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Do smokers in Europe think all cigarettes are equally harmful?

Abraham Brown[1,2], Ann McNeill[2], Ute Mons[3], Romain Guignard[4]

1 Centre for Tobacco Control Research, Institute for Social Marketing, University of Stirling, UK
2 UK Centre for Tobacco Control Studies, Division of Epidemiology and Public Health, University of Nottingham, UK
3 Unit Cancer Prevention and WHO Collaborating Centre for Tobacco Control, German Cancer Research Center (DKFZ), Heidelberg, Germany
4 French Institute for Health Promotion and Health Education (INPES), Saint-Denis, France

Correspondence: Abraham Brown. UK Centre for Tobacco Control Studies, Division of Epidemiology and Public Health, University of Nottingham, and the Centre for Tobacco Control Research, Institute for Social Marketing, University of Stirling, FK9 4LA, UK, T: +44-1786-466457, F: +44-1786-467745, e-mail: a.k.brown@stir.ac.uk

Background: Despite the ban on misleading descriptors such as light or mild cigarettes in Europe, there are still widespread misperceptions of the relative harmfulness of different brands of cigarettes among smokers. This study examined the extent to which smokers in three European countries believed that some cigarette brands are less harmful and why, using data from the International Tobacco Control (ITC) Europe surveys. **Methods:** Cross-sectional analyses were completed among nationally representative samples of 4,956 current smokers (aged $\geq$ 18) from Germany (n = 1,515), France (n = 1,735) and the United Kingdom (n = 1,706) conducted between September 2006 and November 2007. Logistic regression models examined whether outcomes, including beliefs that some cigarettes could be less harmful than others, varied by socio-demographic and country of residence. **Findings:** Around a quarter of smokers in the UK and France, and a third in Germany believed some cigarettes are less harmful than others. Overall, of smokers who falsely believed that some cigarettes are less harmful, 86.3% thought that tar/nicotine yields, 48.7% taste, and 40.4% terms on packs such as 'smooth' or 'ultra' indicated less harmful brands. About a fifth of smokers across all countries chose their brand based on health reasons, and a similar proportion gave tar yields as a reason for choosing brands. **Conclusion**s: Our research suggests that the current European Tobacco Products Directive is inadequate in eliminating misperceptions about the relative risk of brand descriptors on cigarettes. There is therefore an urgent need to protect smokers in Europe from these misperceptions via stronger measures such as plain packaging regulations.

Introduction

The use of misleading brand descriptors on cigarettes, such as 'low-tar', 'light' and 'mild', is now banned in several jurisdictions.[1–3] However, many smokers continue to hold erroneous beliefs that some cigarette brands might be healthier and less addictive than regular brands.[4–7] This is not surprising as evidence suggests that following the descriptor ban tobacco manufacturers have used alternative brand imagery such as new labels and pack colours to mislead health concerned smokers.[4,6,8] Such imagery conveys a set of connotations to help smokers identify lower-tar cigarettes,[9–12] reassures consumers of risk reduction and encourages them to switch brands rather than quit smoking.[13–16]

Survey evidence suggests that consumer perceptions of risk and even taste are directly linked to lower-tar cigarettes.[2,5,6] This is largely because these cigarettes are thought to deliver reductions in tar and nicotine yields and pose less health risks to smokers.[17–20] Nonetheless, the tar and nicotine levels generated under the standard machine testing are unrelated to individual levels of exposure or risk.[3,10,12] Rather dose per cigarette smoked depends more on smoking behaviour than on the standard tar and nicotine yield of cigarettes.[17] Indeed, industry documents show that cigarette manufacturers recognised the deceptiveness of low machine measured yield cigarettes such as 'light' or 'mild' descriptor brands.[4–6,10]

Previous research has showed continued misperceptions among smokers in the UK[6,21] but research on this has not yet been published from other European countries. In this study, we add to this existing literature by comparing the extent to which smokers in the UK, France, and Germany falsely believe that some cigarette brands are less harmful and why, using data from the International Tobacco Control (ITC) Europe surveys. Prior to the study, the European Union (EU) Tobacco Products Directive (2001/37/EC) had been passed in June 2002,[19] which prohibited the use of brand descriptors such as 'light', 'ultra–light' or 'mild' from cigarette packs in all member states including the three study countries.

In both France and the UK, the descriptor ban came into effect in September 2003. In the UK, but not France, this coincided with a mass-media campaign to highlight light brand descriptors as deceptive and deadly, although the campaign was short-lived and declines in misperceptions were not sustained over time.[1] Before this there was a heightened debate surrounding the use of misleading terms on cigarette packs. In Germany, the ban on misleading descriptors was introduced in December 2002, but as a consequence of the transitional arrangements this was delayed until October 2003. Unlike the UK, the implementation of the descriptor ban in Germany was not accompanied by a public education campaign, but there was some debate with regards to the ban after its implementation.

Methods

Procedure

The International Tobacco Control (ITC) Europe Survey is a multi-country cohort study including nationally representative samples of adult smokers aged 18 years or older. Cohort members from the three study countries, i.e. France, Germany, and the UK are recruited by geographically stratified probability sampling (except in France where it is a simple random survey) and surveyed via computer assisted telephone interview (CATI). Participants have smoked at least 100 cigarettes in their lifetime, and at least once in the past 30 days. To replenish those lost to attrition, additional participants were recruited at each wave. A complete description of the ITC Project conceptual framework and methods can be found elsewhere.[22]

In the three countries the survey was conducted after the descriptor ban was introduced (UK and France in September 2003 and Germany in October 2003). In order to permit comparisons of smokers' perceptions of lower–tar cigarettes in the three countries, we have chosen waves occurring at similar times: in France, Wave 1 was conducted between December 2006 and February 2007; in Germany Wave 1 occurred between July and November 2007; and in the UK, survey Wave 5 was conducted between September 2006 and January 2007. Despite the availability of more recent data in the three countries we could not use these for comparisons given that these surveys did not have similar measures of interest.

The study was approved by the Institutional Review Board or Research Ethics Board at the University of Stirling (Scotland), the Open University (UK), the University of Heidelberg (Germany), French Institute for Health Promotion and Health Education (INPES), Saint–Denis (France), and the University of Waterloo (Canada).

Measures

Only current smokers were included in this study. Current smokers were established as respondents who reported 'daily', 'weekly' or 'monthly' smoking.

Indicators of a less harmful cigarette

Respondents indicated whether: 'some types of cigarettes could be less harmful than other types, or are all cigarettes equally harmful' (1= 'some less harmful than others' and 0 = 'all equally harmful'/ 'don't know'). Those who indicated that some types of cigarettes could be less harmful than other types were asked whether: 'the brand you usually smoke might be a little less harmful, no different, or a little more harmful, compared to other cigarette brands?' (1 = 'a little less harmful' and 0 = other, comprising 'no different', 'a little more harmful' and 'don't know'). Those respondents who indicated that some types of cigarettes could be less harmful than other types were also asked: 'which of the following, if any, helps to indicate whether a cigarette brand could be less harmful compared to others (i) the taste of the smoke, (ii) tar/nicotine levels, (iii) smooth/ultra (or in Germany, terms in brand name such as ''silver''), or (iv) something else?' (coded: 1 = yes and 0 = no).

Beliefs related to usual brands

Current smokers were asked if they had a 'regular brand' and if so to state the 'regular brand' they typically smoke. Respondents were then asked to indicate reasons for selecting a particular brand, from the following: tar/nicotine levels, health, taste and satisfaction (more than one response could be indicated). All four responses were coded: 1 = yes and 0 = no.

Tar yield numbers

Respondents were also asked: 'how closely, if at all, are the tar numbers on cigarette packs, related to the amount of tar that smokers take into their bodies?' Responses were coded: 1 = 'closely related' and 'somewhat related' and 0 = other (including 'not related' and 'don't know').

Data analysis

Analyses were conducted using SPSS version 19. A sample of 4,956 respondents comprising current smokers from Germany (n = 1,515), France (n = 1,735), and the UK (n = 1,706) was used in the analyses. All analyses were based on weighted data. Logistic regression models examined correlates of primary outcomes. A standard set of covariates were included in each model: country of residence, age, sex, education, heaviness of smoking index (HSI), and intention to quit.

Results

Table 1 shows sample characteristics of current smokers in the three study countries.

Beliefs that some cigarettes were less harmful

As depicted in table 2, logistic regression analyses were performed to examine whether current smokers' beliefs that some cigarettes could be less harmful varied by country and sample characteristics. Overall, 27.8% of current smokers believed that some cigarettes could be less harmful; but this differed across countries, with 22.4% of current smokers in the UK endorsing beliefs that some brands might be less harmful, compared to 24.3% in France and 36.7% in Germany. Compared to German smokers, UK and French smokers were less likely to hold beliefs that some brands might be less harmful.

Overall, younger smokers aged 18–24 were more likely to endorse beliefs that some brands could be less harmful than those aged 55+ (OR = 1.30, 95% CI = 1.04 – 1.63). Gender differences were also found as males were more likely than females to indicate some cigarettes were less harmful (OR = 1.64, 95% CI = 1.44 – 1.88). Across the countries, smokers with high levels of education overall were more likely to hold such misperceptions than those with low education (OR = 1.67, 95% CI = 1.40 – 1.98). Smokers with higher scores on the heaviness of smoking index were less likely to endorse misperceptions than smokers with lower scores (HSI=3: OR = .69, 95% CI = .57 – .83, and HSI = 5: OR = .66, 95% CI = .45 – .96). No association with intention to quit was found.

Indicators of less harmful cigarettes

Across the countries, for those believing that some cigarettes were less harmful than others, 86.3% believed that tar/nicotine yields were indicative of relative harmfulness (table 3), 48.7% thought taste was an indicator of harm, 40.4% thought smooth or ultra (in France and UK) to be indicative of harm and 30.6% (in Germany) thought some other term was indicative of relative harmfulness. With the exception of Germany, we found significant positive correlations between all of the indicators of harm by country (table 4). For instance, UK smokers who reported that tar/nicotine yields were indicative of relative harmfulness also more frequently thought taste was an indicator of harm.

Comparisons between countries showed that French smokers who believed that some cigarettes were less harmful than others, were less likely to think that tar/nicotine yields were indicative of relative harm than their German counterparts (OR = .66, 95% CI = .45 – .98) (see table 3). There were also socio-demographic differences with respect to age and education level regarding beliefs about tar/nicotine levels (data not shown). Overall, younger smokers were more likely to indicate that tar or nicotine levels were indicative of less harmful cigarettes than older smokers (OR = 2.19, 95% CI = 1.24 – 3.85), whereas those with high level of education were more likely than those with low education to report such misperceptions (OR = 1.81, 95% CI = 1.17 – 2.81).

As table 3 depicts, UK smokers who had believed some cigarettes were less harmful were more likely to hold misperceptions that the terms 'smooth' or 'ultra' were indicative of less harmful cigarettes than French smokers (OR = 1.75, 95% CI = 1.28 – 2.38). Overall, UK smokers were also more likely to report that the taste of cigarettes was an indicator of less harmful cigarettes than German smokers, while French smokers were less likely than their German counterparts to hold these beliefs.

Among those believing that some cigarettes were less harmful than others, the proportion believing that their own cigarette brands were less harmful differed across countries when controlling for other variables: smokers in the UK were more likely to hold such beliefs than those in Germany (OR = 1.99, 95% CI = 1.46 – 2.72).

Table 1 Sample characteristics of current smokers by country

Variables	Germany n = 1515		France n = 1735		United Kingdom n = 1706	
	%	(n)	%	(n)	%	(n)
Age (years)						
18–24	14.9	(226)	13.4	(233)	5.9	(101)
25–39	25.1	(381)	37.2	(645)	27.1	(462)
40–54	40.2	(609)	36.6	(635)	36.9	(630)
55+	19.7	(299)	12.8	(222)	30.1	(513)
Sex						
Female	52.2	(791)	51.8	(898)	57.2	(975)
Male	47.8	(724)	48.2	(837)	42.8	(731)
Education						
Low	22.2	(335)	44.8	(778)	59.2	(1000)
Moderate	37.8	(570)	35.3	(612)	27.0	(456)
High	40.0	(603)	19.8	(343)	13.8	(234)
Cigarettes per day						
1–10	37.3	(564)	52.7	(914)	31.1	(530)
11–20	48.0	(727)	39.8	(690)	53.9	(920)
21–30	11.7	(177)	6.1	(105)	10.5	(179)
31+	3.0	(46)	1.5	(26)	4.5	(77)
Intention to quit (within next 6 months)						
Yes	69.4	(1016)	71.8	(1246)	61.7	(1032)
HSI						
0	23.2	(350)	32.3	(557)	12.4	(209)
1	18.0	(272)	14.8	(255)	10.8	(183)
2	20.7	(312)	19.0	(328)	20.6	(348)
3	22.5	(340)	21.7	(375)	33.0	(559)
4	9.9	(149)	8.7	(151)	15.2	(257)
5	4.3	(65)	2.7	(47)	5.7	(96)
6	1.3	(20)	.8	(14)	2.4	(40)

HSI denotes heaviness of smoking index, with higher values indicating heavier smoking
All percentages are based on unweighted data

Table 2 Geographical, demographic and dependence differences in beliefs about indicators of less harmful cigarettes

	Beliefs that some brands could be less harmful than others				
Variables	**Germany (w1) n = 1515 % endorsed (n)**	**France (w1) n = 1735 % endorsed (n)**	**UK (w5) n = 1706 % endorsed (n)**	**Total n = 4956 % endorsed**	**OR [95% CI]**
Overall	36.7 (556)	24.3 (422)	22.4 (385)	27.8	
UK vs. Germany					.64*** (.54 – .76)
France vs. Germany					.62*** (.52 – .72)
Age (years)					
18–24	40.9 (85)	31.4 (95)	24.7 (57)	32.0	1.30* (1.04 – 1.63)
25–39	35.3 (166)	20.4 (126)	26.1 (159)	26.6	.95 (.78 – 1.15)
40–54	35.6 (195)	24.3 (137)	20.0 (100)	26.8	1.00 (.82 – 1.21)
55+	37.7 (109)	25.7 (64)	18.2 (68)	26.5	ref[a]
Sex					
Female	28.9 (185)	22.1 (170)	16.8 (149)	22.0	ref
Male	42.4 (370)	26.1 (252)	28.4 (236)	32.1	1.64*** (1.44 – 1.88)
Education					
Low	31.6 (107)	21.0 (166)	19.9 (191)	20.4	ref[a]
Moderate	31.1 (173)	26.9 (164)	21.0 (105)	29.9	1.14 (.97 – 1.33)
High	44.2 (269)	27.2 (90)	35.2 (86)	34.8	1.67*** (1.40 – 1.98)
Quit intention (within next 6 months)					
yes	36.6 (377)	25.4 (317)	23.4 (257)	28.2	1.07 (.92 – 1.22)
no	36.4 (159)	22.5 (105)	21.2 (125)	26.1	ref[a]
HSI[b]					
0	43.0 (148)	27.3 (150)	25.1 (54)	31.7	ref[a]
1	35.3 (88)	23.5 (59)	28.9 (59)	29.4	.89 (.72 – 1.10)
2	38.0 (116)	24.2 (79)	21.5 (78)	27.5	.84 (.69 – 1.02)
3	30.5 (111)	23.0 (90)	19.7 (110)	23.7	.69*** (.57 – .83)
4	38.3 (62)	23.2 (35)	22.6 (55)	27.3	.86 (.68 – 1.09)
5	33.3 (21)	13.3 (6)	21.8 (19)	23.2	.66* (.45 – .96)
6	31.6 (6)	21.4 (3)	20.6 (7)	23.5	.71 (.38 – 1.31)

*$P < .05$, **$P < .01$, ***$P < .001$, OR: Odds Ratio, CI: Confidence Interval. All percentages are based on weighted data
a: *ref* denotes reference category
b: *HSI* denotes heaviness of smoking index, with higher values indicating heavier smoking

Table 3 Indicators of less harmful cigarettes among smokers who believed that some cigarettes were less harmful than others

Variables	Germany (wave 1) n = 556 % endorsed [n]	France (wave 1) n = 422 % endorsed [n]	UK (wave 5) n = 385 % endorsed [n]	Total n = 1363 % endorsed	OR [95% CI]
Indicators of less harmful cigarettes					
Tar/nicotine levels					
Overall	88.1 (489)	82.4 (348)	88.5 (340)	86.3	
UK vs. Germany					.88 (.57 – 1.37)
France vs. Germany					.66*(.45 – .98)
Taste					
Overall	43.9 (244)	36.3 (153)	66.1 (254)	48.7	
UK vs. Germany					2.33***(1.74 – 3.12)
France vs. Germany					.67** (.50 – .88)
Smooth/Terms					
Overall	30.6[b] (170)	34.2[a] (144)	46.6[a] (179)	40.4	
UK vs. France					1.75*** (1.28 – 2.38)
Something else					
Overall	31.6 (174)	30.2 (128)	25.5 (97)	29.1	
UK vs. Germany					.87 (.63 – 1.20)
France vs. Germany					1.16 (.86 – 1.56)
Own brand a little less harmful					
Overall	28.2 (143)	24.1 (96)	40.8 (157)	30.7	
UK vs. Germany					1.99*** (1.46 – 2.72)
France vs. Germany					.89 (.64 – 1.23)

*$P < .05$, **$P < .01$, ***$P < .001$. All models include covariates of interest
a: *smooth (or ultra)* as an indicator of less harmful cigarette
b: *terms (such as silver)* as an indicator of less harmful cigarette

Table 4 Correlations between indicators of less harmful cigarettes by country

	Taste	Tar/nicotine levels
UK		
Taste	1.00	
Tar/nicotine levels	.20***	1.00
Smooth[a]	.22***	.14***
France		
Taste	1.00	
Tar/nicotine levels	.11*	1.00
Smooth[a]	.22***	.13**
Germany		
Taste	1.00	
Tar/nicotine levels	.06	1.00
Terms[b]	.15**	.16**

*$P < .05$, **$P < .01$, ***$P < .001$
a: *smooth (or ultra)* as an indicator of less harmful cigarette
b: *terms (such as silver)* as an indicator of less harmful cigarette

Overall, more than three-quarters (80.0%) of smokers think that tar yields are indicative of the tar intake of cigarettes. Compared to German smokers, French and UK smokers were less likely to believe that tar numbers were closely related to tar intake (OR = .38, 95% CI = .31 – .47 and OR = .40, 95% CI = .32 – .49), respectively.

Reasons for choosing brands

As shown in figure 1, the most popular reasons participants gave for selecting the brands they usually smoked were taste and satisfaction. Despite this, over a fifth (21.8%) of participants overall gave health, and 19.5% tar/nicotine yields as reasons for selecting their brands with differences across countries. After adjusting for socio–demographics, comparisons between countries revealed that German and UK smokers overall were more likely than French smokers to state that they chose their brands based on health reasons (OR = 3.16, 95% CI = 1.31 – 7.64 and OR = 2.33, 95% CI = 1.06 – 5.13, respectively). Compared to French smokers brand selection by German smokers was more likely to be based on the tar and nicotine yields (OR = 2.45, 95% CI = 1.06 – 5.69).

Discussion

Despite the ban on misleading descriptors (such as light/mild) in Europe, there are still widespread misperceptions of the relative harmfulness of different brands of cigarettes among smokers in the UK, France and Germany. Overall, just under three out of ten European smokers believed that some cigarettes could be less harmful and we identified some differences by socio–demographic and dependence characteristics. The most perceptible indicator of less harmful cigarettes reported by smokers was tar and nicotine yields (by 86.3%) followed by taste (48.7%) and terms such as smooth (40.4%). For those believing that some cigarettes were less harmful than others, around a quarter of smokers in France and Germany reported that their own cigarettes were less harmful, and 41% held this belief in the UK. About a fifth of smokers across all countries chose their brand based on health reasons, and a similar proportion gave tar yields as a reason for choosing brands.

We found that among those perceiving that some brands are less harmful, nearly nine out of ten smokers, across the three European countries we studied, believed that tar and nicotine yields are an indicator of relative harm and that three out of four smokers thought that tar yields are indicative of their tar intake, despite nearly three decades of research indicating that this is inaccurate.[3,23–25] These findings are consistent with earlier research[17] that found that majority of smokers could not correctly judge the relative tar levels of cigarettes; often underestimated the tar yields of own brands because of brand descriptors such as 'light' and 'mild' that imply lower tar delivery; and smokers were misinformed about the true meaning of tar yield numbers. For this reason there is a consensus among experts that these yields are misleading and should be removed, yet they remain on cigarette packs.[26]

This study is not without limitations. Consistent with both experimental[6,18,27] and survey[5,21] research, there is the tendency to underestimate the prevalence of actual beliefs that lower-tar cigarettes are less harmful. This is partly so, i.e. smokers might report this less when asked because they know that this is not supposed to be, as they are aware of the standard position that the yields from lower-tar brands are no different from regular cigarettes.[4,5,21] Past research that used actual illustrations of cigarette packs reported higher levels of misbeliefs about the

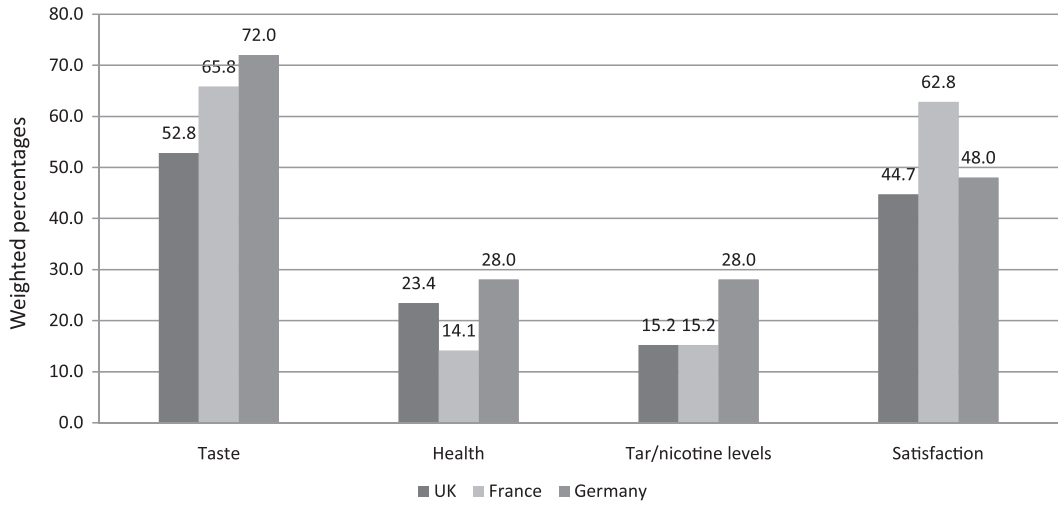

Figure 1 Reasons for selecting cigarette brands

relative harmfulness of cigarettes.[4] Demographic and geographical differences were as well observed which are hard to explain and further research is needed to explore the reasons for these differences.

Given the survey data are from 2006/7, we also assessed responses at more recent waves for France (2008) and Germany (2009) and found very little difference in the measures reported, e.g. of smokers who thought that some cigarettes are less harmful, no significant difference was found among those who believed that tar and nicotine yields indicated less harmful brands than in 2007; however, we found a significant decline in 2009 to 24.2% of German smokers believing that some brands may be less harmful than others. A recent study examining misperceptions about light and mild cigarettes in the UK has found sustained misperceptions up to 2009[21]. We therefore believe that our results showing that over a quarter of smokers continue to hold misperceptions about some cigarette brands some five/six years after the EU directive was implemented are likely to be relevant today.

The current findings therefore provide additional evidence that misperceptions about the relative risk of cigarette brands are relatively widespread among smokers in Europe, despite the existing EU directive, as well as guidelines of the World Health Organization's Framework Convention on Tobacco Control treaty, which recommend restricting potentially misleading information from cigarette packages. This appears likely to be because cigarette manufacturers have introduced a wide range of cigarette brand descriptors to replace previous brands[4,6,15] and the machine-measured yields have remained on packs. Our findings imply that the current EU Tobacco Products Regulation Directive is not protecting smokers in Europe from these misperceptions and that there is an urgent need for better measures to protect smokers. The current revision of the EU directive on tobacco products regulation provides a chance to strengthen the protection of consumers from misperceptions about the harm of tobacco products and should ensure that proposed measures such as plain packaging[24,27,28] are introduced.

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Conflicts of interest: None declared.

Key points

- This paper examined the extent to which smokers in three European countries believed that some cigarette brands are less harmful and why, using cross-sectional data from the ITC Europe surveys.
- Our evaluation found that around a quarter of smokers in the UK and France, and a third in Germany believed some cigarettes are less harmful than others. About a fifth of smokers across all countries chose their brand based on health reasons, and a similar proportion gave tar yields as a reason for choosing brands.
- The current European Tobacco Products Directive is inadequate in eliminating misperceptions about the relative risk of brand descriptors on cigarettes. There is therefore an urgent need for better measures such as plain packaging regulations to protect smokers from these misperceptions.

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