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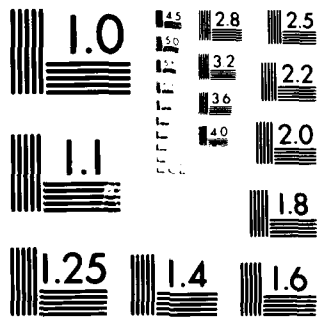
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**COMPARISONS OF THE NAVY ALCOHOL
SAFETY ACTION PROGRAM WITH
OTHER ALCOHOL REHABILITATION PROGRAMS**

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KOLB, P. COHEN, & E. K. E. GUNDERSON



REPORT NO. 79-58

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Comparisons of the Navy Alcohol Safety Action Program
with Other Alcohol Rehabilitation Programs

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and

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Report Number 79-58

Research supported by the Bureau of Naval Personnel under Project Order
Number N0002278F088AFZ and the Naval Medical Research and Development Command,

Department of the Navy, under Research Work Unit M0096-PN.001-1034.

The views presented in this paper are those of the authors.

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SUMMARY

Problem

The Navy Alcohol Safety Action Program (NASAP) is directed toward the early identification of alcohol abuse among Navy personnel. Individuals in crisis situations because of drinking, that is, arrested for drunk driving or fighting, are referred to this counseling program which is conducted during off-duty hours. Through an educational approach the individual is made aware of his drinking problem and given the necessary help to change his destructive drinking patterns.

As a first step in evaluating the effectiveness of NASAP, a comparative study of NASAP and other alcohol rehabilitation programs was considered useful.

Objectives

The objectives of the study were: (1) to compare post-treatment effectiveness for NASAP and alcohol rehabilitation participants, (2) to determine correlates of post-treatment effectiveness for both populations, (3) to estimate the extent of alcoholism among NASAP participants, (4) to compare outcomes among individual NASAP facilities, and (5) to examine rates of disciplinary difficulties before and after treatment for both NASAP and rehabilitation participants.

Approach

The records of 3,435 Navy enlisted men admitted to NASAP in 1977 or 1978 and 5,481 men admitted to alcohol rehabilitation facilities during the same period were analyzed. Each of these populations was divided into younger (≤ 25 years old) and older (≥ 26 years old) groups. All participants completed an extensive biographical questionnaire covering preservice family and social history, schooling, military disciplinary and achievement history as well as a detailed history of alcohol use and problems due to alcohol. From the information provided five composite variables were constructed: (1) Alcoholic by Behavioral Criteria, (2) Family Alcoholism, (3) Sociopathy, (4) Earliest Age Alcohol Problem, and (5) Family Socioeconomic Status. Post-treatment effectiveness was determined from Navy personnel records. Effectiveness was defined as being on active duty or receiving a favorable discharge with no recommendation against reenlistment 6 months or more following release from rehabilitation. Noneffectiveness was the receipt of an unfavorable discharge or a favorable discharge with a negative recommendation for reenlistment more than 30 days after the completion of treatment. Analysis of variance was the principal technique used for analyzing the data.

The number of alcoholics seen in the NASAP program was estimated from responses to questions contained in the Biographical Questionnaire and from alcohol rehabilitation records.

Enlisted medical and service history files maintained at the Naval Health Research Center were utilized to compute rates of hospitalization for alcoholism and disciplinary occurrences during pre- and post-treatment periods for younger men.

Results

Among NASAP participants 88% of the younger men and 97% of the older men were effective. For rehabilitation participants the percentages were 75% and 92%, respectively. Indicators of longevity and achievement in the service--age, pay grade, and years on active duty-- were associated with effective outcome for both younger and older groups in the two populations. Younger and older men in both programs who were effective reported less utilization of health care services during the year preceding admission to treatment. Self-reported disciplinary histories were highly discriminating for younger but not older groups. Similarly, many items covering pre-service family, school, and social history discriminated between effective and noneffective men in one or both younger groups. In the older groups items reflecting a more stable social adjustment discriminated effective from noneffective rehabilitation program participants but not NASAP participants. For all groups, except the older NASAP group, effectiveness was associated with lower Sociopathy scores. Alcohol use and problem histories were highly discriminating for both younger groups although specific items associated with effectiveness differed in each group. In the older groups less severe alcohol problem histories discriminated effective from noneffective rehabilitation program participants and to a lesser degree NASAP participants. In both younger groups and in the older rehabilitation program group effective men scored lower on the Alcoholic by Behavioral Criteria variable.

When the two effective groups in both younger and older populations were compared, NASAP participants presented more favorable profiles than rehabilitation participants.

Many items from the areas of alcohol use and alcohol problem history discriminated between noneffective groups for both younger and older men. All differences suggested lesser involvement with alcohol for noneffective NASAP men when compared to noneffective rehabilitation participants.

Of several possible sources for estimating the extent of alcoholism among NASAP participants, the single best indicator was the composite variable Alcoholic by Behavioral Criteria which identified 20% of the NASAP population as alcoholic.

When effectiveness rates among selected individual NASAP facilities were determined for younger and older groups, the differences observed appeared related to differences in the populations of the facilities rather than to program differences.

Comparisons of younger subgroups on rates of disciplinary occurrences, promotions, and hos-

pitalizations before and after treatment revealed higher rates of desertion and demotion after treatment for all groups, effective and noneffective. Higher unauthorized absence rates were observed after treatment for the effective groups but not for the noneffective groups. Promotion rates were lower for all groups after treatment, and hospitalization rates were lower for effective and noneffective rehabilitation groups.

Conclusions

1. Effectiveness rates were very high for both NASAP and rehabilitation program participants using the relatively short follow-up period of this study; NASAP participants, both younger and older, had significantly higher effectiveness rates than other rehabilitation participants.

2. The higher effectiveness rates for NASAP participants were consistent with more favorable population characteristics, less severe alcohol problems, and the concept of early treatment intervention.

3. Post-treatment effectiveness in both types of programs was associated with more favorable preservice histories, more positive achievements in naval service, and less severe alcohol use and alcohol problem histories.

4. One-fifth of the NASAP participants were considered alcoholic by behavioral criteria and, therefore, in need of more intensive treatment. Overall, however, the two types of programs appeared to be receiving appropriate candidates for their services.

5. The rates of disciplinary problems among younger men generally were higher after treatment than before. It is not possible to interpret these initial descriptive results, however, until comparisons can be made with disciplinary rates for untreated controls over similar time intervals. Such a comparison has been proposed as a future project.

Recommendations

1. The Sociopathy Scale or an alternate scale reflecting disciplinary history should be used to screen out younger individuals who are least likely to be effective in naval service. Such individuals should not be referred to alcohol rehabilitation programs.

2. The composite scale Alcoholic by Behavioral Criteria should be used as a screening tool to aid in appropriate referral to NASAP or other rehabilitation programs.

3. Longitudinal comparative studies of NASAP and rehabilitation program participants versus untreated controls are needed to clarify the effects of alcohol treatment on subsequent disciplinary history. A detailed proposal to conduct such a study has been submitted to the Military Personnel Command.

INTRODUCTION

Background

In late 1974 the U.S. Navy initiated the Navy Alcohol Safety Action Program (NASAP). This was another in a wide range of services aimed at personnel with alcohol problems. Since the beginning of the 1970s, the Navy has provided several types of alcohol rehabilitation facilities that provide inpatient or outpatient treatment for alcoholics and alcohol abusers, depending on their needs. NASAP is directed toward individuals who demonstrate incipient alcohol abuse problems. Through an "after hours" educational program extending over 6 weeks for several hours each week, it strives to help individuals become aware of their drinking patterns and encourages more responsible alcohol use behavior. One major source of identifying candidates for NASAP is arrest for drunk driving by civilian authorities. However, men picked up by civilian or military police for other offenses committed or difficulties encountered while drinking also may be referred as may any individual believed to be in need of such services by superior officers.

Objective

The objectives of this study are: (1) to compare post-treatment effectiveness of NASAP participants and participants in other Navy alcohol rehabilitation programs, (2) to determine correlates of post-treatment effectiveness for both populations, (3) to evaluate severity of alcohol involvement (alcoholism) among NASAP participants, (4) to compare post-treatment outcomes among individual NASAP facilities, and (5) to examine rates of disciplinary difficulties pre- and post-treatment for NASAP and rehabilitation participants.

METHOD

Samples

Navy enlisted men with a first admission to NASAP or alcohol rehabilitation facilities in 1977 or 1978 were included in the study. Each of these populations was divided into a Younger group, 25 years old or younger, and an Older group, 26 years old or older. These divisions resulted in groups of 2,347 younger and 1,088 older NASAP participants (total N = 3,435) and 3,227 younger and 2,254 older alcohol rehabilitation participants (total N = 5,481).

Procedure

As part of the intake procedure in both NASAP and rehabilitation programs, participants completed an extensive biographical questionnaire which provided information about pre-service family history, school and community adjustment, in-service disciplinary and achievement history as well as a history of alcohol use and problems encountered due to alcohol. From the information provided five composite variables were created. They were designated: (1) Alcoholic by Behavioral

Criteria, (2) Family Alcoholism, (3) Sociopathy, (4) Earliest Age Alcohol Problem, and (5) Family Socioeconomic Status. The items used for each of these variables and the computation methods have been given in a previous report (1).

Post-treatment effectiveness was determined from official Navy personnel records indicating the active duty or discharge status of each individual as of 31 March 1979. An individual was considered effective if he was on active duty or had received a favorable discharge and did not have a recommendation against reenlistment at least 6 months after completing treatment. He was considered noneffective if he received an unfavorable discharge or a negative recommendation for reenlistment at the time of discharge any time more than 30 days after release from treatment.

Four groups were compared using one-way analysis of variance: Younger and Older NASAP participants and Younger and Older rehabilitation participants. For items that yielded significant F ratios, post hoc Scheffé t tests were computed for the following group comparisons in both younger and older populations: (1) effective vs. noneffective groups, (2) effective NASAP vs. effective rehabilitation groups, and (3) noneffective NASAP vs. noneffective rehabilitation groups.

Records of disciplinary offenses (unauthorized absences, desertions, and demotions) and records of promotions were obtained from the Naval Health Research Center Enlisted Service History file for each participant before and after treatment. Similarly, hospital admissions with primary diagnoses of alcoholism were extracted from medical history files. Pre- and post-treatment disciplinary and hospitalization rates were computed by multiplying frequencies of occurrence in each time period by 1,000 and dividing by the number of months (plus one-half month) served before and after treatment. Rates were computed for four younger groups: effective NASAP, noneffective NASAP, effective rehabilitation program, and noneffective rehabilitation program participants. Analysis of variance was used to test for significance of differences among the four groups. Where significant F ratios were obtained, post hoc comparisons between pairs of groups were made using the Scheffé t test. A similar analysis was not conducted for older participants because of incomplete disciplinary and hospitalization records for individuals with more than 12 years of service. Pre-treatment disciplinary and hospitalization rates were compared with post-treatment rates for each of the four subgroups of younger men using t tests.

RESULTS

Post-Treatment Effectiveness

Large percentages of both younger and older men in both types of programs were effective following treatment by the criteria established. Among the younger NASAP participants, 88% were

on active duty or had been discharged under favorable circumstances 6 months or more after completing treatment; older NASAP men had a 97% effectiveness rate. For the men treated in rehabilitation facilities, 75% of the younger men and 92% of the older men were effective.

These differences in post-effectiveness rate between NASAP participants and other rehabilitation program participants were highly significant for both younger and older populations ($p < .001$). It should be noted that the effectiveness rates reported here were higher than those reported in previous studies; this was largely because of the shorter follow-up period used.

Effective-Noneffective Group Comparisons for Younger Men

Effective men differed from noneffective men in both NASAP and alcohol rehabilitation programs on nearly all biographical items reflecting demography, pre-service history, and military status and experience. These results are summarized in the first two columns of Table 1. Mean values for all variables that showed significant differences among younger effective and noneffective groups in NASAP and alcohol rehabilitation programs are shown in the first part of Appendix A.

Effective men were older, had longer service, and had achieved higher pay grades than noneffective men. Effective men had higher General Classification and Arithmetic Test scores and expressed more satisfaction with their Navy occupations than noneffective men.

During the year preceding admission to NASAP or alcohol rehabilitation programs, effective men had reported to sick call less often and had been hospitalized less frequently than noneffective men. Of those hospitalized, effective men lost fewer days from duty than noneffective men.

For every item reflecting past disciplinary problems--times on report, captain's masts, courts-martial, times in the brig--the effective groups reported fewer occurrences. Effective men also less often reported disciplinary action pending at the time of admission to treatment.

Pre-service family and social history discriminated between effective and noneffective men in both programs. Both effective groups reported more favorable school adjustment than did noneffective groups, completing more years of schooling and reporting fewer suspensions or expulsions, courses failed, and times played hooky. Effective NASAP participants also indicated less often being set back a grade.

A number of items reflecting delinquent behavior discriminated between groups. Effective men in both groups reported running away from home prior to age 15 less often and spending less time in jail. Effective NASAP men reported fewer arrests for offenses committed prior to age 16, arrests for misdemeanors committed since age 16, and adult felony arrests. Effective NASAP participants also less often reported having been treated by mental health workers. Effective rehabilitation program participants less often had wandered from place to place without a job and had

Table 1
Significant Differences between Groups for Younger Population^a

	Effective vs. Noneffective Group Comparisons		Effective Group Comparisons	Noneffective Group Comparisons
	NASAP	Alcohol Rehabilitation		
<u>Demography and Military History:</u>				
Age	5.06	6.89	- 3.33	-
Is the service your career?	- 3.60	- 4.01	-	-
Years on active duty	3.96	5.59	-	-
Present pay grade	11.86	14.10	5.50	-
Highest pay grade held	8.79	10.19	3.01	-
Times reduced in pay grade	- 7.83	-10.22	- 7.04	-
Satisfied with specialty	7.66	5.76	5.92	-
What is GCT/ARI score?	2.99	4.30	-	-
Military honors	3.10	-	-	-
Times at sick call during past year	- 6.65	- 4.94	- 7.89	-
Times hospitalized during past year	- 3.85	- 3.40	- 5.61	-
Total days hospitalized during past year	- 3.57	- 5.12	- 5.02	-
Times on report	-11.84	-11.35	-12.18	-
Captain's masts	- 9.78	-10.53	- 9.92	-
Times court-martialed	- 4.32	- 6.31	-	-
Times in the brig	- 5.45	- 7.09	- 3.00	-
Disciplinary action pending?	5.46	3.96	-	- 3.84
Times dropped from service school	-	-	- 4.61	-
<u>Pre-Service Family and Social History:</u>				
Years of schooling	6.50	4.83	6.13	-
Times suspended or expelled	- 6.57	- 5.40	- 6.28	-
Times set back a grade	- 3.40	-	- 3.38	-
Number of courses failed	- 3.81	- 4.07	- 3.93	-
Moving traffic violations during past three years	-	-	3.84	-
Times played hooky	- 5.55	- 4.49	- 7.31	-
Times ran away before age 15	- 5.17	- 4.38	- 5.12	-
Arrest record prior to age 16	- 4.69	-	- 5.60	-
Arrest record for misdemeanor since age 16	-	- 3.86	- 5.78	-
Adult arrest record for felony since age 16	- 3.37	-	- 3.59	-
Longest time in civilian jail	- 6.45	- 5.88	- 3.55	-
Wandered, no job	-	- 4.62	- 4.83	-
Times used alias	-	-	- 5.13	-
Treated by mental health worker before service	- 3.47	-	- 6.02	-
Composite variable - Sociopathy	- 6.45	- 7.13	-15.43	- 4.86
Until 18th birthday, number of years raised by:				
Real (biologic) father	3.03	-	4.46	-
Real (biologic) mother	3.83	-	3.13	-
Foster, step-, or adoptive father	-	-	- 2.87	-
Foster, step-, or adoptive mother	-	-	- 3.07	-
Father's education	-	-	3.21	-
Number of close relatives treated in mental hospital	-	- 4.25	- 2.96	- 2.93
Number treated who returned to normal self	-	-	- 2.81	-
Number of close relatives seen by mental health worker	-	- 3.59	- 6.38	-
Number of close relatives convicted of felony	-	-	- 3.91	-
Number of close relatives depressed	- 3.63	-	- 6.81	-
Number of close relatives with drug problems	-	- 3.29	- 3.92	-
Total number of relatives with any of above problems	-	-	- 7.04	-
Parents argue or fight	-	-	- 8.07	- 3.59
Father's attitude toward alcohol	-	-	- 5.78	-
Mother's attitude toward alcohol	-	-	- 4.04	-
Home broken	-	-	- 4.37	-
Importance of religion in childhood	-	- 3.68	- 3.13	-
Composite variable - Family Alcohol History	-	- 3.27	- 6.82	- 2.79
Composite variable - Socioeconomic Status	-	-	3.19	-
Single vs. other marital status	-	- 3.32	-	-
Times married	-	3.02	-	-
Number of daughters	-	-	2.90	-
<u>Alcohol Use and Problem History:</u>				
Age when you first drank	3.15	2.87	8.01	-
Trouble in school due to alcohol	3.87	-	9.90	-
Number of cups of coffee per day	-	-	-10.12	- 2.92
Missed time on job because of drinking	-	-	-21.83	- 5.39

^aScheffé t-test. All values are significant ($p < .05$). Score ranges, codes, and group means for individual items are given in Appendix A.

Alcohol Use and Problem History: (continued)	Effective vs. Noneffective Group Comparisons		Effective Group Comparisons	Noneffective Group Comparisons
	NASAP	Alcohol Rehabilitation		
Demoted because of drinking	- 3.22	- 7.04	- 9.89	- 5.44
UA because of drinking	- 6.07	- 3.75	-13.24	-
Auto accident because of drinking	-	-	- 8.67	-
Age had auto accident	2.81	-	-	-
Picked up for drunk driving	5.27	-	15.42	-
Age picked up for drunk driving	4.77	3.25	7.92	-
Disciplinary action because of drinking	- 4.35	- 4.36	-16.06	- 5.51
Age disciplinary action	-	3.17	-	-
Separated or divorced because of drinking	-	-	- 8.53	-
Age separated or divorced	-	4.03	-	-
Hospitalized because of drinking	- 2.99	-	-11.63	- 3.84
Age hospitalized	-	-	- 4.27	-
Doctor told you to stop drinking	-	- 4.12	-12.33	- 5.64
Tried to stop drinking	- 3.89	-	-26.34	- 7.87
Age tried to stop	-	4.31	-	-
Had drinking problem	- 5.87	-	-34.84	- 9.07
Years had drinking problem	-	-	- 7.71	-
Participated in Alcoholics Anonymous	-	-	-23.57	- 9.64
Number of months participated in AA	-	-	5.56	4.38
Abstained from drinking	-	-	-25.26	- 7.42
Number of months abstained	-	-	6.89	3.01
Shakes the "morning after"	- 3.01	-	-19.04	- 5.39
Number of times had shakes	-	-	- 5.97	-
Hallucinations	-	- 3.90	- 8.87	- 3.81
Convulsions	-	-	- 5.88	-
Vomited blood	-	- 4.65	- 8.62	- 4.09
Blackouts	- 5.11	-	-22.00	- 4.84
Number of blackouts	-	-	-11.97	- 4.12
Liver problems	-	- 2.92	- 3.46	- 3.26
Saw doctor to help stop drinking	- 3.84	-	-19.86	- 5.44
Until 25th birthday, how bad was hangover	-	-	-10.18	- 3.42
Past 3 years, how bad was hangover	-	-	-10.81	-
Number of drinks in 24 hours	- 4.43	-	-19.99	- 3.73
Type of alcohol	-	- 3.24	- 6.14	- 2.91
Desire to see psychiatrist	3.80	4.30	10.25	3.46
Treated before in ARC, ARU, or ARD	- 3.73	-	- 2.95	-
Discharge prognosis	- 5.47	- 9.56	-21.26	- 7.55
Self-referral vs. other	-	-	-12.32	-
Composite variable - Alcoholic by Behavioral Criteria	- 4.67	- 6.49	-14.62	- 5.94
Composite variable - Age Major Problem	-	-	3.03	-

fewer arrests for misdemeanors committed since age 16 than did noneffective men. On the derived variable, Sociopathy (a composite score from delinquency items), effective men in both groups scored significantly lower than noneffective men.

A number of items indicative of the emotional stability and mental health of participants' families discriminated between effective and noneffective groups. Effective NASAP participants spent more of their lives until their 18th birthdays with their natural parents; further, they reported that fewer close relatives had suffered periods of severe depression. Effective rehabilitation program participants reported that fewer close relatives were treated in mental hospitals, fewer had seen a mental health worker for a nervous problem, and fewer had drug problems than did noneffective men. Furthermore, effective men scored significantly lower on the derived family alcohol history variable (a composite of family alcohol involvement items); they also reported that religion was more important to them during childhood than noneffective men, and they were more often married.

Histories of alcohol use and problems associated with alcohol use discriminated between effective and noneffective men in both types of programs. Both effective NASAP and rehabilitation program participants had begun drinking at a later age than noneffective men, and fewer had experienced major disciplinary difficulties--unauthorized absence, demotions, and other disciplinary problems--because of alcohol. Also, effective men in both groups who were arrested for drunk driving were older when first arrested.

Many additional items discriminated for one group but not for both. For NASAP participants, noneffective men more often indicated having had trouble in school due to drinking, being hospitalized because of alcohol, having an alcohol problem, trying to stop drinking, and seeking help from a doctor to stop drinking; more of them reported having had shakes the morning after and blackouts than did effective men. On the other hand, effective NASAP participants more often indicated that they had been arrested for drunk driving and reported being older when they had a first auto accident because of drinking.

For rehabilitation program participants, the earliest ages at which problem behaviors due to alcohol occurred were as discriminating as whether the behaviors occurred at all. Effective men were older when they first had a disciplinary problem, were separated or divorced, or tried to stop drinking. They had less often been told by a doctor to stop drinking, and fewer of them reported experiencing severe physical symptoms, such as hallucinations and vomiting blood, than did noneffective men.

The amount of alcohol consumed discriminated effective from noneffective NASAP participants

whereas the type of alcohol consumed was discriminating for rehabilitation program participants. Effective NASAP men reported lower total consumption during a 24-hour period than noneffective men; effective rehabilitation program men reported drinking more beer or wine as opposed to hard liquor. In both groups noneffective men more often expressed the desire to see a psychiatrist.

Prior treatment in an alcohol rehabilitation facility discriminated between effective and noneffective groups for NASAP participants but not rehabilitation program participants. Effective men in both NASAP and rehabilitation programs scored lower on the derived variable Alcoholic by Behavioral Criteria (a composite of several items reflecting severity of problems associated with alcohol use) and received better prognostic ratings by counselors at the completion of treatment.

Comparisons between Effective Groups for Younger Men

Comparisons between effective NASAP and effective rehabilitation program groups yielded results very similar to the effective versus noneffective comparisons for the two populations. That is, effective NASAP participants consistently had more favorable characteristics on many of the biographical items than effective rehabilitation program participants (see third column of Table 1).

Effective NASAP men were slightly younger than effective rehabilitation participants, and, although there was no difference in length of service between the groups, the NASAP group had achieved a higher mean pay grade at the time of entering treatment. The General Classification Arithmetic Test scores did not discriminate between the groups indicating that they started service with equal potential by that measure. A higher mean score on the derived variable Socioeconomic Status (based upon father's and mother's schooling and father's occupation) was noted for the effective NASAP group, again suggesting a more favorable home environment for this group.

Large differences were noted on many of the items reflecting involvement with alcohol and problems associated with its use. Effective NASAP participants generally indicated that alcohol was less of a problem for them. An exception was the item "picked up for drunk driving" which was reported more frequently and at a later age by NASAP participants. Two items concerned with efforts to control drinking discriminated between the effective groups but had not differentiated between effective and noneffective men in either the NASAP or rehabilitation programs. These items were: "Ever participated in Alcoholics Anonymous" and "Ever abstained from drinking"; both were responded to more often affirmatively by effective NASAP men. Further, the number of months spent in these activities was greater for the effective NASAP group. The effective NASAP group less often reported that they were self-referred for treatment.

Comparisons between Noneffective Groups for Younger Men

There were no differences between noneffective groups on demographic and military history items except that rehabilitation participants more often reported disciplinary action pending when admitted to treatment. Similarly, pre-service family and social history did not discriminate consistently between noneffective groups. Differences that did occur favored the NASAP group. Noneffective NASAP men scored lower on the Sociopathy variable, reported fewer close relatives treated in a mental hospital, indicated less arguing or fighting between parents, and showed less severe family alcohol history than rehabilitation program men.

Many differences were obtained between noneffective groups on items reflecting alcohol use and problem history, all indicating less serious alcohol problems for the NASAP group. The noneffective NASAP group had less often missed work, been demoted, or had disciplinary action because of alcohol. Fewer had been hospitalized because of alcohol, sought the help of a doctor, or had medical advice to stop drinking. NASAP men less frequently admitted having an alcohol problem or trying to stop drinking. Fewer had ever abstained from drinking or sought help from Alcoholics Anonymous; for those who had, longer periods of time were spent in both activities. Most of the physical symptoms related to drinking--shakes, hallucinations, vomiting blood, blackouts, and hangovers--were experienced less often by the NASAP group who also reported fewer drinks consumed in a 24-hour period and a preference for beer or wine rather than hard liquor. NASAP men less often expressed a desire to see a psychiatrist and received more favorable prognostic ratings by treatment staff. Finally, the NASAP group scored lower on the Alcoholic by Behavioral Criteria variable than did the rehabilitation program group.

Effective-Noneffective Group Comparisons for Older Men

Effective older men in both the NASAP and alcohol rehabilitation programs differed from noneffective men on major items reflecting military career achievement and status. (See Table 2.) Effective men were older, had higher pay grades, and more years of service than noneffective men. They more often considered the service a career and expressed satisfaction with their Navy occupations. They entered service at a younger age.

Effective men in both groups had less often appeared at sick call during the year preceding treatment, and for rehabilitation program participants, effective men reported fewer hospital admissions. There were no differences between effective and noneffective groups on self-reported disciplinary difficulties with the exception that the effective rehabilitation program group less often indicated that disciplinary action was pending at the time of treatment. The effective rehabilitation program group also reported having received more military honors.

Table 2
Significant Differences between Groups for Older Population^a

	Effective vs. Noneffective Group Comparisons			
	NASAP	Alcohol Rehabilitation	Effective Group Comparisons	Noneffective Group Comparisons
<u>Demography and Military History:</u>				
Age	4.31	7.20	-	-
Is service your career	- 4.11	-14.35	-	-
Years on active duty	6.08	12.90	-	-
Present pay grade	8.50	15.33	3.61	-
Age entered service	- 3.49	- 3.56	-	-
Highest pay grade held	7.17	12.59	-	-
Times reduced in pay grade	- 3.58	-	- 5.51	-
Satisfied with specialty	4.38	8.16	7.30	-
Military honors	-	3.65	-	-
Times at sick call during past year	- 3.54	- 3.29	- 6.08	-
Times hospitalized during past year	-	- 5.48	- 6.42	-
Total days hospitalized during past year	-	-	- 5.98	-
Times put on report	-	-	- 6.24	-
Captain's masts	-	-	- 6.09	-
Disciplinary action pending	-	3.45	-	-
Seasick when ocean calm	- 2.82	-	-	-
<u>Preservice Family and Social History:</u>				
Years of schooling	-	- 2.88	3.60	-
Times suspended or expelled	-	-	- 5.34	-
Times set back a grade	-	-	- 3.28	-
Number of courses failed	-	-	- 4.72	-
Time held full-time job	-	- 4.93	-	-
Moving traffic violations past three years	-	- 3.88	4.90	-
Times ran away before age 15	- 6.50	-	-	4.43
Times played hooky	-	-	- 7.14	-
Arrest record for misdemeanor since age 16	-	- 2.91	- 5.37	-
Adult arrest record for felony since age 16	-	-	- 3.84	-
Longest time in civilian jail	-	- 3.55	-	-
Wandered, no job	-	- 8.54	-	-
Treated by a mental health worker before service	-	- 3.90	- 3.62	-
Number of close relatives in mental hospital	-	-	- 4.19	-
Number of close relatives seen mental health worker	-	-	- 4.74	-
Number of close relatives convicted of felony	-	-	- 2.94	-
Number of close relatives depressed	-	- 3.56	- 5.87	-
Number of close relatives with drug problems	-	-	- 4.10	-
Total number of relatives with any of the above problems	-	-	- 6.70	-
Parents argue or fight	-	-	- 6.82	-
Father's attitude toward alcohol	-	-	- 6.15	-
Mother's attitude toward alcohol	-	-	- 2.96	-
Importance of religion in childhood	-	-	- 5.90	-
Times attended church	-	-	- 2.87	-
Composite variable - Family Alcohol History	-	-	- 6.39	-
Composite variable - Sociopathy	-	- 4.84	- 6.97	-
<u>Marital Status:</u>				
Single vs. other marital states	- 3.60	- 5.98	-	-
Times married	2.85	3.76	-	-
Number of daughters	-	3.70	-	-
Present wife have a drinking problem	-	-	2.86	-
Spouse's income	-	5.13	-	-
<u>Alcohol Use and Problem History:</u>				
Age when first drank	-	-	8.31	-
Trouble in school due to alcohol	-	3.63	4.15	-
Number of cups of coffee per day	-	3.31	- 4.09	-
Missed time on job because of drinking	- 3.56	- 4.43	-16.84	-
Demoted because of drinking	-	-	- 7.78	-
UA because of drinking	-	- 5.87	- 9.53	-
Auto accident because of drinking	-	-	- 9.31	- 2.83
Age had auto accident	-	4.50	5.06	-

^aScheffe t-test. All values are significant ($p < .05$). Score ranges, codes, and group means for individual items are given in Appendix A.

Effective vs. Noneffective
Group Comparisons

<u>Alcohol Use and Problem History: (continued)</u>	<u>NASAP</u>	<u>Alcohol Rehabilitation</u>	<u>Effective Group Comparisons</u>	<u>Noneffective Group Comparisons</u>
Picked up for drunk driving	3.97	-	12.01	-
Age picked up	3.54	-	9.90	-
Disciplinary action because of drinking	-	- 3.19	-10.38	-
Age disciplinary action	-	- 2.97	-	-
Separated or divorced because of drinking	-	- 3.84	- 9.99	- 3.07
Hospitalized because of drinking	-	-	-12.00	-
Doctor told you to stop drinking	-	-	-12.05	-
Tried to stop drinking	-	-	-21.87	-
Have drinking problem	- 3.14	-	-30.25	- 3.52
Years had drinking problem	-	-	- 5.58	-
Participated in Alcoholics Anonymous	-	-	-14.72	-
Number of months participated in AA	-	-	8.02	3.25
Abstained from drinking	-	-	-21.91	-
Number of months abstained	-	-	7.40	-
Shakes the "morning after"	-	- 3.50	-15.53	- 3.07
Times had shakes	-	-	- 4.88	-
Hallucinations	-	- 5.10	- 7.52	- 3.49
Convulsions	-	- 4.13	- 4.43	-
Vomited blood	-	- 5.01	- 7.97	-
Blackouts	-	-	-17.32	- 2.90
Number of blackouts	-	- 2.85	- 7.92	-
Liver problems	-	-	- 5.72	-
Saw doctor to help you stop drinking	-	-	-14.32	-
Until 25th birthday, how bad was hangover	-	-	- 7.26	-
Past three years, how bad was hangover	-	-	-11.56	-
Number of drinks in 24 hours	-	-	-17.24	-
Type of alcohol	-	-	- 2.92	-
Treated before in ARC, ARU, or ARD	- 3.02	-	-	-
Desire to see psychiatrist	-	5.38	10.98	-
Discharge prognosis	-	5.65	-11.04	-
Self-referral vs. other	-	-	- 9.65	-
Composite variable - Alcoholic by Behavioral Criteria	-	- 5.75	-13.80	- 3.85
Composite variable - Age Major Problem	-	-	- 3.89	-

Preservice family and social history was essentially nondiscriminating for older NASAP men. The single exception was that noneffective men reported more often running away from home prior to age 15. The noneffective rehabilitation program group differed from the effective group on a number of items, all suggesting a less stable social adjustment. They had completed fewer years of schooling and had held full time jobs for shorter periods before entering service. The noneffective group had more moving traffic violations during the preceding 3-year period, more arrests for misdemeanors since age 16, and more time in civilian jails. Prior to entering service they had spent more time wandering from place to place without a job and had more frequently been treated by a mental health worker. They scored higher on the Sociopathy variable and reported that more of their close relatives had experienced periods of severe depression than the effective group.

Effective men in both groups were more likely to have married than noneffective men. Effective men in the rehabilitation program reported having more daughters than noneffective men, and, when their wives worked, the wives earned less than the men.

Items reflecting alcohol use and history were much more discriminating for the rehabilitation program participants than for the NASAP group. Effective NASAP men had less often missed time on the job because of alcohol but had been picked up more frequently for drunk driving than noneffective men, and they were older when they had their first drunk driving charges. They less often believed that they had an alcohol problem and less frequently reported prior treatment for alcoholism than noneffective men. Effective rehabilitation program men reported less trouble in school, less lost time on the job, fewer unauthorized absences, and fewer separations or divorces because of drinking than the noneffective group. They were older at the time of their first auto accident but younger when first disciplined because of alcohol. Effective men drank more cups of coffee per day and experienced fewer symptoms of alcohol abuse such as shakes the morning after, hallucinations, convulsions, and vomiting blood. Effective rehabilitation program participants less often desired to see a psychiatrist, received more favorable prognostic ratings from counselors, and scored lower on the Alcoholism by Behavioral Criteria score than noneffective participants.

Comparisons between Effective Groups for Older Men

Differences between effective NASAP and rehabilitation program groups revealed a more positive service record for NASAP participants. Although men in both groups were of comparable age and length of service, effective NASAP participants reported higher pay grades, fewer reductions in pay grade, and fewer times on report and at captain's masts; they also expressed more satisfaction with their Navy occupations. On all three indicators of the use of medical services--

sick calls, hospitalizations, and days lost--effective NASAP participants scored lower than rehabilitation program participants.

Many pre-service family and social history items differentiated between the two effective groups. NASAP participants reported more favorable school adjustment histories, including more years of schooling, fewer suspensions or expulsions, fewer times set back or failing courses, and less hooky. Arrests for either misdemeanors or felonies after age 16 were less common among NASAP men. They reported less frequent treatment by mental health workers prior to service and that fewer of their close relatives were treated in mental hospitals, had seen a mental health worker for nervous or mental problems, had been convicted of a felony, had been severely depressed, or had drug problems. The total number of close relatives with any of these problems was lower for effective NASAP men than for effective rehabilitation program participants and the NASAP group scored lower on the Family Alcoholism variable. NASAP men reported less arguing or fighting between parents and less parental alcoholism. If married, NASAP men less often indicated that wives had drinking problems. The NASAP group reported that religion was more important and church attendance more frequent in childhood. Finally, effective NASAP men scored lower than effective rehabilitation program men on the Sociopathy variable.

Almost every item reflecting alcohol use and problem history discriminated between the effective groups. With a few exceptions, the NASAP group was characterized by less serious involvement in alcohol use and associated problems. NASAP men were more often picked up for drunk driving and were older when this first occurred; they were also older when they had an auto accident due to drinking. For all other significant differences, the NASAP group had more favorable histories than the rehabilitation program group (see the third column of Table 2).

Comparisons between Noneffective Groups for Older Population

In striking contrast to the many significant differences between effective groups, only one item from pre-service or family history discriminated between noneffective groups: Noneffective NASAP men reported a greater frequency of running away prior to age 15 than noneffective rehabilitation program participants.

There were a few differences in the alcohol use histories of the two groups, all suggesting more severe alcohol problems among rehabilitation participants. Noneffective rehabilitation program men more often reported auto accidents and separation or divorce because of alcohol, and more often acknowledged an alcohol problem. Among men who had participated in AA, the rehabilitation group had spent less time in this activity. This same group had more often experienced shakes the morning after, hallucinations, and blackouts than had noneffective NASAP men. Finally, rehabili-

tation group participants scored higher on the Alcoholic by Behavioral Criteria variable (indicating more severe alcohol problems) than NASAP participants.

Estimation of Alcoholism Incidence among Men Admitted to NASAP

The data available on men admitted to NASAP did not include specific diagnoses of alcoholism. However, information provided by participants and rehabilitation records make possible reasonable estimates. The specific sources included: Alcoholic by Behavioral Criteria derived from responses to the biographical questionnaire; a positive response to the question "Have you ever been treated before in an ARC, ARU, or ARD?"; a counselor recommending transfer to alcohol rehabilitation upon release from NASAP or a record of admission to a rehabilitation facility during the 2-year study period. Of the NASAP participants, 32% met one or more of these four criteria, indicating more serious problems with alcohol abuse. The best indicator was Alcoholic by Behavioral Criteria which, either singly or in combination with one or more of the other three criteria, identified 20% of the total population as alcoholics.

Differences in Post-Treatment Effectiveness among Individual NASAP Facilities for Younger Men

Differences in post-treatment effectiveness were determined for younger men treated in three of the larger NASAP programs. There were no differences in post-treatment effectiveness for groups treated in the smaller programs; further, there were minimal differences among the groups on items pertaining to family, service, or alcohol use histories prior to treatment. Among the larger programs, one, designated Group 3, had a 16% noneffectiveness rate which was significantly greater than the 7% rates obtained for each of the other two programs. The items which discriminated among the groups are shown in Table 3. Groups 2 and 3 showed the most differences. Means for age, pay grade, and years of service were higher for Group 2 than Group 3. Additionally, Group 2 participants were more satisfied with their Navy job specialties and had more favorable disciplinary histories as reflected in lower rates of captain's masts and times on report. Men in Group 2 had reported to sick call less often and had been hospitalized less frequently than men in Group 3 during the year preceding admission to treatment. Total days in the hospital also were less for Group 2. Men in Group 2 had been dropped from service schools less often and were less likely to have disciplinary actions pending at the time of admission to treatment.

Differences were less evident between Groups 1 and 3 on demographic and military history items. Mean age and years of service were comparable for the two groups; however, Group 1 men had higher pay grades than Group 3. There were no differences between Groups 1 and 3 on self-reported disciplinary histories, but Group 1 less often reported disciplinary action pending when admitted to treatment. Group 1 participants had been dropped from service schools less frequently

Table 3

Differences among Younger Populations in Three Large NASAP Programs

	Programs				Group Comparisons ^a		
	<u>1</u>	<u>2</u>	<u>3</u>				
<u>Demography and Military History:</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	<u>F</u>	<u>1 vs. 2</u>	<u>1 vs. 3</u>	<u>2 vs. 3</u>
Age	20.92	21.46	20.86	14.95	- 4.25	-	5.00
Years on active duty	.53	.62	.43	8.12	-	-	4.03
Present pay grade	3.24	3.50	3.00	26.43	- 3.60	3.19	7.26
Highest pay grade held	3.36	3.58	3.11	23.54	- 2.98	3.41	6.86
Are you a designated striker	.83	.95	.80	4.53	-	-	2.88
Satisfied with specialty	2.56	2.84	2.36	19.50	- 3.39	-	6.22
Military honors	.63	.79	.46	8.82	-	-	4.20
Times at sick call during past year	2.85	2.71	3.56	16.22	-	- 4.18	- 5.39
Times hospitalized during past year	.57	.41	.74	9.58	-	-	- 4.38
Total days hospitalized during past year	.73	.62	.94	6.15	-	-	- 3.46
Times on report	1.98	1.48	2.28	16.96	3.36	-	- 5.77
Captain's masts	1.07	.82	1.11	6.02	2.62	-	- 3.22
Disciplinary action pending	.74	.74	.63	9.63	-	3.72	3.82
Ever extremely seasick	.16	.21	.25	5.29	-	- 3.25	-
Seasick when ocean calm	.03	.04	.08	7.60	-	- 3.40	- 3.29
Times dropped from service school	.10	.10	.19	9.06	-	- 3.61	- 3.70
<u>Preservice Family and Social History:</u>							
Years of schooling	3.73	3.88	3.56	12.72	-	2.54	5.04
High school equivalency test	1.54	1.56	1.33	12.52	-	3.83	4.67
Times suspended or expelled	1.17	.86	1.40	10.17	-	-	- 4.49
Times set back a grade	.38	.26	.37	6.74	3.10	-	- 3.17
Number of courses failed	1.08	.89	1.16	4.26	-	-	- 2.83
Average grades in high school	1.70	1.78	1.86	6.20	-	- 3.50	-
Athletic honors	1.31	1.38	1.02	4.65	-	-	2.90
Time held full-time job	3.30	3.68	3.47	3.00	-	-	-
Moving traffic violations past 3 years	1.87	2.24	1.96	5.42	- 3.05	-	2.50
Times ran away before age 15	.30	.28	.43	3.23	-	-	-
Times played hooky	2.43	2.05	2.57	8.65	2.74	-	- 4.04
Arrest record for misdemeanor since age 16	.59	.59	.74	3.37	-	-	-
Ever in reform school	.93	.87	.87	4.79	2.76	2.71	-
Wandered, no job	.21	.12	.24	4.24	-	-	- 2.82
Treated by mental health worker before service	.32	.23	.50	5.25	-	-	- 3.07
Number of close relatives in mental hospital	.21	.14	.26	7.15	-	-	- 3.74
Number treated who returned to normal self	.18	.12	.21	4.52	-	-	- 2.96
Number of close relatives seen mental health worker	.16	.14	.25	7.20	-	- 2.85	- 3.56
Number of close relatives depressed	.20	.11	.29	13.56	-	-	- 5.21
Total number of relatives with any of above problems	.35	.28	.43	7.37	-	-	- 3.84
Parents argue or fight	1.62	1.52	1.71	3.72	-	-	- 2.72
Composite variable - Family Alcohol History	1.85	1.15	1.89	4.72	2.46	-	- 2.76
Composite variable - Sociopathy	.75	.71	1.02	17.96	-	- 4.54	- 5.61
Married vs. other marital status	.12	.18	.12	4.87	- 2.59	-	2.73
Times married	.19	.28	.21	5.13	- 2.99	-	-
Number of sons	.09	.16	.09	4.65	-	-	2.75
<u>Alcohol Use and Problem History:</u>							
Age when you first drank	.29	.49	.26	32.52	- 6.11	-	7.47
Trouble in school due to alcohol	.89	.92	.81	15.12	-	3.49	5.40
Number of cigarettes you smoke a day	2.83	2.43	2.82	10.47	3.78	-	- 4.02
Missed time on job because of drinking	.29	.15	.38	36.33	4.85	- 3.03	- 8.45
Age missed time on job	2.43	2.61	1.98	12.14	-	3.52	4.42
Demoted because of drinking	.07	.04	.09	5.77	-	-	- 3.37
UA because of drinking	.06	.03	.18	35.04	-	- 5.78	- 8.00
Auto accident because of drinking	.35	.22	.27	9.81	4.43	-	-
Age had auto accident	2.52	2.56	2.19	4.43	-	2.48	2.62
Picked up for drunk driving	.62	.87	.52	85.69	- 8.37	3.54	12.78
Age drunk driving	2.98	3.28	2.86	14.91	- 3.53	-	5.14
Disciplinary action because of drinking	.27	.15	.24	11.01	4.33	-	- 3.58
Hospitalized because of drinking	.06	.04	.08	4.33	-	-	- 2.94
Doctor told you to stop drinking	.04	.02	.08	9.68	-	- 2.75	- 4.33
Tried to stop drinking	.26	.18	.34	18.28	3.10	- 2.52	- 6.03
Had a drinking problem	.40	.22	.48	39.17	5.72	-	- 8.62
Abstained from drinking	.39	.30	.37	4.07	2.61	-	-

^aScheffé t-test; all values are significant ($p < .05$).

	<u>Programs</u>			<u>F</u>	<u>Group Comparisons</u>		
	<u>1</u>	<u>2</u>	<u>3</u>		<u>1 vs. 2</u>	<u>1 vs. 3</u>	<u>2 vs. 3</u>
<u>Alcohol Use and Problem History: (continued)</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>				
Shakes the "morning after"	.27	.19	.35	17.78	2.77	- 2.79	- 5.96
Number of times had shakes	3.23	3.01	4.01	8.09	-	- 2.92	- 3.65
Hallucinations	.06	.02	.12	20.17	2.72	- 3.19	- 6.35
Convulsions	.04	.03	.07	6.40	-	- 2.51	- 3.43
Vomited blood	.04	.03	.10	11.81	-	- 3.77	- 4.49
Blackouts	.58	.42	.62	24.85	4.99	-	- 6.71
Number of blackouts	2.79	2.54	3.48	17.63	-	- 4.17	- 5.58
Liver problems	.01	.00	.02	4.01	-	-	- 2.83
Saw doctor to help stop drinking	.14	.09	.15	5.65	2.59	-	- 3.09
Until 25th birthday how bad was hangover	1.68	1.53	1.84	9.77	-	-	- 4.42
Past 3 years, how bad was hangover	1.67	1.47	1.84	14.36	2.74	-	- 5.35
Number of drinks in 24 hours	4.43	4.02	4.72	18.59	3.38	-	- 6.06
Type of alcohol	1.13	1.12	1.31	29.55	-	- 6.13	- 6.99
Desire to see psychiatrist	.86	.94	.79	26.85	- 3.85	2.96	7.30
Discharge prognosis	1.40	.98	1.48	61.40	8.80	-	- 9.70
Self referral vs. other	.17	.06	.18	18.41	4.80	-	- 5.49
Composite variable - Alcoholic by Behavioral Criteria	.21	.14	.32	13.39	-	- 2.84	- 5.15
Post-treatment effectiveness (proportion noneffective)	.07	.07	.16	15.82	-	- 4.44	- 5.14
N	392	521	499				

and had reported to sick call during the past year less frequently than Group 3 men.

Items reflecting preservice family and social history were most often discriminating for the comparisons between Groups 2 and 3. Group 2 men had completed more years of schooling and had less often been suspended or expelled, set back a grade, or failed courses. They had less often played hooky and had received more athletic honors. On the negative side Group 2 reported more moving traffic violations during the preceding 3 years. Men in Group 2 less often indicated that either they or their families experienced emotional illness or the need for professional mental health services. On the composite variable, Family Alcohol History, Group 2 men scored lower than Group 3 men. Similarly, on the composite variable, Sociopathy, Group 2 had a lower mean score. Finally, Group 2 men were more often married and had children than men in Group 3.

Differences between Groups 1 and 3 were infrequent on family and preservice items. Group 1 men had completed more years of schooling and reported higher grades than men in Group 3. They less often indicated that they were ever in reform school and scored lower on the Sociopathy variable. Only one item indicative of family emotional health discriminated: Group 1 men reported fewer close relatives had seen a mental health worker.

Nearly all alcohol use items that discriminated among the three groups of younger men also discriminated between Groups 2 and 3. Men in Group 2 were older when they first drank. They had less often had trouble in school due to alcohol. They less often reported any of the following because of drinking: missed time on the job, demotion, unauthorized absence, disciplinary action, hospitalization, or being told by a doctor to stop drinking. The one problem reported more often by Group 2 than Group 3 was being picked up for drunk driving. Men in Group 2 who had experienced missing time on the job, auto accidents, or drunk driving were older when these events first occurred than were men in Group 3. Men in Group 2 less often believed that they had drinking problems and less frequently had tried to stop drinking. They reported fewer experiences of shakes the morning after, hallucinations, convulsions, vomiting blood, or blackouts. Group 2 men less often reported shakes or blackouts on a number of occasions than Group 3 men. Liver problems were less often reported by Group 2 and fewer had sought the help of a doctor to stop drinking. They reported less severe hangovers, drinking less in 24-hours, and a preference for beer or wine rather than hard liquor. While in treatment they less often wanted to see a psychiatrist and more often received favorable prognostic ratings from staff counselors. Finally, Group 2 scored lower than Group 3 on the variable Alcoholic by Behavioral Criteria.

Many of the same items reflecting alcohol use histories discriminated between Groups 1 and 3. All items, with the exception of drunk driving arrests, indicated that alcohol was more of a prob-

lem for the Group 3 men. They reported more trouble in school, time missed on the job, and unauthorized absence, as well as shakes, hallucinations, convulsions, and vomiting blood. Group 1 men were older than Group 3 men when they first missed time on the job, had auto accidents, or were picked up for drunk driving. They had less often been told by a doctor to stop drinking and had less often tried to stop. They, like Group 2 men, indicated a preference for beer or wine rather than liquor. They were less apt to express the desire to see a psychiatrist when in treatment. Finally, Group 1 scored lower than Group 3 on the variable Alcoholic by Behavioral Criteria.

Differences in Post-Treatment Effectiveness among Individual NASAP Facilities for Older Men

The same NASAP groups were used to compare outcome for three relatively large programs and three small programs for older men. Among the larger groups there was no difference in post-treatment effectiveness. Post-treatment effectiveness differed among the three smaller groups, $F(2, 120) = 3.10, p < .05$. However, individual between-group comparisons were not significant.

Comparisons of Pre-Treatment and Post-Treatment Rates of Hospitalization for Alcoholism, Disciplinary Problems, and Promotions for Young NASAP and Rehabilitation Participants

The differences between groups of younger men on rates of hospitalization for alcoholism, promotion, and disciplinary occurrences during both pre-treatment and post-treatment periods are shown in Table 4. (Mean values for these items as well as F ratios are shown in Appendix B.) When effective and noneffective groups in the two populations were compared for the pre-treatment period no differences were observed in rates of hospitalization with primary diagnoses of alcoholism. However, effective groups among both NASAP and rehabilitation participants had significantly lower rates of unauthorized absence, desertion, and demotion than noneffective groups. The effective rehabilitation group had a higher rate of promotion than the noneffective group; no difference in promotion rates was observed between NASAP groups. In the post-treatment period both effective NASAP and rehabilitation groups had lower rates of hospitalization as well as lower UA, desertion, and demotion rates than noneffective groups. Rates of promotion were higher for both effective groups in the post-treatment period. When the two effective groups were compared, the NASAP group had lower rates of hospitalization, UA, and demotion and a higher promotion rate during the pre-treatment period. The effective NASAP group also had lower rates of UA and demotion during the post-treatment period. Only one difference in rates was observed in both pre- and post-treatment periods between noneffective groups and that was a higher rate of desertion for the noneffective NASAP group during the pre-treatment period.

Comparisons of rates before and after treatment for the various effective and noneffective groups are shown in Table 5. All groups showed higher rates of desertion and demotion and lower

Table 4

Significant Differences between Younger Groups in Hospitalization and Disciplinary Rates

	Effective vs. Noneffective Group Comparisons			
	NASAP	Alcohol Rehabilitation	Effective Group Comparisons	Noneffective Group Comparisons
<u>Pre-Treatment Rate:</u>				
Hospitalizations	ns	ns	- 7.15***	ns
Unauthorized absences	~ 7.05***	- 9.30***	- 4.30***	
Desertions	~ 9.46***	- 6.93***	ns	4.55***
Demotions	~ 6.18***	- 9.47***	- 5.94***	ns
Promotions	ns	3.37**	3.45**	ns
<u>Post-Treatment Rate:</u>				
Hospitalizations	~ 3.26*	- 4.30***	ns	ns
Unauthorized absences	- 4.57***	- 4.16***	- 4.28***	ns
Desertions	~ 8.75***	- 7.91***	ns	ns
Demotions	~ 4.53***	- 6.60***	- 3.40**	ns
Promotions	10.73***	16.49***	ns	ns

*p < .05
 **p < .01
 ***p < .001

Table 5

Significant Differences for Younger Groups on Pre-Treatment versus
Post-Treatment Hospitalization and Disciplinary Rates

	NASAP		Alcohol Rehabilitation	
	Effective	Noneffective	Effective	Noneffective
Hospitalizations	ns	ns	6.62***	4.14***
Unauthorized absences	- 4.30***	ns	- 5.19***	ns
Desertions	- 5.04***	- 3.34***	- 7.55***	- 6.28***
Demotions	- 5.88***	- 2.16*	- 4.88***	- 2.82**
Promotions	22.84***	18.66***	22.95***	29.30***

*p < .05
 **p < .01
 ***p < .001

rates of promotion in the post-treatment period. Both effective groups, but not noneffective groups, had higher UA rates in the post-treatment period. The effective and noneffective rehabilitation groups had lower rates of hospitalization during the post-treatment period.

DISCUSSION

The higher effectiveness rates noted for participants in this study compared to those obtained in previous studies were, in part, due to the fact that admissions were restricted to the more recent time period, 1977-1978. This resulted in a shorter follow-up period for both populations than in previous studies, and thus fewer men became ineffective during the reduced post-treatment observation period. It was also noted that a larger proportion of the alcohol rehabilitation program population in the present study was composed of Drydock participants than was the case in earlier studies. Drydocks treat individuals with less serious problems than do Alcohol Rehabilitation Centers and Services. The high rates of effectiveness found for NASAP participants were not unexpected. NASAP was designed to provide early intervention for individuals experiencing some problem associated with alcohol use, especially driving while intoxicated. Men identified in this way who demonstrated more serious alcohol abuse problems or alcoholism generally would have been referred to alcohol rehabilitation programs.

Effective post-treatment performance for men in both types of programs and in both age groups was more often noted for individuals who were older, had higher pay grades, and had more years of service at the time they were admitted to treatment. These findings are consistent with those of all previous studies of outcome for men treated in alcohol rehabilitation facilities (1). The effectiveness criteria used in this study were based on service longevity and achievement; disciplinary difficulties, whether or not associated with alcohol abuse, lead to premature discharge from service under unfavorable circumstances. This occurs much more frequently among younger, first enlistment personnel. Disciplinary problems were reported more often by the noneffective, younger men in both NASAP and rehabilitation programs; when the two noneffective groups were compared, there were no differences between them on disciplinary items despite the indications that the noneffective rehabilitation participants were more heavily involved in alcohol abuse. Self-reported disciplinary histories did not discriminate between effective and noneffective groups of older men in either program. It may have been that recall of the longer pre-treatment period for older men produced a less accurate accounting of past difficulties.

Although it is the men's disciplinary histories during their service careers that largely determines effectiveness after treatment, it seems apparent from the records of the men in this study that their ineffective performance was not unique to the service. Noneffective men in both

of the younger groups had less favorable family, school, and community adjustment histories than did effective men. Even among older rehabilitation men, those who were noneffective had less favorable pre-service adjustments.

Differences in alcohol use and problem histories were apparent for all group comparisons. Effective men, younger and older, in both NASAP and alcohol rehabilitation programs, reported fewer difficulties due to alcohol than did noneffective men with one exception. NASAP participants more often indicated they were picked up for driving while intoxicated. This is consistent with the fact that from its inception NASAP has been considered a possible diversion program for Navy men arrested for this offense. NASAP men experiencing this problem reported that it occurred at a later age than did rehabilitation participants. Less severe alcohol problem histories were characteristic of effective NASAP men when compared to effective rehabilitation participants; similar trends were noted when noneffective groups were compared. Thus, it seems clear that, in the main, men who have more serious alcohol problems are being appropriately referred to and treated in the rehabilitation programs; men with less serious or incipient alcohol problems are being referred to an educational program designed to help them evaluate their current drinking behavior and to encourage them to modify destructive trends. On the negative side, the possibility that as many as one-fifth of the men seen in NASAP programs could be described as alcoholic by behavioral criteria suggests the need for more careful screening of those men. Some, but not all who met this criterion, were recommended for transfer to alcohol rehabilitation. It would not be difficult during the screening period to obtain and evaluate the information necessary to determine alcoholism by the behavioral criteria used in this study. It could be an aid to appropriate referral and treatment.

When effectiveness rates of individual facilities were compared few differences were obtained. When they did occur, either significance was minimal or differences in outcome appeared related to the varying characteristics of the populations treated rather than to differences in programs. A more accurate assessment of effective post-NASAP adjustment would be reflected by changes in behavior that caused the individuals to be referred for treatment, i.e., drunk driving arrests, as compared to individuals with similar records who did not undergo treatment.

Differences in rates of hospitalization, disciplinary occurrences, and promotion observed between effective and noneffective groups for both NASAP and rehabilitation participants were all in the expected directions. Similarly, comparisons between effective groups, indicating more favorable performance for the NASAP group, were consistent with self-reported information from biographical questionnaires. The higher desertion rate observed for the noneffective NASAP group

in the pre-treatment period is not easily explained and goes contrary to other findings which indicate few differences between the two noneffective groups of younger men on any of the self-reported disciplinary items.

Higher rates of desertion and demotion were observed after treatment than before for all younger groups, effective and noneffective. In addition, higher rates of unauthorized absence occurred after treatment for effective groups. Fewer promotions occurred after treatment for all groups.

The above descriptive results cannot be properly interpreted without further knowledge of disciplinary and promotion rates for untreated controls over similar time periods. Studies of the Navy enlisted population have shown that unauthorized absence and demotion rates tend to be highest during the third year of the first enlistment which would roughly coincide with the post-treatment period of the present study. It will be necessary to conduct comparative analyses of the service histories of NASAP and rehabilitation program participants versus those of untreated controls in order to determine the effects of alcohol treatment programs on subsequent military performance.

As expected, rates of hospital admissions for alcoholism were lower after treatment than before for both effective and noneffective rehabilitation groups, and noneffective men had higher hospitalization rates than effective men in both populations.

REFERENCE

1. Kolb, D., Gunderson, E. K. E., & Coben, P. Population differences and correlates of post-treatment effectiveness in alcohol rehabilitation facilities (Report No. 78-48). San Diego, Calif.: Naval Health Research Center, 1978.

APPENDIX A

Biographical Items That Discriminated among Effective and Noneffective Groups in

NASAP and Alcohol Rehabilitation Programs

Younger Population (Age 25 or Younger)

	NASAP		Alcohol Rehabilitation		p ^a
	Effective	Non-Effective	Effective	Non-Effective	
Demography and Military History:	Mean	Mean	Mean	Mean	
Age	21.03	20.38	21.24	20.67	26.41
Is service your career (0 = yes, 1 = no)	.78	.87	.75	.82	11.08
Years on active duty (0 = ≤ 2 to 8 = 19, 20)	.53	.33	.57	.39	15.87
Present pay grade	3.26	2.41	3.07	2.42	134.52
Highest pay grade held	3.35	2.72	3.25	2.79	67.61
Times reduced in pay grade (0 to 8)	.16	.46	.29	.55	84.95
Satisfied with specialty (0 = very dissatisfied to 4 = very satisfied)	2.59	1.94	2.35	2.04	45.00
What is GCT/ARI score (0 = ≤ 29 to 6 ≥ 130)	3.94	3.63	3.89	3.61	10.37
Military honors (0 to 8)	.62	.39	.60	.52	4.24
Times at sick call during past year (0 to 8)	2.96	4.08	3.59	4.13	48.24
Times hospitalized during past year (0 to 8)	.58	.92	.81	1.00	22.47
Total days hospitalized during past year (0 = none to 8 ≥ 46 days)	.79	1.17	1.04	1.40	26.97
Times on report (0 to 8)	1.74	3.50	2.59	3.67	158.63
Captain's masts (0 to 8)	.88	1.86	1.35	2.03	118.15
Times court-martialed (0 to 8)	.03	.12	.04	.11	21.57
Times in the brig (0 to 8)	.08	.24	.12	.25	33.25
Disciplinary action pending (0 = yes, 1 = no)	.23	.36	.46	.54	122.39
Seasick when ocean calm (0 = no, 1 = yes)	.05	.06	.07	.09	6.03
Times dropped from service school (0 to 4 times)	.12	.18	.18	.20	10.70
Preservice Family and Social History:					
Years of schooling (0 = ≤ 8 years to 8 = advanced degree)	3.74	3.28	3.54	3.31	37.20
Times suspended or expelled (0 to 8)	1.09	1.97	1.49	1.96	41.12
Times set back a grade (0 to 8)	.31	.45	.37	.42	9.20
Number of courses failed (0 to 8)	1.07	1.48	1.27	1.56	18.09
Academic honors (0 to 8)	.72	.61	.70	.55	2.81
Athletic honors (0 to 8)	1.30	1.01	1.15	1.04	4.87
Moving traffic violations past three years (0 to 8)	1.91	1.80	1.69	1.61	6.88
Times ran away before age 15 (0 to 8)	.35	.78	.55	.78	26.72
Times played hooky (0 = never to 7 = > 30 times)	2.39	3.18	2.88	3.28	39.41
Arrest record prior to age 16 (0 to 8)	.22	.54	.40	.48	19.08
Arrest record for misdemeanor since age 16 (0 to 8)	.59	.80	.81	1.01	24.03
Adult arrest record for felony since age 16 (0 to 8)	.10	.20	.15	.17	7.96
Ever in reform school (0 = yes, 1 = no)	.90	.87	.88	.86	3.11
Longest time in civilian jail (0 = never to 8 = > 1 year)	.97	1.47	1.10	1.39	31.59
Wandered, no job (0 to 8)	.22	.36	.36	.54	22.64
Times used alias (0 to 8)	.09	.21	.23	.32	14.59
Treated by mental health worker before service (0 to 8)	.38	.79	.72	.89	20.19
Until 18th birthday, number of years raised by: (0 = none to 7 = 18 years)					
Real (biologic) father	5.11	4.64	4.86	4.76	9.02
Real (biologic) mother	6.92	5.54	5.84	5.74	8.16
Foster, step-, or adoptive father	.64	.80	.79	.83	3.62
Foster, step-, or adoptive mother	.30	.47	.42	.46	4.81
Father's education (0 = ≤ 8 yrs. to 7 = college grad)	4.37	4.18	4.12	4.15	3.67
Mother's education (0 = ≤ 8 yrs. to 7 = college grad)	4.68	4.64	4.54	4.41	4.18
Number of half-brothers (0 to 8)	.25	.37	.31	.35	4.81
Number of close relatives in mental hospital (0 to 4)	.19	.22	.24	.34	13.35
Number treated who returned to normal self (0 to 4)	.15	.19	.19	.24	7.15
Number of close relatives seen mental health worker (0 to 4)	.19	.29	.33	.41	26.06
Number of close relatives convicted of felony (0 to 4)	.12	.14	.18	.20	7.49
Number of close relatives depressed (0 to 4)	.19	.34	.33	.40	25.33
Number of close relatives with drug problems (0 to 4)	.10	.18	.17	.22	13.22
Total number of relatives with any of above problems (0 to 4)	.34	.44	.43	.55	24.27
Parents argue or fight (0 = never to 4 = always)	1.61	1.70	1.89	1.98	31.00
Father's attitude toward alcohol (0 = opposed to 4 = alcoholic)	1.98	2.08	2.17	2.26	17.49

^aAll p-values are significant (p < .05).

Younger Population (Age 25 or Younger)

	<u>NASAP</u>		<u>Alcohol Rehabilitation</u>		<u>F</u>
	<u>Effective</u>	<u>Non-Effective</u>	<u>Effective</u>	<u>Non-Effective</u>	
<u>Preservice Family and Social History: (continued)</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	
Mother's attitude toward alcohol (0 = opposed to 4 = alcoholic)	1.36	1.40	1.48	1.49	6.71
Home broken (0 = no, 1 = yes)	.36	.43	.43	.42	7.17
Importance of religion in childhood (0 = very to 4 = none)	1.72	1.84	1.82	1.98	11.85
Times attended church (0 = ≥ 4 times a month to 3 = none)	.76	.73	.78	.87	3.03
Derived variable - Family Alcohol History (0 to 60)	1.55	2.33	2.65	3.37	27.26
Derived variable - Sociopathy (0 to 4)	.81	1.24	1.29	1.60	137.48
Derived variable - Socioeconomic Status (0 to 6)	4.33	4.33	4.18	4.17	4.30
Single vs. other marital status (0 = other, 1 = single)	.77	.80	.74	.79	5.29
Times married (0 to 8)	.24	.19	.27	.22	5.08
Number of daughters (0 to 8)	.11	.10	.15	.13	3.14
Present wife has drinking problem (0 = yes, 1 = no)	.92	.89	.90	.84	3.38
<u>Alcohol Use and Problem History:</u>					
Age when you first drank (0 = ≤ 16 to 4 = ≥ 31)	.32	.23	.21	.16	33.29
Trouble in school due to alcohol (0 = yes, 1 = no)	.87	.77	.75	.72	42.97
Number of cups of coffee per day (0 to 8)	1.94	2.16	2.72	2.68	38.50
Missed time on job because of drinking (0 = no, 1 = yes)	.26	.43	.50	.57	190.29
Age missed time on the job (1 = ≤ 17 to 7 = ≥ 28)	2.24	2.14	2.22	2.08	2.67
Demoted because of drinking (0 = no, 1 = yes)	.06	.12	.16	.25	73.35
UA because of drinking (0 = no, 1 = yes)	.08	.22	.22	.28	85.45
Auto accident because of drinking (0 = no, 1 = yes)	.25	.34	.38	.38	28.32
Age had auto accident (1 = ≤ 17 to 7 = ≥ 28)	2.38	2.03	2.21	2.08	6.25
Picked up for drunk driving (0 = no, 1 = yes)	.56	.40	.34	.32	94.20
Age drunk driving (1 = ≤ 17 to 7 = ≥ 28)	3.08	2.55	2.68	2.42	38.46
Disciplinary action because of drinking (0 = no, 1 = yes)	.23	.36	.46	.54	122.39
Age disciplinary action (1 = ≤ 17 to 7 = ≥ 28)	2.81	2.74	2.90	2.72	3.82
Separated or divorced because of drinking (0 = no, 1 = yes)	.02	.05	.08	.07	25.98
Age separated or divorced (1 = ≤ 17 to 7 = ≥ 28)	3.39	3.31	3.64	2.93	5.56
Hospitalized because of drinking (0 = no, 1 = yes)	.05	.12	.17	.21	61.62
Age hospitalized (1 = ≤ 17 to 7 = ≥ 28)	2.37	2.67	2.94	2.76	6.31
Doctor told you to stop drinking (0 = no, 1 = yes)	.04	.09	.16	.21	77.59
Tried to stop drinking (0 = no, 1 = yes)	.23	.35	.60	.60	266.90
Age tried to stop (1 = ≤ 17 to 7 = ≥ 28)	2.90	2.90	2.98	2.72	6.21
Had drinking problem (0 = no, 1 = yes)	.33	.50	.79	.77	454.58
Years had drinking problem (1 = ≤ 1 to 7 = ≥ 21 years)	2.01	2.07	2.36	2.33	22.21
Participated in Alcoholics Anonymous (0 = no, 1 = yes)	.08	.14	.37	.41	236.01
Number of months participated in AA (1 = ≤ 1 to 7 = ≥ 16)	1.75	2.03	1.31	1.35	16.88
Abstained from drinking (0 = no, 1 = yes)	.33	.40	.69	.64	235.25
Number of months abstained (1 = ≤ 1 to 7 = ≥ 16)	2.04	2.06	1.67	1.69	18.90
Shakes the "morning after" (0 = no, 1 = yes)	.27	.36	.54	.54	138.09
Number of times had shakes (1 = once to 7 = ≥ 16)	3.49	3.82	4.18	4.20	13.28
Hallucinations (0 = no, 1 = yes)	.07	.12	.16	.21	44.23
Convulsions (0 = no, 1 = yes)	.04	.08	.08	.12	18.64
Vomited blood (0 = no, 1 = yes)	.06	.11	.14	.20	46.54
Blackouts (0 = no, 1 = yes)	.53	.67	.82	.82	182.90
Number of blackouts (1 = once to 7 = ≥ 16)	3.00	3.27	3.97	4.00	55.55
Pancreatitis (0 = no, 1 = yes)	.00	.01	.01	.01	3.61
Liver problems (0 = no, 1 = yes)	.01	.01	.03	.05	10.89
Saw doctor to help stop drinking (0 = no, 1 = yes)	.12	.22	.38	.39	153.30
Until 25th birthday, how bad was hangover (0 = never to 4 = terrible)	1.66	1.74	2.04	2.03	40.14
Past three years, how bad was hangover (0 = never to 4 = terrible)	1.61	1.76	2.00	1.96	42.51
Number of drinks in 24 hours (0 = none to 6 = ≥ 6)	4.32	4.79	5.32	5.22	144.30
Type of alcohol (1 = beer, wine; 2 = liquor; 3 = other)	1.20	1.26	1.29	1.36	23.38
Desire to see psychiatrist (0 = yes, 1 = no)	.88	.79	.76	.69	57.86
Treatment before in ARC, ARU, or ARD (0 = never to 3 = ≥ 3 times)	.04	.11	.07	.09	8.48
Discharge prognosis (0 = excellent to 3 = poor)	1.28	1.65	1.86	2.20	250.36
Self-referral vs. other (0 = other, 1 = self)	.14	.18	.29	.25	53.41
Derived variable - Alcoholic by Behavioral Criteria (0 to 6)	.20	.42	.52	.72	121.00
Derived variable - Age Major Problem (1 = ≤ 17 to 7 = ≥ 28)	2.64	2.56	2.95	2.69	5.19

Older Population (Age 26 and Older)

	NASAP		Alcohol Rehabilitation		
	Effective	Non-Effective	Effective	Non-Effective	
Demographic and Military History:	Mean	Mean	Mean	Mean	F
Age	32.46	29.03	32.43	29.80	23.62
Is the service your career (0 = yes, 1 = no)	.12	.38	.13	.53	76.37
Years on active duty (0 = ≤ 2 to 8 = 19, 20)	5.28	2.62	5.23	2.65	68.71
Present pay grade	5.72	3.78	5.54	3.98	110.52
Age entered the service (0 = 17 to 8 = 26)	1.80	3.06	1.64	2.23	9.83
Highest pay grade ever held	5.79	4.31	5.67	4.51	74.62
Times reduced in pay grade (0 to 8)	.24	.74	.40	.57	16.56
Satisfied with specialty (0 = very dissatisfied to 4 = very satisfied)	3.23	2.22	2.87	2.02	50.99
Military honors (0 to 8)	3.48	2.56	3.65	2.81	6.17
Times at sick call past year (0 to 8)	2.02	3.48	2.56	3.19	20.88
Times hospitalized during past year (0 to 8)	.37	.67	.64	1.13	28.38
Total days hospitalized during past year (0 = none to 8 = ≥ 46 days)	.71	.65	1.12	1.37	14.76
Times put on report (0 to 8)	1.82	2.70	2.34	2.51	14.91
Captain's masts (0 to 8)	1.23	1.79	1.65	1.64	12.05
Disciplinary action pending (0 = yes, 1 = no)	.84	.68	.87	.77	7.58
Ever extremely seasick (0 = no, 1 = yes)	.28	.44	.31	.24	2.91
Seasick when ocean calm (0 = no, 1 = yes)	.04	.15	.06	.05	4.47
Preservice Family and Social History:					
Years of schooling (0 = ≤ 8 yrs to 8 = advanced degree)	3.64	3.74	3.45	3.78	6.36
Years in trade school (0 to 8)	.24	.56	.26	.39	3.03
Times suspended or expelled (0 to 8)	.37	.32	.62	.77	12.01
Times set back a grade (0 to 8)	.35	.45	.44	.54	5.70
Number of courses failed (0 to 8)	.61	.94	.84	1.06	10.61
Academic honors (0 to 8)	.63	.82	.49	.70	3.85
Time held full-time job (0 = none to 8 = > 36 months)	3.06	3.74	3.02	4.16	9.22
Moving traffic violations past 3 years (0 to 8)	1.32	1.29	1.07	1.49	11.38
Times ran away before age 15 (0 to 8)	.18	1.09	.26	.42	17.79
Times played hooky (0 = never to 7 = > 30 times)	1.03	1.65	1.49	1.71	19.64
Arrest record for misdemeanor since age 16 (0 to 8)	.50	.41	.75	1.04	15.04
Adult arrest record for felony since age 16 (0 to 8)	.08	.09	.15	.24	7.78
Ever in reform school (0 = yes, 1 = no)	.89	.76	.91	.85	4.44
Longest time in civilian jail (0 = never to 8 = 1 > 1 yr)	1.02	1.29	1.12	1.44	7.40
Wandered, no job (0 to 8)	.12	.35	.15	.60	28.12
Treated by mental health worker before service (0 to 8)	.07	.35	.22	.55	11.46
Until 18th birthday, years raised by foster, step- or adoptive father (0 = none to 7 = 18 yrs.)	.54	.84	.70	.88	3.24
Father's education (0 = < 8 years to 7 = college grad)	3.43	3.93	3.16	3.25	2.86
Number of close relatives in mental hospital (0 to 4)	.12	.15	.18	.23	7.19
Number treated who returned to normal self (0 to 4)	.10	.18	.15	.17	5.12
Number of close relatives seen mental health worker (0 to 4)	.13	.18	.21	.27	8.97
Number of close relatives convicted of felony (0 to 4)	.08	.09	.13	.21	6.45
Number of close relatives depressed (0 to 4)	.12	.20	.23	.38	18.39
Number of close relatives with drug problems (0 to 4)	.06	.09	.12	.15	6.64
Total number of relatives with any of the above problems (0 to 4)	.24	.26	.40	.50	18.27
Parents argue or fight (0 = never to 4 = always)	1.56	1.39	1.85	1.97	18.69
Father's attitude toward alcohol (0 = opposed to 4 = alcoholic)	1.99	2.26	2.34	2.40	15.43
Mother's attitude toward alcohol (0 = opposed to 4 = alcoholic)	1.34	1.23	1.46	1.44	3.30
Home broken (0 = no, 1 = yes)	.36	.53	.41	.43	3.31
Importance of religion in childhood (0 = very to 4 = none)	1.48	1.65	1.72	1.70	11.77
Times attended church (0 = ≥ 4 times mo. to 3 = none)	.60	.79	.69	.89	3.44
Derived variable - Family Alcohol History (0 to 60)	1.41	1.41	2.64	3.34	16.52
Derived variable - Sociopathy (0 to 4)	.53	.94	.76	1.10	29.15
Marital Status:					
Single vs. other marital status (0 = other, 1 = single)	.16	.38	.14	.31	16.43
Times married (0 to 8)	1.11	.74	1.14	.91	7.64
Number of sons you have (0 to 8)	.72	.42	.75	.60	3.01
Number of daughters you have (0 to 8)	.73	.56	.78	.50	5.24
Present wife has a drinking problem (0 = yes, 1 = no)	.93	.95	.90	.83	5.14
Spouse's income (0 = more to 2 = less than own)	1.69	1.50	1.70	1.22	9.11

Older Population (Age 26 and Older)

	<u>NASAP</u>		<u>Alcohol Rehabilitation</u>		<u>F</u>
	<u>Effective</u>	<u>Non-Effective</u>	<u>Effective</u>	<u>Non-Effective</u>	
<u>Alcohol Use and Problem History:</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	
Age when first drank (0 = ≤ 16 to 4 = ≥ 31)	.69	.50	.48	.40	26.25
Trouble in school due to alcohol (0 = yes, 1 = no)	.95	.85	.91	.83	12.76
Number of cups of coffee per day (0 to 8)	4.44	3.91	4.88	4.14	8.84
Missed time on job because of drinking (0 = no, 1 = yes)	.26	.56	.57	.74	112.11
Age missed time on job (1 = ≤ 17 to 7 = ≥ 28)	4.35	4.10	4.44	3.90	2.94
Demoted because of drinking (0 = no, 1 = yes)	.07	.15	.17	.24	25.49
UA because of drinking (0 = no, 1 = yes)	.09	.24	.23	.42	49.01
Age UA (1 = ≤ 17 to 7 = ≥ 28)	4.80	4.25	5.14	5.62	3.27
Auto accident because of drinking (0 = no, 1 = yes)	.30	.29	.47	.55	34.11
Age had auto accident (1 = ≤ 17 to 7 = ≥ 28)	5.52	5.19	4.92	4.03	17.87
Picked up for drunk driving (0 = no, 1 = yes)	.74	.41	.52	.52	51.10
Age picked up for drunk driving (1 = ≤ 17 to 7 = ≥ 28)	6.26	4.86	5.58	5.48	36.63
Disciplinary action because of drinking (0 = no, 1 = yes)	.23	.38	.42	.54	43.95
Age disciplinary action (1 = ≤ 17 to 7 = ≥ 28)	4.98	5.46	5.00	5.63	3.27
Separated or divorced because of drinking (0 = no, 1 = yes)	.10	.15	.26	.38	43.60
Hospitalized because of drinking (0 = no, 1 = yes)	.07	.12	.24	.30	53.47
Doctor told you to stop drinking (0 = no, 1 = yes)	.07	.20	.25	.39	54.73
Age doctor told you to stop (1 = ≤ 17 to 7 = ≥ 28)	5.92	6.28	6.26	5.80	3.15
Tried to stop drinking (0 = no, 1 = yes)	.34	.53	.72	.75	165.99
Have drinking problem (0 = no, 1 = yes)	.40	.62	.86	.88	316.44
Years had drinking problem (1 = ≤ 1 yr to 7 = ≥ 21 yrs)	3.20	2.81	3.66	3.62	12.19
Participated in Alcoholics Anonymous (0 = no, 1 = yes)	.17	.26	.42	.49	78.74
Number of months participated in AA (1 = ≤ 1 to 7 = ≥ 16 months)	3.03	3.89	1.98	2.08	25.08
Abstained from drinking (0 = no, 1 = yes)	.45	.59	.81	.81	165.16
Number of months abstained (1 = ≤ 1 to 7 = ≥ 16 months)	3.21	2.95	2.50	2.71	18.44
Shakes the "morning after" (0 = no, 1 = yes)	.27	.41	.55	.69	92.72
Times had shakes (1 = once to 7 = ≥ 16)	3.91	4.43	4.65	4.68	8.15
Hallucinations (0 = no, 1 = yes)	.05	.06	.11	.26	32.79
Convulsions (0 = no, 1 = yes)	.03	.06	.07	.15	14.58
Vomited blood (0 = no, 1 = yes)	.05	.12	.15	.29	34.83
Blackouts (0 = no, 1 = yes)	.49	.62	.78	.86	108.80
Number of blackouts (1 = once to 7 = ≥ 16)	3.32	3.90	4.20	4.76	26.39
Pancreatitis (0 = no, 1 = yes)	.00	.03	.01	.03	3.16
Liver problems (0 = no, 1 = yes)	.02	.03	.07	.07	11.34
Saw doctor to help stop drinking (0 = no, 1 = yes)	.19	.35	.44	.53	75.85
Until 25th birthday, how bad was hangover (0 = never to 4 = terrible)	1.82	2.24	2.14	2.31	20.80
Past three years, how bad was hangover (0 = never to 4 = terrible)	1.71	2.15	2.23	2.40	49.08
Number of drinks in 24 hours (0 = none to 6 = ≥ 6)	4.40	4.91	5.40	5.67	107.70
Type of alcohol (1 = beer, wine; 2 = liquor; 3 = other)	1.27	1.29	1.33	1.33	2.93
Treated before in ARC, ARU, or ARD (0 = never to 3 = ≥ 3 times)	.14	.35	.15	.17	3.26
Desire to see psychiatrist (0 = yes, 1 = no)	.94	.76	.78	.62	57.76
Discharge prognosis (0 = excellent to 3 = poor)	1.13	1.58	1.49	1.86	59.33
Self-referral vs. other (0 = other, 1 = self)	.22	.12	.38	.36	33.64
Derived variable - Alcoholic by Behavioral Criteria (0 to 6)	.34	.59	.82	1.25	85.28
Derived variable - Age Major Problem (1 = ≤ 17 to 7 = ≥ 28)	5.10	4.80	5.66	5.36	5.93

APPENDIX B

Hospitalization and Disciplinary Rates That Discriminated among Effective and Noneffective Groups in NASAP and Alcohol Rehabilitation Programs for the Younger Population

	<u>NASAP</u>		<u>Alcohol Rehabilitation</u>		<u>F^a</u>
	<u>Effective</u>	<u>Non- effective</u>	<u>Effective</u>	<u>Non- effective</u>	
<u>Pre-Treatment Rate:</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	
Hospitalizations	.41 ^b	1.10	2.98	7.74	46.66
Unauthorized absences	9.88	30.06	15.66	32.46	58.19
Desertions	.75	6.81	.85	3.65	34.37
Demotions	4.64	12.85	8.35	16.29	65.68
Promotions	68.79	63.00	64.69	59.30	12.02
<u>Post-Treatment Rate:</u>					
Hospitalizations	.29	2.75	.70	2.75	10.98
Unauthorized absences	16.04	33.61	23.78	33.88	20.7
Desertions	2.84	15.43	4.16	11.34	48.67
Demotions	8.94	18.26	12.23	20.79	29.40
Promotions	37.71	8.52	37.23	8.93	133.02
N	1,991	274	2,416	808	

^aAll F-values are significant ($p < .001$)

^bThe incidence per 1,000 personnel per month.

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14 NAVHLTHRSCHC-79-58

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 79-58	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER 9
4. TITLE (and Subtitle) Comparisons of the Navy Alcohol Safety Action Program with Other Alcohol Rehabilitation Programs		5. DATE OF REPORT & PERIOD COVERED Interim rept.
7. AUTHOR(s) Douglas Kolb Patricia Coben E. K. Eric Gunderson		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Health Research Center P.O. Box 85122 San Diego, California 92138		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Medical Research and Development Command Bethesda, Maryland 20014		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS P.O. #N0002278F088AFZ and W.U. #M0096-PN.001-1034
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Bureau of Medicine and Surgery Department of the Navy Washington, D.C. 20372		12. REPORT DATE 11 Mar 1980
		13. NUMBER OF PAGES 1233
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) 16 M0096PN 17 M0096PN001		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Alcohol abuse Counseling Treatment effectiveness Rehabilitation programs Navy enlisted personnel		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The Navy Alcohol Safety Action Program (NASAP) is directed toward the early identification of alcohol abuse among Navy personnel. The objectives of this study were: (1) to compare post-treatment effectiveness for NASAP and alcohol rehabilitation participants, (2) to determine correlates of post-treatment effectiveness for both populations, (3) to estimate the extent of alcoholism among NASAP participants, (4) to compare outcomes among individual NASAP programs, and (5) to examine rates of disciplinary difficulties before and after		

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treatment for both NASAP and rehabilitation participants.

Effectiveness rates were high for both NASAP and rehabilitation participants; NASAP participants, both younger and older, had significantly higher effectiveness rates than rehabilitation program participants. Effectiveness in both programs was associated with more favorable preservice histories, better military records, and less severe alcohol use and problem histories. Effective NASAP participants presented more favorable profiles than effective rehabilitation participants in terms of preservice characteristics, family and social history, military adjustment and achievement, and alcohol use and problem history.

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