

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION  
DIVISION OF MATHEMATICAL STATISTICS  
University of Adelaide  
Adelaide, S.Aus.

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Dr. S. Alderson,  
343 Essex Road,  
LONDON, N.1.

Dear Dr. Alderson,

I have to thank you for your long and interesting letter on the possible relation between personality type and smoking and cancer of the lung.

I should agree that genotype could only influence habits in respect of smoking through what may, in your sense, be called personality type. On the other hand I am no psychologist and for my part I should prefer to leave the evidence where I have left it, as showing the importance of the genotype without discussing any chains of causation through which it might exert its influence.

The blood group A is not a rare genotype, comprising as it does about 43% of Londoners, and there is, I believe, no doubt of its association with cancer of the stomach. Moreover, there is an enormous body of evidence from that experimental animal most used in cancer studies, namely the house mouse, to the effect that all, or nearly all, individuals of the same genotype have associations with age incidence, type and frequency of cancer. However in mice as in men I cannot see any difficulty in the belief that the genotypic influence is mediated by the central nervous system.

So far as I can understand the evidence, the whole population of the United States might give up smoking without having the least effect on the incidence of lung cancer. Joseph Berkson, the chief statistician at the Mayo Clinic, has pointed to the other diseases associated with smoking and, of course, with drinking and for that matter with going to race meetings, as counter-evidence to the belief of the American Cancer Association that smoking has any causative effect in respect to cancer of the lung. However, Berkson is quite capable of arguing his own case and I need not try to recapitulate it.

It was undoubtedly the circumstance that one cancer, namely cancer of the lung, was associated with smoking, and not the products of combustion which do to some extent come in contact with the bronchus, that led Bradford Hill and his associates to think that they had important evidence. That evidence is remarkably weakened by the lack of association of cancer of the lung with inhaling. that

On the psychological side it would appear that what I may describe as the "greedy" smokers, i.e. those who are not satisfied with the mild and brief cigarette but prefer the stronger fumes of cigars or pipes are the least associated with cancer of the lung, and the cigarette smokers who inhale may be thought perhaps to fall into the same class. I suggest no explanation of these associations which I suspect are quite incidentally associated with genotype in its influence on smoking habits and those more deep-seated associations with lung and other types of cancer.

The apparent increase in the incidence of lung cancer seems to be readily explained by the large development of radiology during the present century and therefore the enormously increased facility in the detection of this disease. However I think we should also expect a considerable increase in real incidence owing to the widespread and remarkable increase in urbanisation with all those populations in which lung cancer has apparently increased. The rates of lung cancer in the great metropolitan cities such as London and New York is manyfold that of comparable populations, equally addicted to smoking, living in remote rural environments. And in

England not only have the great centres of population increased rapidly and lesser centres coalesced in considerable conurbations but the most scattered population elements have been progressively adopting many elements of the urban way of life. To find what elements of the urban conditions are the effective causes of lung cancer seems to be a central research problem which has been almost neglected. No doubt atmospheric pollution is a plausible cause which has not been excluded by the evidence but which has certainly not yet been proven to be the effective cause, which may equally be merely increased human contacts.

The officially sponsored and popularised researches into lung cancer seem to have failed by reason of the narrow approach and of course I am with you that it would be of immense importance if it could be shown that cancers of the lung or elsewhere were in any important degree psycho-somatic in origin.

Sincerely yours,

R. A. Fisher