

Adolescents' response to text-only tobacco health warnings: results from the 2008 UK Youth Tobacco Policy Survey

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Background: As of June 2009 most (89%) European Union member states continue to use mandated text-only health warnings on tobacco products. This study assessed adolescent (aged 11–16 years) perceptions of and reactions to these text warnings on cigarette packs in the UK. **Methods:** Data comes from wave five of the cross-sectional Youth Tobacco Policy Survey in 2008. A total of 1401 adolescents were recruited and health warnings were assessed in terms of salience (noticing, reading), comprehension and credibility, memorability (recall), depth of processing (contemplating, discussing) and persuasiveness (put off smoking, make more likely to stop). Smokers were also asked about behavioural compliance (foregoing cigarettes due to warnings, avoidance of warnings) and perceptions of harm from their smoking (to indirectly assess possible knowledge gained from warnings). **Results:** Despite moderately high salience of warnings, memorability and, in particular, depth of processing was quite low, with warnings only sometimes thought about and very rarely discussed. Warnings were however considered comprehensible, credible and a reasonable deterrent for occasional and never smokers. Additionally, a third of regular smokers indicated that, in the last month, warnings had stopped them from having a cigarette. However, only 6% of smokers indicated that warnings made them forego cigarettes frequently. **Conclusion:** Text warnings help to communicate the dangers associated with smoking and, resultantly, prompt a small number of smokers to forgo cigarettes and take action to avoid warnings, but depth of processing is low and warnings do not appear to be achieving their full potential among smokers.

Keywords: adolescents, health warnings, tobacco

Introduction

As tobacco use is a risk factor for six of the eight leading causes of death, globally, and causally implicated in many other diseases,¹ these health risks must be effectively communicated to all who use or consider using tobacco products. To this end, the current 2001 European Tobacco Products Directive (2001/37/EC)² stipulates that health warnings must cover 30–35% of the front and 40–50% of the back of tobacco packs in all European Union (EU) states, a significant increase from the Directive (1992/41/EC)³ it abrogated, where warnings covered 4% of the front and 5% of the back of the packs (countries with multiple languages warnings had to cover 6% of pack front and back). And with bordering these updated warnings cover 43% of the front and 53% of the back of packs.⁴ Article 11 of the Framework Convention on Tobacco Control (FCTC), which includes all EU states as signatories, only specifies that warnings must cover 30% of both principle display areas, although recommending 50% or more.⁵

Both the EU Directive and FCTC allow warnings to be in the form of graphical images, with the extant literature consistently and comprehensively, demonstrating their superiority over textual images.⁶ For instance, comparative research examining Canadian pictorial warnings with text-only warnings from either the UK, the US, Australia or Mexico demonstrate that pictorial warnings increase adult smokers' awareness of warnings, knowledge and credibility of health risks, depth of processing and also cessation behaviours

such as forgoing cigarettes, quit intentions and quitting.^{7–10} Similarly, young people are more likely to read, attend to, recall and discuss pictorial warnings than text warnings,^{11,12} and consider them more persuasive.¹³ Importantly however, as of June 2009, only three of the 27 EU member states had implemented pictorial warnings (Belgium in 2006 and Romania and the UK in 2008) (warnings were introduced into the UK from 1 October 2008, following this study); with 14 countries outside Europe having done likewise. These countries are Australia, Brazil, Brunei, Chile, Canada, Egypt, Hong Kong, Jordan, New Zealand, Panama, Singapore, Thailand, Uruguay and Venezuela. For the remaining 89% of EU states that have not yet adopted pictorial warnings there is no obligation to do so.

Resultantly, most EU residents, for the time being at least, will continue to be exposed to text warnings in isolation and, as such, further assessment of the utility of these warnings is merited. Research examining the impact of the new larger EU text warnings in the period following their implementation demonstrated early promise. For instance, a pan-European qualitative study assessing the new text warnings in seven EU countries found that they increased salience (more likely to be noticed) and depth of processing (stimulated greater thought and discussion) and limited the packs ability to communicate brand value.¹⁴ In Holland the new warnings, which included a smoking quitline number, lead to, at its peak, a 6-fold increase in calls to the quitline.¹⁵ Despite a subsequent decrease in calls, within the study period, calls remained higher than at baseline. Another Dutch study found that within the first year of their introduction one in three adult smokers indicated they preferred to purchase packs without the new warnings, one in seven were less inclined to purchase cigarettes because of the warnings and one in ten reported that the warnings had helped them reduce consumption.¹⁶ And in the UK longitudinal research found that the new warnings increased both salience and depth of processing of messages.¹⁷ However,

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in these studies the novelty of enlarged warnings likely influenced smokers' perceptions and overexposure and wear out, which occurs for all package labelling,¹¹ may have subsequently reduced their effectiveness.^{18,19} Additionally, as with more recent research examining text warnings, the focus tends to be exclusively on adult populations.²⁰

A useful barometer for measuring the success of tobacco warnings is to gauge their ability to capture attention, effectively communicate credible information and through further cognitive processing, persuade the consumer to change their smoking behaviour. According to the marketing,^{21,22} psychology,²³ tobacco,^{11,13,17,24,25} alcohol²⁶ and licit drugs^{27,28} literature, to do this warnings must follow a stage-like progression. The stage model we use in this study is adapted from the multi-country longitudinal International Tobacco Control (ITC) Policy Survey.²⁹ In this model, as with other models, salience is considered a necessary precursor to warning effectiveness, as warnings that are neither noticed nor read can logically yield no benefits. The information contained within the warning must then be considered comprehensible and credible to merit further cognitive processing. It must also be memorable enough to be recalled and thereafter contemplated and discussed. The final stages for warnings, at least for tobacco products, include persuasion and behavioural compliance. The consumer must be persuaded to at least consider reducing consumption, quitting or remaining a non-smoker, and ideally, the warning would be sufficiently powerful as to elicit actual behaviour compliance.

We add to the literature by exploring adolescents' perceptions of and reactions to EU textual tobacco health warnings, an area largely neglected. More specifically, we assess the salience, memorability, cognitive processing, persuasiveness and behavioural compliance of text warnings. As most smokers begin smoking before 18, preventing initiation among youth, and indeed helping young smokers to quit while the addiction is in its relative infancy, is central to successful tobacco control efforts.

Methods

Design

Data comes from wave five of the UK Youth Tobacco Policy Survey (YTPS), conducted in summer 2008 and completed prior to the introduction of pictorial warnings in October 2008. The fieldwork comprised face-to-face interviews conducted in-home, by professional interviewers and a self-completion questionnaire. Conducting the study during the summer months, when most schoolchildren are on holiday, made access to young people easier. Prior to each interview, parental and participant consent were secured. Parents were informed that the main purpose of the study was to assess their child's awareness of the way that products are marketed, in particular, cigarettes. Parents were encouraged to leave the room for the duration of the interview as their presence may influence the responses given by their child. However, in anticipation of circumstances where others may be present at the time of the interview, which was inevitable in some cases given the age of the sample, showcards were used for the face-to-face interviews to maximize privacy and the questionnaires came with a sealed envelope in which they were to be placed after completion. Although the survey was confidential it was not anonymous, given that the young people were interviewed in their own homes and interviewers recorded details of name and address at the time of the interview. Questionnaires were however anonymized at the data processing and analyses stages and findings are considered at an aggregate level.

The face-to-face interview used both structured and open-ended questions to assess; awareness of and involvement with tobacco marketing; awareness, identification and perceptions of various brands of cigarettes; attitudes towards smoking and, at wave five, awareness and perceptions of health warnings. Showcards were used to facilitate communication of question response categories. The self-completion questionnaire was used to garner information on smoking behaviour, sibling, parental and peer smoking and perceptions of the prevalence of smoking. As previously mentioned, administering such sensitive questions in this format increased respondent privacy.

Sample

A cross-sectional sample of 11 to 16 year olds was drawn from UK households by random location quota sampling. To ensure coverage of a range of geographic areas and sociodemographic backgrounds sampling involved a random selection of 92 electoral wards, stratified by Government Office Region and a classification of residential neighbourhoods (ACORN); a geo-demographic system providing demographic and lifestyle profiles of small geographic areas. A quota sample, balanced across sex and age, was obtained in each selected ward. The specific age group targeted and the random location nature of this survey makes it difficult to locate the sample, given that some of the sampled areas have a very low proportion of young people. Given this, it was impractical to record the number of contacts made before doing the interview. For more information on the sampling strategy see elsewhere.^{30,31} A total of 1401 young people were recruited at wave five, see table 1 for respondent characteristics.

Measures

Smoking status

Two items assessed smoking status. 'Never smokers' are those who have never smoked a cigarette, not even a puff; 'occasional smokers' are those who have tried smoking, who used to smoke or who smoke less than one cigarette a week and 'regular smokers' are those who smoke at least one cigarette a week.

General information

Information was obtained on age, sex, social grade (assessed via occupation of the parent with highest income using the National Readership Survey social grading system) and smoking by mother, father, siblings (if any) and close friends.

Salience

Two questions were asked regarding how often, in the last month, young people had noticed warnings on cigarette packs, and read or looked closely at these warnings. Responses were measured on five-point scales: never (1), rarely (2), sometimes (3), often (4) or very often (5). As with most subsequent items, these are valid and reliable measures principally taken from the ITC Policy Survey.^{7,9,17,24,32}

Comprehension and credibility

Level of understanding and credibility (believability and truthfulness) were assessed via three items measured on five-point scales. The items assessed whether warnings were: easy (1)/difficult to understand (5); believable (1)/not believable (5); truthful (1)/not truthful about the health risks of smoking (5). These measures have not been formally validated but have been widely used elsewhere.^{8,33,34}

Table 1 Characteristics of sample by sex, age, social grade and smoking status

	Regular smokers		Occasional smokers		Never smokers		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sex								
Male	68	48	152	49	480	51	700	50
Female	74	52	158	51	466	49	701	50
Total	142	100	310	100	946	100	1401	100
Age								
11	0	0	25	8	228	24	253	18
12	3	2	37	12	179	19	221	16
13	8	6	45	15	174	18	227	16
14	27	19	68	22	149	16	244	17
15	36	26	59	19	118	12	215	15
16	67	48	75	24	99	10	241	17
Total	141	100	309	100	947	100	1401	100
Social grade								
ABC1	22	15	91	29	363	38	476	34
C2DE	120	85	219	71	584	62	925	66
Total	142	100	310	100	947	100	1401	100

All figures in table are weighted.

Memorability

The sample was asked to recall, unaided, information they could remember from text warnings. Responses were positively coded (yes) if they matched one of the themes in the various text warnings. This measure is not formally validated but has been commonly used in past research.^{34,35}

Depth of processing

Three questions were asked regarding how often, in the last month, young people had; thought about what warnings are telling them (with the pack in sight and out of sight), and talked with anyone about warnings; all measured on five-point scales: never (1), rarely (2), sometimes (3), often (4) or very often (5).

Persuasiveness

Two items, assessed on five-point scales, were asked in relation to persuasiveness of warnings: does (1)/does not put me off smoking (5) and make me less (1)/more likely to smoke (5).

Behavioural compliance

Smokers were asked, in the last month, if warnings had stopped them from having a cigarette when they were about to smoke one? Response options were: never (1), once (2), a few times (3) and many times (4). Smokers were also asked whether they avoided looking at warnings by avoiding buying cigarette packets with particular warnings on them; covering the warnings up; putting the packet away and using a cigarette case or some other pack, each with dichotomous responses (yes/no).

Perceived harm from smoking

Smokers were asked about perceived smoking harm with two questions: 'Do you think that your smoking is harming your health?' and 'Do you think that your smoking will harm your health in the future?' Each item had four responses: definitely not (1), probably not (2), probably yes (3) and definitely yes (4).

Statistical analysis

Data were analysed using SPSS (version 15). Descriptive data are weighted for age, sex and social grade. Logistic regressions were conducted on unweighted data to examine differences, by smoking status, in likelihood of noticing and paying attention to warnings, considering warnings comprehensible and credible, recalling warnings, thinking about and discussing warnings and persuasiveness of warnings. Data from the five-point scales were recoded into binary variables to facilitate analyses. Items measured on the five-point 'never' to 'very often' scale were recoded to 'often or very often' (1) versus 'never, rarely or sometimes' (0). Items measured on the five-point semantic scales had codes '1' and '2' recoded to '1' and codes '3', '4' and '5' recoded to '0'. For example 'easy' (1)/difficult to understand (5) was recoded to 'easy' (1) versus 'not easy to understand' (0). The logistic regressions controlled for age, sex, social grade and parental, sibling and close friend smoking. In each regression, regular and occasional smokers were compared to never smokers.

Results

Salience

In the previous month, approximately half (51%) the sample had 'often' or 'very often' noticed warnings on cigarette packs and around a fifth (22%) had 'often' or 'very often' read or looked closely at warnings. Regular smokers were significantly more likely than never smokers to report noticing and attending to warnings: 76% of regular smokers noticed warnings 'often' or 'very often' compared to 46% of never smokers [Adjusted odds ratio (OR)=2.24, 95% confidence interval (CI)=1.30–3.89, $P<0.01$] and 43% of regular smokers 'often' or 'very often' read or looked closely at warnings compared to 19% of never smokers (OR=1.79, 95% CI=1.03–3.12, $P<0.05$) (figure 1).

Comprehension and credibility

The sample considered warnings easy to understand (91%), believable (87%) and truthful in regards to reporting health risks associated with smoking (86%) (figure 2). Regular smokers were less likely than never smokers to think that warnings 'tell the truth about smoking', with 68% regular

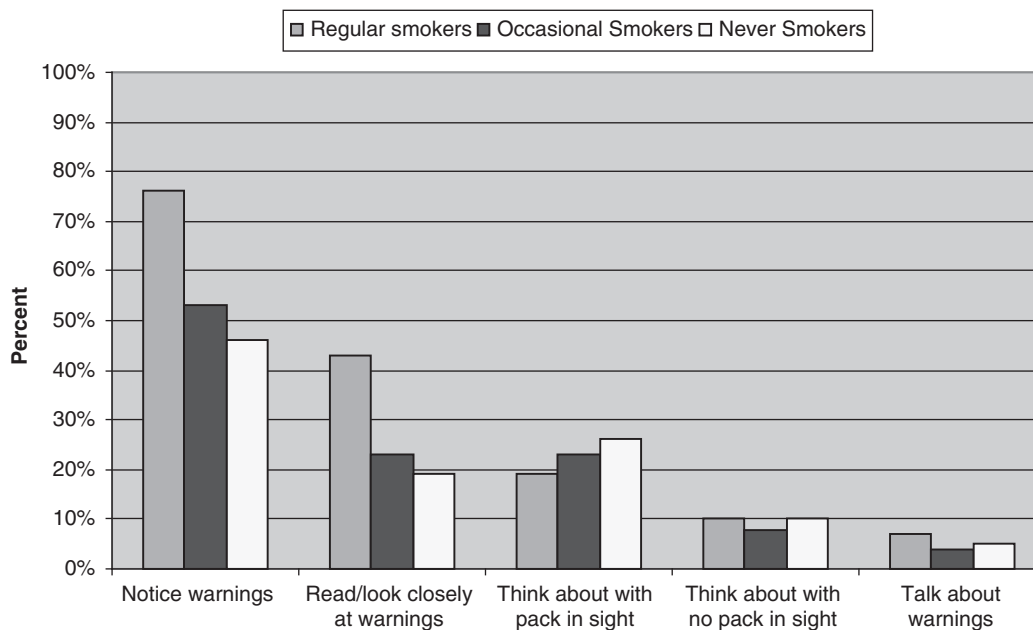


Figure 1 Salience and depth of processing of warnings by smoking status

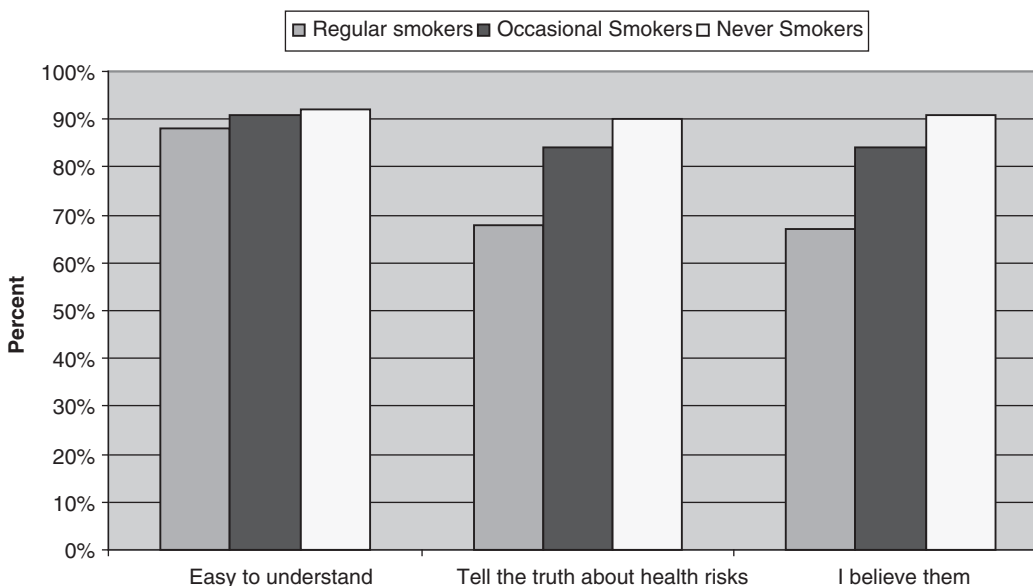


Figure 2 Comprehension and credibility of warnings, by smoking status

smokers endorsing this item compared to 90% never smokers (OR = 0.39, 95% CI = 0.21–0.73, $P < 0.01$). Similarly, regular and occasional smokers were each less likely to believe warnings than never smokers, with 67% regular smokers (OR = 0.23, 95% CI = 0.12–0.45, $P < 0.001$) and 84% occasional smokers (OR = 0.50, 95% CI = 0.33–0.76, $P < 0.01$) believing the warnings, compared to 91% of never smokers.

Memorability

The most commonly recalled messages were those on the pack front: Smoking kills (57%) and Smoking seriously harms you and others around you (41%). Other commonly recalled themes included Smoking when pregnant can harm the baby (11%) and Smoking causes fatal lung cancer (11%). Recall of the other 12 warnings was below 10% and these are not shown

in figure 3. Regular and occasional smokers had higher recall regarding smoking during pregnancy harming the unborn child: 30% regular smokers (OR = 4.29, 95% CI = 2.15–8.56, $P < 0.001$) and 15% occasional smokers (OR = 2.22, 95% CI = 1.42–3.48, $P < 0.001$) recalled this compared to 7% never smokers. Recall of Smoking kills, Smoking seriously harms you and others around you and Smoking causes lung cancer did not vary significantly by smoking status, when demographic and smoking related variables were controlled for.

Depth of processing

A quarter (25%) think about warnings ‘often’ or ‘very often’ when they see a pack, while only 9% do so when a pack is not in sight. Responses did not vary by smoking status. Only a

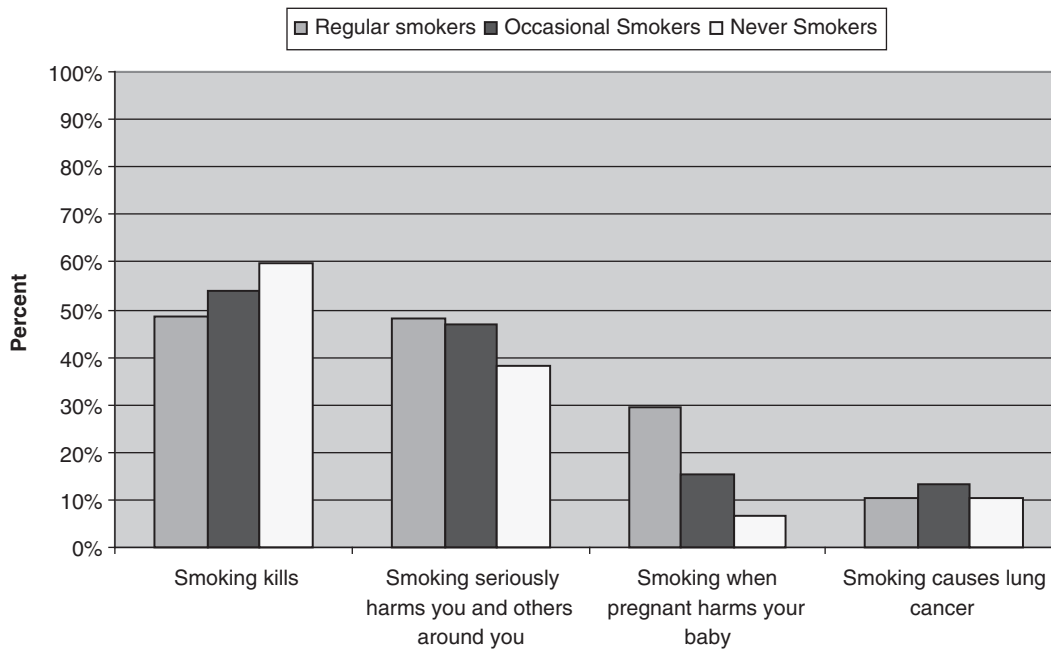


Figure 3 Recall of warnings on cigarette packs, by smoking status

small minority (5%) reported that they 'often' or 'very often' talk about warnings, with no significant variation by smoking status (figure 1).

Persuasiveness

The findings indicate that the sample view warnings as capable of putting them off smoking (80%) and making them less likely to smoke (81%). Most never smokers (91%) claimed that warnings 'put me off smoking' and 'make me less likely to smoke'. However, both occasional and regular smokers were significantly less likely to respond this way: with 79% of occasional smokers indicating that warnings 'put me off smoking' (OR = 0.417, 95% CI = 0.28–0.62, $P < 0.001$) and only 14% of regular smokers doing so (OR = 0.02, 95% CI = 0.01–0.04, $P < 0.001$). Approximately a fifth (21%) of regular smokers indicated that warnings 'make me less likely to smoke' (OR = 0.038, 95% CI = 0.02–0.07, $P < 0.001$), compared to 78% of occasional smokers (OR = 0.38, 95% CI = 0.25–0.56, $P < 0.001$).

Behavioural compliance

Almost one in three (32%) regular smokers indicated that, in the last month, warnings had stopped them from having a cigarette. Only 6% of regular smokers however indicated that warnings had stopped them from having a cigarette many times, with 16% reporting a few times, 10% reporting once and two-thirds (68%) never. Regular smokers seemed to take limited action to avoid looking at warnings. One in nine regular smokers (11%) had put the pack away to avoid looking at warnings. Between 7 and 8% had avoided buying packs with particular warnings, covered the warnings or used a cigarette case or other pack to avoid looking at the warning.

Perceived harm

The vast majority of regular smokers thought that their smoking was probably or definitely harm their health (92%) and that it would probably or definitely harm their health in the future (96%).

Discussion

This study provides mixed findings regarding text-only health warnings. Youth reported high levels of awareness, close attendance to the warnings and knowledge of health risks, but relatively low levels of recall and deeper processing, such as discussing them with others. The general patterns of findings on salience and health knowledge are consistent with research among adults, which demonstrates the broad reach and general awareness of health warnings among both smokers and non-smokers.⁹ Earlier UK research with adult smokers did find higher depth of processing than was found in our study, although the fact that this study was conducted shortly after the introduction of larger text warnings offers an explanation for this finding.¹⁷

Text warnings seem to help discourage never and occasional smokers from initiation, possibly by reinforcing the health risks of smoking in a comprehensible and credible fashion. One important finding is the high levels of salience among non-smokers. One of the primary benefits of making warnings more prominent is that levels of awareness increase among non-smoking youth, who represent a critical target group. That recall of specific warnings among never smokers was similar to smokers (and higher for Smoking kills) is remarkable and speaks to the reach of prominent warnings. Warnings are also having some impact on regular smokers, by encouraging almost one in three (32%) to forgo a cigarette when about to have one. However, only 6% forgo cigarettes regularly due to warnings and in general regular smokers appear less open to believing messages or considering them truthful. Subsequently they were less contemplative of health risks, less than half were able to recall, unaided, warning messages such as Smoking kills, and Smoking seriously harms you and others around you. However, despite the finding that text warnings appear to discourage never and occasional smokers, those not engaging in particular health risk behaviours are inclined to be more supportive of restrictions.³⁶

From a stage model perspective failure at any stage decreases the possibility of compliance and reduces warning effectiveness.²¹ Given that these same text warnings had been

used for almost 5 years it is possible that the constraining effects of overexposure and wear out has lead to a desensitisation to warnings, which reduces cognitive engagement (contemplation and discussion) and subsequently behavioural compliance. Alternatively, there may be a ceiling effect where, despite increased size, text warnings can only achieve so much. Either way, this provides a stark reminder to all EU countries that have not implemented pictorial warnings about the limitations of text warnings. And when considering that none of the eight South Eastern European (SEE) countries, the three West European democracies (Norway, Iceland, Switzerland) or the 12 Commonwealth of Independent States (CIS) has implemented pictorial warnings either and indeed in most of these CIS and SEE countries warnings typically cover <20% of the largest surface (WHO, 2007), disconcertingly only three countries in continental Europe currently have pictorial tobacco warnings.

Previous research suggests that pictorial warnings increase awareness²⁴ and quit motivation,^{18,37} and lower consumption within the home,³⁸ smoking intentions¹² and discourage initiation.^{8,13} Pictorials also help communicate health risks to youth, low-literate or illiterate populations, and residents of countries that use multiple languages more effectively than text warnings,¹⁰ and are able to convey more information than textual images, which are necessarily limited to short sentences.²⁵ When considering that more than two-thirds of regular smokers and 85% of occasional smokers in our study were unaware that smoking during pregnancy harms the unborn child, the use of an appropriate pictorial, showing a foetus in a jar for instance, may facilitate increased recall; as with other warnings. Indeed, research shows that pictorial warnings not only increase recall among youth, compared to text warnings, but they are also attended to and discussed more frequently^{11,12} and viewed as more persuasive.¹³

Twenty-eight new text warnings, developed in spring 2009 for the European Commission, will be pre-tested in all 27 EU states by early 2010. These proposed warnings are either unchanged (e.g. Smokers die younger), updates of existing warnings (e.g. Smoking causes over 80% of lung cancer, as opposed to, Smoking causes fatal lung cancer), existing warnings used elsewhere that will be adopted for the first time in the EU (e.g. Smoking doubles the risk of blindness) or completely new warnings (e.g. Smoking doubles the risk of cervical cancer). These will be tested alongside new pictorial warnings although for the latter, and pursuant to the EC Directive, countries are under no obligation to employ these images.

Warnings can of course only achieve so much, and are best employed as one component of a comprehensive tobacco control strategy. An effective regulatory measure to further enhance the salience of warnings would be to implement plain (or standardized) packaging.^{39,40} In addition to removing the promotional appeal of packs,^{41,42} plain packaging would remove information that distracts attention from warnings and provide a greater proportion of space with which to communicate health messages.⁴³ Plain packaging remains under review in the UK and the second report of the European Commission on the EC Directive states that the possibility of plain packaging for all tobacco products could be explored as a possibility to reduce the attractiveness of packaging.⁴⁴

Study limitations

The cross-sectional nature of this study is limited with respect to establishing potentially causal associations between health warnings and cessation behaviour. Future research should also examine how to improve the content of health

warnings, such as the impact of message framing, e.g. loss or gain framed messages, or differences in perceived effectiveness of fear appeal, social appeal or cessation support appeal messages.^{11,14} Further, we were unable to compare text and pictorial warnings given that pictorial warnings have only recently been phased into the UK, from October 2008, and are not a mandatory requirement on cigarette packs until September 2009.

Policy implications

That the only the two text warnings that had high recall among youth appear on the front of cigarette packs, and given the limited overall effectiveness of text warnings, our study suggests the need to update the current EC Tobacco Products Directive. Not only should pictorial warnings be mandatory in all EU states but they should also appear on the front of the pack given that our findings indicates that this is where most smoking and non-smoking youth focus their attention.

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Conflicts of interest: None declared.

Key points

- Large text health warnings on cigarette packages are a prominent source of health information for youth smokers and non-smokers.
- Youth smokers and non-smokers report that the warnings are credible and easy to understand; however, text warnings have had a limited impact on deeper measures of cognitive processing, particularly among youth smokers.
- Adolescents, irrespective of smoking status, had poor recall of warning messages, suggesting the need for the addition of graphic images.

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