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**Notes**

# What happened to smokers' beliefs about light cigarettes when "light/mild" brand descriptors were banned in the UK? Findings from the International Tobacco Control (ITC) Four Country Survey

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## ABSTRACT

**Aim:** This paper examines how beliefs of smokers in the UK were affected by the removal of "light" and "mild" brand descriptors, which came into effect on 30 September 2003 for Member States of the European Union (EU).

**Participants:** The data come from the first four waves (2002–2005) of the International Tobacco Control Policy Evaluation (ITC) Four-Country Survey, an annual cohort telephone survey of adult smokers in Canada, USA, UK and Australia (15 450 individual cases).

**Design:** The UK ban on misleading descriptors occurred around the second wave of data collection in the ITC survey, permitting us to compare beliefs about light cigarettes among adult smokers in the UK before and after the ban, with beliefs in the three other ITC countries unaffected by the ban.

**Results:** There was a substantial decline in reported beliefs about the benefits of light cigarettes in the UK following the policy change and an associated public information campaign, but by 2005 (ie, wave 4), these beliefs rebounded slightly and the change in beliefs was no greater than in the USA, where there was no policy change.

**Conclusions:** The findings reveal that high levels of misperceptions about light cigarettes existed among smokers in all four countries before and after the EU ban took effect. We cannot conclude that the policy of removing some aspects of misleading labels has been effective in changing beliefs about light cigarettes. Efforts to correct decades of consumer misperceptions about light cigarettes must extend beyond simply removing "light" and "mild" brand descriptors.

Tobacco manufacturers have incorporated a variety of terms into the names of their cigarette brands as a form of advertising.[1,2] Words such as "light" and "mild" have been used by tobacco companies for over three decades to distinguish different types of cigarettes, typically those with lower machine-tested yields of tar and nicotine and a weaker taste, which also produce less irritation to the throat and chest when smoked.[3] Studies have consistently found that many smokers erroneously believe that cigarettes labelled "light" actually deliver less tar to smokers and/or are less harmful, and are thus "healthier" than regular cigarettes.[3–8] However, it is now well established that "light" cigarettes do not convey any health benefit and may actually cause extra harm to the extent that

consumers who might otherwise have attempted to quit continue to smoke under the false belief that they are reducing their health risk by smoking a light brand instead of a full strength one.[9] The wide scale adoption by cigarette manufacturers of filter ventilation and other technologies that facilitate smoker compensation, has ensured that cigarettes labelled "light" or variants of that term, actually deliver levels of tar and nicotine to smokers that are comparable to "full flavour" cigarettes.[9–14]

To date, attempts to address the problem of smokers' incorrect beliefs about "light" cigarettes have focussed on the misleading nature of the brand descriptors. Article 11 of the World Health Organization's (WHO) Framework Convention on Tobacco Control (FCTC) states that ratifying countries will enact laws to ensure that:

> Tobacco product packaging and labelling do not promote a tobacco product by any means that are false, misleading, deceptive or likely to create an erroneous impression about its characteristics, health effects, hazards or emissions, including any term, descriptor, trademark, figurative or any other sign that directly or indirectly creates the false impression that a particular tobacco product is less harmful. These may include terms such as "low tar", "light", "ultra-light", or "mild".

Governments have begun to implement Article 11 provisions and prohibit advertising that is deemed to be misleading to smokers. Brazil and the European Union (EU) were among the first jurisdictions to have prohibited the use of "light" and "mild" descriptors on cigarette packages and in advertising. The clear intent of bans on misleading descriptors is to reduce (and ideally, eliminate) the erroneous beliefs that cigarettes labelled "light" deliver less tar to smokers and thus are less harmful. Any changes in beliefs associated with a policy are likely to be a joint function of the implementation and enforcement (where necessary) of the policy, and attendant public education, whether specifically intended to produce belief change in smokers or resulting secondarily from publicity and discussion surrounding the policy change.

However, we are unaware of any published studies that have evaluated the effects of such policies on the beliefs that smokers hold about cigarettes labelled light or low tar.

The EU ban on misleading use of cigarette brand descriptors such as "low-tar", "light", "ultra-light" and "mild" officially took effect in September 2003, but packs with the terms removed started to appear on the market before this date. Unfortunately there are no available data on the pattern of implementation, but typically it takes several months before all the old packs are sold. In the UK the formal introduction of the ban was accompanied by a high profile television campaign explaining the policy and highlighting the equal dangers of all cigarette brands and brand variants (fig 1). This provided us with an opportunity to evaluate how smokers in the UK responded to the ban compared to smokers in countries unaffected by the policy. The International Tobacco Control Policy Evaluation (ITC) Four-Country Survey, an annual cohort telephone survey of adult smokers in the UK, Canada, USA and Australia[15] that began in 2002 was designed to evaluate such initiatives. Four waves of the ITC survey, 2002–2005 are used in this study. The implementation of the EU ban on light and mild brand descriptors in the UK resulted in a gradual removal of packs with "light" descriptors from packs. Implementation occurred during the second wave of data collection in the ITC survey in 2003 leading to the final day for implementation a couple of days after the survey was completed. However, the large mass media campaign to explain the change happened shortly after surveying for wave 2 was complete. In the 18 months preceding formal implementation there was publicity in the UK about the decision of the EU and its implications. Between 2001 and 2005 there was also publicity about the "lights" issue in the other countries covered by the ITC survey. In Canada the issue of the deceptiveness of "light" descriptors achieved high visibility prior when the Federal government announced its intention to regulate product brand descriptors in 2001. In the US the National Cancer Institute (NCI) issued its monograph on light cigarettes in 2001 and this was followed by several high profile lawsuits against cigarette manufacturers for their marketing of so-called light cigarettes. In Australia in 2005 the Australian Competition and Consumer Commission (the government regulatory agency) published a finding that "light" and "mild" descriptors were misleading, resulting in these terms being starting to be removed during wave 4.[16]

In this study, we test the hypothesis that the policy banning "light" and "mild" brand descriptors resulted in a greater and sustained reduction in beliefs about the benefits of light cigarettes among UK smokers relative to their counterparts in the other countries surveyed that were unaffected by the ban, and attempt to interpret the results in terms of the relative contribution of the policy itself and of associated public education.

## METHODS

### Sample and data collection procedures

The data for this analysis come from the first four waves of the ITC Four-Country survey. Respondents were aged ≥18 years, had smoked at least 100 cigarettes lifetime and at least once in the past 30 days at recruitment. A full description of the ITC methodology and survey rates, including comparisons with national benchmarks for the early waves, can be found in Thompson et al.[17] Briefly, the ITC cohort was constructed from probability sampling methods (random-digit dialling methods from list-assisted phone numbers) from the population of each country within strata defined by geographic region and community size. The cohort was followed up yearly and a small replenishment sample was obtained at each subsequent

wave to replenish those lost due to attrition using the same sampling protocol. The baseline wave began in October 2002 and completed in December 2002 (prior to the UK ban). Wave 2 data collection was undertaken between May and September 2003 (coinciding with a period when brands were appearing without the "light" terms in the UK ban, but just before the public education campaign began), whereas wave 3 was between June and December, 2004 and wave 4 was between October 2005 and January 2006 (approximately 1 and 2 years after the UK ban, respectively). Wave 4 occurred during the period over which the terms began to be removed from packs in Australia.

Figure 2 indicates the survey dates and sample sizes for each wave. The samples from all four countries are broadly representative of their respective populations, being recruited from random digit dialling. The demographic profile of the samples for each country can be found in table 1. Smokers have similar characteristics in the four countries.

### ITC survey measures

The ITC survey is standardised across the four countries with respondents asked the same questions, with only minor variations in colloquial speech or usual reference. Of relevance for this paper is that the term "mild" is used more often in Australia when referring to cigarette strength, while the term "light" is used more in the other countries. The ITC survey is about 45 min long and includes questions about self-reported smoking behaviour, including measures of dependence (eg, time to first cigarette, cigarettes per day and perceived addiction), quit history, brand information and key psychosocial measures such as intentions to quit, perceived risk and attitudes towards tobacco use. Also included are demographic questions, including age, sex, income, education and an index of minority status (ethnicity or, in Australia, language spoken at home).

Three questions were used to measure smokers' beliefs about "light/mild" cigarettes. They were prefaced by a statement that the term "lights" was being used to refer to cigarettes that were being promoted with terms such as light, mild or low in tar. The questions were: (1) "light cigarettes are less harmful than regular cigarettes" (less harm), (2) "smokers of light cigarettes take in less tar than smokers of regular cigarettes" (less tar) and (3) "light cigarettes make it easier to quit smoking" (easier to quit). Respondents were asked to indicate their agreement with each statement on a five-point scale ranging from strongly agree to strongly disagree. For the purposes of analyses, these three items were combined into a scale, the lights benefit scale (LBS) reported previously by Borland et al.[6] which had been shown to have an acceptable internal consistency (Cronbach $\alpha = 0.69$). Smokers were also asked to rate how much they agreed with the statement: "light cigarettes are smoother on your throat and chest than regular cigarettes" (smoother).

### Statistical analyses

The analyses were conducted using Stata V.8 (Stata, College Station, Texas, USA). The current analysis included 15 450 unique respondents who provided complete information for at least one of the four waves. Mean estimates were computed on weighted data. In order to take into account the correlated nature of the longitudinal data, we used generalised estimating equations (GEE) to compute parameter estimates.[18] We assumed a working correlation structure that is unstructured given the large sample and used robust variance to compute the p values for the parameter estimates.[19] In the multiple regression

**Figure 1** The UK public education, which coincided with the abolition of light mild descriptors. Source: Cancer Research UK internal report to the UK Government, November 2004.

Media: television; radio; online; press; print and PR.

Budget: total £2.4 million, of which £1.7 million went to buying TV space

Key objectives:

- To see a 5% increase from pre to post survey in the number of respondents saying that there is "no difference" between smoking low tar cigarettes and regular cigarettes and agreeing with the statement, "smokers of light, mild of low tar cigarettes take in less tar than smokers of regular cigarettes".

- To achieve 55% proven recall amongst respondents in the post campaign survey.

- To see a 3% increase from pre to post survey in the number of respondents who intend to give up smoking within the next month.

1. Target audience: smokers of low tar brands (typically ABC1 (C2) 25–44 year olds, with a skew towards women)

2. Creative theme: low tar cigarettes are as deadly as any other, whatever name they are given. The copy read: "A nice name doesn't make something less deadly. If you smoke low tar, light or mild cigarettes you will inhale just as much tar and nicotine as from regular cigarettes. Low tar cigarettes: death repackaged"
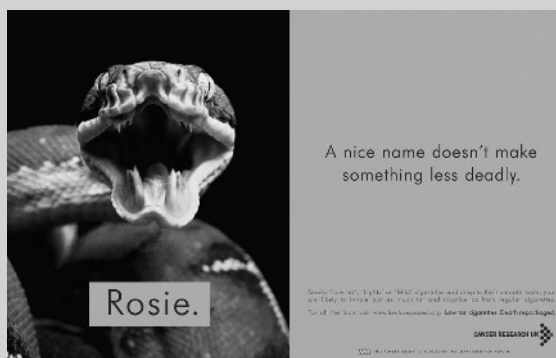


3. Campaign tracking: according to the repeat cross-sectional survey done before and after the campaign with 1000 of the target group the campaign more than achieved its objectives. Attitudes towards low tar cigarettes had changed by 16% and 10% in the desired direction and prompted recall reached 76%.

analysis, we tested for the effect of country, wave and their interaction on level of endorsement of light beliefs. The interaction between country and wave provided a formal test of whether the pattern of change in perceptions over time in UK was significantly different from that of the other comparison countries. In each of the models, we included the following invariant control variables reported at baseline wave (age, sex, education, ethnicity, income and reported endorsement of light beliefs) and also the following time-varying covariates reported at each wave (cigarettes per day, smoking status, recentness since quitting and belief that filter reduces harm). The GEE models also allow us to control for time in survey (or resurveying) effects as we had a replenishment sample at each wave as well as the continuing cohort.

**RESULTS**

Figure 3 presents the mean level of endorsement of three-item LBS by smokers in each country measured across four survey waves. At baseline (wave 1), UK smokers were significantly more likely to endorse the beliefs about health benefit of light cigarettes (69.5% endorsed at least one of the three items) compared to smokers from the other three countries (Australia, 55.1%; USA 51% and Canada, 42.9%; Borland *et al*)[6] the

differences in the scaled scores are highly significant (table 2). The multivariate analysis revealed that over the four waves UK smokers were more likely to hold these misperceptions, that the beliefs changes over waves, declining to a minimum at wave 3 with some increase to wave 4, and that there was a significant wave by country interaction, reflecting different trends across the four countries. At wave 4, percentages endorsing at least one of the three beliefs were UK, 58.0%; Australia, 47.9%, USA, 42.3% and Canada, 39.1%. Overall, females were less likely to hold these beliefs (p<0.001). We consider the country by year interactions in detail (see table 2 for effect sizes). The decline in LBS scores in the UK following the EU ban on "light" and "mild" descriptors was significantly greater than those in the other countries in the year following the ban (at wave 3), but by wave 4, there was some recovery in these misperceptions, such that the magnitude of the reduction in the LBS scores was equivalent to those in the USA over the same time period. In Canada, which had the lowest LBS scores to start with, there was no clear trend in beliefs over the 4 years. In Australia, there was no evidence of a trend until wave 4, where the decline could be a function of the publicity and early removal of terms in that country just before and during wave 4.

**Figure 2** Surveying date and sample size for each wave of the International Tobacco Control (ITC) Four-Country Survey.
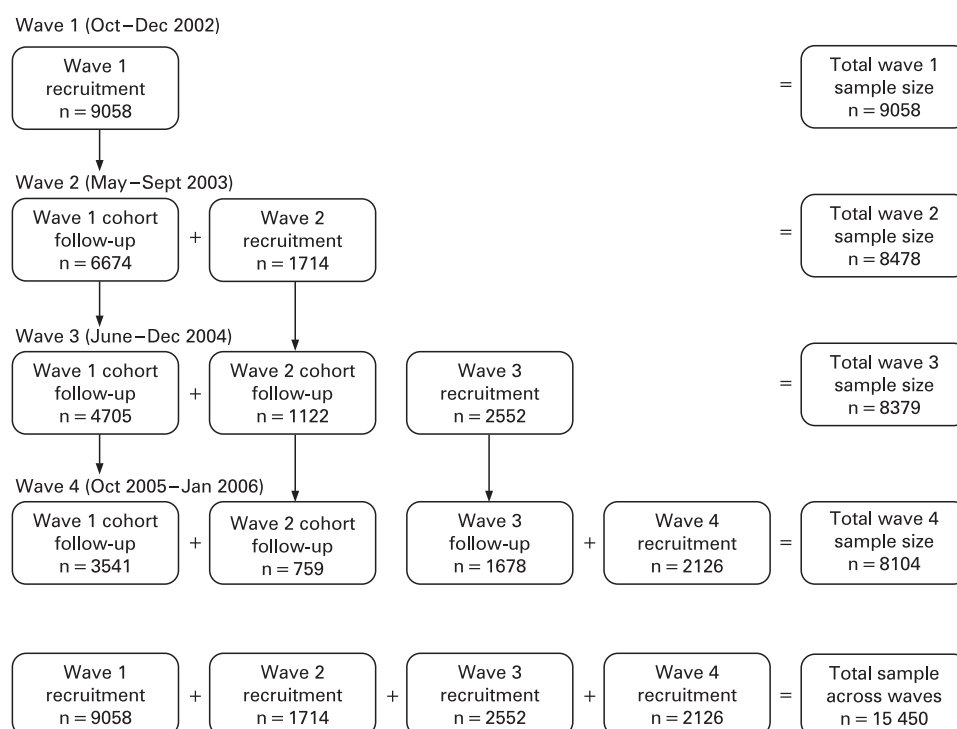


We conducted parallel analyses (data available from first author on request), using each of the three items in the LBS as separate measures and found essentially the same results. The effects were most clear for the belief about "lights having less tar" and "lights being less harmful", and less so for "lights make quitting easier".

Figure 4 shows results for the belief that light cigarettes are smoother on the throat for each country and survey wave. The majority of smokers in all countries endorse the idea that light cigarettes are smoother on the throat than regular cigarettes. At baseline the mean estimate in this belief in UK was not

significantly different from that of US and Australia (3.38 vs 3.43 and 3.40, respectively), but was significantly higher than that of Canada (3.38 vs 3.15, p<0.001). The belief that light cigarettes are smoother on the throat declined slightly in all countries over the subsequent survey waves. The overall change observed in the UK was no different to that observed in the other countries, although there was a temporary effect at wave 3.

We also explored whether or not smoking a cigarette labelled "light" was related to beliefs about smoking light cigarettes and changes in beliefs overtime. We limited this analysis only to subjects recruited at wave 1 because the product labelling

**Table 1** Characteristics of adult smokers in the sample (n = 15 450)

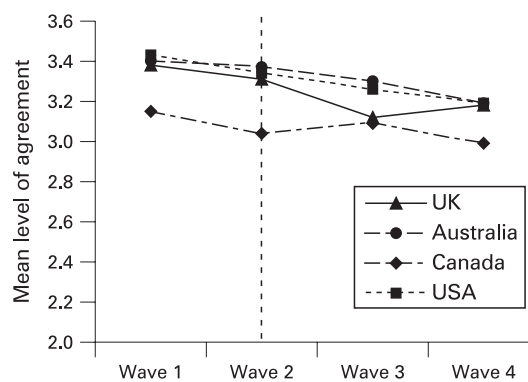|  | Canada, n = 3795 | USA, n = 4453 | Australia, n = 3457 | UK, n = 3745 |
|---|---|---|---|---|
| Age (%, years): |  |  |  |  |
| 18–24 | 15.5 | 14.6 | 16.8 | 9.1 |
| 25–39 | 32.3 | 29.8 | 37.1 | 33.6 |
| 40–54 | 35.4 | 35.2 | 32.3 | 33.9 |
| 55+ | 16.8 | 20.5 | 13.7 | 23.4 |
| Sex, male (%) | 45.6 | 43.9 | 47.3 | 43.9 |
| Education (%): |  |  |  |  |
| Low | 46.9 | 44.6 | 65.6 | 62.9 |
| Medium | 39.1 | 40.6 | 20.5 | 24.2 |
| High | 13.9 | 14.8 | 13.9 | 12.8 |
| Identified minority group (%) | 11.3 | 22.2 | 13.3 | 4.9 |
| Cigarettes per day (%) |  |  |  |  |
| 1–10 | 31.8 | 32.7 | 31.5 | 30.0 |
| 11–20 | 42.6 | 45.1 | 39.3 | 53.7 |
| 21–30 | 21.3 | 13.1 | 22.1 | 11.5 |
| 31+ | 4.3 | 9.0 | 7.1 | 4.8 |
| Cohort (n): |  |  |  |  |
| Wave 1 | 2214 | 2138 | 2305 | 2401 |
| Wave 2 | 517 | 684 | 258 | 255 |
| Wave 3 | 545 | 889 | 532 | 586 |
| Wave 4 | 519 | 742 | 362 | 503 |

Percentages are based on unweighted data.
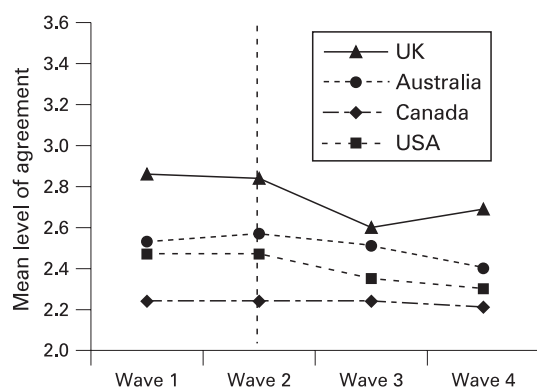
**Figure 3** Mean (weighted) level of endorsement of beliefs about health benefit of light cigarettes. The vertical dotted line indicates the date the ban on light brand descriptors took effect in UK.



**Figure 4** Mean (weighted) level of endorsement of beliefs about light cigarettes being smoother on the throat. The vertical dotted line indicates the date the ban on light brand descriptors took effect in UK.

changes in the UK (and Australia in subsequent waves) meant that it was difficult to determine exactly what sort of cigarette was being smoked where the descriptors were absent. We found no evidence of an interaction between smoking "lights" at wave 1 and the changes in beliefs, although those who said they were "light" smokers were more likely to hold the misperceptions (p<0.001). We also looked at brand switching for health reasons at waves 2 and 3 among "non-light" smokers at wave 1, and found no evidence of reduced shifting in the UK relative to any of the other countries.

## DISCUSSION

Two key findings emerge from this study. Firstly, a sizeable percentage of smokers in all four countries continue to believe that so-called low tar (light) cigarettes offer a relative health advantage over higher tar (regular) cigarettes, despite the efforts that have been made to convey the current expert consensus that they do not. Secondly, while the proportion of smokers holding these beliefs reduced in the UK following the ban on misleading descriptors, the change in beliefs was comparable in the US where there had been no policy change.

The ban on "light" and associated descriptors has not led the tobacco companies to remove the products they previously marketed under these terms; they have simply found new ways to label them. The tobacco companies now use a mixture of alternative terms (eg, smooth, fine, refined, ultimate) and/or colour differentiation on packs to help smokers identify these products. In the UK, Marlboro Lights became Marlboro Gold, Embassy Mild became Embassy Blue and Silk Cut Ultra became Silk Cut Smooth.[20] The same thing

has happened in other countries when similar restrictions were introduced.[14] Tobacco retailers also frequently provide smokers with information as to which new descriptor relates to which old product when the labelling changes. In addition, tar, nicotine and carbon monoxide yields as measured by machine tests have remained on cigarette packs in the UK after the EU ban on "light" and "mild" descriptors. These yield figures also strongly suggest to smokers that some cigarettes are less harmful than others.

### What this paper adds

► This paper is the first evaluation of a ban on misleading use of descriptors on cigarette packs. As such it provides important information on the implementation of aspects of Article 11 of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC).
► The findings from this study suggest that bans on brand descriptors such as "light" and "mild" are insufficient to markedly change false beliefs held by smokers about low tar cigarettes and will need to be supplemented by bans on other misleading product descriptors such as providing yield numbers on packs, and the use of reassuring terms, images and colouring in product marketing.
► Policy makers and researchers must also consider the role that the less harsh taste of some cigarettes has in influencing smokers' beliefs about relative harms.

**Table 2** Regression coefficients showing main effect of country (at baseline and across waves) and interaction between country and wave on reported endorsement of light beliefs

| | Baseline country differences (wave 1) | Overall country effect (across four waves) | Effect sizes (compared with wave 1)† | | |
|---|---|---|---|---|---|
| | | | Wave 2 | Wave 3 | Wave 4 |
| Canada | −0.476*** | −0.087*** | 0.007 | 0.040** | 0.001 |
| US | −0.272*** | −0.051*** | 0.033* | −0.035* | −0.103*** |
| Australia | −0.207*** | −0.027*** | 0.042* | 0.010 | −0.069*** |
| UK | Reference | Reference | 0.033* | −0.154** | −0.050** |

Regression coefficients were adjusted for age, sex, ethnicity, baseline income, baseline education, cigarette per day at each wave, smoking status at each wave, recentness since quitting at each wave, belief that filter reduces harm at each wave, and also baseline belief about harmfulness of light cigarettes. Main effect for country, wave (not shown in table) and their interaction was significant at p<0.001;
*p<0.05; **p<0.01; ***p<0.001.
†A negative coefficient indicates a decline, while a positive coefficient indicates an increase, in level of endorsement of the light beliefs (relative to that of the baseline wave).

The rebound in incorrect beliefs we found in the UK at wave 4 is hard to explain. We know of no industry counter strategy beyond the introduction of the new terms, which happened at implementation, not some time later. The most plausible explanation is that it is a rebound that occurred once the publicity of the information campaign had died down, suggesting some untouched underlying mechanism supporting the beliefs.

One possible mechanism is that cigarettes previously labelled as ''lights'' tended to taste less harsh. The harshness of the smoke, and thus, the degree of ''lightness'' of the cigarette, is routinely manipulated by cigarette manufacturers using ventilated filters and technologies such as flavour additives.[11 14] Shiffman and colleagues[3] have shown that smokers rely on perceptions about the harshness of cigarettes to infer that light cigarettes are less harmful. Most of the smokers in our sample thought that light cigarettes are smoother on the throat and chest than regular cigarettes, and this correlated strongly with beliefs about lower health risks associated with light cigarettes. The use of the term ''light'', which is well established in the public mind as being used to indicate healthier food products, would act to reinforce experience-based beliefs. However, while the experienced differences remain, it is likely that such products will continue to be seen as less harmful. Thus while terms like lights may have reinforced experience-based beliefs, it is unlikely that any terms could completely eliminate the beliefs. The comparable declines in belief in the relative health benefits of ''lights'' in the UK and the US by wave 4 suggest that bans on use of the misleading terms alone is not enough to eliminate the misperceptions. Indeed, a closer look at the data suggests that publicity about the issue might have been a more important influence in the declines that were achieved. In the UK, the trend over time shows that the biggest decline in beliefs came in the year after the policy was launched, the period of the high profile television advertising campaign (fig 1) explaining the new law and emphasising that all cigarettes, whatever their labels, are equally dangerous. This campaign did not persist, and the rebound in misperceptions about so-called low tar (light) cigarettes in the UK is thus more consistent with the initial reduction in these misperceptions being due to combination of the policy and public education campaign, rather than just the ban on brand descriptors alone, something we would expect to have a sustained effect as the ban on the terms has persisted.

In the USA, where there was an equivalent reduction in misperceptions during the course of the study, there were several widely publicised court cases against the tobacco industry for marketing cigarettes labelled as light. While the level of public awareness of these cases may not have reached the levels of public awareness of a dedicated campaign, as in the UK, the issue was certainly in the public arena. In addition, some manufacturers in the USA voluntarily added labels to their advertising and packs warning smokers that light cigarettes were not safer than regular ones.[7] As we have no precise measures of the extent or direct impact of these activities, we can only infer possible effects of public activity, because we can think of no other plausible explanation for systematic reductions in public misperceptions about so-called light cigarettes.

It is notable that we found no evidence of a reduction in misperceptions in the UK around implementation (wave 2), but did find a reduction in Australia (wave 4). As far as we can tell, the removal of packs branded with terms such as ''light'' was further advanced in the UK than Australia at the comparable surveys. This is more evidence that the removal of the terms by itself has little direct impact on beliefs. The slow onset of effects

in the UK weakens the case that general public debate about an issue (as distinct from targeted public education designed to challenge beliefs) is the main cause of the reductions in misperceptions, because there was debate in the UK media in the period before wave 2. However, we are at a loss to explain the effect, unless it also relates to public discussion of the utility of yield information (which identifies nominally low tar cigarettes), something that was being promoted in the UK, as a lead in to reducing the upper limits on yields (something that occurred from early 2004), while in Australia the limited public debate was around removal of the yield information as misleading.

Based on our findings, we conclude that simply removing misleading terms from packaging is not a major factor in reducing misconceptions about ''light'' cigarettes, at least up to 2 years after implementation. It remains possible that the effects will be greater in the longer term as smokers forget (and new smokers never learn) that less harsh-tasting cigarettes used to be called ''lights''. It seems likely that at least part of the misconception about ''lights'' is the result of sensory perceptions resulting from the easy draw and cooler feel associated with heavily ventilated cigarettes which in turn reinforces the perception in the smokers' mind their cigarettes, these so-called low tar cigarettes, are less harmful relative to other so-called higher tar less ventilated cigarettes. Some is also likely to be due to the use of yield figures on packs, which bear no clear relationship to human exposures. It is important to gain a more complete understanding of the methods the tobacco industry uses to convey to consumers the sense that some brands are somehow less dangerous than others, especially those that are independent of any real differences in harmfulness, and to counteract those methods through the formulation of effective policies and informational strategies.

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# The lighter side



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