SMOKING AND NEUROTICISM

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Smoking has been related to several aspects of personality but the association with neuroticism is rather uncertain (Eysenck, 1965). The Royal College of Physicians (1962), in their first report, *Smoking and Health*, suggested that smokers tend to be more neurotic. This is supported by the view of the U.S. Public Health Service (1964) that there is a relationship between the smoking habit and a personality configuration which is vaguely described as neurotic. However, in the latest report of the Royal College of Physicians (1971) it is stated that this claim has not been substantiated. Even more recently, Eastwood and Trevelyan (1971) concluded that their study in a random half of those aged 40 to 64 years in a London group practice gave no support to this hypothesis. It therefore seems worth reporting the results of an epidemiological survey in South Wales which was concerned mainly with headache but which included standard questions on smoking habits and also questions designed to give a neurotic grade for each individual.

METHODS

In 1968 a random sample of 2,000 electors living in the northern half of the Pontypridd constituency in Glamorgan was sent a questionnaire by post. This included questions on headache, current smoking

habits, and, interspersed among a number of questions on general health, nine questions which had been derived from the Cornell Medical Index Health Questionnaire. These nine questions (numbers 19, 20, 28, 31, 34, 58, 86, 89, and 91 in Rawnsley (1966)) had previously been adapted for community studies in South Wales and had correlated with a psychiatrist's evaluation of neuroticism. They have also been validated in their present context in a self-administered headache questionnaire (Waters and O'Connor, 1971). The neurotic grade (0 to 9) given in this paper is the sum of the affirmative replies to these questions. If the questionnaire was not returned by post after a second letter, which was sent as a reminder, the homes were visited and individuals were encouraged to answer the questions.

FINDINGS

Completed questionnaires were finally obtained from 773 men and 945 women. One woman refused to answer the questions relating to the neurotic grade. To obtain the completed questionnaires, it was necessary to visit the home of 274 (35.4%) of the men and 367 (38.8%) of the women. After excluding those who had left the constituency or died since the electoral roll was prepared, the response rate for the eligible sample was 94.2% in men and 92.9% in women.

The distribution of individuals by current smoking

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TABLE I
DISTRIBUTION OF INDIVIDUALS BY SEX AND CURRENT SMOKING HABITS

Smoking Habits		Men					Women				
		Age (yr)					Age (yr)				
		21-	35-	55-	75-	Total	21-	35-	55-	75-	Total
Non-smokers	No.	67	106	58	18	249	121	161	202	54	538
	%	34.2	31.5	29.7	39.1	32.2	49.0	46.0	69.7	93.1	56.9
Cigarettes (per day)	No.	7	12	6	5	30	8	12	21	4	45
1-4	%	3.6	3.6	3.1	10.9	3.9	3.2	3.4	7.2	6.9	4.8
5-14	No.	17	47	27	6	97	52	84	37	0	173
	%	8.7	14.0	13.8	13.0	12.5	21.1	24.0	12.8	—	18.3
15-24	No.	71	94	49	2	216	59	83	24	0	166
	%	36.2	28.0	25.1	4.3	27.9	23.9	23.7	8.3	—	17.6
25+	No.	25	41	16	1	83	7	10	5	0	22
	%	12.8	12.2	8.2	2.2	10.7	2.8	2.9	1.7	—	2.3
Pipes or cigars only	No.	9	36	39	14	98	0	0	1	0	1
	%	4.6	10.7	20.0	30.4	12.7	—	—	0.3	—	0.1
Total	No.	196	336	195	46	773	247	350	290	58	945
	%	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

TABLE II
SMOKING AND NEUROTIC GRADE

Smoking Habits	No.	Neurotic Grade*				
		0	1-2	3-4	5-9	Mean
Men						
Non-smokers	249	84	108	40	17	1.58
Cigarettes (per day)						
1-4	30	7	12	5	6	2.20
5-14	97	32	39	20	6	1.61
15-24	216	79	83	32	22	1.58
25+	83	26	37	11	9	1.66
Pipe or cigars only	98	35	38	16	9	1.65
Total	773	263	317	124	69	1.62
Women						
Non-smokers	538	130	231	84	93	2.19
Cigarettes (per day)						
1-4	45	13	15	9	8	2.18
5-14	173	39	63	40	31	2.42
15-24†	165	24	62	44	35	2.80
25+	22	2	6	9	5	3.32
Cigars only	1	1	0	0	0	—
Total	944	209	377	186	172	2.36

*See text.

†One individual refused to answer questions leading to neurotic grade.

habit, age, and sex is shown in Table I. The neurotic grade was not related to age in either men or women. Table II shows the distribution of the neurotic grades and the mean grade for various smoking groups. In men the mean neurotic grade of the smokers (1.65) was slightly higher than that of the non-smokers (1.58). There was no evidence that the neurotic grade was related to the amount smoked, and Spearman's rank correlation coefficient r_s , corrected for ties, was -0.002 . In women the non-smokers and the light smokers had the lowest neurotic grades and the mean grade increased with the number of cigarettes smoked each day. The rank correlation coefficient r_s , corrected for ties, was 0.127 ($P < 0.001$) in women.

DISCUSSION

The proportion of smokers in this sample is very similar to that given for 1968 in the report of the Royal College of Physicians (1971). In addition, the present figures show that the proportion of smokers declined further in the oldest age group which is not detailed separately by Todd (1969). It is interesting to speculate to what extent this reduction in the proportion of smokers in old age is a cohort effect, to what extent it is related to the economic circumstances of pensioners, or to what extent this is due to selection—being the survival of the fittest, i.e., the non-smokers.

This survey shows that on average women had higher neurotic scores than men but that they smoked considerably less. Despite this, the evi-

dence of an association between smoking and neuroticism comes almost entirely from women. The present finding, that in women there is a significant correlation between the neurotic grade and the amount smoked, is in conflict with the conclusions of Eastwood and Trevelyan (1971). These authors admit that their results may have been affected by their study design. The present data are based on a community survey of rather larger numbers and with a wider age range. More important may be the higher response rate obtained (93.5% against 'approximately 70%') and the fact that the questionnaires were completed in the individuals' homes and returned to a research unit 15 miles away. Eastwood and Trevelyan (1971) collected their smoking information in a self-administered questionnaire which the respondent knew would be seen by his/her family doctor. However, Eastwood and Trevelyan (1971) did find that 54% of their female psychiatric patients smoked cigarettes, compared with 47% of their matched controls. With 87 women in each group this difference was not significant statistically but it could be taken as suggesting a relationship between smoking and neuroticism in women.

The relationship between smoking and neuroticism in women reported here is that found in a cross-sectional survey. It gives no direct evidence of whether it is a cause or effect of smoking. It may be that the more neurotic women tend to smoke, or that smoking makes them neurotic, or that smoking and neuroticism have a common aetiology. A classification of smokers by associated features such as neuroticism might enable attempts at smoking prevention to be more specific for each individual. Women who smoke are, on average, more neurotic than those who do not, and for heavy smokers this difference may be important. The use of an index of neuroticism might be of value in assessing the effectiveness of different methods of preventing smoking and seems worth further investigation.

SUMMARY

A standard questionnaire, which was completed by 1,718 individuals (93.5% of the available sample) selected at random from the electoral roll, asked about smoking habits and included questions from which a grade for neuroticism was obtained. The results suggested that, in women, smokers are more neurotic than non-smokers, and there was a statistically significant correlation between the number of cigarettes smoked per day and the neurotic grade.

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