

# LETTERS TO THE EDITOR

## Cigarette smoking and health promotion in Nazi Germany

SIR - I have followed the exchanges between Brenner and Davey Smith *et al* with interest,<sup>1,2,3</sup> given that I am presently writing a book-length history of Nazi cancer research and policy, with a special focus on Nazi tobacco policy. Davey Smith *et al* are correct to say that the Nazis implemented strong anti-smoking policies; it is not quite true, however, to state that these policies were implemented "with little success".<sup>2</sup> While per capita smoking increased in the first six years of Nazi rule, smoking actually declined rather dramatically during the war and immediate postwar period (table 1).

Table 1 Cigarette consumption, per capita per year

Year	Germany	USA
1930	490	1485
1935	510	1564
1940	1022	1976
1944	743	3039
1950	460	3552
1955	866	3597
1960	1280	4171
1963	1523	4345

Sources: "Rauchen: Wie Gut", *Der Spiegel*, January 22, 1964; 61 and the Economic Research Service, US Department of Agriculture. American figures are per capita for persons 18 years and over.

### Cigarette consumption

From 1940-50, German per capita cigarette consumption fell by more than half, from 1022 per person to 460 per person. The decline is notable, given that in the US over this same period cigarette consumption nearly doubled, from 1976 per person to 3552 per person.

It is important to recognise, of course, the possible sources of bias in such figures. In both the German and the American case, the numbers indicated are domestic sales figures recorded for taxation purposes (both therefore exclude production for export). In the German case, there are several reasons official records may have underestimated actual tobacco use in the immediate post war period. For one thing, official statistics could not take into account the flourishing black market trade in foreign tobacco. American cigarettes ("Amis") were highly prized in the post war period, with single cigarettes selling for as much as 5 or even 7 marks (compared with several pfennigs for German brands). Tobacco smuggling was rampant: in 1949, an estimated 400 million American cigarettes found their way into Germany every month. As late as 1954 two billion Swiss cigarettes - a quarter of that country's production - were estimated to have been smuggled into Germany and Italy.<sup>4</sup>

Smuggling was fostered by the fact that German cigarette manufacturing had sunk to only about 10% of prewar levels, mainly due to the inability to secure raw tobacco from outside Germany. Shortages remained so severe that American authorities decided to

ship tobacco, free of charge, into Germany as part of the Marshall Plan. Twenty four thousand tons were shipped in 1948, followed by another 69 000 tons in 1949. The net cost to the US government was around 70 million dollars; the benefit, at least for American tobacco firms, was a gradual shift in German tobacco tastes from the traditionally favoured black tobacco to the milder, blond Virginian blend (the latter was also purportedly more popular among women).<sup>5</sup>

Two other factors may be mentioned, both of which indicate that tobacco consumption may have been somewhat higher than is indicated in official figures. The first is that, by contrast with later years, cigarettes in the immediate postwar period were often smoked down to the very end. Discarded cigarette butts were gathered and smoked, and one has to conclude that the amount of tar, nicotine, and ash inhaled per cigarette produced or smuggled was significantly higher than in less desperate years (cigarette butts contain a disproportionately high quantity of harmful substances). Such things can be important in calculating the cancer consequences of the tobacco habit.<sup>6</sup>

The second factor is that many Germans grew their own tobacco for home use or trade. The Tobacco Research Institute in Forchheim actually promoted backyard tobacco cultivation in the 1940s, providing detailed instructions for how to grow and cure your own.<sup>7</sup> Home cultivation continued after the war, and popular memory records many a soldier returning home from the east to transform gardens being used to grow vegetables into tobacco plots.

It is difficult to say how much home cultivation, the black market trade, and the smoking of discarded butts added to overall cigarette consumption. It is unlikely, however, that even all of these factors combined made up for the shortages imposed by the collapse of the German tobacco trade. Recall that German domestic tobacco production in the immediate postwar period was only a tiny fraction of prewar production, that much of the home grown variety was eventually sold to tobacco companies (and therefore counted in official sales statistics), that post war rations were only about a fifth of the early wartime rations, and that women, even after the war, continued to receive half rations.<sup>6</sup> Recall also that, at 100 marks or more per pack and in a time of extreme poverty, American brands were more often traded than smoked. Taking such things into account, we should probably conclude that the decline in tobacco consumption was real - though it is difficult to sort out the separate contributions of Nazi policy and the coincident pressures of the war and post war poverty. Tobacco consumption in several other European nations declined from 1940-50.

### Gender differences

The Nazi anti-tobacco campaign was not gender neutral: women were much more aggressively targeted than men. When tobacco rationing was implemented early in the war, women received only half rations. Two thirds of all tobacco supplies were diverted into the military for the duration of the war. It is therefore not surprising that German women born in the periods 1911-20 and 1921-30 show a much lower lifetime prevalence of smoking than subsequent birth cohorts.<sup>1</sup> Equally intriguing is the fact that female age adjusted lung cancer rates in Germany are low for the period 1952-90, when one would

Table 2 Lung cancer mortality (age adjusted) per 100 000 inhabitants in West Germany and the USA\*

	West Germany		USA	
	1952	1990	1952	1990
Men	22	49	25	75
Women	4	8	5	32

All figures are age adjusted. Sources: Deutsches Krebsforschungszentrum (Nicholas Becker) and the American Cancer Society.

expect the tobacco policies of the 1930s and 1940s to have borne fruit. In 1952, the annual rate of death from lung cancer among German women was a mere 4 per 100 000; that same year, the mortality rate for German men was 22 per 100 000. By 1990 the mortality rate for women had climbed to only 8 per 100 000, while the rate for men had increased to 49 per 100 000 (see table 2). In Germany today, more men die from lung cancer than from any other kind of cancer. Among women, by contrast, lung cancer is still in third place, behind breast and colon cancer. The difference in lung cancer mortality between the sexes is so great that, if this particular difference were somehow to vanish, most of the difference in overall cancer mortality between men and women would also disappear.

How can we explain the relatively slow rise of female lung cancer mortality in Germany, by comparison with that of the United States? I would suggest that Nazi efforts to discourage women from smoking, together with the shortages imposed by the war and postwar poverty, combined to slow the rate of rise of female smoking and (therefore) the rate of rise of female lung cancer mortality.

Indeed, it is possible to calculate how many women's lives may have been saved by whatever caused the dramatic reduction in smoking in Germany over the period 1940-50. We are obviously moving here in the realm of speculation, but it is perhaps worth noting that many more women would have died of lung cancer had German rates continued to grow as rapidly as they did in the United States. As we can see in table 2, American women's lung cancer mortality rates increased by more than a factor of six between 1952 and 1990. German women's rates, by contrast, only doubled. Had the German rate increased as rapidly as the American rate, roughly 20 000 more women would have died than actually did die. One could plausibly argue that whatever prevented German women from taking up smoking as rapidly as American women eventually prevented the lung cancer deaths of some 20 000 German women.

### Fertility

One further correction to the comment article by Davey Smith *et al*. Martin Gumpert, the emigré author of *Heil Hunger*, is quoted to the effect that German birth rates did not increase, despite Nazi pronatalist propaganda. In fact, Germany's birth rate jumped dramatically in the first few years of Nazi rule (from 14.7 per 1000 in 1933 to 18 per 1000 in 1934), probably due to the optimism with which the new regime was greeted. The birth rate continued to climb until about 1940, by which time German women were having more babies than England and France combined.<sup>8</sup> Fascism is perhaps more complicated and seductive than many of us like to think.

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- 1 Brenner H. A birth cohort analysis of the smoking epidemic in West Germany. *J Epidemiol Community Health* 1993;47:54-58.
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- 3 Davey Smith G et al. Smoking and death. *BMJ* 1995;310:396.
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## Reply

Robert Proctor's contribution to the debate on Nazi anti-smoking activities is to be welcomed, since he has made important contributions to the understanding of this issue.<sup>1</sup> He suggests that the anti-smoking measures implemented in Nazi Germany, discussed in our article,<sup>2</sup> may have had more impact than we, and others,<sup>3</sup> have implied. This point is made by comparing the cigarette consumption and lung cancer rates of Germany and the United States. Proctor appears to attribute the fall in cigarette consumption in Germany after 1940 to the Nazi anti-smoking measures, with the consequent shortfall in lung cancer rates thus being attributed to these measures.

### Cigarette consumption in postwar Germany

This analysis depends upon the acceptance of data on cigarette consumption coming from the devastated terrain of post 1945 Germany. As Proctor acknowledges, there was certainly an extensive contribution of smuggling and home production to post war German tobacco consumption, which is not reflected in these figures. Equally importantly, the comparison between Germany and the United States is surely not the most appropriate one. If reductions in smoking are taken to be long term consequences of Nazi anti-smoking policies then they should not be seen in other countries which suffered similar post war disruption, but without the anti-smoking activities. In Japan, where we can find no evidence of intensive anti-smoking propaganda before and during the war, cigarette consumption per adult collapsed from around 1150 per adult per year at the time of Japan's entry into the war to 310 per year in 1947 and only returned to the prewar level in 1950.<sup>4</sup> In Germany prewar levels had been reattained by 1953.<sup>4</sup> Indeed the ratios for cigarette consumption per adult per year in Japan compared with Germany remained remarkably consistent: 1927 - 1.23; 1937 - 1.21; around 1947 - 1.33; 1957 - 1.23; and 1967 - 1.19. Thus it appears that postwar disruption may have produced simple shortages, together with extensive black market trading and home production, which reduced the official cigarette consumption data. This fall cannot be attributed to the anti-smoking campaigns and policies.

Comparing cigarette smoking in Germany to that in the United States is clearly com-

paring countries with very different long term attitudes and behaviours relating to cigarette smoking. As the data reproduced by Proctor show, per capita consumption in 1930 - before the Nazi ascendancy to power - was 1485 cigarettes per person per year in the US and 490 in Germany; a ratio of 3.03. In 1963 consumption was 4345 in the US and 1523 in Germany, a ratio of 2.85. Comparing Germany with its European neighbour France again demonstrates that there was no great deviation from the general trends in cigarette smoking in Germany. In 1932 (the first year with data from France) the per capita consumption of cigarettes was identical in France and Germany, at 570.<sup>4</sup> By 1939 French consumption had increased to 630 while that in Germany - which had already begun implementing its anti-smoking campaigns - had risen to 900. Cigarette consumption in France showed a lesser postwar collapse than in Germany, as would be expected from the level of disruption which existed, but by 1957 the Germans had overtaken the French in terms of per capita cigarette smoking, a position which was maintained over the succeeding decades. It is implausible that the short German occupation of part of France can be thought of as having exported Nazi attitudes to smoking to France, to account for this pattern.

The smoking data from France and Germany are matched by lung cancer mortality rates, which have been consistently higher in the latter.<sup>5</sup> Proctor considers that German women may have especially benefited from the anti-tobacco campaign, since smoking among women was more actively discouraged than among men. However, comparisons between France and Germany give no support for this. Table 1 documents lung cancer mortality rates by birth cohort and age.<sup>5</sup> In each

cohort and at each age group lung cancer mortality rates are higher in Germany than in France and there is no suggestion that women of any age during the Nazi campaign have benefited in the subsequent years. Male data present essentially the same picture, although there is a weak and inconsistent suggestion that those who would have been teenagers during the Nazi period had slightly lower lung cancer rates than expected. The basic picture, however, is one of higher lung cancer mortality rates in Germany than France, which is seen for women as well as men.

### Diet

As Proctor has pointed out elsewhere, Nazi health promotion involved the encouragement of increased fruit and vegetable consumption, the use of wholegrain bread and the avoidance of fat.<sup>1</sup> Hitler's vegetarianism is widely known while an important figure in Nazi medicine, Erwin Liek, predicted that cancer would come to be seen as a product of diet.<sup>1</sup> The consumption of whipped cream seems to have been a particular target of enthusiastic Nazis. The SS paper *Schwarzes Korps* reported on German tourists seen in Austrian coffee houses and suggested that anyone would "think Greater Germany was only created so that this raving Philistine rabble can wolf whipped cream".<sup>6</sup> In 1938 the same paper considered the audience at the 1938 Nuremberg rally as consisting of "those who pretend starvation stares them in the face unless they have their regular supply of *vol-au-vent* and whipped cream".<sup>6</sup> A prominent promilitarist slogan read, "Fighting power or whipped cream".<sup>7</sup> Germany was, however, "a passionately carnivorous country"<sup>8</sup> and changing the diet was difficult. There was a change in bread consumption,

Table 1 Lung cancer mortality by birth cohort and age (age specific death rates per 100 000)<sup>5</sup>

Women										
Central years of birth cohort	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	
<i>France</i>										
1899-1900					6.8	9.3	14.7	20.6	25.6	
1904-05				4.3	6.1	9.5	14.5	19.3	25.3	
1909-10				3.9	6.5	9.7	13.0	19.6	27.6	
1914-15		1.4	2.3	3.6	6.9	10.0	14.6	22.2		
1919-20	0.6	1.2	2.0	3.2	5.7	9.4	16.8			
1924-25	0.7	1.2	1.9	3.3	6.9	11.2				
1929-30	0.5	1.1	1.8	4.3	8.1					
<i>Germany</i>										
1899-1900					8.1	13.1	21.2	30.2	36.4	
1904-05				4.3	7.5	14.1	21.2	29.3	40.7	
1909-10			2.6	4.9	8.8	13.3	20.2	30.5	44.7	
1914-15		1.3	2.7	5.4	8.9	14.0	23.1	35.4		
1919-20	0.8	1.3	2.9	5.0	7.8	15.4	28.0			
1924-25	0.7	1.4	2.7	5.0	8.9	16.9				
1929-30	0.5	1.2	2.5	5.0	11.2					
<i>Men</i>										
Central years of birth cohort	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	
<i>France</i>										
1899-1900					34.0	75.2	132.6	205.6	262.2	
1904-05				17.4	42.3	88.5	152.9	221.2	303.4	
1909-10				19.9	48.1	93.7	160.2	252.5	324.5	
1914-15		2.7	8.2	22.4	52.9	104.9	185.2	268.4		
1919-20	1.2	3.0	9.3	26.3	58.6	115.3	188.7			
1924-25	1.3	3.8	11.6	31.1	76.0	139.8				
1929-30	1.5	4.0	14.9	41.1	84.4					
<i>Germany</i>										
1899-1900					60.2	128.0	229.5	339.7	441.1	
1904-05				27.9	66.0	136.3	230.8	344.4	462.9	
1909-10			9.4	26.3	64.3	126.8	217.2	331.7	442.2	
1914-15		3.5	9.1	26.8	61.0	120.2	214.7	314.3		
1919-20	0.9	3.6	9.4	26.4	61.2	121.6	210.4			
1924-25	1.4	3.7	10.6	28.5	66.3	130.7				
1929-30	1.7	3.9	11.9	34.6	74.9					



however. Wholegrain bread was produced by nearly a quarter of all German bakeries by 1943, compared to only 1% in 1939, following appeals from the health Führer Leonardo Conti that wholegrain bread should be eaten "for the benefit of individual health and the strength of Germany".<sup>1</sup>

The legacy of healthy eating campaigns are even less easy to discern than those of the anti-smoking campaigns. Germany has an overall mortality picture which is unfavourable given its high gross national product<sup>9</sup> and Nazi campaigns against alcohol, against smoking, against animal fat, and in favour of fruit and vegetables, wholemeal bread and exercise – which were targeted particularly at the same youth who are now the generation contributing substantially to national mortality rates – had no discernible long term impact. Indeed the postwar legacy may have been unfavourable, with the *Fresswelle* ("wave of guzzling") which followed the deprivations of war having adverse consequences with respect to obesity and obesity related diseases.<sup>10</sup>

### Fertility

Proctor also comments on our reference to Martin Gumpert, who intimated that the Nazi campaigns to increase fertility were failing. Gumpert managed to escape from Germany before the war and did much to advertise the level of misery in Hitler's state. His book *Heil Hunger*<sup>7</sup> was an attempt to demonstrate that a popular contemporary view – that the Nazis had improved health in Germany – was incorrect. The book was widely quoted outside of Germany and appears to have been an effective intervention. When discussing the fertility campaign Gumpert was referring to the later stage of the "battle for births", rather than its early days. As Proctor points out there was an increase in the birth rate and marriage rate immediately following the imposition of the Nazi rule. The birth rate increased from 15.1/1000 in 1932 to 18.9/1000 in 1936.<sup>11</sup> But, this should be seen against the decline which preceded it. From a rate of 35.6/1000 in 1900 the fertility rate declined (to 31.6/1000 in 1910, 26.8/1000 in 1914, 20.7/1000 in 1925, and 17.5/1000 in 1930), and by the early 1930s it had reached an all-time low.<sup>12</sup> Seen in this light the "success" of the pronatalism campaign was modest.<sup>13,14</sup>

Interest-free marriage loans were offered from 1933, once couples had passed tests of political and eugenic reliability. Family allowances, with one-off payments at the birth of each child, were followed by the introduction of recurrent grants, increasing with each child, and propaganda intended to encourage working women to return to the home to raise children.<sup>15</sup> Increasing legal sanctions against abortion were imposed, culminating in the death penalty being introduced for habitual assistance at abortions.<sup>12</sup> In the light of these activities, the last of which would increase the birth rate by fiat rather than winning the propaganda war, the cessation of the lack of any sustained rise in fertility can be seen as the basis for Gumpert's consideration that German mothers "had gone on strike". Gumpert commented cynically on many other aspects of Nazi social policy. He considered that attempts to claim that poor health was due to bad lifestyle was serving as a smoke screen, to cover up for the genuine deterioration in health due to the iniquities of Nazi policies. Thus he considered the then campaigns to reduce fat consumption during a period of hunger were

particularly invidious, stating, "there emerge today health administration hyenas who proclaim to the public that butter is poison".<sup>7</sup>

### Lack of support

The anti-smoking campaigns in Nazi Germany, extensive as they appear, did not engage the unquestioning support which might have been expected for activities seen to be fully in line with the Führer's wishes. When the Deutscher Bund Zur Bekämpfung der Tabakgefahren was soliciting for a president it received a stream of letters from potential candidates stating that they would not take up the post. The reasons given included the invited individual admitting to be "a passionate smoker". Even letters from the feared Nazi labour chief, Fritz Sauckel, received the same response. When Karl Astel, rector of Jena University and head of the Institute for the Struggle against the Dangers of Tobacco, attempted to have the bodies of all deceased smokers sent to the Jena Pathology Institute for investigation of the damage that smoking had induced, public opposition required the withdrawal of the proclamation within two months of it being issued. The military were also opposed to restrictions on tobacco and this may have led to a lessening of the degree to which anti-smoking legislation was enforced.<sup>8</sup>

### Legacies of Nazism

The legacies of Nazism in contemporary Germany are complex and contradictory.<sup>10</sup> A motivated systematic rejection of the Nazi period can be seen in everything from functional architecture, the staid and apolitical nature of universities and television, the desire for press freedom even when it produces the embarrassment that is *Bild* (Europe's biggest selling newspaper, which can on occasions make the English *Sun* read like *New Left Review*), and consensus Government, through to the more extreme and obvious counter-reaction to the Nazi past by the Baader-Meinhof Group and Red Army Faction,<sup>16</sup> or the alternative living situations in squats of many German cities of the *Aussteiger* and *Spontis*. Some commentators consider that through it all an intense sense of conformity remains.<sup>10</sup> With these contradictions, the direct translation of policies enacted during the Nazi period into what has happened in Germany since the war is problematic, but then again so is simply ignoring history.<sup>17,18</sup>

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## Estimating life expectancy using an age-cohort model: a critique

SIR – In a recent article published in this journal, Lee and Hsieh<sup>1</sup> proposed using the age-cohort model suggested by Clayton and Schifflers<sup>2</sup> to estimate cohort mortality and cohort life expectancy at birth. They applied it to estimate the cohort life expectancy in Taiwan. The model is a multiplicative Poisson regression model with an intercept term, an age effect term, and a cohort effect term. It does not include an interaction term. As such, the model assumes a constant age pattern of mortality across cohorts.

I have great reservations about this implicit assumption. Child and adult mortality are subject to different factors. On one hand, during the epidemiologic transition, communicable diseases usually decline faster than non-communicable diseases. Besides, most public health measures in developing countries after the second world war focused on improving maternal and child health.<sup>3</sup> Therefore, child mortality generally declined faster than adult mortality. On the other hand, however, we expect that in countries whose mortality level is already very low, further mortality declines will be concentrated in older ages because of the law of diminishing marginal returns. So there is no reason to presume a constant age pattern of mortality.

In their study of the incidence of bladder cancer among men aged 25 or over, Clayton and Schifflers<sup>2</sup> justified their application of the model graphically by showing that the cohort curves of logarithmically transformed, age specific incidence rates were "quasi-parallel" to one another. However, the determinants of a single disease are not as diverse as those of all-cause mortality; the study of adults is not as complex as that of a whole population. The quasi-parallel is unlikely to occur in the context of Lee and Hsieh's application.<sup>1</sup>

Figure 1 plots some of the data which appear in Lee and Hsieh's paper. Not surprisingly, for the cohorts born earlier this century, the mortality curves are reasonably parallel in adulthood and old age. The two