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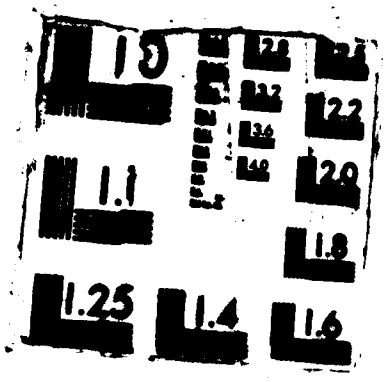
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Is the Navy Attracting or Creating Smokers?*

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Summary

Problem

Cigarette smoking produces a number of different health problems. In addition to long-term negative health consequences, rapid-onset adverse effects have been found. Even healthy young individuals may suffer respiratory symptoms, decreased pulmonary functioning, and lowered physical fitness. These known negative consequences of smoking should be of particular concern to the military because of the high rates of smoking among service members.

Objective

The purpose of this study was to examine whether the Navy is attracting smokers or creating smokers once individuals join the Navy.

Approach

Self-reported demographic and smoking information was provided by 687 recruits entering the Navy and by 1,357 Navy men stationed aboard ships in the San Diego area. Demographic variables examined were age, years of schooling, and race/ethnicity; smoking variables included smoking status (e.g., never smoked, former smokers, current smokers) and average amount smoked per day.

Results

According to self reports, 27.6% of the recruits were current smokers, whereas 49.8% of the shipboard men were current smokers. Recruits were almost twice as likely never to have smoked as the shipboard sample (63.2% vs. 32.1%, respectively). Smokers tended to be older Caucasian men. However, even in the youngest group of men (17 to 19 years old), there were over twice as many smokers among the shipboard sample. Among those who smoked, shipboard men smoked more cigarettes on the average than the incoming recruits.

Conclusions

The results indicated that the Navy is not attracting a higher than expected percentage of smokers from the U.S. population. Rather, many men →over

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start to smoke after they enter the Navy. These findings suggest that the Navy should implement strong prevention programs in recruit training. There were also large numbers of ex-smokers in the shipboard sample, which demonstrates that men in the Navy can and do quit smoking. Thus, the Navy should also develop effective smoking cessation programs for people who smoke. Effective smoking prevention and cessation programs should decrease health care costs, increase productivity, increase physical fitness, and produce a healthier and fitter force.

Is The Navy Attracting or Creating Smokers?

Terry A. Cronan, Ph.D. and Terry L. Conway, Ph.D. Cand.
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Introduction

Cigarette smoking is the single greatest cause of preventable death and disability in the United States (USDHHS, 1982). As indicated by morbidity and mortality rates, cigarette smoking is now the most serious as well as the most widespread form of addiction in the world (Ravenholt, 1985). This addiction has been linked to cancers of the pharynx, larynx, lung and bronchus, esophagus, stomach, colon, rectum, liver, pancreas, and bladder; cardiovascular disease, which includes coronary heart disease, aortic aneurysm, and cerebral vascular disease; and emphysema (Ravenholt, 1985). In addition to these long-term ill effects related to morbidity and mortality, smoking also has short-term effects on respiratory symptoms (John, 1977), pulmonary functioning (Enjeti, Hazelwood, Permutt, Menkes, & Terry, 1978), and physical fitness (Biersner, Gunderson, and Rahe, 1972; Conway & Cronan, 1986; Jensen, 1986).

Smoking among military personnel should be a cause of concern not only because of its adverse impact on health and physical fitness, but also because smokers are in general more costly than nonsmokers to employers. These costs include lost productivity, increased absenteeism, higher health care costs, and premature death (Kristen, 1983; Weis, 1981). Such costs related to tobacco use should be of particular concern to the military because of the high rates of smoking among service members. A Department of Defense survey conducted in 1985 (Bray, Marsden, Guess, Wheeless, Pate, Dunteman, & Iannacchione, 1986) found that 46% of military personnel smoked. Conway & Cronan (1986) found that 49.8% of a shipboard sample of Navy men, assessed during 1984, smoked. These smoking rates are higher than the 36% reported for males and 29% for females in the general United States population during 1983 (Schoenborn & Cohen, 1986).

For all these reasons (i.e., the increased costs, decreased productivity, and decreased health and physical fitness related to smoking),

the military should be especially concerned about having smoking rates which are substantially higher than the U.S. population at large. As a first step toward dealing with this problem, it is important to understand why the military has such high rates of smoking. An initial question might be whether the military attracts people who already smoke or whether the military environment is somehow conducive to the development of the smoking habit. The purpose of the present study was to address this question by comparing the smoking rates of men as they entered the Navy with those of men in the fleet.

Methods

Subjects

Two groups of Navy men were participants. One group consisted of 1,357 shipboard personnel who filled out self-report surveys asking about various habits and attitudes related to health and fitness. These men were participants in a larger study examining baseline levels of physical readiness among Navy personnel (Conway & Dutton, 1985). They were stationed aboard nine ships whose home port was San Diego: one aircraft carrier, one cruiser, two frigates, two destroyers, and three amphibious warships. The average age of this group was 26.0 years (SD = 6.2), with a range from 18-51 years of age. The median pay grade was E-4. Enlisted personnel comprised 93% and officers 7% of the sample, which slightly overrepresents enlisted personnel relative to the 88% found in the Navy at large (Naval Military Personnel Command, 1984).

The second group of participants was 687 incoming Navy recruits. These men were participants in a larger study designed to evaluate the effects of an educational smoking intervention during recruit training. The average age of this group was 18.7 (SD = 2.3), with a range from 17-35 years.

Measures

Shipboard participants. Command Fitness Coordinators distributed lifestyle surveys to individuals on board each ship. Participants were asked to complete the survey and return it to the Command Fitness Coordinators who forwarded the surveys to our research staff. Demographic measures taken from this survey included age, years of schooling, and race/ethnicity. Smoking

measures included: 1) smoking status, which classified individuals as having never smoked, being a former smoker, or being a current smoker; and 2) average amount smoked per day. The latter measure was based on a 10-category response scale: 0, 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35, 36-40, and 41+ of cigarettes, cigars, or pipefuls of tobacco.

Recruits. Nine companies of Navy recruits were asked to complete a battery of questionnaires within their first week of basic training. These questionnaires were completed during group testing sessions conducted by our research staff. Information used from this battery included: age, years of schooling, race/ethnicity, and several measures of tobacco use prior to entering recruit training.

Results

Two types of analyses were conducted. First, the hierarchical log-linear procedure in SPSS^{X} (1986) was used to examine the relationships among five factors: group membership (recruit versus shipboard men), smoking status (smokers, ex-smokers, and non-smokers), age (17 to 19 years, 20 to 25 years, and 26 years and greater), race (Caucasian versus non-Caucasian), and education (less than 12 years, 12 years, and greater than 12 years). Second, chi-square analysis was used to compare the amount of tobacco consumed by smokers in the recruit and shipboard groups.

Relationships among Five Factors

The alpha level was set at .05. Of particular interest were the relationships between group membership (recruit versus shipboard men) and smoking status, smoking status and the three demographic variables (age, education, and race), and the three-way interactions among group membership, smoking status, and the three demographic variables. There were significant differences in smoking status by group membership, and smoking status by all three demographic variables. One of the three three-way interactions that included the group membership and smoking status variables was significant: group membership by smoking by age.

As shown in Table 1, the percentages of people in the three smoking status categories clearly differed for recruit and shipboard men. Current

smokers comprised 49.8% of of shipboard sample but only 27.6% of the recruit sample. Only 29.9% of the shipboard sample had never smoked, compared to the 59.7% of recruits who had never smoked. There were also more former smokers (20.3%) among shipboard men than among recruits (12.8%).

Smoking status was also associated with the three demographic variables. Smokers were more likely to be older, to be less educated, and to be Caucasian. The significant three-way interaction indicated that the relationship between smoking status and age differed for the recruit and shipboard samples. In the 17- to 19-year age group there were over twice as many smokers in the shipboard sample as in the recruit sample. In the 26 and older age category there were only 3.1% more shipboard smokers than recruit smokers. However, since there were only 16 recruits in the 26 and older age group this interaction should be considered tentative until replicated.

Table 1

A Comparison of Shipboard and Recruits' Smoking Status and Demographic Characteristics

	Recruits				Shipboard			
	N	Current	Former	Never	N	Current	Former	Never
OVERALL	682	27.6%	12.8%	59.7%	1323	49.8%	20.3%	29.9%
AGE GROUP								
17-19	552	24.6%	12.1%	63.2%	106	51.9%	16.0%	32.1%
20-25	114	38.6%	14.9%	46.5%	640	46.3%	21.1%	32.7%
26 PLUS	16	50.0%	18.8%	31.3%	516	53.1%	20.9%	26.0%
EDUCATION								
< 12	93	41.9%	11.8%	46.2%	72	69.4%	13.9%	16.7%
12	464	24.1%	12.5%	63.4%	810	50.2%	19.6%	30.1%
> 12	116	28.4%	13.8%	57.8%	287	42.5%	24.0%	33.4%
RACE								
Caucasian	438	33.3%	13.5%	53.2%	892	51.6%	20.4%	28.0%
Non-Caucasian	235	15.3%	11.5%	73.2%	232	40.1%	17.7%	42.2%

Group Differences in the Amount Smoked

The second type of analysis was performed to determine whether smokers in the recruit and shipboard samples varied in the amount smoked per day. Table 2 shows that there were significant differences in the average number of cigarettes smoked per day for the two groups. Almost three-fourths of the recruits smoked 15 or fewer cigarettes per day, while only about one-third of the shipboard sample smoked this few.

Table 2

Average Amount Smoked by Smokers in the Recruit and Shipboard Samples

	Recruits		Shipboard	
AVERAGE AMOUNT SMOKED PER DAY	**N**	**Percentage**	**N**	**Percentage**
1 TO 15	89	71.2%	216	33.4%
16 TO 25	22	17.6%	258	39.9%
26 OR More	14	11.2%	172	26.6%

Chi-Square (2) = 62.48 $p < .05$

Discussion

Previous research has indicated that smoking rates of men in the Navy are much higher than those of the general population (Bray, Marsden, Guess, Wheeless, Pate, Dunteman, Iannacchione, 1986). This finding raises the question of whether the Navy is attracting smokers or whether the Navy environment somehow reinforces smoking among its members. Results from this study indicate that the rate of smoking in the Navy is high because people begin to smoke after they join the service. Only about 28% of incoming recruits were smokers, whereas almost 50% of the shipboard sample smoked. The shipboard sample also had a higher percent of ex-smokers, and the recruit sample had a larger percent of men who never smoked. Furthermore, shipboard smokers smoked larger quantities than incoming recruit smokers. In general, smokers tended to be older, less educated, and Caucasian.

Various aspects of Navy life may be contributing to smoking behavior.

Conditions of group living may increase the extent to which younger men observe and model the smoking of older men. The Navy encourages cohesiveness and uniformity, and men may begin smoking to become like each other and "one of the group." In addition, work breaks and opportunities to relax are often paired with opportunities to smoke. Other reasons for the increased rates of smoking in the Navy may be stress, boredom, cheap cigarettes, and a lack of other forms of recreation. It is also possible that economic factors in the civilian community make it more difficult, especially for minority men, to smoke. By contrast, the Navy provides a stable income and cheap cigarettes. These findings suggest that joining the Navy augments both an age-related increase in percent of smokers and the amount smoked by those who do smoke. Thus, an important strategy for reducing smoking in the Navy would be to prevent people from ever starting to smoke.

Recommendations and Future Research

To date there have not been any evaluations of smoking prevention programs in the Navy. It is recommended that the Navy develop and evaluate programs directed toward preventing personnel from smoking. Prevention programs should probably be implemented as early as recruit training. If the Navy can prevent its personnel from starting to smoke, it should experience decreased health care costs, increased productivity, and decreased absenteeism (Kristen, 1983). Health and physical readiness should also improve (Conway & Cronan, 1986). The Navy also needs to follow new recruits to determine precisely when and why Navy personnel begin to smoke. If the Navy can determine when most individuals start to smoke, interventions can be developed to target specific time periods, locations, or other contributing factors.

Furthermore, men in the Navy can and do quit smoking. This was demonstrated by the significant numbers of ex-smokers in the shipboard sample. Thus, the Navy should also focus on the development and evaluation of smoking cessation programs. Effective smoking cessation programs, in combination with good prevention programs, should substantially decrease costs and increase the physical fitness of Navy personnel to produce a healthier and fitter force.

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Approach

Self-reported demographic and smoking information was provided by 687 recruits entering the Navy and by 1,357 Navy men stationed aboard ships in the San Diego area. Demographic variables examined were age, years of schooling, and race/ethnicity; smoking variables included smoking status (e.g., never smoked, former smokers, current smokers) and average amount smoked per day.

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Conclusions

The Navy is not attracting a higher than expected percentage of smokers from the U.S. population. Rather, many men start to smoke after they enter the Navy. These findings suggest that the Navy should implement strong prevention programs in recruit training. There were also large numbers of ex-smokers in the shipboard sample, which demonstrates that men in the Navy can and do quit smoking. Thus, the Navy should also develop effective smoking cessation programs for people who smoke. Effective smoking prevention and cessation programs should decrease health care costs, increase productivity, increase physical fitness, and produce a healthier and fitter force.

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