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 reports findings of an evaluation that examined how beliefs of smokers in the United Kingdom (UK) were affected by the removal of light and mild brand descriptors which came into effect on September 30, 2003 for Member States of the European Union (EU).

Participants: The data come from the first 4 waves (2002-2005) of the International Tobacco Control Policy Evaluation (ITC) 4 Country Survey, an annual cohort telephone survey of adult smokers in Canada, United States, United Kingdom, and Australia (15450 individual cases).

Design: The UK ban on misleading descriptors occurred around the 2nd wave of data collection in the ITC survey, permitting us to compare beliefs about light cigarettes among adult smokers in the UK both before and after the ban, with beliefs in three other countries unaffected by the ban.

Results: 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. There was a substantial decline in reported beliefs about the benefits of Lights in the UK following the policy change and an associated public information campaign, but by 2006 (i.e., Wave 4), these beliefs rebounded slightly and the change in beliefs was no greater than in the United States, where there was no policy change.

Conclusion: We cannot conclude that the policy which required removal of the misleading labels has been effective in changing beliefs about light cigarettes. What seems apparent is that efforts to correct decades of consumer misperceptions about light cigarettes will require more than simply removing brand descriptors.

What this paper adds

This paper is the first evaluation of a ban on misleading use of descriptors such as ‘light’ and ‘mild’ on cigarette packs. As such it provides important information as to the value of aspects of Article 11 of the FCTC.

Our findings strongly suggest that bans on such terms are neither sufficient to eliminate false beliefs, nor do they produce greater effects than non-regulatory measures. The less harsh taste of some cigarettes is likely to be crucial to maintaining beliefs that these cigarettes are less harmful.

INTRODUCTION

Tobacco manufacturers have incorporated a variety of terms into the names of their cigarette brands as a form of advertising (Kozlowski & Pilliteri, 2001; Pollay & Dewhirst, 2002). Words such as "light" and "mild" have been used by tobacco companies for decades to distinguish different types of cigarettes, typically those with a lower machine tested yield of tar and a weaker taste which produces less irritation to the throat and chest when smoked (Shiffman et al, 2001). Studies have found that many smokers erroneously believe that cigarettes labeled "light" actually deliver less tar to smokers and/or are less harmful, and thus "healthier" than regular cigarettes (Cohen, 1996; Kozlowski et al., 1998; Shiffman et al., 2001; Borland et al., 2004; Cummings et al., 2004; Hamilton et al, 2004). 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 continue to smoke under the false belief that they are reducing their health risk by smoking a light brand instead of a full flavour alternative brand (NCI Monograph 13). The wide scale adoption by cigarette manufacturers of filter ventilation and other technologies that facilitate smoker compensation, has ensured that cigarettes labeled "light" or variants of that term, actually deliver levels of tar and nicotine to smokers comparable to "full-flavor" cigarettes (Jarvis et al., 2001; Kozlowski & O'Connor, 2002; Hammond et al., 2005, 2006, King and Borland, 2004; NCI Monograph 13).

To date, attempts to address the problem of smokers' misbeliefs about "Light" cigarettes have focussed on the misleading nature of the brand descriptors . Article 11 of the World Health Organization's Framework Convention on Tobacco Control (FCTC) states that ratifying countries will enact laws to ensure that "tobacco product packaging and labeling 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 labeled "light" deliver less tar to smokers and 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 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', 'mild', officially took effect in September 2003. In the UK it was accompanied by a high profile television campaign explaining the policy and highlighting the equal dangers of all cigarette brands and brand variants. This provided us with an opportunity to evaluate how smokers in the United Kingdom 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, United States, and

Australia (Fong et al., 2006) that began in 2002 was designed to evaluate such initiatives. Four waves of the 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. Early implementation occurred during the second wave of data collection in the ITC survey in 2003, although the official implementation date and a 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 considerable publicity in the UK about the decision of the EU and its implications. In addition, there was a concerted public education campaign in September 2003 to coincide with the introduction of the policy (see Figure 4). Between 2001 and 2005 there was also considerable 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 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.

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.

METHOD

Sample and data Collection Procedures

The data for this analysis come from the first four waves of the ITC four-country cohort study. Respondents in the ITC Four Country Survey 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, have been reported by Thompson et al. (2006). Briefly, the ITC cohort was constructed from probability sampling methods (random-digit dialing 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 (pre-UK ban). Wave 2 data collection was undertaken between May and September 2003 (coinciding with a period when some brands were appearing without the 'light' terms in the UK ban), whereas Wave 3 was between June and December, 2004 and Wave 4 was between September and December, 2005 (approximately 1 and 2 years post-UK ban respectively). Wave 4 occurred during the period over which the terms began to be removed from packs in Australia.

Figure 1 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 dialing. The demographic profile of the samples for each country can be found in Table 1. Smokers have similar characteristics in the four countries.

[Insert Figure 1 and Table 1 about here]

ITC Survey Measures

The ITC survey is standardized 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 minutes long and includes questions about self-reported smoking behavior, including measures of dependency (e.g., 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 5-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., (2004) which had been shown to have an acceptable internal consistency (Cronbach's alpha=.69). Smokers were also asked to

rate how much they agreed with the statement that “Light cigarettes are smoother on your throat and chest than regular cigarettes” (Smoother).

Statistical Analyses

The analyses were conducted using Stata Version 8. 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 generalized estimating equations (GEE) to compute parameter estimates (Liang & Zeger, 1986). 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 (Hanley, Negassa, Edwardes, & Forrester, 2003). In the multiple regression 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, quit recency, 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 2 presents the mean level of endorsement of 3-item light beliefs scale (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 compared to smokers from the other three countries (these differences are highly significant, see Table 2). The multivariate analysis revealed that over the 4 waves UK smokers were more likely to hold these misbeliefs, 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. We consider these 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 misbeliefs, such that the magnitude of the reduction in the LBS scores was equivalent to those in the United States 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 both the publicity and early removal of terms in that country just before and during wave 4.

We conducted parallel analyses (data available from first author on request), using each of the 3 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 3 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, $p<.001$). The belief that light cigarettes are smoother on the throat declined slightly in all countries over the subsequent survey waves. The change observed in the UK was no different to that observed in the other countries.

We also explored whether or not smoking a cigarette labeled "light" would influence beliefs about smoking light cigarettes and changes in beliefs overtime. We limited this analysis only to subjects recruited at wave 1 because the product labeling 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" and the changes in beliefs, although those who said they were 'light' smokers were more likely to hold the misperceptions ($p<.001$). 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. First, a sizeable percentage of smokers in all four countries continue to believe that light cigarettes offer a relative health advantage. Second, 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 was no policy change.

The ban on "light" and associated descriptors has not led the tobacco companies to remove the products they marketed under these terms. Instead they have found new

ways to label them. They now use a mixture of alternative terms (e.g., smooth, fine, refined, ultimate) and/or colour differentiation on packs to help smokers identify these products. In the UK, for instance, Marlboro Lights became Marlboro Gold, Embassy Mild became Embassy Blue and Silk Cut Ultra became Silk Cut Smooth (Devlin et al., 2003). The same thing has happened in other countries when similar restrictions were introduced (King and Borland, 2005). 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 remained on cigarette packs in the UK after the EU ban on 'light/mild' descriptors. These yields may also have suggested to smokers that lower yielding cigarettes were less harmful.

Shiffman and colleagues (2001) 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 harshness of 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 (Kozlowski & O'Connor, 2002; King and Borland, 2004). The use of "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 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 falls in beliefs 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 an 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. Over the implementation period there was a high profile mass media advertising campaign (see Figure 4) explaining the new law and emphasizing that all cigarettes, whatever their labels, are equally dangerous. However this campaign was limited to the launch of the policy, with a reminder burst a few months later - it did not persist beyond the first year of implementation. The rebound in misbeliefs in the UK is thus more consistent with the initial reduction in misbeliefs 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..

Consistent with this explanation, in the United States, where there was equivalent reduction in misbeliefs during the course of the study, there were several widely publicized court cases against the tobacco industry for marketing cigarettes labeled as light. In addition, some manufacturers voluntarily added labels to their advertising and packs warning smokers that light cigarettes were not safer than regular ones (Cummings et al, 2004).

It is notable that we found no evidence of a reduction in misbeliefs in the UK around implementation (Wave 2), but did find a reduction in Australia (Wave 4). This might be because the Australian implementation was more advanced than in the UK when we surveyed (although as far as we can tell there was little difference), and/or different levels of publicity before and during our survey period (but, we have no good measure of this). 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 misbeliefs, 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.

We draw three conclusions from this study. Firstly, it is apparent that simply removing misleading terms from packaging is not a major factor in reducing misconceptions about "light" cigarettes, at least up to two 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". However, we think it unlikely while the taste cues remain, and smokers learn to associate these with new descriptors. Second, publicity to reduce pro-light perceptions should also be part of the solution; we have inferred, but cannot demonstrate in these data, that public information is responsible for most of the observed changes. Third, we believe that the at least part of the problem will remain while some cigarettes, which do not deliver lower health risks, taste less harsh and thus are experienced by smokers as being less harmful.

Conflicts of Interest: None

Ethical Approval: All waves of the study have received ethical approval from the relevant institutional review or research ethics committee at The Cancer Council Victoria (Australia), Roswell Park Cancer Institute (USA), University of Waterloo (Canada), and University of Strathclyde (UK).

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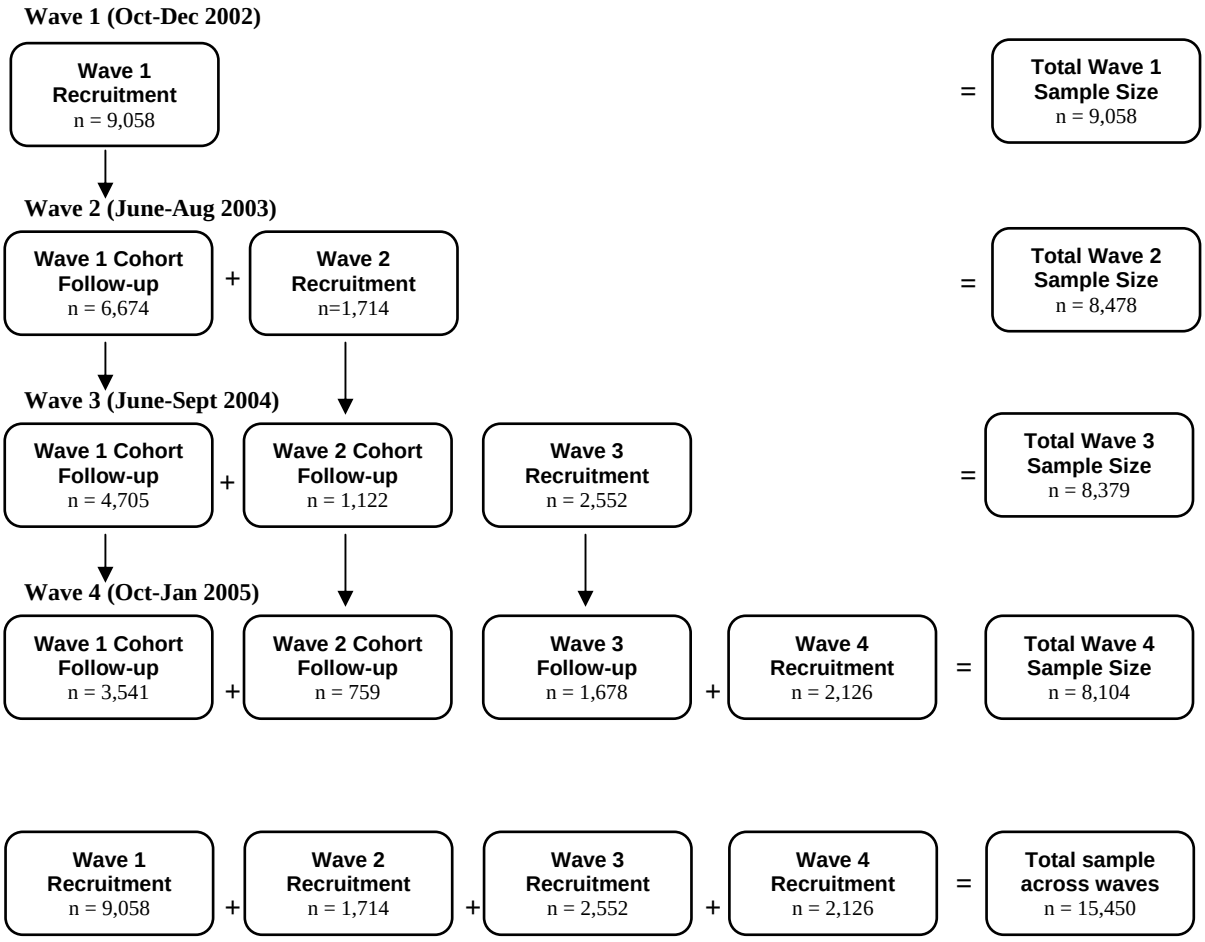

Figure 1. Surveying date and sample size for each wave of the ITC Four-Country Survey.

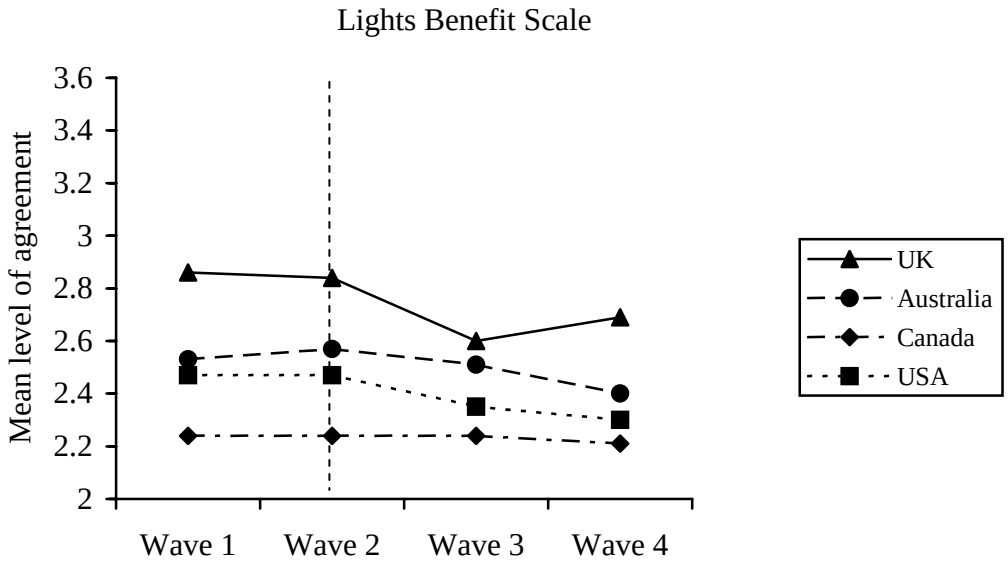

Figure 2. Mean (weighted) level of endorsement of beliefs about health benefit of light cigarettes . The vertical dotted line indicates the date the ban on light brand descriptors took effect in UK.

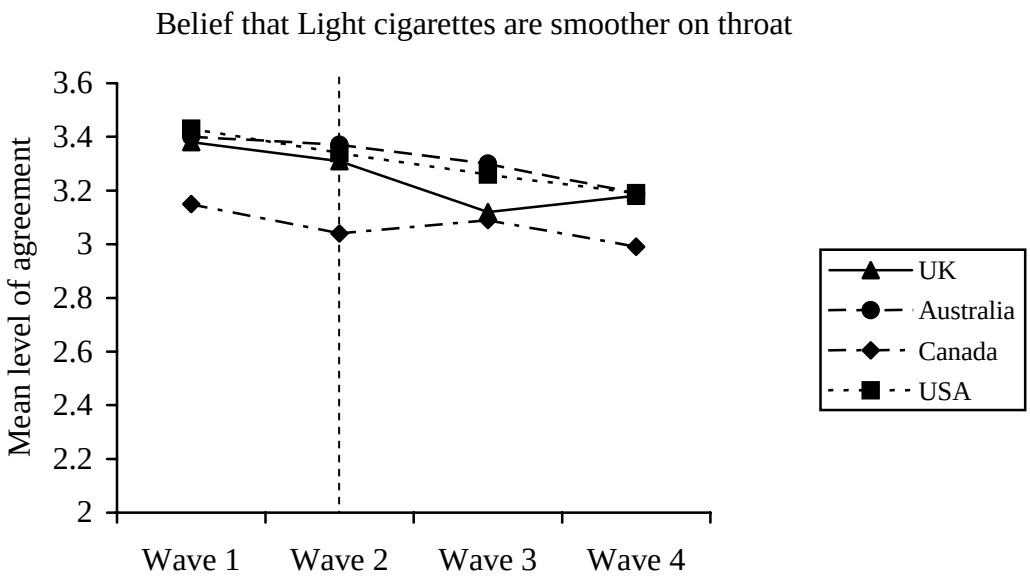

Figure 3. Mean (weighted) level of endorsement of beliefs about light cigarettes being smoother on the throat . The vertical dotted line indicates the date the ban on light brand descriptors took effect in UK.

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

	Canada n=3,795	**US** n=4,453	**Australia** n=3,457	**UK** n=3,745
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 cigs	31.8	32.7	31.5	30.0
11-20 cigs	42.6	45.1	39.3	53.7
21-30 cigs	21.3	13.1	22.1	11.5
31+ cigs	4.3	9.0	7.1	4.8
Cohort (n)				
Wave 1	2,214	2,138	2,305	2,401
Wave 2	517	684	258	255
Wave 3	545	889	532	586
Wave 4	519	742	362	503

NB. Percentages are based on unweighted data.

Table 2. Regression coefficients[a] showing main effect of country (both 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 4 waves)	Effect sizes (compared with Wave 1)[b]		
			Wave 2	Wave 3	Wave 4
Canada	-.476***	-.087***	.007	.040**	.001
US	-.272***	-.051***	.033*	-.035*	-.103***
Australia	-.207***	-.027***	.042*	.010	-.069***
UK	Ref	Ref	.033*	-.154**	-.050**

NB. Main effect for country, wave (not shown in table) and their interaction was significant at p<.001;

* p<.05; ** p<.01; *** p<.001

[a] adjusted for age, sex, ethnicity, baseline income, baseline education, cigarette per day at each wave, smoking status at each wave, quit recency at each wave, belief that filter reduces harm at each wave, and also baseline belief about harmfulness of Light cigarettes.

[b] 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)