other departments or shifts?	
How receptive are people above your supervisor to ideas and suggestions from your work group?	1. 3. 2 *
To what extent does this organization tell your work group what it needs to know to do its job in the best possible way?	
<u>Motivational Conditions</u>	
How are differences and disagreements between units or departments handled in this organization?	...

Index Name

Why do people work hard
in this organization?

Are there things about
working here that
encourage you to work
here?

Human Resources Primacy

Does this organization
have a real interest in
the welfare and happiness
of those who work here?

How much does this
organization try to
improve working
conditions?

Are work activities
sensibly organized in
this organization?

Lower Level Influence

In general, how much say
or influence do lowest-
level supervisors have on
what goes on in your
dept?

In general, how much say
or influence do employees
(people who have no
subordinates) have on
what goes on in your
department?

Technological Readiness

Is this organization
generally quick to use
improved work methods?

Are the equipment and
resources you have to do
your work with adequate,
efficient, and well
maintained?

Supervisory Support

10, 13, 11 **

64, 65 *

...

Index Name	NHRMS Items that were Used to create it
How friendly and easy to approach is your supervisor?	22, 23, 24 *
When you talk with your supervisor does he pay attention to what you're saying?	
Is your supervisor willing to listen to your problems?	
<u>Supervisory Work Facilitation</u>	
Does your supervisor show you how to improve your performance?	*
Does your supervisor provide the help you need so that you can schedule work ahead of time?	
Does your supervisor offer new ideas for solving job-related problems?	*
<u>Supervisory Goal Emphasis</u>	
How much does your supervisor encourage people to give their best effort?	
Does your supervisor maintain high standards of performance?	
<u>Supervisory Team Building</u>	
Does your supervisor encourage the persons who work for him to work as a team?	28, 27 *
Does your supervisor encourage people who work for him to exchange opinions and ideas?	

NHRMS Items that were
Used to create it

Index Name

Peer Support

How friendly and easy to approach are the persons in your work group?

When you talk with persons in your work group do they pay attention to what you're saying?

Are persons in your work group willing to listen to your problems?

Peer Work Facilitation

Do persons in your work group help you find ways to do a better job?

Do persons in your work group provide the help you need so that you can plan.. organize and schedule work ahead of time?

Do persons in your work group offer each other new ideas for solving job-related problems?

Peer Goal Emphasis

How much do persons in your work group encourage each other to give their best effort?

Do persons in your work group maintain high standards of performance?

Peer Team Building

How much do persons in your work group encourage each other to work as a team?

35. 36. 37 *

44. 45. 46 *

42. 43 *

NHRMS Items that were
Used to create it

Index Name

How much do persons in
your work group emphasize
a team goal?

40, 41, 39 *

Do persons in your work
group exchange opinions
and ideas?

Group Process

Does your work group plan
together and coordinate
its efforts?

Does your work group make
good decisions and solve
problems well?

Do persons in your work
group know what their
jobs are and know how to
do them well?

42, 50, 49, 52, 48 **

Is information about
important events and
situations shared within
your work group?

Does your work group
really want to meet its
objectives successfully?

Is your work group able
to respond to unusual
work demands placed upon
it?

Do you have confidence
and trust in the persons
in your work group?

Satisfaction

How satisfied are you
with the persons in your
work group?

How satisfied are you
with your supervisor?

How satisfied are you
with your job?

56, 57, 59, 58, 60 61 **

Index Name	NHRMS Items that were Used to create it
How satisfied are you with this organization?	
Considering your skills and the effort you put into the work, how satisfied are you with your pay?	
How satisfied do you feel with the progress you have made in this organization up to now?	
How satisfied do you feel with your chances for getting ahead in this organization in the future?	

* Exactly the same as the 1974 S00 Index.

** Similar to the 1974 S00 Index.

*** Could not compute this Index.

Description of the Profiles found in the Navy Units

One fact immediately apparent from the information displayed in Table 5 is that many of the original analysis profile types were not found among the units in the present sample. Three factors, however, may combine to explain this. First, the original typology was based on face-to-face work groups comprised of an average of six individuals, whereas in the present sample the entire unit means were used, representing aggregations of about 200 persons. Because of this, some elimination of extremes would be expected, and it occurred (i.e., there were no I-80s, I-70s, or I-25s.) Next, unlike work groups, these units span hierarchical levels. Given this, and the larger N, it is not difficult to see how small groups with the uneven profiles (types 9-17) would look more "I"-like when merged into organization-wide aggregations. Finally, the profiles that were not found in this Navy sample were those that, in the original study, also had low memberships (8% of the total sample of groups or less).

When the mean total Upgrade rate was examined in relation to unit profile, (see Table 6) the results were clear: the better the management practices profile, the lower the Upgrade rate. This is especially true for the Wave 1 profiles. If it is remembered that Wave 1 NHRMS indexes were more strongly correlated to Upgrade percentages than were Wave 2 indexes and that it appeared that a fairly long period of time must elapse before the unit's management

Table 5

Frequencies of Each Profile Found in
both Waves of NHRMS Data

Type #	Type Name	Units in W1 Data N	Units in W1 Data Percent	Units in W2 Data N	Units in W2 Data Percent
1	I-80	0		1	.6
2	I-70	0		2	1.2
3	I-60	13	9.2	15	9.2
4	I-50	28	19.9	30	18.4
5	I-45	57	40.4	73	44.8
6	I-40	0		0	
7	I-30	38	27	33	20.2
8	I-25	0		0	
9	High Peer Med	0		0	
10	Low Peer Med	1	.7	2	1.2
11	Med Sup High	4	2.8	6	3.7
12	Med Sup Low	0		0	
13	High Clim Low	0		0	
14	Low Clim High	0		0	
15	low peer high	0		0	
16	low sup low	0		0	
17	low sup high	0		1	.6
		141	100	163	99.9

practices profile becomes evident as an outcome (for example as an Upgrade rate), the slightly more linear link between Wave 1 profiles and Upgrade rates seems not surprising.

For the Wave 1 scores especially, units at the 60th percentile were those with the lowest Upgrade rates; those at the 50th percentile discharged slightly higher percentages of their eligible personnel under Upgrade, and so on. Units at the 30th percentile, however, discharged (on the average) at twice the rate of units at the 45th percentile and at three times the rate of units with more favorable profiles.

Wave 1 to Wave 2 Profile Change

Table 7 presents Wave 1 and Wave 2 profile type frequencies. Of the 134 units for which both Wave 1 and Wave 2 profile types could be determined, 69 units (that is, 52% of the total) remained classed in the same profile over both waves of survey data. Of the remainder that were classified as belonging to I-type profiles, 22 units (or 16% of the total) improved by at least one type and 30 units (or 22% of the total) deteriorated by at least one profile type (e.g., a wave 1 "I-45" becoming, at Wave 2, an "I-30").

Another way to look at the Wave 1 - Wave 2 changes in unit profiles is to look at Wave 1 unit profiles by change type. Bowers (1983) described the process by which Wave 1 - Wave 2 NHRMS gain scores were clustered, producing five distinct change types:

Table 6
Mean Total Upgrade Rates
by Management Practices Profile Type

Units with a Wave 1 Profile	$\bar{X}$ Total Upgrade Percentage	Units with a Wave 2 Profile	$\bar{X}$ Total Upgrade Percentage
I-60	.0093	I-60	.012
I-50	.010	I-50	.011
I-45	.015	I-45	.012
I-30	.031	I-30	.032
Med Sup High*	.011	Med Sup High*	.015
eta=.40, F=6.55	df=4, p=.0001	eta=.44, F=9.11	df=4, p<.0001

* These are generally at the 40th percentile level with the supervisory leadership domain above the 60th percentile.

Table 7
Frequencies of Wave 1 by Wave 2 Profiles

9014. W2HGTTYPE	9013.W1HTTYPE						
	MISS	I-60	I-50	I-45	I-30	Low Peer Med	Med Sup High
n=	134						
Total=	173	29	11	28	55	35	1 4
MISS	7	3	2	0	2	3	0 0
I-80	1	0	1	0	0	0	0 0
I-70	0	2	0	0	0	0	0 0
I-60	14	1	5	6	3	0	0 0
I-50	23	7	4	10	9	0	0 0
I-45	58	15	1	10	32	12	1 2
I-30	29	4	0	0	7	21	0 1
Low Peer Med	2	0	0	2	0	0	0 0
Med Sup High	6	0	0	0	4	1	0 1
Low Sup High	1	0	0	0	0	1	0 0

$\chi^2 = 103.90, p < .0001$

Type 1 - Modest improvement: up to approximately 1/4 S.D. improvement. (41% of all units).

Type 2 - Modest deterioration: up to approximately 1/4 S.D. deterioration. (16% of all units).

Type 3 - Mixed effects: up to approximately 1/4 S.D. deterioration in Command Climate, but up to approximately 1/4 S.D. improvement in supervisory leadership and work group relations. (13% of all units).

Type 5 - Substantial improvement: up to approximately one S.D. improvement. (14% of all units)

Type 6 - Substantial deterioration: up to approximately one S.D. deterioration. (14% of all units).

Table 8 presents percent frequencies of change type by Wave 1 management practices by profile type.

Keeping in mind that change types 1 and 5 connote improvement and types 2 and 6 reflect deterioration, it is clear that a relatively high proportion of units at the 60th percentile were deteriorating, at least somewhat, whereas, the weakest units (in the 1-30s) were improving. Some regression toward the mean may well have occurred, but this does not appear to have been the sole explanation. With the exception of the I-60 and the Med/Sup/High profiles, a far greater proportion of units were improving, most by small increments.

An earlier finding that there were quite different relationship patterns between gain scores and subsequent Upgrade percentages among NHRMS change types presents a perplexing problem of interpretation (Bowers, 1983). They must be considered within the context of two additional findings:

Table 8
Percent Frequencies of Change Type
by Profile Type

Wave 1		Percent Frequency by Change Type				
Profile Type	(N)	1	2	3	5	% Total
I-60	(11)	9	18	27	9	36
I-50	(28)	39	18	18	7	18
I-45	(55)	40	15	13	19	12
I-30	(35)	54	11	6	14	9
Med Sup High	(2)	50	50			
						99
						100
						99
						94*
						100

*6% did not cluster in either of these five change types.

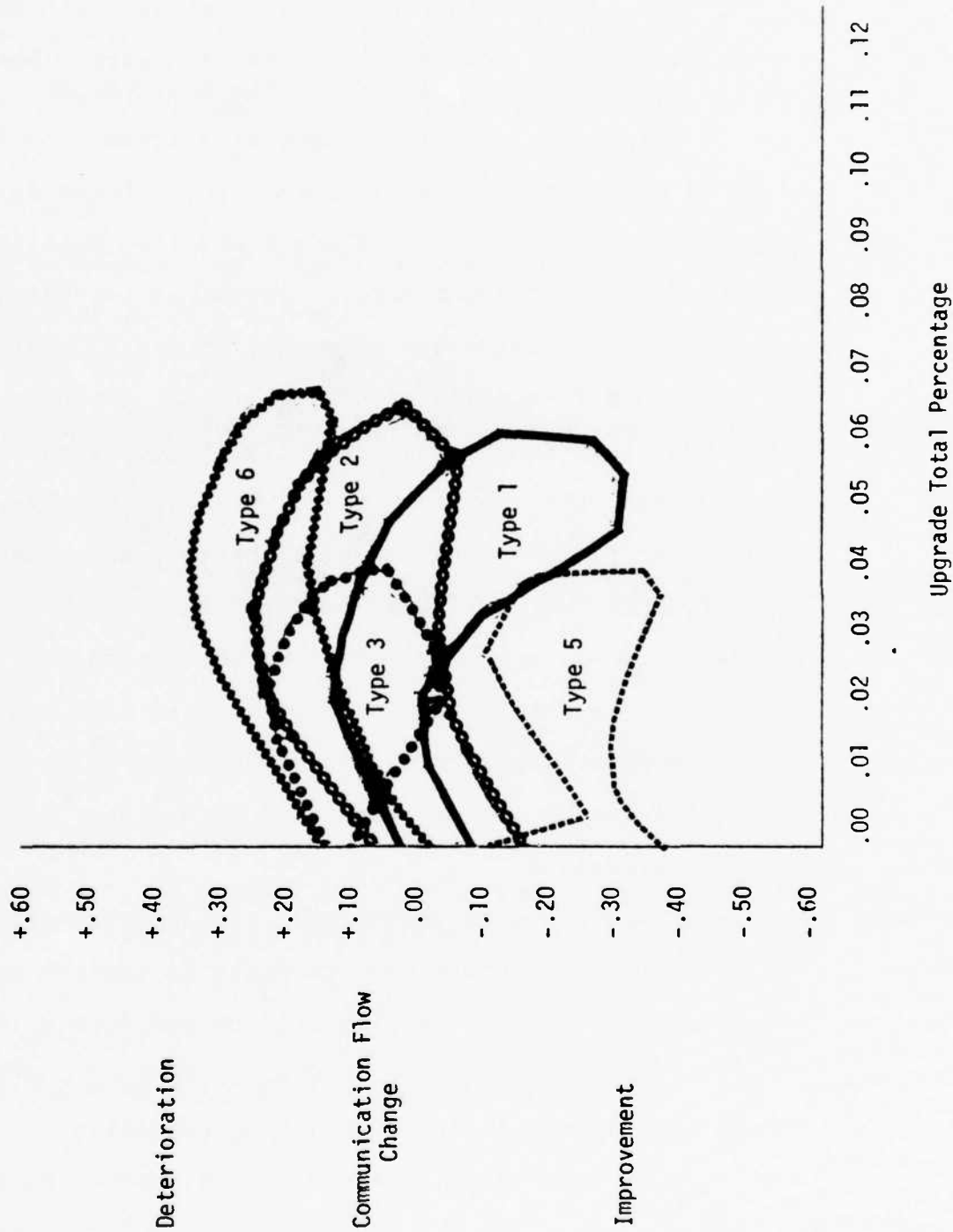
- . The overall percentages of Upgrade cases among the five change types, while different, were not significantly so. (That is, the change types tended to have the same average Upgrade percentages.)
- . The pattern of relationships between gain scores and Upgrade percentages for the entire sample, while mixed, was predominantly one of greater improvement associated with lower Upgrade percentages.

To shed additional light upon this issue, the scatter plots of NHRMS gain scores x Upgrade percentages for each change type were obtained. These plots (too detailed to be presented in the present report) reveal an interesting pattern. For illustration purposes, Figure 1 presents such scatter plots in general boundary form for the Communication Flow index gain score, with the five change types superimposed upon the same chart. What it suggests is a curvilinear pattern, one in which the extremes within each type, together with the average intermediate case, describe a similar curve, one in which placement toward non-improvement or deterioration is associated with medium-level Upgrade percentages, whereas placement toward improvement or non-deterioration may be associated with either high or low Upgrade percentage.

Also worth noting is the fact that gain scores for the various types are much closer together at the low Upgrade percentage levels than at high Upgrade percentage levels. Finally, it may be significant that in Types 1 and 3 it is modest improvement in the intra-group conditions (supervisory leadership, peer relations, and outcomes), not

Figure 1

Relationship of Communication Flow Change To
Upgrade Percentage By Change Type



command climate, that yields the relationship, whereas for Type 6, indexes across the board, including command climate, yield that relationship.

What all of this may suggest, although it certainly does not prove it, is that units showing higher levels of modest improvement in these intra-group processes experienced a "taste" of improvement and saw Project Upgrade as an easy route to gaining even more. Those units which had experienced great improvement, on the other hand, saw no connection between the possibility of Upgrade and further improvement and simply handled cases on an individual basis, as did those which had modestly deteriorated and may well not have recognized that deterioration nor have seen any connection to the possibility of Upgrade. Finally, those units which had experienced substantial deterioration may well, the more they deteriorated, simply have "given up," or concluded that each human being was necessary, no matter how unproductive.

Whatever the reasons, it is apparent that Upgrade percentage was connected to the form and degree of movement in conditions of organizational functioning that had occurred over time in an earlier period. This would appear to reinforce the idea, derived from other findings in these reports, that previous conditions and a dynamic movement of some sort in the unit's organizational life, were associated with the subsequent incidence of Upgrade cases.

The Impact of Change on Upgrade Rates

Since NHRMS indexes and management practice profiles were strongly related to unit Upgrade rate, a logical next question was, what effect, if any, did the degree and/or the direction of change have on decisions to Upgrade? Did units that were improving, for example, see the Upgrade programs as an opportunity to get ahead faster and take advantage of this discharge authority more than, say, units that were deteriorating in some way?

One way to address this question was to look at units at both ends of a continuum of Upgrade rates: those with very low Upgrade rates (under 1% of their unit E1-E7 complement) and those with the highest rates of discharge (over 2%). Among the 43 units with the lowest Upgrade rates, 29 were changing positively, 9 were changing negatively, and 5 were mixed. This group also included only one unit which had a Wave 1 profile as low as the 13th percentile; 73% were I-45s and I-50s, that is, they moved upward from a position that was already mid-range.)

Of the units with the highest Upgrade rates, 75% began as I-30s. The average direction of change was only slightly more positive than negative for these units, but examining the intensity of change yielded an interesting finding. Of this group, 67% changed only a little (most of these, positively) the remainder had experienced significant

negative change (type 6). There were no type 5s or type 3s among this group of units with the high range of Upgrade rates.

Units which Upgraded the least, therefore, tended to be those with management practices at average levels (45th to 50th percentile) that were more likely than not experiencing positive change. Units that discharged at a relatively high rate were, by and large, those that were already in managerial trouble: they had Wave 1 profiles at the 13th percentile and were either experiencing little change or substantial deterioration.

RELATIONSHIPS BETWEEN UPGRADE RATE AND
OTHER MEASURES OF OUTCOME

Two kinds of outcome measures were examined in this study: those that reflected unit performance, and those that reflected the behavior of enlisted personnel (so-called "personnel criteria"). Unit Performance was measured by refresher training scores (REFTRA) and by five readiness scores: overall, equipment, supply, training, and personnel. Although REFTRA scores were not included in this analysis because so few cases were available, none of the other unit performance (readiness) variables showed any significant relationship to Upgrade rate (see Table 9). This finding may be explained by the long lag time found to exist between the management practices of units and the peaking of the impact of that situation on unit readiness (Denison & Bowers, 1983). While the impacts on personnel behavior are also relatively long, unit readiness effects were seen to be even longer, peaking four or more years after the human system that predicted those effects had been measured.

Unauthorized absence, followed closely by desertion rate, was the best correlate to Upgrade rate. The relationships between these variables are shown in Figure 2. The relationship between Upgrade and UA rates is the strongest at T5, three years after the Wave 1 survey. With a median Wave 1 survey date of March 1979, the strongest relationship is nearly concurrent to the time of Upgrade.

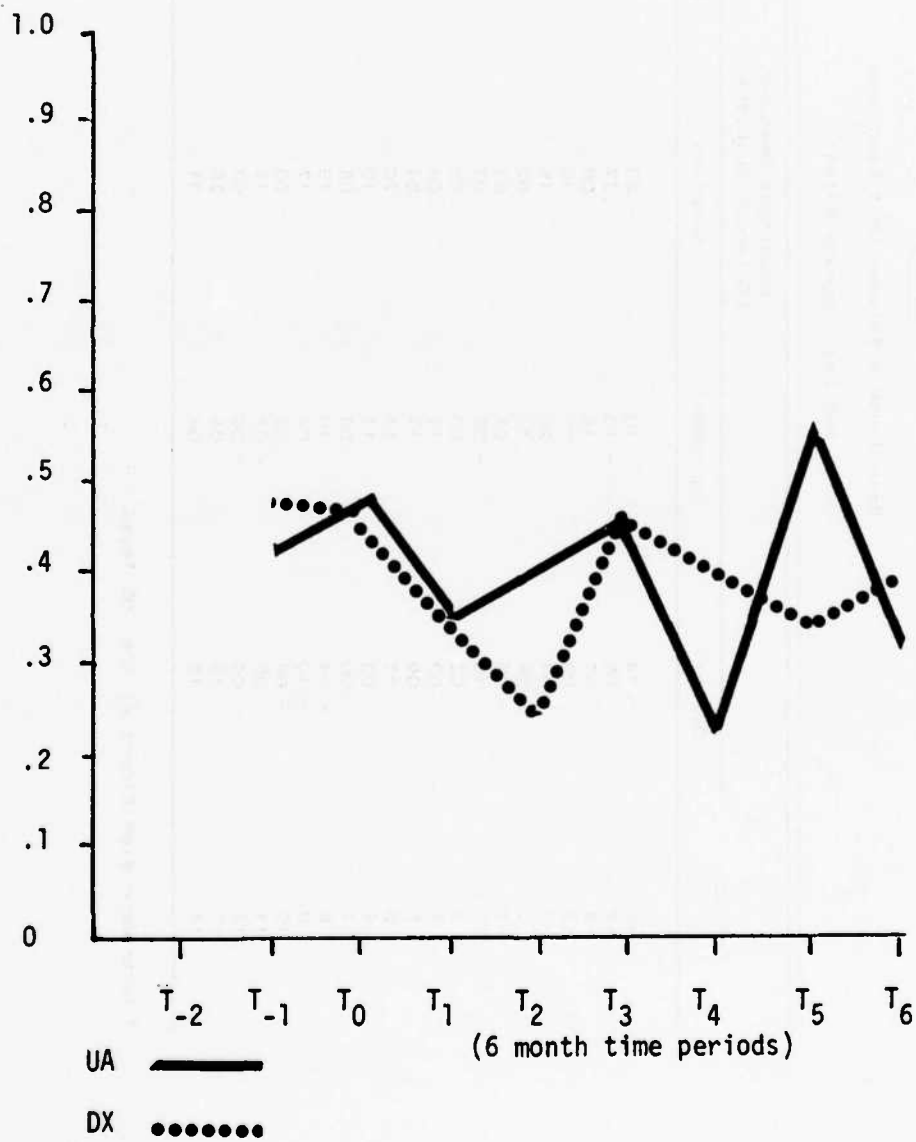
Table 9
Relationship Between Unit Readiness
and Unit Upgrade Rates*

Period	Readiness Measures (Calendar Quarters)			
	Overall	Equipment	Supplies	Personnel
-5	-.14	.10	-.23	-.30
-4	.05	-.10	-.27	-.24
-3	.07	.18	.09	-.22
-2	.09	.07	.19	.14
-1	.11	.20	.15	.12
0	.06	.11	.03	.00
1	-.06	.08	.01	-.06
2	-.15	-.06	.02	-.16
3	.02	.00	.05	-.02
4	.09	.17	.04	.07
5	.02	.14	.20	-.07
6	.03	.13	.10	-.08
7	.00	.08	.08	-.11
8	-.04	.10	.19	-.15
9	-.10	.04	.17	-.11
10	-.08	.02	.09	-.08
11	-.05	-.03	.17	-.02
12	-.09	-.06	.07	-.08
13	.16	-.01	.26	.04
14	.15	.04	.31	-.01

* None were significant at the .05 level.

Figure 2

Correlations Between Performance
Measures and Unit Upgrade Rate:
Unauthorized Absence and Desertion



This should not be surprising, given that one of the primary criteria for selecting a candidate for Upgrade was his or her record of unauthorized absence. Given that desertion appears to trail UAs in its relationship to Upgrade (and logically, as well), it might be expected to correlate with Upgrade at T7, if those data were available.

Figure 3 presents the relationships between the rates of NJP and drug and marijuana offenses and Upgrade percent. Note that, although these relationships were somewhat weaker than those discussed above, they still were strongest at what is the most likely concurrent time period, here T_{11} (quarterly periods were used). A strong relationship at T_2 for NJPs and T_5 for drug and marijuana offenses shows some predictive effects, whereas, peaking at T_{16} could either be lagged effects or concurrent ones for units with late survey dates. Drug and marijuana offenses and NJPs were also among the criteria suggested for selecting Upgrade candidates and were only slightly weaker correlates to Upgrade rate than desertion and UAs.

Reenlistment rates were not available for the estimated average time period concurrent with Upgrade. Even without these more recent data, Upgrade correlations with total reenlistment of $-.38$ at T4 and T9 and of $-.40$ at T6 were found. Similarly, correlations of first-term reenlistment at T6 and T7 of $-.35$ were found, (See Figure 4).

Figure 3

Correlations Between Performance Measures
and Unit Upgrade Rates: NJP Rate and Drug and
Marijuana Offenses

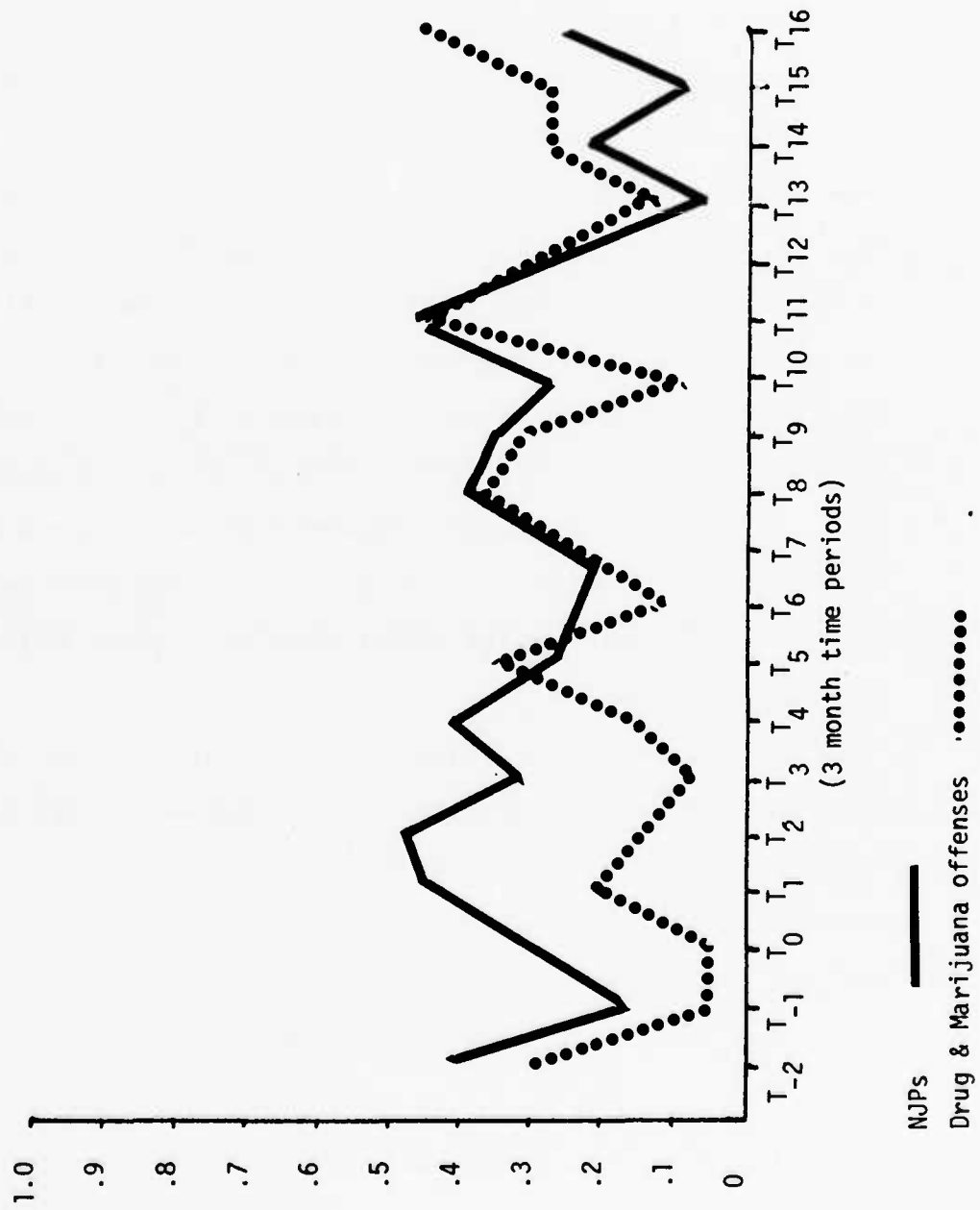
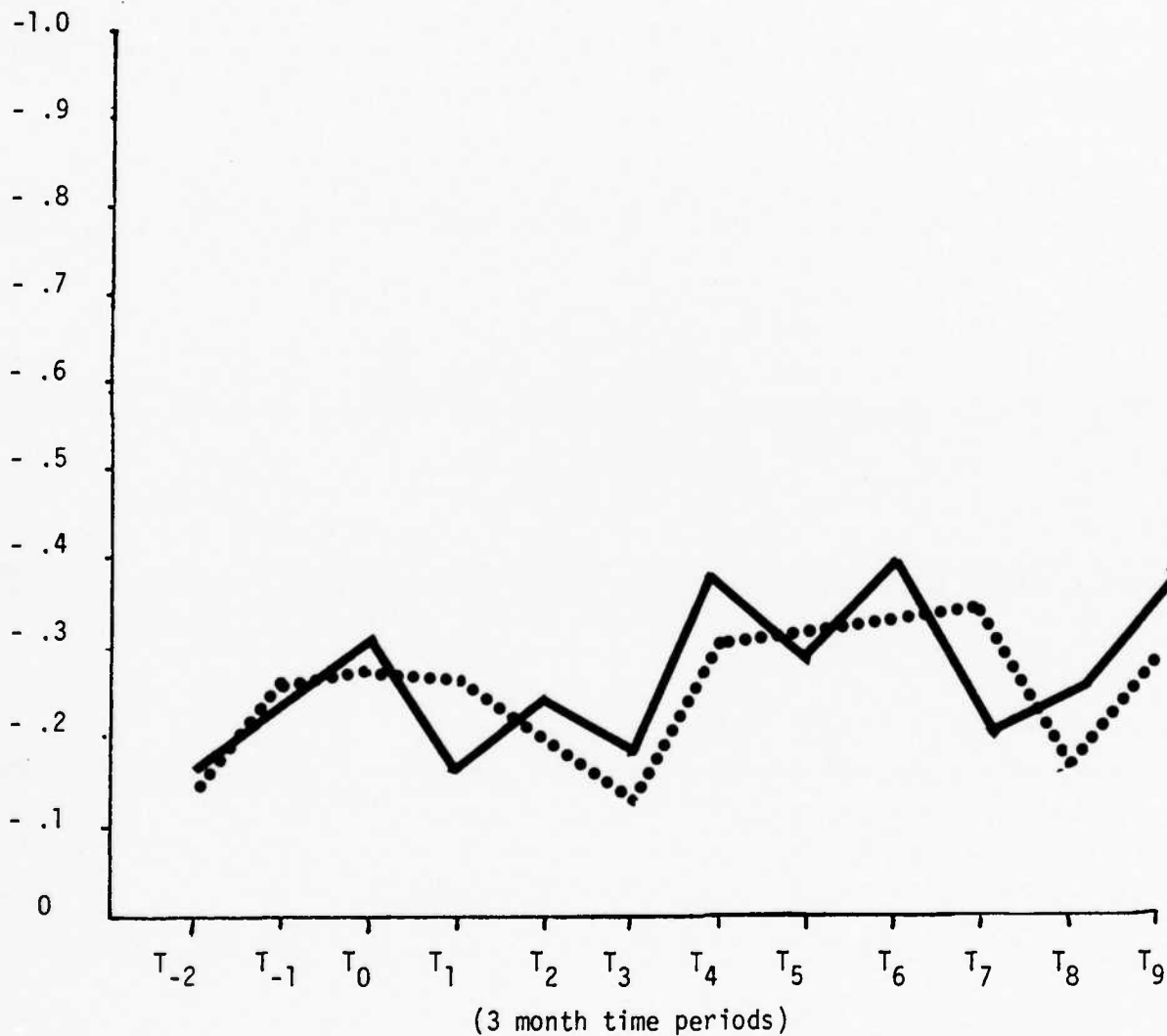


Figure 4
Correlations Between Performance
Measures and Unit Upgrade Rates:
Reenlistment Rates



Total Reenlistment —————
First-Term Reenlistment
.....

Clearly, the measures of personnel outcomes examined here correlate significantly with unit Upgrade rate, producing correlations peaking at .38 to .54. These measures, like Upgrade rate, can be predicted well from measures of the management practices present in a unit from somewhere between two and four years prior to them (Bowers, 1983a).

PREDICTING UPGRADE RATES USING UNIT MEASURES

Unit Upgrade rates can be predicted with reasonable accuracy using information gathered, for the most part, two and one-quarter to three years before the actual discharges took place.

Multiple regression analyses were used to determine the best predictors to total unit Upgrade rate. The solution that explained the greatest variance using the fewest variables and sacrificing the least cases included the following indexes:

Communications Flow	Wave 1
Motivation	Wave 1
Human Resource Emphasis	Wave 1
Work Group Facilitation	Wave 1
Work Group Coordination	Wave 1
Work Group Discipline	Wave 1
Equal Opportunity	Wave 2
Drug and Alcohol Use	Wave 1
Unauthorized Absence	T 0
Desertion	T 3

Together, these indexes explained 56 per cent of the total unit Upgrade rate variance (Mult R = .75, $p < .0001$) for 80 units.

If data for more units had been available, substituting the desertion rate at T-1 for T3 would probably have resulted in an even closer solution. With only 61 units, such a regression model could explain 62% of the variance in Upgrade rate (Mult R = .79, $p < .0001$). The ability to use T5 UA data might have driven the explanatory power still higher.

When one notes that the median date for Wave 1 survey administrations (and therefore also T0) was March 1979, it is clear that Upgrade rates could be predicted to a significant degree, long before the Upgrade candidates entered their units (and before most entered the Navy!).

THE EFFECTS OF UNIT TYPE/CLASS ON UPGRADE RATES

Can units' Upgrade percentages be predicted simply on the basis of their type/class? If so, does this prediction add to or improve upon what can be predicted through NHRMS scores and unauthorized absence and desertion rates? To answer these questions, the following analyses were undertaken.

First, type/class designations were combined into categories large enough to allow for statistical testing. Eight categories were formed, taking into account the similarity of size and mission of the component types.

1. Surface Combatant Units (N=24) including unit type/
classes DD, DDG, FFG and FF.
2. Submarine units (N=24) SS, SSN, SSBN
3. Amphibious Warfare Units (N=15) LKA, LPD, LHA, LPH, .
LSD, LST
4. Mine Warfare, small surface miscellaneous units
(N=10) MSO, ASR, ATF
5. Auxiliary Surface Units (N=9) AD, AE, AOR, AR, ARS,
AS
5. Helicopter Units (N=12)
HC, HM, HS, HL
7. Tactical Aviation Unit (N=28)
VA, VF, VAQ, VAW
8. Miscellaneous Aviation Units (N=8)
VP, VS, VC, VR, VRC, VRF, VX, VXE, VXN

Of these categories, numbers 1, 3, 4, and 5 described surface units; category number 2 represented the subsurface community; and numbers 6, 7 and 8 were air units.

Table 10-A presents the means of the total Upgrade percentages for the surface, subsurface, and air communities and Table 10-B presents the means of the total Upgrade percentages for the units categorized as described above. The differences between the means of the three communities were the differences between the eight type/class category means. Furthermore, a dummy regression predicting total Upgrade rate using only these eight type/class categories resulted in a Multiple $R = .63$ ($p = <.0000$).

Although these findings appear to suggest that unit type is a major factor impacting Upgrade rate, there is good reason from previous research to believe that the relationship is spurious and that a third factor, management practices, varies with unit type and has a major effect upon Upgrade rates (Bowers, 1975).

An analysis supports the theory that unit type alone contributes little, if any, unique impact on Upgrade rates. Whereas the type/class categories alone could account for 39per cent of the variance in total Upgrade rates in Navy units (see above), the solution considered earlier in this report, involving eight NHRMS indexes and two indexes reflecting desertion and unauthorized absence rates, had the power to explain 56% of this variance (Multiple $R = .75$, $p = <.0000$). Furthermore, the addition of the dummy variables representing the eight type/class categories added no significant difference ($p = .40$) to the NHRMS/UA/DX solution.

Table 10-A

Mean Total Upgrade Percentages
by Surface, Subsurface, and
Air Community Membership

Community	Number of Units	Mean Total Upgrade Percent
Surface	58	2.92
Subsurface	24	.47
Air	55	1.81

Table 10-B

Mean Total Upgrade Percentages
by Type Class Category

Category	Number of Units	Mean Total Upgrade Percent
1. Surface Combatant	24	2.50
2. Submarine	24	.47
3. Amphibious Warfare	15	5.31
4. Mine Sweep, Misc. small surface	10	.90
5. Auxiliary Surface	9	2.30
6. Helicopter	12	1.20
7. Tactical Aviation	29	2.41
8. Miscellaneous Aviation	14	1.08

The figures from Tables 11 and 12 help to explain why this may have occurred.

There is clearly a strong, significant relationship demonstrated between management practices (as summarized here by NHRMS Wave 1 and Wave 2 profiles) and type/class category. As has been discussed above, there is also a very strong relationship between management practices as reflected in the NHRMS and unit Upgrade rates. Therefore, it is not surprising, but also not particularly informative, that unit Upgrade rates vary by type/class.

Table 11

Percent Frequency of Wave 1 Management Profiles
by Type/Class Category*

Category	I-60	I-50	I-45	I-30	Low Peer Med	Med Sup High	Low Sup High	Missing	Total %
Surface Combatant	0	0	.13	.71	0	0	0	17	101
Submarine	0	29	46	8	4	4	0	8	99
Amphibious Warfare	0	0	7	67	0	0	0	27	101
Mine Sweep, Misc.		10	20	10		10		50	100
Auxiliary Surface			33	44				22	99
Helicopter	17	33	25			8		17	100
Tactical Aviation	14	21	45			3		17	100
Misc. Aviation	14	7	64					14	99

* When the frequencies of these cells are tabulated $\chi^2=98.84$, $df=35$, $p<.0001$.

Table 12
Percent Frequency of Wave 2 Management Profiles
by Type/Class Category **

Category	I-60	I-50	I-45	I-30	Low Peer Med	Med Sup High	Low Sup High	Missing	Total %
Surface Combatant	0	0	42	50	0	0	0	8	100
Submarine	4	8	68	8	4	8	0	0	100
Amphibious Warfare			13	53			7	27	100
Mine Sweep. Misc.		10	60	20	10				100
Auxiliary Surface		11	56	33					100
Helicopter	17	42	17			8		8	100
Tactical Aviation	14	24	52	3		3		3	99
Misc. Aviation	21	36	36					7	100

** When the frequencies of these cells are tabulated $\chi^2=95.85$, $df=49$, $p<.0001$.

THE LONG-LAG ISSUE

The extremely long lag which these findings present poses interesting problems. What it indicates is that, had we known the command climate which was coming into existence in these units in late 1975 or early 1976, we could have forecast with considerable accuracy the proportion of E-1s to E-3s that these units would release under Project Upgrade in 1982. We would not have been able to identify the particular individuals, of course, but their numbers would have been predictable.

The case study interview analyses pointed to a clear person-environment fit problem in the Upgrade cases. A more human resources-oriented set of organizational conditions was associated with a lower incidence of Upgrade, whereas conditions which attached less importance to the human resource and more importance to the immediate task were associated with a higher incidence. One of the measures used to define a human resources orientation--a structure of cohesive teams--seems remarkably consonant with a finding cited earlier in the present report, that work group and peer behavior characteristics were the strongest predictors.

Still, it is perplexing to fathom the processes that could have caused these effects to have been transmitted over a six-year time period. The possibilities are categorically limited: there are the hardware and the technical system on the one hand, and the people and the social system on the other. Both the hardware and the

technical system seem unlikely candidates for explaining this long lag effect, however. First, unit size--at least one possible concomitant of differences in hardware and technical system--was found to be only marginally related to Upgrade rate. Second, although there were differences in Upgrade rate among group types (subsurface, surface, air, and shore), there were not significant differences by ship type, and the latter added little as a predictor when included in the prediction equation. (In addition, group type may represent, in this relationship, more differences in people selected and assigned, or social system, than in the impact of hardware or technical system per se.) Third, an inspection of data from the overall sample of units showed instances of Blue versus Gold submarine crews, who share the same hardware and technical system, but which had vastly different Upgrade rates.

Instead, it appears much more likely that the explanation lies in some configuration of the people and the social system--the same variables which were involved in the observed effect itself.

However, the effect cannot be explained by consistent behavior on the part of the same persons, since, across this time period, perhaps two complete changes of crew had taken place. Nor do differences in assignment practices generate a plausible explanation. Many things affect assignment, but

a practice of systematically assigning "rotten apples" to units that were poorly managed six years earlier seems highly unlikely.

Rather, something appears to have happened which did either or both of the following: (a) caused a larger number of Upgrade-vulnerable persons to flow through some units over time, and (b) caused more such vulnerable persons to have dysfunctional behavior triggered.

Considering the fact that Upgrade rate was found to be related to "personnel" performance measures during the intervening period (Reenlistment rate, UA/Desertion rate, Non-Judicial Punishment rate) but not to Readiness suggests at least one possible explanation.

Assume, for a moment, that the population from which recruits are drawn contains some proportion who are Upgrade-vulnerable. Although this proportion is a minority and of unknown size, it must be at least as high as the overall Navy rate (approximately three per cent), or even as high as the highest-rate unit in our sample (approximately 11 per cent). Also, it seems likely that the proportion of vulnerables coming through is several times this proportion, since many obviously do not deteriorate and become problems, or, once counselled, shape up and succeed. A conservative estimate, therefore, might be somewhere between 10 and 25 per cent of the incoming recruit population.

What does Upgrade-vulnerable mean? No precise definition is possible, but the case study interviews may provide some clues. Several themes appear to have run through the backgrounds of the five types of Upgrade individuals that were identified:

- . Counter-dependent persons who saw Navy service as a route to personal independence from authority figures (parents, teachers, school officials, etc.).
- . Persons whose customary coping stance was one of escape from unfavorable or unpleasant situations (pressure, demands, lack of employment opportunity, etc.).
- . Persons whose nature was dominating, aggressive, and often violent, who saw the Navy as a place where, they thought, that would be recognized and perhaps valued.

Admittedly, these generalizations go far beyond the evidence. Nevertheless, they contain at least a subjective congruity with the case descriptions.

No doubt some proportion of such persons would never succeed in Navy service, regardless of the social system, counselling, or the like. Many, however--perhaps most, considering the large number of units with zero Upgrade--do succeed, to the extent that the social environment is one that is human resource-oriented and places them early on into a structure of cohesive teams, well socialized to the mission and self-discipline. But if placed in a unit that is managed from an Immediate Task Orientation, with persons largely left to fend for themselves as independent

commodities and treated in a highly directive, indifferent manner, the probability rises that their behavior will deteriorate.

The possibility exists, therefore, that the higher proportion of Upgrades present in poorly managed units is in great part attributable to two factors: (a) a harsh set of practices sometime earlier in the unit's history which led to disproportionate personnel losses and a greater sheer number of persons being pumped through the system, and (b) a tendency for practices, harsh or effective, to be transmitted across time through different sets of incumbents, subsequently triggering (or preventing the triggering) of vulnerables as they come aboard. The first of these might be termed "personnel velocity," the second "cultural constancy." Together, they suggest what might be termed a "constancy/velocity" explanation.

The present data were inadequate to test this constancy/velocity explanation with any degree of accuracy. However, the personnel performance criteria permitted at least a preliminary examination of the plausibility of this explanation. Table 13 presents the mean index correlation coefficient between NHRMS Wave 1 and Upgrade 2. As indicated earlier, the median date of occurrence of NHRMS Wave 1 was March 1979, whereas Upgrade 2 occurred in February-March 1982, three years later. Presented also are a series of partial correlation coefficients, in which, first, the effects of UA and Desertion rates are removed,

then, the effects of Total Reenlistment rate, and finally, the effects of Non-Judicial Punishment rate. As can be observed, the original relationship declines from substantial to insignificant.

Table 13

Effects of Partially Out
Personnel Performance Criteria
from the NHRMS-Upgrade Relationship

Mean zero order correlation, Eight NHRMS Wave 1 Indexes*
(Median Date = March 1979)
x Upgrade 2 (Feb-Mar 1982) = $-.47$

Mean Partial Correlation: Eight NHRMS Wave 1 Indexes*
x Upgrade 2, holding constant UA and Desertion
(Oct 1979-Mar 1980) = $-.31$

Mean Partial Correlation, Eight NHRMS Wave 1 Indexes*
x Upgrade 2, holding constant UA and Desertion,
(Apr 1979-Sep 1979) and Total Reenlistment,
(Apr-Jun 1980) = $-.23$

Mean Partial Correlation, Eight NHRMS Wave 1 Indexes^{2*}
x Upgrade 2, holding constant UA and Desertion,
(Apr-Sep 1979), Total Reenlistment, (Apr-Jun 1980),
and NJP (Jul-Sep 1980) = $-.13$

^{2*} The eight NHRMS indexes used in this analysis were:
Fair and Equitable Treatment, Supervisory Support,
Supervisory Goal Emphasis, Peer Support, Peer Team
Coordination, Work Group Coordination, Work Group
Readiness, Work Group Discipline.

CORRELATES OF DRUG AND ALCOHOL MEASURES

Because of prevalent role, central or peripheral, which drugs and alcohol seem to have played in Upgrade cases, special attention might profitably be paid to the correlates of the NHRMS Drug and Alcohol Index. That index consists of the mean score on eight survey questions:

- Q.77 To what extent does this command have an effective drug abuse prevention program?
- Q.78 To what extent do members of your work group discourage drug abuse?
- Q.79 To what extent would you feel free to talk to your supervisor about a drug problem in your work group?
- Q.80 To what extent is the performance of your work group affected by drug and/or alcohol related problems?
- Q.81 To what extent would you feel free to talk to your supervisor about an alcohol problem in your work group?
- Q.82 To what extent does the command program promote the responsible use or the non-use of alcoholic beverages?
- Q.83 To what extent do members of your work group discourage the abuse of alcoholic beverages?
- Q.84 To what extent do the social activities of this command include alternatives to the use of alcohol?
- Q. 81 To what extent would you feel free to talk to your supervisor about an alcohol problem in your work group?
- Q.82 To what extent do you feel obligated to report people drinking on the job?

Table 14 presents the correlations of this index, as measured at Wave 1, with non-judicial punishment (NJP) rate by quarterly period for the 17 periods for which NJP data

were available. Mean annual coefficients and mean coefficients for each of three somewhat different impact periods are presented as well. These findings show that the D&A index correlates strongly, significantly, and negatively with NJP rate across all periods, with the peak relationships occurring in the periods T0 - T+4 (from the time of the survey until one year later) and again in T+8 and T+9 (two to two and one-quarter years later.)

Table 15 presents analogous correlations of the D&A index with drug and marijuana offenses (DMO) rate. A high proportion of these coefficients are strong and significant as well, peaking in the periods T+4 to T+10 (one year to two and one-half years later.) The coefficients are understandably lower than were those to overall NJP rate, in part no doubt because only a portion of the D&A concern is with drugs. It could also represent an impact of greater Navy-wide concern about this issue beginning in those time periods, although this is a less than persuasive argument. For one thing, that concern has, indeed, been Navy-wide and not selective by unit D&A Program effectiveness. While it may have raised the overall DMO rate, it seems less likely that it would have systematically altered the covariance of the two. Furthermore, as will be seen in subsequent paragraphs, the connection which DMO rate has to performance impairment makes this line of explanation less plausible.

Table 14

Correlations of the NHRMS
Drug and Alcohol Index with NJP

Period	Correlation	Mean Annual Coefficient	Mean Impact Period Coefficient
M2	-.43*		-.45*
M1	-.47*	-.47*	
0	-.50*		
+1	-.53*		
+2	-.65*		
+3	-.59*	-.62*	
+4	-.69*		
+5	-.45*		-.54*
+6	-.49*	-.48*	
+7	-.36*		
+8	-.60*		
+9	-.50*		
+10	-.39*		
+11	-.44*	-.44*	
+12	-.41*		
+13	-.50*	-.52*	-.46*
+14	-.53*		

Table 15

Correlations of the NHRMS
Drug and Alcohol Index with DMO

Period	Correlation	Mean Annual Coefficient	Mean Impact Period Coefficient
M2	-.04		
M1	-.29	-.16	
0	-.03		-.14
+1	-.09		
+2	-.33*	-.30	
+3	-.29		
+4	-.48*		
+5	-.47*		
+6	-.34*	-.35*	
+7	-.32*		-.45*
+8	-.28*		
+9	-.50*		
+10	-.38*	-.38*	
+11	-.31		
+12	-.32		
+13	-.41*	-.26	
+14	-.10		-.29

In this regard, one of the D&A index questions (Q.80) is unique among the items, since it deals, not with command or local efforts, but with the degree to which the work group's performance is seen as impaired by drug and alcohol problems. Table 16 presents correlations of this question alone with NJP and DMO rates by period. It is apparent that they resemble closely those for the overall D&A index, with significant relationships occurring in the period one to two years later. This lag suggests an obvious interpretation: that, for example, the crew of a unit realized that their performance was impaired by drug and alcohol problems, but that it took one to two years for that effect to appear in NJP and DMO actions.

Yet another set of relationships of interest are those of the other NHRMS indexes to the D&A index and to question 80. These are presented in Table 17. All coefficients listed are statistically significant beyond the .05 confidence level. The highest coefficients for the D&A index are predominantly those to indexes of command climate and supervisory leadership, whereas the highest for Q.80 (Performance Impaired) are to Work Group Indexes. In other words, while the nature of the drug and alcohol program may be more a function of what the command does, D&A improvement or lack thereof is more a function of what goes on within the work group.

Table 16
Correlations of Q.80
with NJP and DMO Rates

Period	Correlation with NJP	Correlation with DMO
M2	-.30	-.12
M1	-.18	-.11
O	-.30	.06
+1	-.35	-.02
+2	-.48*	-.21
+3	-.44*	-.08
+4	-.63*	-.20
+5	-.30*	-.36*
+6	-.48*	-.42*
+7	-.34*	-.26*
+8	-.40*	-.27*
+9	-.26	-.39*
+10	-.27*	-.09
+11	-.45*	-.28
+12	-.23	-.20
+13	-.29	-.51*

Table 17

Correlation of NHRMS Indexes
with D&A Index and with Q. 80

Index	D&A	Q. 80
Communication Flow	.83	-.41
Decision-Making Practices	.82	-.36
Motivational Conditions	.83	-.35
Human Resources Emphasis	.77	-.38
Fair and Equitable Treatment	.83	-.39
Supervisory Support	.74	-.45
Supervisory Team Coordination	.79	-.50
Supervisory Team Emphasis	.80	-.35
Supervisory Goal Emphasis	.75	-.40
Supervisory Work Facilitation	.77	-.40
Peer Support	.64	-.50
Peer Team Coordination	.73	-.56
Peer Team Emphasis	.70	-.42
Peer Goal Emphasis	.79	-.52
Peer Work Facilitation	.75	-.52
Peer Coordination	.76	-.57
Work Group Readiness	.48	-.50
Discipline	.86	-.47
Satisfaction	.83	-.46
Lower Level Influence	.57	-.30
Training	.72	-.46
Equal Opportunity	.82	-.52
Personnel	.72	-.36

Finally, the correlation of the other D&A index items with Q.80 are presented in Table 18. These data reinforce what was just said: that dynamics within the face-to-face work group are what permits or prevents impairment. The command, its program, and social activity alternatives have less to do with that crucial issue.

Table 18

Correlation of Other
D&A Items with Q. 80

Item	Referent	Correlation with Q.80
Q.77	Command	.35
Q.78	Work Group	.64
Q.79	Supervisor	.57
Q.81	Supervisor	.65
Q.82	Command	.36
Q.83	Work Group	.51
Q.84	Command	.39

IMPLICATIONS OF THE FINDINGS FOR NAVY POLICY

The findings presented in this report and in the earlier, interim report suggest both a dilemma for Navy policy-makers and a possible solution. The dilemma is that, in all probability, Upgrade vulnerables cannot be screened out in advance, at least not at a cost that would be tolerable. In addition, even if successful screening were possible, it would in all likelihood involve the screening out as well of those vulnerables who do eventually succeed in Navy life.

The solution--the possible key to minimizing the administrative and performance drains involved in dealing with Upgrade individuals--lies instead in prevention. In relation to this, there appears to be at least strongly suggestive evidence that the solution lies in the close, cohesive group, linked and integrated into the unit, its goals, and its mission. As Cartwright and Zander (1960) pointed out many years ago, groups, as such, are neither good nor bad. Indeed, in the cases presented in this series of reports, there were instances in which at least a part of an Upgrade individual's difficulty seemed to have stemmed from his involvement in an antisocial group. Whether their effects are judged as socially good or bad, groups are almost universally powerful. Through their norms and sanctions of acceptance and rejection, they profoundly influence the behavior of their members. When groups are an

integral part of the unit, its structure, purposes, and mission, these norms and standards influence member behavior in constructive directions.

A young sailor who comes aboard a command and is quickly integrated into a cohesive group whose norms are consonant with the unit's mission and values stands a substantial chance of succeeding in a Navy environment. On the other hand, one who comes aboard and is treated as a faceless part of a manpower pool runs some risk. The feeling of isolation and of indifference can be quite debilitating. For a person who is what we have termed Upgrade-vulnerable, this difference may well be critical. Belonging to a group where he is wanted and needed may be enough to keep a person who otherwise would be a Dropout or a Failure involved, working, and off the Unauthorized Absence list. Being a part of a group that values being alert and able to carry your share of the load and which clearly disapproves of arriving for work disoriented and partially unable to function from drugs and/or alcohol may be enough to keep the potential Burnout from seeking escape through substance abuse.

A prime factor in the prevention of Upgrade cases, therefore, would seem to be the encouragement of units to structure themselves into a pyramid of interlocked, tightly cohesive groups, ably led by officers and non-commissioned officers who, while they view the mission and its component goals as paramount, see the human resources assigned to them

as a primary vehicle for fulfilling those goals and that mission. The payoff to the Navy of doing this would not be limited to reducing the instances of Upgrade, however. As other reports in this series have indicated, and other research as well, there should also result, over time:

- . Higher levels of unit readiness.
- . Higher reenlistment rates, with an opportunity where desirable to be more selective.
- . Lower levels of non-judicial punishment, including drug and marijuana offenses, with their attendant costs.
- . Lower levels of unauthorized absence and desertion, once more with their attendant costs.

An additional benefit is less certain, but at least conceivable. Much has been made of a well-known postulate of system reliability as a joint function of equipment and human reliabilities. Today's sophisticated equipment requires high levels of human component reliability. It is well known that group cohesiveness strongly affects the nature and predictability of group effectiveness. It may well be, therefore, that human component reliability will be, by a structure of cohesive groups, augmented in ways not possible on an individual basis. If so, the reliability of the entire system might be raised significantly.

Finally, and only indirectly related to these issues, is that of the usage of drugs, particularly marijuana. As was indicated in the report of data from aboard-unit interviews regarding Upgrade cases, there is strong reason to believe that, despite the Navy's efforts, the

recreational drug culture still exists. Indeed, it would be surprising if it did not. An ISR program of longitudinal research upon high school seniors has found that, although both daily and less frequent use of marijuana has declined steadily in the last several years, recreational use (defined as monthly) remains high--about one-fourth of such persons, and a somewhat higher proportion among the non-college bound, which would include most persons subsequently entering military service (Johnston, Bachman and O'Mally, 1982).

These findings are congruent, sadly or hopefully, with those from the drug and alcohol data presented earlier. It appears to be the strong, cohesive peer work group with norms against drug and alcohol abuse, ably led by a supervisor with whom they feel free to talk about such problems, that prevents impairment and the subsequently high disciplinary action rates. Drawing perhaps an extreme, yet one that was personally described to one of the present writers in a shipboard interview, having a scheduled, canned lecture on the evils of substance abuse, delivered to a group of young seamen by a grizzled chief with a large, red nose who is a notorious boozer, will simply accomplish little that is positive. For Navy policy-makers, the message, perhaps, may be this: a system which builds a structure of admired role models and strong peer groups with norms against substance abuse may alleviate or even solve

the drug and alcohol problem. However, when an authority system confronts a strong counter peer culture, the authority system almost invariably loses.

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