

# Plain Tobacco Packaging Research: An Update

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This document is a briefing paper written by researchers at the University of Stirling to inform their on-going work on tobacco packaging and other forms of promotion. This briefing paper has not been commissioned by any external organisation and has not been peer-reviewed, although all the individual articles summarised here have been through the peer-review process and published in academic journals. The views expressed are those of the authors and not those of any commissioning organisation.

All of the new papers summarised here are available from the journals they have been published in. If any readers of this briefing paper have difficulty accessing any of the original articles, please contact [d.m.dixon@stir.ac.uk](mailto:d.m.dixon@stir.ac.uk) for assistance.

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## BACKGROUND

Plain tobacco packaging, also referred to as standardised packaging, was first considered as a possible policy option in the UK in the government consultation on the future of tobacco control in 2008, with four studies from North America cited as supporting evidence. A rapid review of the literature in 2009 identified 12 completed plain packaging studies (Moodie, Hastings & Ford, 2009). In 2011, *'Healthy Lives, Healthy People'* set out a tobacco control plan for England, which promised to consult on possible options to reduce the promotional impact of tobacco, including plain packaging. The Department of Health commissioned a systematic review of the available evidence to accompany the consultation (Moodie et al, 2012). The resulting peer-reviewed report included 37 studies assessing the potential impacts of plain packaging in relation to appeal, perceptions of harm, and salience and effectiveness of health warnings; the three potential benefits of plain packaging identified by Articles 11 and 13 of the Framework Convention on Tobacco Control (WHO, 2008a; WHO, 2008b). The review also examined what the available literature had found about smoking-related attitudes, beliefs, intentions and behaviour in respect to plain packaging, and facilitators and barriers to plain packaging.

Since the review was published, the authors have submitted an article on its main findings to the journal *PLOS One* and this is now in press, expected to be published on 16<sup>th</sup> October 2013 (Stead et al, in press).

In the intervening period, important policy developments have taken place. The Commonwealth Government of Australia fully implemented plain packaging in December 2012 and remains the only country to have done so. In February 2013 the New Zealand Government announced, in principle, plans to introduce plain packaging, as did the Republic of Ireland Government in May 2013, although neither has set a timeline for doing so. Within the UK, the Scottish Government announced in September 2013 that they aim to announce a legislative timetable for the introduction of plain packaging (Scottish Government, 2013).

Also in the period since the systematic review was published, there have been a number of new plain packaging studies. This briefing paper provides an update on the evidence published since the systematic review.

## OVERVIEW OF STUDIES

We confined our update to research already published in academic journals. We located **17 studies** that have been published between August 2011, the cut-off date for study inclusion in the original systematic review, and mid-September 2013. We have not included unpublished research (e.g. GfK Bluemoon, 2011; Vita, 2012) and studies which explore retail transaction times but do not include participants (Carter et al, 2013; Wakefield et al, 2013a). Summaries of each study's design, sample, procedure and plain packaging findings are given in Appendix 1.

As with the studies included in the original systematic review, most were conducted in a few high income countries, with 15 of the 17 studies included here having been conducted in Australia, New Zealand or the UK. Of the 17 studies identified, nine assessed the impact of plain packaging on appeal and eight the impact of plain packaging on warning salience and effectiveness. Seven studies explored perceptions of product harm and eight explored the impact of pack design on smoking-related attitudes, beliefs, intentions and behaviour. Four studies considered potential facilitators or barriers to plain packaging (see Table 1).

The findings of these 17 studies, discussed below, suggest that plain packaging would: reduce the appeal of cigarettes and smoking; enhance the salience of health warnings on packs; and address the use of packaging elements that mislead smokers about product harm.

**Table 1: Plain packaging studies published since the systematic review (Moodie et al, 2012)**

Study	Location	Date of study	Study design	Age (years)	Sample size	Smoking Status	Appeal	Warnings	Harm	Attitudes & Behaviour	Facilitators/ Barriers
<b>Al-Hamdani 2013</b>	Canada	Not stated	Survey	19+	220	Smokers and non-smokers		✓			
<b>Borland &amp; Savvas 2013</b>	Australia	Not stated	Survey	18-29	320	Smokers and ex-smokers	✓		✓		
<b>Borland et al 2013</b>	Australia	Not stated	Survey	18-29	160	Smokers and ex-smokers	✓	✓			
<b>Edwards et al 2012</b>	New Zealand	2009	Focus groups	19-60	24	Smokers and non-smokers					✓
<b>Ford et al 2013a</b>	Scotland	2011	Focus groups	15	48	Smokers and non-smokers	✓		✓		
<b>Ford et al 2013b</b>	UK	2011	Survey	11-16	1373	Smokers and non-smokers	✓		✓	✓	
<b>Hoek et al 2012</b>	New Zealand	2012	Survey	Not stated	936	Smokers and non-smokers				✓	✓
<b>Maynard et al 2013</b>	England	2011	Experimental (eye-tracking)	14-19	87	Smokers and non-smokers		✓			
<b>McCool et al 2012</b>	New Zealand	2009	Focus groups	14-16	80	Smokers and non-smokers	✓	✓	✓		
<b>Moodie &amp; MacKintosh 2013</b>	Scotland	2011-12	Naturalistic	18-35	187	Smokers	✓	✓		✓	
<b>Pechey et al 2013</b>	England	2012	Interviews	Not stated	33	Not stated				✓	
<b>Ramunno et al 2012</b>	England	Not stated	Experimental (eye-tracking)	18-40	28	Smokers and non-smokers		✓			
<b>Rosenberg et al 2012</b>	New Zealand	2010	Survey	18-69	2005	Smokers and non-smokers					✓
<b>Scheffels &amp; Sæbø 2013</b>	Norway	2009-10	Focus groups	16-50	69	Smokers and non-smokers	✓	✓	✓	✓	
<b>Uppal et al 2013</b>	England	Not stated	Focus groups and interviews	18+	22	Smokers				✓	
<b>Wakefield et al 2012</b>	Australia	Not stated	Experimental	18+	1203	Smokers	✓	✓	✓	✓	
<b>Wakefield et al 2013b</b>	Australia	2012	Survey	18+	536	Smokers	✓		✓	✓	✓

## SUMMARY OF FINDINGS

Here we summarise findings from the 17 new studies using the same themes as those covered in the 2012 systematic review: appeal; health warning salience and effectiveness; perceptions of product harm; smoking-related attitudes, beliefs intentions and behaviour; and facilitators and barriers to the implementation of plain packaging. Where important subgroup differences within the studies exist, these are also summarised.

### Appeal

Nine studies assessed appeal as a consequence of packaging design. Six used a quantitative design (Wakefield et al, 2012; Borland et al, 2013; Moodie & MacKintosh, 2013; Wakefield et al, 2013b; Borland & Savvas, 2013; Ford et al, 2013b) and three a qualitative design (McCool et al, 2012; Ford et al, 2013a; Scheffels & Sæbø, 2013). Five of these studies were from Australasia, three from the UK and one from Denmark. Studies focused on three main elements of appeal: 1) attractiveness, 2) quality (includes perceptions of quality, taste, smoothness and cheapness), and 3) smoker identity (includes ‘what kind of smoker would smoke this pack’; whether a pack is seen as appealing to a particular group; and personality attributes associated with a brand or pack).

Four of the studies compared responses to plain and branded packs, and **consistently found that plain packs reduced the appeal of the pack, of the cigarettes contained within it, and of smoking in general.** A UK wide survey with 11-16 year olds (Ford et al, 2013b) found that a plain pack was rated consistently and significantly lower on 11 items when compared with a regular branded pack and with three novelty packs with distinctive designs ( $p < 0.007$ ). These items included measures of appraisal (e.g. cool/not cool, boring/fun) and receptivity (e.g. meant for someone like me/not meant for someone like me, I would like/would not like to have this pack). Another UK study asked young adult women smokers in Scotland to use plain packs (into which they put their usual cigarettes) and their own usual branded pack for one week each, and to complete questionnaires twice a week assessing their perceptions and feelings (Moodie & MacKintosh, 2013). Using plain packs in real world settings was associated with more negative pack perceptions (for example, that the pack was not stylish, was poor quality, was cheap), with more negative feelings about the pack (for example, feeling embarrassed or ashamed of the pack) and more negative feelings about smoking in general (for example, that it was ‘less satisfying’ and ‘less good’) (all  $p < 0.001$ ).

An online survey of adult smokers in Australia conducted before the implementation of plain packs and larger front of pack pictorial warnings (Wakefield et al, 2012) found that plain packs were consistently associated with lower brand appeal, and that the plainness of the pack had more of a negative impact on brand appeal than did increasing the size of pictorial warnings. A second Australian study (Wakefield et al, 2013b) was conducted just as plain packs were being introduced, and compared the views of smokers still using branded packs with the views of smokers who had switched to plain packs. Those using plain packs were more likely than those still using branded packs to perceive that their cigarettes were lower quality (OR=2.00,  $p=0.004$ ) and less satisfying (OR=2.03,  $p=0.006$ ) than they had been a year ago. These findings were consistent when variables which might affect perceptions, such as socio-economic status, daily consumption and previous quit attempts, were controlled for.

In the qualitative studies which explored young people's views of plain packs, the packs were overwhelmingly associated with negative attributes such as cheapness and ugliness, and evoked negative emotions such as embarrassment and disgust (McCool et al, 2012; Ford et al, 2013a). A qualitative study involving Norwegian young people and adults found that plain packaging weakened the identity and personality associations which participants made with particular brands (Scheffels & Sæbø, 2013). When pack design elements were removed, participants felt that the brand's identity was taken away, and that they could no longer connect with their own brand to the same extent.

Two studies were conducted in Australia in 2012 just before the final government specification for plain pack design was issued. These sought to examine how pack elements such as shape, opening and use of descriptor terms might affect response to plain packs. In the first study, plain packs with straight edges were perceived as both less attractive and lower quality than plain packs with rounded and bevelled edges, while a standard flip-top opening on a plain pack was perceived as lower quality than a slide opening plain pack; however, the type of opening on a plain pack did not alter perceptions of pack attractiveness (Borland et al, 2013). In the second study, the effect of different descriptor terms on plain packs was examined (Borland & Savvas, 2013). This provides useful guidance on which types of descriptor terms, in the context of plain packs, were associated with higher and lower perceived quality and taste. For example, descriptor terms 'Gold' and 'Premium' were most strongly associated with quality, of the various descriptor terms examined, while the descriptor terms 'Red', 'Full flavoured' and 'Rich' were associated with the strongest taste, of the various terms examined.

### **Sub-group Differences**

One experimental between-subjects survey examined the appeal of the pack design by age. Wakefield et al (2012) analysed the data from their online survey for a three-way interaction between the age of adult smokers (18-29 years vs. 30+ years), the plainness of packs (plain or branded) and the pictorial health warning size (30%, 70% or 100%) but found no significant interactions on pack appeal ratings. No analyses of sub-group differences were reported for appeal in the other eight studies.

### **Warning Salience and Effectiveness**

Eight studies assessed warning salience and effectiveness by pack design. Two of these studies used an experimental design (Ramunno et al, 2012; Maynard et al, 2013), four a quantitative design (Wakefield et al, 2012; Al-Hamdani, 2013; Borland et al, 2013; Moodie & MacKintosh, 2013) and two a qualitative design (McCool et al, 2012; Scheffels & Sæbø, 2013). Three of these studies were from Australasia, three from the UK, one from Canada and one from Denmark. Studies assessed salience and recall of warnings, thinking about warnings, the impact of warning size and the presence or absence of branding on pack perceptions, and how plain pack structure (size and style of opening) can distract from warnings.

Two studies in the UK used an experimental design with an eye-tracking methodology, where a video records the number of eye movements (saccades) towards, or fixation time on, a particular stimulus. This allows researchers to explore whether plain packaging, in comparison with branded packaging, increases visual attention towards the health warnings. Maynard et al (2013) conducted a study with adolescent smokers and non-smokers aged 14 to

19 years (N=101) using images of branded and plain cigarette packs, each presented for 10 seconds on the centre of a computer screen. For each participant, 20 images were selected pseudo-randomly from the total set of 200 pack images, comprising each of the 10 branded packs and the 10 plain packs, with each of the 10 pictorial health warnings presented once on each type of pack. Analysis of variance, irrespective of smoking status, revealed more eye movements towards health warnings than branding on plain packs, but an equal number of eye movements to both regions on branded packs ( $p=0.033$ ). A smaller study by Ramunno et al (2012), conducted with adult smokers and non-smokers aged 18 to 40 years (N=28), found that less time was spent looking at the text health warnings on the front of the presented packs than was spent looking at the rest of the pack front, whether branded or plain. Fixation time on the health warnings was greater for plain packs than for branded packs (18.1% vs. 15.8%), although only significantly so for the first pair of trials ( $p=0.043$ ).

In an Australian online survey conducted before plain packaging was implemented (Wakefield et al, 2012), smokers aged 18 years and over (N=1,203) were allocated randomly to view one of six pack conditions that varied by front-of-pack pictorial health warning size (30%, 70% or 100%) and cigarette pack design (plain or branded), then asked to view and rate six brands consecutively. The study found that plain packaging reduced elements of brand appeal more than increasing the size of pictorial health warnings did. There was a significant interaction between pack plainness and pictorial health warning size in predicting ratings of 'positive pack characteristics' (a combination of 'popular among smokers', 'attractive', 'sophisticated' and 'a brand you might try/smoke') ( $p=0.008$ ), such that when packs were plain, increasing the size of health warning did not influence these ratings; and when packs were branded, increasing the size of the warning from 30% to 70% significantly reduced 'positive pack characteristics' ratings ( $p<0.001$ ), but increasing it to 100% did not reduce ratings further. Comparing the plain and branded packs with 100% pictorial health warnings, positive pack ratings were significantly lower for plain than branded packs ( $p=0.001$ ). There were no significant interactions in predicting other rating measures (perceptions of smokers being boring, taste and harm characteristics) and there were no interaction effects between plainness of pack and pictorial health warning size in respondents' attitudes toward smoking and perceived health effects of smoking or in predicting their pack choice for purchase.

In a naturalistic intervention study in the UK (in six Scottish towns and cities), 187 young adult women smokers, aged 18-35 years, were asked to use plain cigarette packs provided to them for one week and their own fully branded packs for one week, with the ordering randomised (Moodie & MacKintosh, 2013). Participants completed questionnaires twice a week to capture their reactions to, among other things, health warnings which, in the UK at the time, were a text warning on pack fronts and a pictorial warning on the reverse of the pack. Participants reported looking more closely at the health warnings on plain packs than on branded packs ( $p<0.001$ ), and also thinking more about what the health warnings were telling them on the plain packs ( $p<0.001$ ). No significant overall differences in salience, seriousness or believability of health warnings were found between the pack types.

In a cross-sectional web survey in Canada, smokers and non-smokers (N=220) aged 19 and over were recruited from three universities in Halifax, with 54.5% female, 77.7% aged 19-24 and 24.1% smokers (Al-Hamdani, 2013). Participants were randomly exposed to one of four online images of cigarette packs and asked to recall the pictorial health warning on it from a multiple choice of four. The image showed either a regular fully branded cigarette pack or one of three increasingly plainer packs: a plain pack with the font style and size of the brand

name retained (plain pack 1), a plain pack with the brand name in a standardised font in the centre of the pack (plain pack 2), or a plain pack with the brand name in a small standardised font at the bottom of the pack with the number of cigarettes in the centre (plain pack 3). All four packs had an identical pictorial health warning covering 30% of the upper pack face. Overall, approximately three-quarters (76.8%) of participants recalled the correct pictorial health warning. In comparison to the regular branded pack, the odds for recalling the correct health warning were significantly increased for the two plainest packs, plain pack 2 ( $p=0.008$ ) and plain pack 3 ( $p=0.002$ ). There was no significant difference in warning recall between the regular branded pack and the plain pack where the style and size of the brand name was the same as that on the regular branded pack (plain pack 1).

A cross-sectional web survey examined the extent that novel plain cigarette pack shapes and novel plain cigarette pack openings had on 160 Australian young adult (18-29 year-old) smokers' perceptions of the degree of distraction from pictorial health warnings (Borland et al, 2013). Plain standard pack shape (where cigarettes are organised as rows of 7-6-7 inside the pack) was rated as least distracting from health warnings and was significantly lower in distraction compared with the plain pack with the cigarettes organised inside as 4 sticks by 5 sticks ( $p=0.001$ ); compared with the plain standard pack with bevelled edges ( $p<0.001$ ); and compared with the plain standard pack with rounded edges ( $p=0.030$ ). There was also a significant interaction effect for pack shape x warning size ( $p=0.038$ ), with the plain 4 sticks by 5 sticks pack more distracting with a smaller (30%) rather than larger (70%) warning size. The plain standard pack remained the least distracting under both warning size conditions. In terms of pack openings, Borland et al (2013) found differences in ratings on tendency to distract from pictorial health warnings, with the plain standard flip-top opening rated as least distracting and significantly lower than all the other plain packs' opening styles ratings, from a case opening, to a slide out mechanism, to a flip opening from the pack's base, to a 'cigarette lighter' pack (all  $p<0.001$ ).

Two studies used qualitative methods to investigate the impact of plain packaging on health warnings. McCool et al (2012) conducted 12 focus groups with 14-16 year-olds in New Zealand in 2009 to explore their response to, and interpretation of, pictorial warnings and plain packaging. Participants were shown two branded packs (brands popular with adolescents) and plain pack prototypes. The packs had the same pictorial warnings. Participants found the juxtaposition of branded imagery and pictorial warnings on branded packs confusing and contradictory, and expressed scepticism regarding the credibility and authenticity of the warning messages and photographs. In contrast, on plain packs, the warnings were consistently perceived as "*clear*", "*direct*" and "*straight-to-the-point*". In a focus group study conducted between 2009 and 2010 with young people and adults in Norway, Scheffels and Sæbø (2013) explored the role of packaging design in communicating brand images and how participants perceived cigarette packs when design elements such as colour, logos and branded fonts were removed. Eleven focus groups were conducted, segmented by age (16-21, 20-29, 30-50 years) and smoking status (non-smokers, occasional smokers, daily smokers, former smokers). Participants were presented with four branded packs (popular brands in Norway) and two different plain pack prototypes for each brand. The packs had the same text health warning labels (in Norway, pictorial warnings were introduced later in July 2011). In several groups, participants reported that the removal of design elements made the text health warning appear more prominent because of the removal of competition from colour and other design elements.

### **Sub-group Differences**

Three experimental between-subjects surveys reported sub-group findings for health warning salience by pack design; the first by smoking status, the second by smoking status and gender, and the third by age. Maynard et al (2013) measured the number of eye movements (saccades) towards health warnings as participants were shown both plain and branded packs, as a measure of visual attention. The analysis included the variable of smoking status, with the categories: never smokers (never having tried a cigarette), experimenters (tried a cigarette or smoked a cigarette, but not in the past week); weekly smokers (smoking at least one cigarette a week, but not daily); and daily smokers (smoking at least one cigarette a day). It was found that plain packs, in comparison to branded packs, led to more saccades towards the health warnings among experimenters ( $p < 0.001$ ) and weekly smokers ( $p = 0.047$ ) – meaning that these groups spent longer looking at the health warning when it appeared on a plain pack as compared with a branded pack. This effect was not observed for never-smokers or daily smokers. For experimenters and weekly smokers, this interaction was characterized by an equal number of eye movements towards the health warnings and branding on branded packs, but more eye movements towards health warnings than branding on plain packs. Among never-smokers, a main effect of location was observed, reflecting more eye movements towards the health warnings than the branding; also a main effect of pack type was observed, indicating more eye movements overall to branded packs than plain packs. No main effect of pack type or location was observed among daily smokers. Analysis of the time per image spent fixating health warnings compared to branding confirmed that experimental and weekly smokers spent more time fixating health warnings on plain packs than on branded packs. Al-Hamdani (2013) exposed smokers and non-smokers in his university student sample ( $N = 120$ , 54.5% female) to one of four online images of cigarette packs – either a branded pack or one of three increasingly plainer packs – and asked them to recall the pictorial health warning on it. Twenty-four percent of the respondents were smokers and most of them smoked between one and 10 cigarettes per day (54.8%). Non-smokers were three times more likely to recall the correct pictorial health warning than smokers ( $p = 0.003$ ). Smoking status and the pack type viewed significantly predicted health warning recall ( $p < 0.001$ ).

In terms of analysis by gender, Al-Hamdani (2013) found women non-smokers were 4.4 times more likely to recall the correct pictorial health warning compared to women smokers; there were no significant differences in recall between male smokers and non-smokers. In comparison to women who viewed the regular branded pack, women who viewed the two plainest packs were more likely to correctly recall the pictorial health warning (6.55 times more likely for plain pack 2, 5.45 times more likely for plain pack 3); however the same was only significant for men who viewed the plainest pack (plain 3) compared with men who viewed the regular branded pack.

Wakefield et al (2012) analysed the data from their online survey for a three-way interaction between the age of adult smokers (18-29 years vs. 30+ years), plainness of packs (plain or branded) and pictorial health warning size (30%, 70% or 100%) but found no significant interactions on pack ratings.

### **Perceptions of Product Harm**

Seven studies assessed the impact of pack design on harm perceptions. Four studies used a quantitative design (Wakefield et al, 2012; Wakefield et al, 2013b; Borland & Savvas, 2013; Ford et al, 2013b) and three a qualitative design (McCool et al, 2012; Ford et al, 2013a;

Scheffels & Sæbø, 2013). Four of these studies were from Australasia, one from Norway and two from the UK, with three involving adult smokers and three youth smokers and non-smokers. Studies assessed perceptions of harm, or thinking about harm, as a result of the presence or absence of branding, warning size and the use of different descriptors on plain packs.

In an online survey conducted in 2010 in Australia with adult smokers (N=1,203), before plain packaging and larger (75%) front-of-pack pictorial warnings were implemented, participants were randomly allocated to view one of six pack conditions that varied by warning size (30%, 70% or 100%) and cigarette pack design (plain or branded). Participants then viewed and rated six cigarette brands consecutively. Participants were asked to rate the packs they were exposed to according to whether they perceived them to be 'high in tar' and 'harmful to your health'. These two items were combined to form 'negative harm characteristics'. No effect was found for 'negative harm characteristics' by warning size and pack design.

In another survey conducted in Australia with adult smokers (N=536), this time in November 2012 when both plain and branded packs were on sale (Wakefield et al, 2013b), participants were asked: "In the last week how often, if at all, did you think about the harm your smoking might be doing to you?" with response options never, rarely, sometimes, often and very often. Those smoking from a plain pack (45.9%) were significantly more likely than those smoking from a fully branded pack (35.6%) to have thought, in the last week, about the harm that smoking might be doing to them ( $OR=1.56$ , 95%  $CI$  1.04 to 2.36,  $p=0.032$ ). However, in model 1, which adjusted for SES, daily consumption, recall of any anti-smoking advertisements, brand segment and previous quit attempts, no significant differences were found between those smoking from plain packs and those smoking from fully branded packs. Similarly, in model 2, which was the same as model 1 but additionally adjusted for covariates and the proportion of the sample smoking from a plain pack each week of the interview, no significant differences were found between those smoking from plain packs and those smoking from fully branded packs. Participants were also asked: "Would you agree or disagree that the dangers of smoking have been exaggerated?" with the response options strongly agree, agree, neither, disagree and strongly disagree. Almost a third of those smoking from both the plain pack (32.3%) and fully branded pack (30.9%) agreed or strongly agreed that the harms associated with smoking had been exaggerated, with no significant differences found by pack type, irrespective of model.

Two separate web-based surveys in Australia, each with 160 young adult smokers or ex-smokers aged 18-29 years, explored consumers response to brand variant descriptors on an otherwise identical plain pack (beige with a pictorial warning covering 30% of the pack front). The findings are presented together in one paper (Borland & Savvas, 2013). In the first web survey, participants were shown an image of a plain cigarette pack and sets of related variant descriptors, related to *Colour* (red, blue, gold, silver, white), *Flavour* (full-flavoured, ultimate, infinite, smooth, fine), *Filter venting* (highly vented, medium vented, low vented, unvented) and *Filter type* (filter tipped, charcoal filter, dual filter, advanced filter). For each set of descriptors, participants were asked to rate them by tar/nicotine levels and/or harmfulness. In respect to tar and nicotine delivery, there were significant differences across the *Colour* ( $p<0.001$ ), *Flavour* ( $p<0.001$ ), *Filter venting* ( $p<0.001$ ) and *Filter type* ( $p<0.001$ ) descriptors. For *Colour*, the descriptor 'Red' was ranked as giving the most tar/nicotine delivery and 'White' the least. For *Flavour*, the descriptor 'Full flavoured' was ranked as giving the most tar/nicotine delivery and 'Fine' the least. For *Filter venting*, the descriptor

‘Unvented’ was ranked as giving the most tar/nicotine delivery and ‘Highly vented’ the least. For Filter type, the descriptor ‘Filter tipped’ was ranked as giving the most tar/nicotine delivery and ‘Advanced filter’ the least. In respect to harmfulness, there were significant differences across the Filter venting ( $p<0.001$ ) and Filter type ( $p<0.001$ ) descriptors. For Filter venting, the descriptor ‘Unvented’ was ranked as most harmful and ‘Highly vented’ least harmful. For Filter type, the descriptor ‘Charcoal filter’ was ranked as most harmful and ‘Advanced filter’ least harmful.

During an in-home survey in 2011, children aged 11-16 ( $N=1,373$ ) from across the UK were shown an image of five different cigarette packs: a plain pack, a regular pack with no special design features (Mayfair), and three ‘novelty’ packs – a compact ‘perfume-type’ pack (Silk Cut Superslims), a bright pink pack (Pall Mall) and a pack which opened like a zippo lighter (Marlboro Bright Leaf) (Ford et al, 2013b). Eleven items, measured on five-point scales, were used to assess young people’s responses to the different pack designs. One of these items assessed perceptions of harm, with response options ranging from Very harmful to Not at all harmful. The Silk Cut Superslims pack was given the highest mean ratings in terms of harm (1.72), followed by Pall Mall (1.69), Mayfair (1.62), Marlboro (1.58) and the plain pack (1.50), which was given the lowest mean rating. The Silk Cut Superslims pack was rated as significantly less harmful than the regular (Mayfair) pack ( $p<0.001$ ), which in turn was rated as significantly less harmful than the plain pack ( $p<0.001$ ).

Three qualitative studies explored perceptions of harm. McCool et al (2012) conducted focus group research in New Zealand in 2010 with 80 smokers and non-smokers aged between 14-16 years. Participants were shown a plain pack (colour not specified) with a pictorial warning. The plain pack was perceived as cheap and inferior quality which, in turn, was associated by several groups with greater harmfulness. In another focus group study, this time in Scotland in 2011 with 15 year olds ( $N=48$ ), participants were asked to group a range of cigarette packs (including thin Superslims packs and a plain brown pack) according to statements written on show cards, one of which was: Most harmful/Least harmful. The Superslims packs were considered to contain less tobacco, resulting in lower harm perceptions. The plain pack, conversely, was associated with a heavy smoker in ill-health and considered to suggest tobacco as being something that was harmful and dirty, e.g. *“I think that one [plain pack] looks like you’d be more ill if you kept smoking them but they ones [Silk Cut Superslims] look like you wouldn’t be so unwell if you smoked them for ages”* (Ford et al, 2013a). Finally, a focus group study with Norwegian adults and young people found that, for brands whose packs used strong dark colours such as red, a grey plain pack could sometimes evoke less sense of strength and danger than had been associated with the branded pack’s stronger colours (Scheffels & Sæbø, 2013).

## **Attitudes, Beliefs, Intentions and Behaviour**

Eight studies assessed attitudes towards plain packaging or how plain packaging might impact on beliefs, intentions and behaviour in relation to smoking. Five studies used a quantitative design (Hoek et al, 2012; Wakefield et al, 2012; Moodie & MacKintosh, 2013; Wakefield et al, 2013b; Ford et al, 2013b) and three a qualitative design (Pechey et al, 2013; Scheffels & Sæbø, 2013; Uppal et al, 2013). Four of these studies were from the UK, three from Australasia and one from Norway. Studies assessed perceptions of whether plain packaging would prevent initiation and help cessation (e.g. prioritising, thinking about and planning to quit)

In a naturalistic study in Scotland, 187 young women smokers were instructed to use plain cigarette packs for one week and their own branded packs for one week and complete questionnaires twice a week (Moodie & MacKintosh, 2013). Participants reported being more likely to report engaging in cessation behaviours, including foregoing cigarettes ( $p < 0.05$ ), smoking less around others ( $p < 0.001$ ), thinking about quitting ( $p < 0.001$ ), and reduced consumption ( $p < 0.05$ ) when using the plain packs.

A cross-sectional survey with 1,373 11-16 year-olds from across the UK involved participants being shown images of five cigarette packs with the brand names covered, including a plain pack, a regular pack and three novelty packs (a bright pink pack, a slim perfume-type superslims pack, and a pack with a novel style of opening, like a Zippo lighter) (Ford et al, 2013b). Logistic regression analysis found that those with a positive appraisal of the 'novelty' packs were between 2.20 and 2.51 times more likely to be susceptible to smoking than those giving a non-positive appraisal ( $p < 0.001$ ). Those with a positive appraisal of the 'regular' pack were 2.05 times more likely to be susceptible to smoking ( $p = 0.002$ ). There was no association, however, between positive appraisal of the plain cigarette pack and susceptibility ( $p = 0.914$ ). A pack receptivity score using a composite of measures including 'puts me off smoking/tempts me smoke' and 'I would not like to have this pack/I would like to have this pack' was calculated. While those scored as receptive to the novelty packs were between 2.42 and 4.42 times as likely to be susceptible to smoking ( $p < 0.001$ ), there was no association between receptivity to the 'regular' pack and smoking susceptibility ( $p = 0.064$ ) or receptivity to the plain pack and smoking susceptibility ( $p = 0.863$ ).

An online survey was conducted in Australia with smokers aged 18 years and over ( $N = 1,203$ ) before plain packaging was implemented (Wakefield et al, 2012). Participants were allocated randomly to view one of six pack conditions that varied by front-of-pack pictorial health warning size (30%, 70% or 100%) and cigarette pack design (plain or branded), then asked to view and rate six brands consecutively. The study found that viewing plain packs made no difference to participants' attitudes towards smoking or perceptions of the health effects of smoking. When shown images of all six cigarette brands they had rated within their pack condition on a single screen, and asked 'If you ran out of cigarettes and only the packs below were available in the store you went to, which pack would you be most tempted to buy?', 82% chose a pack rather than selecting 'none' of the packs. Participants who saw plain cigarette packs in their condition were more likely to indicate that they would not buy any of the packs they had seen (20.3%), compared with those who had seen branded packs (15.3%) ( $OR = 1.4$ ,  $p = 0.026$ ). More recently, a cross-sectional survey with 536 adult smokers in Australia, conducted in November 2012 when plain packs were being introduced to the market but were not yet mandatory (Wakefield et al, 2013b), found that those smoking from a plain pack were significantly more likely than those smoking from a fully branded pack to rate quitting as a priority in life ( $p < 0.002$ ) and think about quitting at least once a day in the last week ( $p < 0.02$ ). Those smoking from a plain pack were also significantly more likely than those smoking from a fully branded pack to report seriously considering quitting smoking in the next 6 months ( $OR = 1.66$ ,  $p < 0.011$ ). However, when the findings were adjusted for SES, daily consumption, recall of any anti-smoking advertisements, brand segment, previous quit attempts, covariates and the proportion of the sample smoking from a plain pack each week of the interview, no significant differences were found between those smoking from plain packs and those smoking from fully branded packs. In respect to planning to quit smoking in the next 30 days, no significant differences were found by pack type.

A cross-sectional web based survey with an experimental between-subjects design was conducted in March 2012 in New Zealand to explore level of agreement for a number of statements related to tobacco packaging (Hoek et al, 2012). The sample of 836 (418 smokers, 418 non-smokers) was weighted by age, sex, ethnicity and smoking status according to state census data. Agreement with four statements about packaging was rated using 5-point, fully-labelled scales ranging from ‘strongly agree’ to ‘strongly disagree’. Over half (57%) the sample agreed or strongly agreed with the statement ‘Attractive tobacco packaging encourages young people to experiment with smoking’, 48% agreed or strongly agreed with the statement ‘Tobacco packaging encouraging smokers to try new brands’, 39% with the statement ‘Plain packaging would discourage young people from trying smoking’ and 36% with the statement ‘Plain packaging would encourage smokers to quit’.

Three qualitative studies explored respondents’ perceptions of the impact which plain packaging might have on their own or others’ smoking behaviour. In a qualitative study which explored perceptions of a range of tobacco control measures and services among 22 adult smokers in England, respondents expressed the view that plain packaging would not impact on brand selection or the quantity of cigarettes purchased, but may deter youth (Uppal et al, 2013). In a qualitative study involving Norwegian young people and adults, current daily smokers tended to feel that plain packs would have no impact on their smoking, while occasional and former smokers were divided in their views of the possible impact of plain packs, with some feeling that they would be less tempted to smoke with plain packs and others feeling that plain packs would make little difference (Scheffels & Sæbø, 2013). Finally, Pechey and colleagues (2013) examined the views of 33 tobacco control experts from Australasia, UK and North America on the potential impact of plain packaging on adult smoking prevalence and youth onset. Prevalence rates for adults and children were provided and participants asked to estimate the expected values of these two years after the hypothetical introduction of plain packaging in their region, and to outline the reasoning behind the estimates they provided. The overall median estimate for the absolute change in adult smoking prevalence was  $-1\%$ , with the lowest and highest values  $0\%$  and  $-2.25\%$  respectively. The overall median estimate for the absolute change in the percentage of children trying smoking was  $-3\%$ , with the lowest and highest values  $0\%$  and  $-6.1\%$  respectively. None of the sample viewed an increase in smoking as the most likely outcome of plain packaging. The respondents felt that plain packaging would have a greater impact on children, as a consequence of less appealing packs, less brand identification and changes in social norms around smoking, and were less certain about the impact on adult cessation. Many felt that a two year timeframe was not sufficient for the full impact of plain packaging, and several noted that tobacco control policies do not occur in isolation, and that plain packaging would be more effective if combined with media campaigns and fiscal policies.

### **Sub-group Differences**

Hoek et al (2012) found that non-smokers were significantly more likely than smokers to agree or strongly agree that attractive tobacco packaging would encourage young people to experiment with smoking ( $p < 0.001$ ), encourage smokers to try new brands ( $p < 0.001$ ), discourage young people from trying smoking ( $p < 0.001$ ) and encourage smokers to quit ( $p < 0.001$ ).

Wakefield and colleagues (2012) found no interactions for pack purchase intention between age group of smokers (18-29 years vs. 30+ years) and cigarette pack design (plain or branded) (Wakefield et al, 2012). There were no differences between respondents’ attitudes

toward smoking and perceived health effects of smoking by cigarette pack design (plain or branded), and these patterns generally did not vary by age group.

The naturalistic study in Scotland found that engaging in cessation related smoking behaviours did not differ by dependence level or socio-economic status (Moodie & MacKintosh, 2013).

## **Facilitators and Barriers**

Four studies assessed facilitators/barriers associated with the introduction of plain packaging. Three studies used a quantitative design (Hoek et al, 2012; Rosenberg et al, 2012; Wakefield et al, 2013b) and one a qualitative design (Edwards et al, 2012). All studies were conducted in Australasia with adult smokers; two also included adult non-smokers. The findings cover two main themes: Public opinions of plain packaging and Benefits and harms of plain packaging.

### **Public Opinions of Plain Packaging**

Two Australian studies explored support for plain packaging. A survey in Australia with 16-69 year olds (N=2,005) conducted in November 2010, seven months after the Australian Government had announced plans to introduce plain packaging, found that half the sample (51%) agreed with the introduction of plain packaging, and approximately a quarter disagreed (27%) or had no feelings either way (23%) (Rosenberg et al, 2012). Another survey in Australia was conducted in November 2012, during the period that plain packaging was being phased in and both fully branded and plain packs were available on the market. It was found that among 536 adult smokers 52.4% of those using plain packs and 42.2% of those using fully branded packs supported plain packaging (Wakefield et al, 2013b). Those smoking from plain packs were significantly more likely to be supportive of plain packaging than smokers who were using fully branded packs ( $p < 0.05$ ).

A cross-sectional web survey with an experimental between-subjects design was conducted in March 2012 in New Zealand to explore support for plain packaging, and level of agreement for a number of statements related to tobacco packaging and plain packaging (Hoek et al, 2012). The sample of 836 (418 smokers, 418 non-smokers) was weighted by age, sex, ethnicity and smoking status according to state census data. Support for plain packaging was assessed using an 11-point scale, ranging from 'no support at all' to 'full support'. The general level of support for plain packaging was estimated to be 69%.

### **Benefits and Harms of Plain Packaging**

Hoek et al's (2012) survey in New Zealand also explored level of agreement with the statement 'Plain packaging is unfair because it would stop tobacco companies using their brands and logos to promote their products', rated from 'strongly agree' to 'strongly disagree'. Twenty percent agreed or strongly agreed with the statement and 54% disagreed or strongly disagreed. A focus group study conducted in 2009 with 24 smokers and non-smokers aged between 19 and 60 years (Edwards et al, 2012), explored participant's views on the concept of a 'Tobacco-Free Commission' which, it was explained, would act as a monopoly purchaser and distributor of tobacco products in New Zealand and promote a range of measures to reduce smoking prevalence, including plain packaging. Of the few comments made about plain packaging, it was suggested that policymakers may be more willing to introduce individual measures such as plain packaging rather than a radical change to the

purchase, distribution and promotion of tobacco products: “*the plain packet stuff, that’ll be easy to sell that to the government*”.

### **Sub-group Differences**

Rosenberg et al (2012) found that non-smokers (including ex-smokers) were 2.7 times (95% CI, 2.0-3.6) more likely than smokers to agree with plain packaging. Those aged 50-69 years were twice as likely as those aged 16-29 years (95% CI, 1.5-2.7), and men were 1.4 times more likely than women (95% CI, 1.1-1.7), to agree with the introduction of plain packaging. Hoek et al (2012) also found that non-smokers had significantly higher levels of support for plain packaging than smokers (significance not provided), with non-smokers support 30 percentage points higher than for smokers. Support among women for plain packaging was statistically significantly higher than among men (significance not provided), with support for women 10 percentage points higher than for men. Smokers (33%) were significantly more likely than non-smokers (16%) to agree ( $p < 0.001$ ) that plain packaging is unfair because it would stop tobacco companies using their brands and logos to promote their products (Hoek et al, 2012). In the focus group study (Edwards et al, 2012), some Māori smokers suggested that plain packaging may make brand identification in stores more difficult for them and some were concerned that their preferred brand may no longer be available.

### **Summary**

This update of the literature, which now includes 54 published studies (37 in our original review and 17 here) shows that since the systematic review the evidence base has continued to grow at considerable pace. Thirteen of these studies are from the UK and a brief overview of the contribution of research from the UK is presented in Appendix 2.

As outlined in the ‘overview of studies’ section at the start of this briefing paper, the evidence summarised in this update of the literature, in general, provides further support for the proposed benefits of plain packaging.

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## New Individual Studies

*Summaries of Studies Published between August 2011 and mid-September 2013*

**Al-Hamdani M (2013)**

**The effect of cigarette plain packaging on individuals' health warning recall**

*Healthcare Policy*, 8(3): 68-77. Available online: <http://www.longwoods.com/content/23210>

### **Design and Sample**

An online survey was employed with smoking and non-smoking students (N=220), aged 19 and over, recruited from three universities in Halifax (Canada). In terms of sample characteristics, 54.5% were female, 77.7% between 19 and 24, and 24.1% smokers - 54.8% of smokers smoked between one and ten cigarettes per day. A between-subjects design was used where participants were randomly assigned to view one of four images, showing either a regular fully branded cigarette pack (regular pack), a plain pack with the style and size of the brand name retained (plain pack 1), a plain pack with a standardised brand name in the middle of the pack (plain pack 2), and a plain pack with the number of cigarettes in the middle of the pack and a smaller standardised brand name at the bottom of the pack (plain pack 3).

### **Procedure**

Participants answered a single multiple choice question to test warning recall for the pack to which they had been exposed (packs always displayed an image of lung cancer). The four response options were "Smoking causes lung cancer", "Smoking kills", "Smoking causes impotence" and "Get help to stop smoking: Consult your doctor or pharmacist". To facilitate analyses, correct responses were grouped together, as were incorrect responses, and these were compared across the four packs. A sequential binary logistic regression was used to examine whether plain packaging and/or smoking status had an impact on warning recall.

### **Findings**

#### Warnings

Approximately three-quarters (76.8%) of participants recalled the correct warning, with 67.3% recalling the warning for those shown the regular pack, 58.2% for plain pack 1, 89.6% for plain pack 2 and 91.9% for plain pack 3. As for recall by smoking status, 82.0% of non-smokers recalled the correct warning, while 60.4% of smokers recalled the correct warning. Smoking status and pack type significantly predicted health warning recall ( $\Delta x^2 [4, n=220] = 35.935, p < 0.001$ ).

In comparison to the regular branded pack, the odds for selecting the correct health warning were significantly increased for the two plainest packs; plain pack 2 ( $OR = 4.53, 95\% CI 1.49$  to  $13.74, p = 0.008$ ) and plain pack 3 ( $OR = 5.89, 95\% CI 1.97$  to  $17.61, p = 0.002$ ). There was no significant difference in warning recall between the regular branded pack and plain pack 1, i.e. the plain pack where the style and size of the brand name was the same as that on the regular branded pack. The odds of recalling the correct health warning was higher for non-smokers relative to smokers ( $OR = 3.07, 95\% CI 1.47$  to  $6.41, p = 0.003$ ).

**Borland R and Savvas S (2013)****The effects of variant descriptors on the potential effectiveness of plain packaging**

*Tobacco Control*, published online 22<sup>nd</sup> February 2013. doi:[10.1136/tobaccocontrol-2012-050736](https://doi.org/10.1136/tobaccocontrol-2012-050736)

**Design and Sample**

Two separate web-based surveys, each with 160 young adult smokers or ex-smokers aged 18-29 years, explored how consumers respond to brand variant descriptors on an otherwise identical plain pack (beige with a pictorial warning covering 30% of the pack front). The findings of the two surveys are presented together.

**Procedure**

In the first web survey, participants were shown an image of a plain cigarette pack and sets of related variant descriptors, related to Colour (red, blue, gold, silver, white), Flavour (full-flavoured, ultimate, infinite, smooth, fine), Venting (highly vented, medium vented, low vented, unvented) and Filter Type (filter tipped, charcoal filter, dual filter, advanced filter). In the second web survey, participants were shown the same image of a plain cigarette pack and sets of related variant descriptors, this time Colour (red, blue, gold, silver, white), Quality (rich, distinct, premium, premier, refined), Style (Standard, Virginia, American blend, Oriental blend) and Blend (blend 001, blend 004, blend 012, blend 333, blend 879). The first survey asked about taste and tar/nicotine levels for the Colour, Flavour and Venting descriptors (harmfulness was also measured for Venting) and tar/nicotine levels and harmfulness for the Filter descriptors. The second survey asked about taste and quality for each of the descriptors (Colour, Quality, Style and Blend). Ratings for each set of descriptors were made by identifying the highest of lowest for each set of descriptors, except for the Colour descriptors in the first survey, which were rated from 1 to 5.

**Findings**Appeal - Quality

In respect to the quality of cigarettes, there were significant differences across the Colour ( $p < 0.001$ ), Quality ( $p = 0.002$ ), Style ( $p = 0.041$ ) and Blend ( $p = 0.048$ ) descriptors. For Colour, the descriptor 'Gold' was ranked as highest quality and 'White' the lowest quality. For Quality, the descriptor 'Premium' was ranked as highest quality and 'Refined' the lowest quality. For Style, the descriptor 'Virginia' was ranked as highest quality and 'Oriental blend' the lowest quality. For Blend, the descriptor 'Blend 879' was ranked as highest quality and 'Blend 001' the lowest quality.

In respect to taste, there were significant differences across the Colour ( $p < 0.001$ ), Flavour ( $p < 0.001$ ), Quality ( $p < 0.001$ ), Style ( $p < 0.001$ ), Blend ( $p < 0.001$ ) and Venting ( $p < 0.001$ ) descriptors. For Colour, the descriptor 'Red' was ranked as the strongest tasting and 'White' the weakest tasting. For Flavour, the descriptor 'Full flavoured' was ranked as the strongest tasting and 'Fine' the weakest tasting. For Quality, the descriptor 'Rich' was ranked as the strongest tasting and 'Refined' the weakest tasting. For Style, the descriptor 'Virginia' was ranked as the strongest tasting and 'Standard' the weakest tasting. For Blend, the descriptor 'Blend 879' was ranked as the strongest tasting and 'Blend 001' the weakest tasting. For Venting, the descriptor 'Unvented' was ranked as the strongest tasting and 'Highly vented' the weakest tasting.

### Harm

In respect to tar and nicotine delivery, there were significant differences across the Colour ( $p < 0.001$ ), Flavour ( $p < 0.001$ ), Venting ( $p < 0.001$ ) and Filter type ( $p < 0.001$ ) descriptors. For Colour, the descriptor 'Red' was ranked as giving the most tar/nicotine delivery and 'White' the least. For Flavour, the descriptor 'Full flavoured' was ranked as giving the most tar/nicotine delivery and 'Fine' the least. For Venting, the descriptor 'Unvented' was ranked as giving the most tar/nicotine delivery and 'Highly vented' the least. For Filter type, the descriptor 'Filter tipped' was ranked as giving the most tar/nicotine delivery and 'Advanced filter' the least.

In respect to harmfulness, there were significant differences across the Venting ( $p < 0.001$ ) and Filter type ( $p < 0.001$ ) descriptors. For Venting, the descriptor 'Unvented' was ranked as most harmful and 'Highly vented' least harmful. For Filter type, the descriptor 'Charcoal filter' was ranked as most harmful and 'Advanced filter' least harmful.

**Borland R, Savvas S, Sharkie F and Moore K (2013)**

**The impact of structural packaging design on young adult smokers' perceptions of tobacco products**

*Tobacco Control*, 22(2): 97-102. doi:[10.1136/tobaccocontrol-2011-050078](https://doi.org/10.1136/tobaccocontrol-2011-050078)

**Design and Sample**

A cross-sectional web-based survey (with an experimental design) examined the extent to which novel plain cigarette pack shapes and novel plain cigarette pack openings influence young adult smoker's perceptions of the attractiveness of the pack, quality of the cigarettes inside and degree of distraction from the health warnings. The internet survey was run by a registered market research company with respondents drawn from a national panel before plain packaging legislation was first introduced to Parliament of Australia in July 2011. The sample was 160 young adults (18-29 years, median age 25 years) and comprised: 50.0% women; 15.6% did not complete secondary school; 79.4% were current smokers (50.5% of them reporting smoking 1-10 cigarettes/day) and 20.6% ex-smokers (54.5% of them reporting having smoked 1-10 cigarettes/day).

**Procedure**

Respondents were shown computer-generated static images of the five plain pack shapes in random order; then video clips of the five openings on plain packs; finally computer-generated static images of the five openings on plain packs, partly open, in random order. The plain pack images were beige coloured, and used 10-point font for brand, descriptor and number of cigarettes text. (There were some differences from the final design used in Australia in terms of pack colour, font size and health warning size.) The five different pack shapes were: Standard (7-6-7 organisation of the cigarettes inside the pack), 2x10 (organisation of the cigarettes), 4x5 (organisation of the cigarettes), Bevelled Edges and Rounded Edges (both the same basic shape as Standard packs), all with the same pictorial health warning covering 30% or 70% of the front pack face. The five different pack openings were: Standard flip-top, Rotate (a flip opening from the base), Slide (a slide out mechanism), a Case opening and Slide-Flip (a side opening flip-top, sometimes know as a 'lighter' pack), all with the same pictorial health warning covering 30% or 70% of the front pack face.

The relevant survey measures were: ratings of pack attractiveness (scale from 1 of least attractiveness to 5 of most attractiveness); perceived quality of the cigarettes contained inside the pack (scale from 1 of least quality to 5 of most quality); and degree of distraction from the health warnings (scale from 1 of least distraction to 5 of most distraction). There were no comparisons made with fully branded packs.

**Findings**

Appeal – Attractiveness

*Plain pack shapes comparisons:* The plain packs with conventional straight edges were rated as the least attractive. The plain Rounded Edges pack was rated as significantly more attractive than the plain 2x10, the plain 4x5 and the plain Standard packs (all p values <0.001). The plain Bevelled Edges pack was rated as significantly more attractive than the plain Standard pack (p=0.015), the plain 2x10 pack (p<0.001) and the plain 4x5 pack (p<0.001). Ratings of attractiveness for all plain pack shapes were moderately correlated with the perceived quality of cigarettes (p<0.01 - from r=0.32 (plain 2x10 pack) to r=0.54 (plain 4x5 pack)).

*Plain pack openings comparisons:* There was no difference in overall attractiveness amongst the different plain pack openings. There were no significant main effects for attractiveness among the five plain pack openings ( $F(3.5)=0.94$ ,  $p=0.431$ ). No sub-group differences reported.

#### Appeal – Quality

*Plain pack shapes comparisons:* Again, conventional straight edge packs were rated more negatively. The plain Rounded Edges pack was rated as significantly higher in quality than the plain 2x10, the plain 4x5 and the plain Standard packs (all  $p$  values  $<0.001$ ). The plain Bevelled Edges pack was rated as significantly higher quality than the plain 2x10 pack ( $p=0.003$ ) and the plain 4x5 pack ( $p=0.001$ ). Ratings of attractiveness for all plain pack shapes were moderately correlated with the perceived quality of cigarette ( $p<0.01$  - from  $r=0.32$  (plain 2x10 pack) to  $r=0.54$  (plain 4x5 pack)).

*Plain pack openings comparisons:* Separate repeated measures analyses found main effects for quality of cigarette ( $F(3.4)=2.74$ ,  $p=0.036$ ). Post hoc tests showed that the plain Standard flip-top was rated lower in perceived quality compared with the plain Slide opening style ( $p=0.044$ ). No sub-group differences reported.

#### Warnings

*Plain pack shapes comparisons:* The plain Standard pack shape was rated as least distracting from health warnings (mean of 2.54 vs. means ranging from 2.96 to 3.27) and was significantly less distracting compared with the plain 4x5 ( $p=0.001$ ), plain Bevelled Edges ( $p<0.001$ ) and plain Rounded Edges packs ( $p=0.030$ ). There was also a significant interaction effect for pack shape x warning size ( $F(3.3)=2.71$ ,  $p=0.038$ ), with the plain 4x5 pack more distracting with a smaller (30%) rather than larger (70%) warning size. The plain Standard pack remained least distracting under both warning size conditions.

*Plain pack openings comparisons:* Separate repeated measures analyses found main effects for distract most from warnings ( $F(3.4)=14.90$ ,  $p<0.001$ ). Post hoc tests showed a clear difference in ratings on tendency to distract from warnings, with the plain Standard flip-top opening rated as least distracting (mean of 2.23 vs. means ranging from 2.96 to 3.42) and significantly less distracting than all the other plain packs' opening styles (all  $p<0.001$ ). No sub-group differences reported.

**Edwards R, Peace J, Russell M, Gifford H, Thomson G and Wilson N (2012)**  
**Qualitative exploration of public and smoker understanding of, and reactions to, an endgame solution to the tobacco epidemic**

*BMC Public Health*, 12: 782. doi:[10.1186/1471-2458-12-782](https://doi.org/10.1186/1471-2458-12-782)

**Design and Sample**

Four focus groups were conducted in 2011 with 13 smokers (7 Māori smokers, 6 non-Māori smokers) and 11 non-smokers (7 Māori non-smokers, 4 non-Māori non-smokers) aged between 19 and 60 years and recruited from Whanganui, New Zealand.

**Procedure**

Participants were given a presentation at the start of each group concerning the concept of a tobacco-free New Zealand and a possible new approach to achieve this, called the ‘Tobacco-Free Commission’. The Tobacco-Free Commission, it was explained, would act as a monopoly purchaser and distributor of tobacco products and promote a range of measures to reduce smoking prevalence, including plain packaging. Within the groups the discussion concerned, among other things, understanding of and reactions to the proposed Tobacco-Free Commission.

**Findings**

Facilitators/barriers - Benefits or harms of plain packaging

Plain packaging did not appear to be discussed at any great length in the groups. There were however some comments made about plain packaging which could potentially be considered to be facilitators or barriers to plain packaging. For instance, it was suggested that policy makers may be more amenable to individual measures such as plain packaging rather than a radical change to the purchase, distribution and promotion of tobacco products: “the plain packet stuff, that’ll be easy to sell that to the government”. In terms of barriers, some Māori smokers suggested that plain packaging may make brand identification more difficult for them and some were concerned that their preferred brand may no longer be available.

**Ford A, Moodie C, MacKintosh AM and Hastings G (2013a)**

**How adolescents perceive cigarette packaging and possible benefits of plain packaging**  
*Education and Health*, 31(2): 83-88. Available online: <http://sheu.org.uk/x/eh312af.pdf>

**Design and Sample**

Focus groups were used to explore adolescents' responses to and perceptions of different cigarette pack styles. Eight focus groups were conducted in 2011 with 15 year olds (N=48) in Glasgow. The groups were recruited by a professional market research recruiter and were segmented by gender and social grade (ABC1 and C2DE). The groups were not recruited or segmented on the basis of smoking status.

**Procedure**

Participants were encouraged to handle and discuss four types of packaging: innovative packs (packs with a novel type of opening), 'image' packs (packs with distinctive graphics), 'value' packs (packs with price marks or different size offerings) and plain packs (in this study, a brown pack with a fictitious brand name). They were asked to group the packs in whatever ways they thought appropriate, and then to order the packs in relation to different statements such as: Appealing/Unappealing, Most harmful/Least harmful, Appealing to someone thinking of starting smoking/Not appealing to someone thinking of starting smoking, and Strongest/Weakest. In order to uncover the values and meanings associated with the different packs, they were also asked to imagine and describe each pack as a person, and to use free association to express the thoughts triggered by each pack.

**Findings**Appeal - Attractiveness

In comparison with the other pack types, the plain pack was overwhelmingly rated negatively, described as 'dull', 'cheap', and 'boring', and associated with an 'old man' wearing 'old-fashioned clothes'. Whereas the branded packs were associated with feeling mature, popular and confident, the plain pack was associated with negative emotions such as shame, embarrassment, disgust and being unclean.

Harm

Unlike the more attractive branded packs, the plain pack reinforced negative perceptions of the harms associated with smoking and made participants think of illness and poor health.

**Ford A, MacKintosh AM, Moodie C, Richardson S and Hastings G (2013b)**  
**Cigarette pack design and adolescent smoking susceptibility: a cross-sectional survey**  
*BMJ Open*, 3: e003282. doi:[10.1136/bmjopen-2013-003282](https://doi.org/10.1136/bmjopen-2013-003282)

### **Design and Sample**

A cross-sectional in-home survey, involving face-to-face interviews and a self-completion questionnaire, was conducted between July and September 2011 with 11-16 year olds from across the UK. The sample, recruited via random location quota sampling, comprised 1025 never smokers. Based upon the response to three questions gauging susceptibility (intention to smoke), 72% were classified as non-susceptible smokers and 28% susceptible smokers.

### **Procedure**

Participants were shown one image which displayed five cigarette packs with the brand names covered. The five packs featured were a 'regular' pack with no special design features, a brown 'plain' pack, and three 'novelty' packs (a bright pink pack, a slim perfume-type superslims pack, and a pack with a novel style of opening, like a Zippo lighter).

Participants were asked to rate each of the five packs according to 11 different scales. The 11 scales were: (a) Attractive/Unattractive; (b) Eye-Catching/Not eye-catching; (c) Cool/Not Cool; (d) Not at all harmful/Very harmful; (e) Fun/Boring; (f) Worth looking at/Not worth looking at; (g) Meant for someone like me/Not meant for someone like me; (h) Grown-up/Childish; (i) Puts me off smoking/Tempts me smoke; (j) I dislike this pack/I like this pack; and (k) I would not like to have this pack/I would like to have this pack. Responses to each were provided on five-point semantic scales (e.g. 1 = 'Attractive' to 5 = Unattractive').

For each pack, a principal components analysis was conducted on the eleven items, to explore the potential for reducing these to a smaller number of composite measures. Principal components were extracted using varimax rotation with the criteria of eigenvalues greater than 1 and component loadings over 0.4. Two composite measures were derived from nine of the 11 items. Five items combined to form a composite *pack appraisal* measure: (a) Unattractive/Attractive; (b) Not eye-Catching/Eye-catching; (c) Not cool/Cool; (e) Boring/Fun; (f) Not worth looking at/Worth looking at. Four items combined to form a composite *pack receptivity* measure: (g) Not meant for someone like me/Meant for someone like me; (i) Puts me off smoking/Tempts me smoke; (j) I dislike this pack/I like this pack; (k) I would not like to have this pack/I would like to have this pack.

Composite scores for each pack were derived by combining the pack ratings, with scores ranging from 5-25 for pack appraisal and 4-20 for pack receptivity.

### **Findings**

#### Appeal - Attractiveness

The plain pack was viewed more negatively than the regular pack and the three 'novelty' packs. Mean scores for the plain pack ranged from 1.24 to 1.99, which were significantly lower for all 11 items when compared with each of the other four packs ( $p > 0.007$ ).

#### *Positive pack appraisal*

Three percent indicated positive appraisal of the plain pack, 8% the 'regular' pack and between 14% and 21% the 'novelty' packs. Generalised estimating equations (GEE) analysis, controlling for confounding variables linked with youth smoking, found that each of the three 'novelty' packs was significantly more positively appraised than the 'regular' pack

( $p < 0.001$ ). The plain pack was significantly less likely to receive a positive appraisal score than the regular pack ( $AOR = 0.54$ , 95%  $CI$  0.43 to 0.67,  $p < 0.001$ ).

#### *Positive pack receptivity*

Three percent indicated being receptive to the plain pack, 4% the 'regular' pack and between 5-7% the 'novelty' packs. GEE analysis, controlling for confounding variables linked with youth smoking, found that participants were more receptive to each of the three 'novelty' packs than the 'regular' pack ( $p < 0.05$ ). Although the likelihood of positive receptivity was lower for the plain pack versus the regular pack, the effect was not statistically significant ( $AOR = 0.85$ , 95%  $CI$  0.68 to 1.07,  $p = 0.172$ ).

#### Harm

One of the 11 items measured perceptions of harm (Very harmful/Not at all harmful) for each pack. The plain pack was rated as significantly more harmful than the regular pack ( $p < 0.001$ ). The regular pack was rated as significantly more harmful than two of the (lighter coloured) novelty packs ( $p < 0.001$ ).

#### Attitudes, beliefs, intentions and behaviour

##### *Appraisal and susceptibility*

For each pack, logistic regressions, controlling for smoking related and demographic variables, were conducted to examine the relationship between pack appraisal and susceptibility. Those with a positive appraisal of the 'regular' pack were 2.05 times as likely to be susceptible to smoking as those giving a non-positive appraisal ( $AOR = 2.05$ , 95%  $CI$  1.29 to 3.25,  $p = 0.002$ ). Those with a positive appraisal of the 'novelty' packs were between 2.20 and 2.51 times as likely to be susceptible to smoking ( $p < 0.001$ ). There was no association between positive appraisal of the plain pack and susceptibility ( $AOR = 1.04$ , 95%  $CI$  0.48 to 2.26,  $p = 0.914$ ).

##### *Receptivity and susceptibility*

For each pack, logistic regressions, controlling for demographic and smoking related variables, were used to examine the relationship between pack receptivity and smoking susceptibility. Those receptive to the novelty packs were between 2.42 and 4.42 times as likely to be susceptible ( $p < 0.001$ ). There was no association between receptivity to the 'regular' pack and susceptibility ( $AOR = 1.97$ , 95%  $CI$  0.96 to 4.03,  $p = 0.064$ ) or receptivity to the plain pack and susceptibility ( $AOR = 0.92$ , 95%  $CI$  0.38 to 2.27,  $p = 0.863$ ).

**Hoek J, Gendall P, Maubach N and Edwards R (2012)**

**Strong public support for plain packaging of tobacco products**

*Australian and New Zealand Journal of Public Health*, 36(5): 405-407. doi:[10.1111/j.1753-6405.2012.00907.x](https://doi.org/10.1111/j.1753-6405.2012.00907.x).

### **Design and Sample**

A cross-sectional survey (with an experimental between-subjects design) was conducted to investigate public support for the plain packaging of cigarettes and public evaluations of industry and public health arguments amongst smokers and non-smokers in New Zealand via an internet survey run by a commercial internet panel in March 2012. The final sample of 836 comprised 418 smokers and 418 non-smokers and was weighted to the age, sex, ethnicity and smoking status of the population according to 2006 state census data.

### **Procedure**

Respondents were asked to evaluate statements about plain tobacco packaging using 5-point, fully-labelled scales ranging from ‘strongly agree’ to ‘strongly disagree’ with a ‘neither disagree nor agree’ mid-point and a ‘don’t know/can’t choose’ option. Support for plain packaging was assessed using an 11-point scale, labelled at each end, ranging from ‘no support at all’ to ‘full support’.

### **Findings**

#### Attitudes, beliefs, intentions and behaviour

Most respondents agreed or strongly agreed that ‘Attractive tobacco packaging encourages young people to experiment with smoking’ (57%). Non-smokers had significantly higher levels of agreement with these statements than smokers (63% vs. 31%). Just under half (48%) agreed that ‘tobacco packaging encourages smokers to try new brands’ compared with 23% disagreeing, and 39% agreed that ‘Plain packaging would discourage young people from trying smoking’ compared with 30% disagreeing; in both cases, respondents were more likely to agree than disagree with public health arguments. Smokers disagreed that packaging encouraged them to experiment with new brands; less than a third agreed (29%) with this claim compared to just over half the non-smokers (52%). Forty-four percent smokers disagreed and 18% non-smokers disagreed with the statement.

Equal proportions of respondents agreed (36%) and disagreed (36%) that ‘Plain packaging would encourage smokers to quit’. Around a fifth of smokers believed plain packaging would promote quitting (18%) or deter initiation (22%), while more than twice as many non-smokers believed plain packaging would promote quitting (41%) or deter initiation (43%). Fifty-three percent smokers disagreed and 31% non-smokers disagreed with the encourage quitting statement and 30% smokers disagreed and 49% non-smokers disagreed with the initiation statement.

Neither smokers (35%) nor non-smokers (58%) agreed that ‘Plain packaging is unfair because it would stop tobacco companies using their brands and logos to promote their products’ (33% smokers agreed and 16% non-smokers agreed with this statement). Overall, respondents were more likely to reject than accept this argument (20% agreed vs. 54% disagreed).

#### Facilitators/barriers – Public opinion of plain packaging

The general level of support for plain packaging was estimated to be 69%. Non-smokers’ support for plain packaging was statistically significantly higher (30 percentage points

higher) than that of smokers. Support among women for plain packaging was statistically significantly higher (10 percentage points higher) than among men. Support for plain packaging among Māori and Pacific people was higher than among other ethnicities, and younger and older respondents were more supportive than those aged between 25 and 64, but these differences were non-significant.

**Maynard OM, Munafò MR and Leonards U (2013)**

**Visual attention to health warnings on plain tobacco packaging in adolescent smokers and non-smokers**

*Addiction*, **108**(2): 413-419. doi:[10.1111/j.1360-0443.2012.04028.x](https://doi.org/10.1111/j.1360-0443.2012.04028.x)

**Design and Sample**

Eye tracking research was conducted with a convenience sample of 87 adolescents (14-19 years) in three comprehensive secondary schools in Bristol (England). Participants included never-smokers ( $n = 26$ ), experimenters ( $n = 34$ ), weekly smokers ( $n = 13$ ) and daily smokers ( $n = 14$ ), with smoking classification based on self-report. Never-smokers were defined as never having tried a cigarette; experimenters as having tried a cigarette or smoked a cigarette, but not in the past week; weekly smokers were defined as smoking at least one cigarette a week, but not daily; and daily smokers were defined as smoking at least one cigarette a day.

**Procedure**

Eye-tracking equipment (Eyelink II) was used to measure the number of saccades (eye movements) towards health warnings and branding on branded and plain cigarette packs. Pupils who expressed an interest in participating arranged a testing time with the teacher and testing was completed during either their psychology lesson or during a free period.

Participants were shown identically sized images of cigarette packs, which were either branded or plain, on an LCD screen. Branded pack images were taken from 10 popular tobacco brands in the UK (Benson and Hedges, Lambert and Butler, Mayfair, Richmond, Silk Cut, Embassy, Marlboro, Player's Gold Leaf, Royals and Sterling). Plain pack images were taken from an example of a plain pack created for ASH and modified to create 10 plain pack images with the cigarette brand names described above included as plain text. Ten different pictorial health warnings were chosen at random from the 11 pictorial warnings currently in use on cigarette packs in the UK. These health warnings were paired with the branded and plain pack images, to create a total of 200 stimuli (100 branded, 100 plain). For each participant, 20 images were selected pseudo-randomly from the total image set of images, comprising each of the 10 branded packs and the 10 plain packs, with each of the 10 health warnings presented once on each type of pack. Each image was shown at a rate of ten seconds per image, followed by a one second of an empty screen. To ensure that participants had the same scan starting point at image onset, they fixated a central fixation cross between each image presentation.

**Findings**

Warnings

Analysis of variance, irrespective of smoking status revealed more eye movements to health warnings than branding on plain packs, but an equal number of eye movements to both regions on branded packs ( $P = 0.033$ ). This was observed among experimenters ( $P < 0.001$ ) and weekly smokers ( $P = 0.047$ ), but not among never-smokers or daily smokers.

For experimenters and weekly smokers, this interaction was characterised by an equal number of eye movements towards the health warnings and branding on branded packs (experimenters:  $t(33) = 0.41$ ,  $P = 0.68$ ; weekly smokers:  $t(12) = 0.56$ ,  $P = 0.58$ ), but more eye movements towards health warnings than branding on plain packs (experimenters:  $t(33) = 2.69$ ,  $P = 0.011$ ; weekly smokers:  $t(12) = 2.25$ ,  $P = 0.044$ ). Among never-smokers, a main effect of location was observed, ( $F(1, 25) = 6.95$ ,  $P = 0.014$ ), reflecting more eye movements towards the health warnings than the branding. A main effect of pack type ( $F(1, 25) = 11.36$ ,

$P = 0.002$ ) was also observed, indicating more eye movements overall to branded packs than plain packs. No main effect of pack type or location was observed among daily smokers. Analysis of the time per image spent fixating health warnings compared to branding confirmed that experimental and weekly smokers spent more time fixating health warnings on plain packs than on branded packs.

**McCool J, Webb L, Cameron LD and Hoek J (2012)**

**Graphic warning labels on plain cigarette packs: will they make a difference to adolescents?**

*Social Science & Medicine*, 74(8): 1269-1273. doi:[10.1016/j.socscimed.2011.12.043](https://doi.org/10.1016/j.socscimed.2011.12.043)

### **Design and Sample**

Focus groups were used to explore young people's response to, and interpretation of, pictorial warnings and plain packaging. Twelve focus groups were conducted in 2009 with 80 14-16 year olds recruited from a sample of schools stratified to represent different levels of socio-economic status. The groups were segmented by gender, and comprised mostly non-smokers (it was not considered possible to segment the groups by smoking status because the reported incidence of smoking in this age group was low, around 5-6%). Participants were recruited through schools, with random procedures used to select from the list of those who indicated consent to participate.

### **Procedure**

The discussion covered a range of topics including attitudes towards smoking, brand imagery, response to pictorial warnings and interpretations of plain packaging. Participants were shown two branded packs for brands popular with adolescents in New Zealand (Holiday and Horizon) and a plain pack featuring a pictorial warning. The packs had the same pictorial warning labels ('Smoking causes foul and offensive breath', with an image of blackened teeth and a rotting tongue, and 'Smoking is highly addictive', with an image of tarred and aged fingers holding a cigarette).

### **Findings**

#### Appeal - Attractiveness

The plain pack made smoking "look budget", "ugly" and "pointless", and was perceived to "kill the fun" associated with the behaviour, making it appear "not a cool thing to do".

#### Warnings

Participants found the juxtaposition of branded imagery and pictorial warnings on branded packs confusing and contradictory, and expressed scepticism regarding the credibility and authenticity of the warning messages and photographs. In contrast, on plain packs, the warnings were perceived as "clear" and "straight to the point".

#### Harm

Plain packs were perceived as cheap and inferior quality which, in turn, was associated by some participants with greater harmfulness.

**Moodie CS and MacKintosh AM (2013)****Young adult women smokers' response to using plain cigarette packaging: a naturalistic approach**

*BMJ Open*, 3: e002402. doi: [10.1136/bmjopen-2012-002402](https://doi.org/10.1136/bmjopen-2012-002402)

**Design and Sample**

In this naturalistic experiment, 187 young adult women smokers aged 18-35 were recruited from across the six most populated towns and cities in Scotland and instructed to use plain cigarette packs provided to them for one week and their own fully branded packs for one week; ordering was randomised. Participants completed questionnaires twice a week assessing their perceptions and feelings towards packaging and smoking, response to the health warnings, and avoidant and cessation behaviour.

**Procedure**

Participants were instructed to transfer cigarettes from their own pack into brown (plain) packs provided and use these for either the first or second week of the study; ordering was randomised with half using the plain pack in the first week and half in the last week. The plain packs had a fictitious brand name (Kerrods) but featured the markings that appear on fully branded packs (Duty Paid stamps, health warnings, barcodes). Participants were instructed to complete questionnaires twice a week (each Thursday and Sunday) and return them via pre-addressed envelopes or by email. This allowed comparison between branded and plain packs.

**Findings**Appeal – Attractiveness and quality

In comparison to branded packaging, plain packaging was associated with more negative pack perceptions (not stylish, unfashionable, cheap, uncool, unattractive, poor quality, unappealing), more negative feelings about the pack (embarrassed, ashamed, unaccepted) and more negative feelings about smoking (less satisfying, less enjoyable, less good) (*all*  $p < 0.001$ ).

Warnings

No significant overall differences in salience, seriousness or believability of health warnings were found between the pack types. Participants did, however, report looking more closely at the warnings on plain packs than on branded packs ( $p < 0.001$ ), and also thinking more about what the warnings were telling them on plain packs ( $p < 0.001$ ).

Attitudes, beliefs, intentions and behaviour

Participants reported being more likely to report engaging in avoidant behaviours (hiding the pack and also covering the pack) when using the plain pack ( $p < 0.001$ ). They were also more likely to report engaging in cessation behaviours, including foregoing cigarettes ( $p < 0.05$ ), smoking less around others ( $p < 0.001$ ), thinking about quitting ( $p < 0.001$ ), and reduced consumption ( $p < 0.05$ ) when using the plain packs. Results did not differ by dependence level or socio-economic status.

**Pechey R, Spiegelhalter D and Marteau TM (2013)****Impact of plain packaging of tobacco products on smoking in adults and children: an elicitation of international experts' estimates***BMC Public Health*, 13: 18. doi:[10.1186/1471-2458-13-18](https://doi.org/10.1186/1471-2458-13-18)**Design and Sample**

A number of tobacco control experts (N=33) from Australasia, UK and North America participated in a semi-structured telephone interview to gauge their opinion on the potential impact that plain packaging may have on adult smoking prevalence and the percentage of children trying smoking, two years after being introduced in their respective countries. The experts were also asked to provide reasons for their estimates on prevalence change. The study used a mixed-methods approach, with estimated change in prevalence for both youth and adult smokers measured quantitatively, and the reasoning behind the estimates provided measured qualitatively.

**Procedure**

Prevalence rates for adults and children were provided and participants asked to estimate the expected values of these two years after the hypothetical introduction of plain packaging in their region, and the lowest and highest likely values, holding all other relevant factors constant. Participants were asked to outline the reasoning behind the estimates they provided.

**Findings**Attitudes, beliefs, intentions and behaviour

Estimates were provided by 32 of the 33 experts for adult smoking prevalence and 31 of the 33 for the percentage of children trying smoking. Estimates were linearly pooled to obtain medians of best estimates, and lower and upper points, to represent the opinion of the 'average expert'. The overall median estimate for the absolute change in adult smoking prevalence two years after the hypothetical introduction of plain packaging was -1%, with the lowest and highest values 0% and -2.25% respectively. The overall median estimate for the absolute change in the percentage of children trying smoking two years after the hypothetical introduction of plain packaging was -3%, with the lowest and highest values 0% and -6.1% respectively. None of the sample viewed an increase in smoking as the most likely outcome of plain packaging.

In terms of the reasoning behind the estimates provided, which was measured qualitatively, most experts (N=20) suggested that plain packaging would have a greater impact on children, as a consequence of less appealing packs, less brand identification and changes in social norms around smoking. The impact on cessation-related behaviours among adult smokers was less frequently mentioned (N=9), with the experts view that plain packaging would have little impact on adult smokers. Many (N=14) felt that the two year time frame for which estimates were requested did not allow for the full impact of plain packaging to be seen in prevalence rates, and 12 participants noted that tobacco control policies do not occur in isolation and plain packaging would be more effective if combined with media campaigns and fiscal policies.

**Ramunno S, Mandeville KL and Yarrow K (2012)**

**The effect of plain cigarette packaging on attention to health warnings**

*The Lancet*, **380**(November Suppl.): S5. doi:[10.1016/S0140-6736\(13\)60361-X](https://doi.org/10.1016/S0140-6736(13)60361-X)

### **Design and Sample**

Eye-tracking research was conducted with 28 adults (9 daily smokers, 7 weekly smokers, 4 ex-smokers and 8 non-smokers) aged 18-40 years who were recruited by convenience sampling.

### **Procedure**

Participants viewed an image of six cigarette packs on an LCD monitor, with three of these packs displaying the health warning Smoking Kills and three displaying the warning Smoking seriously harms you and others around you; the two health warnings displayed on the front of packs in the UK. Each image (showing the six packs) always contained the same six brands, but brand position and the warning featured on packs was randomised each time. Each participant viewed six consecutive images, which alternately showed only branded packs or only plain packs. For each presentation, after a period of five seconds a mouse pointer appeared allowing participants to select a brand; doing so ended the trial. A video eye tracker was used to record the time spent fixating on health warnings compared with the rest of the packet.

### **Findings**

#### Warnings

More time was spent looking at the branding than was spent looking at the health warnings. Fixation time on warnings was greater for plain packs than for branded packs (18.1% vs 15.8%), although only significantly so for the first pair of trials ( $p=0.043$ ).

**Rosenberg M, Pettigrew S, Wood L, Ferguson R and Houghton S (2012)  
Public support for tobacco control policy extensions in Western Australia: a cross-sectional study**

*BMJ Open*, 2: e000784. doi:[10.1136/bmjopen-2011-000784](https://doi.org/10.1136/bmjopen-2011-000784)

**Design and Sample**

A cross-sectional survey (with an experimental between-subjects design) was used to investigate public support for the plain packaging of cigarettes with young people and adult residents of Western Australia via household telephones in November 2010. Telephone numbers were randomly selected from an electronic household telephone directory. The final sample of 2,005 16-69 year-old respondents (66% from the Perth metropolitan area, the rest from country areas) was weighted to the age and location distribution of population according to 2006 state census data. The sample comprised 49.3% women; 29.3% 16-29 year-olds, 42.0% 30-49 year-olds and 28.7% 50-69 year-olds; 63.5% had no children under 15 years; 53.5% had completed postsecondary education; 12.3% were current smokers, 22.6% were ex-smokers and 59% had never smoked. A significantly higher proportion of men than women were current smokers (21.9% vs. 12.3%;  $p < 0.001$ ).

**Procedure**

Respondents were asked whether they ‘agreed’, ‘disagreed’ or ‘had no feelings either way’ about the introduction of plain packaging on cigarettes. The Australian Government had announced its intention to introduce plain packaging seven months earlier in April 2010.

**Findings**

Facilitators/barriers – Public opinion of plain packaging

Survey findings showed that half of the total sample (51%) agreed with the introduction of plain packaging on cigarettes, around a quarter (27%) disagreed and around a quarter (23%) stated they had no feelings either way. With regard to smoking status, non-smokers (including ex-smokers) were 2.7 times (95% CI, 2.0 to 3.6) more likely than smokers to agree with the introduction, and smokers were 2.6 times (95% CI, 1.9 to 3.6) more likely than non-smokers (including ex-smokers) to have no feelings either way about the introduction of plain packaging. Disagreement with the introduction of plain packaging by smoking status was reported as 38% for smokers, 25% for non-smokers and 21% for ex-smokers. By age, the survey found that respondents aged 50-69 years were twice as likely to agree with the introduction of plain packaging compared with respondents aged 16-29 years (55.1% vs 42.0%, OR 2.0, 95% CI 1.5 to 2.7). Finally by gender, the survey found that men were 1.4 times (95% CI 1.1 to 1.7) more likely than women to agree with the introduction of plain packaging (53.3% vs 47.8%), and less likely than women to have no feelings either way (21.3% vs. 24.4%; OR 0.9, 95% CI 0.7 to 1.2).

**Scheffels J and Sæbø G (2013)**

**Perceptions of plain and branded cigarette packaging among Norwegian youth and adults: a focus group study**

*Nicotine & Tobacco Research*, **15**(2): 450-456. doi:[10.1093/ntr/nts153](https://doi.org/10.1093/ntr/nts153)

### **Design and Sample**

Focus groups were conducted between 2009 and 2010 with young people and adults in Norway to explore the role of packaging design in communicating brand images and how participants perceived cigarette packs when design elements such as colour, logos and branded fonts were removed. Eleven focus groups were conducted (n=69), segmented by age (16-21, 20-29, 30-50 years) and smoking status (non-smokers, occasional smokers, daily smokers, former smokers). Participants were recruited by telephone by a market research agency.

### **Procedure**

An interview guide was used to structure the discussion, covering how brands are perceived, the role of cigarette pack design in perceptions of brand image and identity, views of the point of sale display ban on tobacco (implemented in Norway in 2010), and response to plain packaging. Participants were presented with original branded packs and two versions of plain packs for four popular brands in Norway (Prince, Marlboro, Kent, Lucky Strike). The plain packs were in two versions: grey with all symbols and logos removed but the original branded font retained, and grey with all symbols and logos removed and the brand name displayed in a standardised font and positioned under '20 cigarettes'. All packs had text-only warnings identical to the warnings on Norwegian packs at the time of the research.

### **Findings**

#### Appeal - Attractiveness and smoker identity

Cigarette brands were associated with particular attributes and identities, particularly by the younger participants. Colour and fonts were important pack design elements in defining these identities, and triggered associations with different personality types, social status, femininity and masculinity. When pack design elements were removed, participants felt that this "took away the identity" of packs and made them appear "boring", without their "spark of life". Current and former smokers felt that their brand no longer felt like their own pack when presented in a plain variant, and that they could no longer connect with it in the same way.

#### Warnings

The removal of design elements made the warnings appear more prominent to participants because of the removal of competition from colour and other design elements.

#### Harm

For brands whose packs used strong dark colours such as red, the grey plain pack's loss of identity could sometimes evoke less sense of strength and danger than had been associated with the branded pack's stronger colours.

#### Attitudes, beliefs, intentions and behaviour

Current daily smokers tended to feel that plain packs would have no impact on their smoking. Occasional and former smokers were divided in their views of the possible impact of plain packs, with some feeling that they would be less tempted to smoke with plain packs and others feeling that plain packs would make little difference.

**Uppal N, Shahab L, Britton J and Ratschen E (2013)**

**The forgotten smoker: a qualitative study of attitudes towards smoking, quitting, and tobacco control policies among continuing smokers**

*BMC Public Health*, 13: 432. doi:[10.1186/1471-2458-13-432](https://doi.org/10.1186/1471-2458-13-432)

### **Design and Sample**

Adult smokers, recruited in Nottingham (England) using purposive sampling, participated in either focus groups (N=13) or semi-structured interviews (N=9). The study aimed to explore issue relating to continuing smokers' motivation to quit, including their attitudes towards various measures of existing and impending tobacco control.

### **Procedure**

Within both the interviews and groups a number of tobacco related issues were discussed, for instance, attitudes towards smoking and quitting, motives for quitting, barriers to quitting, and attitudes towards existing and impending policies (e.g. hidden sales displays, plain packaging) and services (e.g. local NHS Stop Smoking Services).

### **Findings**

#### Attitudes, beliefs, intentions and behaviour

Plain packaging was mentioned only briefly. Participants felt that plain packaging would not affect brand selection or quantity of cigarettes purchased, because price, taste, and brand familiarity were thought to be more important influences on purchasing. Plain packaging was considered to have some potential in deterring younger people: "It will work from the point of view of some kids who are drawn to shiny things... but I don't think it's going to make much difference to established smokers."

**Wakefield M, Germain D, Durkin S, Hammond D, Goldberg M and Borland R (2012)**  
**Do larger pictorial health warnings diminish the need for plain packaging of cigarettes?**  
*Addiction*, **107**(6): 1159-1167. doi:[10.1111/j.1360-0443.2012.03774.x](https://doi.org/10.1111/j.1360-0443.2012.03774.x)

### **Design and Sample**

An online survey was conducted in Australia with adult smokers (N=1,203) in 2010, before plain packaging and larger (75%) front-of-pack pictorial health warnings were implemented. It aimed to assess the impact of plain packaging and pictorial warning size on brand appeal.

### **Procedure**

Participants were randomly allocated to view one of six pack conditions that varied by pictorial warning size (30%, 70% or 100%) and cigarette pack design (plain or branded), then asked to view and rate six brands consecutively.

### **Findings**

#### Appeal

Plain packaging reduced brand appeal, and it did so more than increasing the size of pictorial health warnings. There was a significant interaction between pack plainness and pictorial health warning size in a number of measures. When packs were plain, increasing the size of health warning did not influence ratings of positive pack characteristics ( $p > 0.05$ ) – these positive pack characteristics being a combination of ‘popular among smokers’, ‘attractive’, ‘sophisticated’ and ‘a brand you might try/smoke’. When packs were branded, increasing the size of the health warning from 30% to 70% significantly reduced ‘positive pack characteristics’ ratings ( $p < 0.001$ ), but increasing it to 100% did not reduce ratings further.

Comparing the plain and branded packs with 100% pictorial health warnings, positive pack ratings were significantly lower for plain than branded packs ( $p = 0.001$ ). There were no significant interactions in predicting other rating measures (perceptions of smokers and taste) and there were no interaction effects between plainness of pack and pictorial warning size in respondents’ attitudes toward smoking and perceived health effects of smoking or in predicting pack choice for purchase.

#### Warnings

Increasing the size of pictorial health warnings on packs had less of an effect than plain packaging had on brand appeal (see findings for ‘Appeal’ above).

#### Harm

Participants were asked to rate the packs they were exposed to according to ‘negative harm characteristics’ (a combination of two items assessing whether packs were perceived to be high in tar and harmful to your health). No effect was found for ‘negative harm characteristics’.

#### Attitudes, beliefs, intentions and behaviour

Participants indicated their response on a scale of ‘0–not at all’ to ‘10–extremely’ to a series of statements. Controlling for the time since finishing their last cigarette, there was no effect of plainness of pack (plain or branded) on participants’ ratings of ‘how much do you feel like having a cigarette right now?’; ‘how much do you feel like quitting today?’; or ‘how likely are you to be smoking cigarettes a year from now?’. There was no effect of plainness of pack (plain or branded) on participants’ strength of agreement or disagreement with the following

attitudinal statements: 'I regret having started smoking'; 'the health effects of smoking are exaggerated'; 'I get a lot of pleasure out of smoking'; and 'smoking is a disgusting habit'.

Participants were asked 'If you ran out of cigarettes and only the packs below were available in the store you went to, which pack would you be most tempted to buy?' and could select one or none of the packs. Eighty-two percent chose a pack they had rated. Participants who saw plain cigarette packs were more likely to indicate that they would not buy any of the packs they had seen (20.3%), compared with those who had seen branded packs (15.3%) [OR=1.4, 95% CI: 1.04–1.89,  $p=0.026$ ].

Wakefield MA, Hayes L, Durkin S and Borland R (2013)

**Introduction effects of the Australian plain packaging policy on adult smokers: a cross-sectional study**

*BMJ Open*, 3: e003175. doi:[10.1136/bmjopen-2013-003175](https://doi.org/10.1136/bmjopen-2013-003175)

**Design and Sample**

A cross-sectional survey, conducted in November 2012 when plain packs were being introduced to the Australian market but were not yet mandatory, explored whether brand appeal, perceived harm, quitting thoughts and support for plain packaging differed according to whether smokers were smoking from plain packs or fully branded packs. The sample was 536 smokers (identified from the Victorian Smoking and Health Survey, which has a sample of just under 4,000 adults) in the Australian state of Victoria. Almost three-quarters (73.2%) of those surveyed were smoking from a plain pack and 27.7% from a branded pack.

**Procedure**

Computer assisted telephone interviews were conducted. Smokers were identified as individuals who currently smoked cigarettes, pipes and/or cigars daily, weekly or less than weekly. To ascertain exposure to the new plain packs, current cigarette smokers who reported smoking their usual cigarette or RYO brand were asked: "Is the cigarette/ tobacco pack you are currently smoking one of the new dark brown packs which has all of its logos removed and a large picture health warning on the front?"

As part of the larger survey, participants were asked about: perceived quality and satisfaction of cigarettes compared with one year ago, frequency of thoughts of smoking harm, perceived exaggeration of harms, frequency of thoughts of quitting, quitting as a priority in life, plans to quit (in 30 days and six months) and support for plain packaging.

**Findings**

Appeal - Quality

Compared with branded pack smokers, those smoking from plain packs perceived their cigarettes to be lower in quality than a year ago (OR=2.00, p=0.004) and less satisfying than a year ago (OR=2.03, p=0.006). When the findings were adjusted for SES, daily consumption, recall of any anti-smoking advertisements, brand segment and previous quit attempts (Model 1), those smoking from plain packs still perceived their cigarettes to be lower in quality than a year ago (OR=1.66, p=0.045) and less satisfying than a year ago (OR=1.70, p=0.052). In Model 2, which was the same as Model 1 but additionally adjusted for covariates and the proportion of the sample smoking from a plain pack each week of the interview, no significant differences were found between those smoking from plain packs and those smoking from fully branded packs.

Harm

Those smoking from a plain pack were significantly more likely than those smoking from a fully branded pack to have thought, in the last week, about the harm that smoking might be doing to them (OR=1.56, p=0.032). However, in Model 1 and Model 2, no significant differences were found between those smoking from plain packs and those smoking from fully branded packs. Almost a third of those smoking from both the plain pack (32.3%) and fully branded pack (30.9%) agreed or strongly agreed that the harms associated with smoking had been exaggerated, with no significant differences found by pack type. This did not change for Model 1 and Model 2.

#### Attitudes, beliefs, intentions and behaviour

Those smoking from a plain pack were significantly more likely than those smoking from a fully branded pack to rate quitting as a priority in life ( $p < 0.002$ ) and think about quitting at least once a day in the last week ( $p < 0.02$ ). Those smoking from a plain pack were significantly more likely than those smoking from a fully branded pack to report seriously considering quitting smoking in the next 6 months ( $OR = 1.66$ ,  $p < 0.011$ ). However, in Model 1 and Model 2, no significant differences were found between those smoking from plain packs and those smoking from fully branded packs. In respect to planning to quit smoking in the next 30 days, no significant differences were found by pack type.

#### Facilitators/barriers – Public opinion of plain packaging

Those smoking from plain packs were significantly more likely to be supportive of plain packaging than smokers who were using fully branded packs ( $p = 0.034$ ). The findings remained significant for Model 1 ( $p = 0.049$ ) and Model 2 ( $p = 0.024$ ).

## Research Within the UK

### **Emerging Evidence and Contribution to the Literature**

In July 2013 the UK government announced that the decision on plain tobacco packaging would be delayed until evidence emerges from Australia. While evidence from Australia will provide an insight into the impacts that plain packaging may have in that country, research from the UK is pertinent to the debate concerning the potential impacts of plain packaging in this country. The first study in the UK was published in 2009, meaning that no research from the UK was available at the time of the consultation on the future of tobacco control. There have now been thirteen studies conducted in the UK, all published in academic journals such as *Addiction*, *BMJ Open*, *European Journal of Public Health*, *Journal of Adolescent Health*, *Lancet*, *Nicotine & Tobacco Research* and *Tobacco Control* and all subject to peer-review (Hammond et al, 2009; Moodie & Ford, 2011; Moodie et al, 2011; Munafò et al, 2011; Moodie et al, 2012; Ramunno et al, 2012; Uppal, 2012; Ford et al, 2013a; Ford et al, 2013b; Hammond et al, 2013; Maynard et al, 2013; Moodie & MacKintosh, 2013; Pechey et al, 2013).

It is important to consider how plain packaging research from the UK has contributed to, and extended, existing knowledge. In respect to study design, researchers from the UK were the first to use eye-tracking technology to explore fixation time and number of saccades (eye-movements) towards health warnings on branded and plain packs, with both youth and adult smokers and non-smokers (Munafò et al, 2011; Ramunno et al, 2012; Maynard et al, 2013). Similarly, the first studies to employ a naturalistic approach, where smokers use plain packs instead of their own fully branded packs, were conducted in the UK (Moodie et al, 2011; Moodie & MacKintosh, 2013). In respect to outcomes, some of the key findings from research in the UK are detailed below.

### **Key Findings from Research from the UK**

#### **Appeal**

All studies from the UK that have assessed appeal have found that plain packaging reduces the appeal of the pack, the cigarettes inside, the smoker and smoking. This is consistent with research from other countries, and is the most common finding in the literature. As many of the UK studies use fully branded packaging as a comparison, this also allows an insight into the appeal of some of the packs currently available on the UK market. To provide one example, five studies have assessed consumer perceptions of Silk Cut Superslims, a slim pack introduced to the UK market in 2008 (see Figure 1).

One study explored young adult smoker's (N=54) perceptions of a range of cigarette packs, including Silk Cut Superslims (Moodie & Ford, 2011). While some males commented that the pack was "like a fashion accessory", it was not considered a brand that males would smoke as females were considered the target market: "*It's for teenage lasses they're going for there I think*". For young women, particularly those in the 18-24 year old age range, the pack was viewed very positively. It was described as cute, cool, pretty, glamorous, sophisticated,

trendy, chic, compact, skinny and thin, likened to a perfume, considered to help with discretion and helped increase purchase interest (Moodie & Ford, 2011). That young women smokers are appreciative of these packs helps explain why tobacco companies invest heavily in innovative packaging. There is however the potential for a ‘spillover’ effect, where something intended for adult smokers has an impact on underage youth, both smokers and non-smokers. Two studies explored how children respond to this and other packs. The Silk Cut Superslims pack (and a Vogue Superslims pack) were rated in one focus group study with 15 year old smokers and non-smokers (N=48) as appealing, being described as cute, cool, compact and skinny, likened to a perfume, considered to help with discretion and increased desire to see what was inside (Ford et al, 2013a); essentially the same description given by young women smokers.

**Figure 1: Silk Cut Superslims**



In a survey with children aged 11-16 from across the UK (N=1,373), the sample was shown an image of five different packs with the brand names covered (see Figure 2), including Silk Cut Superslims (Ford et al, 2013b). Eleven items, measured on five-point scales, were used to assess young people’s responses to these different pack designs. Five of these items were used to assess pack appraisal (e.g. Unattractive/ Attractive; Not cool/Cool; Boring/Fun) and four items pack receptivity (e.g. Puts me off smoking/Tempts me smoke; I would not like to have this pack/I would like to have this pack). For every item, and the composite score for pack appraisal and pack receptivity, the Silk Cut Superslims pack was rated significantly higher than a regular Mayfair King Size pack, which was rated on every item, and the composite score for pack appraisal and pack receptivity, significantly higher than the plain pack. Those with a positive appraisal of the Silk Cut Superslims pack were 2.2 times more likely to be susceptible to smoking than those with a non-positive appraisal, and those receptive to this pack were 4.4 times more likely to be susceptible.

**Figure 2: Left to right: Mayfair King Size, Silk Cut Superslims, Marlboro Bright Leaf, Pall Mall and a plain pack**



In another study from the UK, 16-19 year old women (N=947) were shown ten images of packs according to one of four experimental conditions: fully branded female-oriented packs, the same packs without descriptor words, the same packs but without branding (i.e. plain packs), and fully branded male-oriented packs (Hammond et al, 2013). Only one of these ten packs, Silk Cut Superslims, came in a compact perfume-type format (see Figure 3 for the female-oriented packs used in this study). The Silk Cut Superslims pack was rated by 35.8% of those shown this pack as ‘a little’ or ‘a lot’ more appealing than other brands. Of the ten different female-oriented brand variants shown, this was the second lowest rating given. So while more appealing than other brands, it was considered by this sample as less appealing than the other female-oriented packs shown. In respect to plain brown versions of the same ten brand variants however, the plain Silk Cut Superslims pack was rated by 41.5% of those shown this pack as ‘a little’ or ‘a lot’ more appealing than other brands which was, this time, the highest rating for any of the packs. This suggests that much of the appeal of the Silk Cut Superslims pack is related to the size and shape, at least for young women.

**Figure 3: Ten female oriented packs with full branding (Condition 1), without descriptors (Condition 2) and plain versions (Condition 3)**



Permission to use image granted by Dave Hammond

Two other studies have explored perceptions of plain versions of the Silk Cut Superslims pack. Moodie and Ford (2011) showed young adult smokers three brown packs displaying health warnings but with no branding. The three packs differed only in size and method of opening. The first pack was a regular sized pack with flip-top opening, the second a regular sized pack which opened horizontally (a slide pack), and the third a slim pack in the style of the Silk Cut Superslims pack. Even with all branding removed, and in a colour that participants disliked, some young women smokers still found the plain brown Superslims pack appealing, equating it with a perfume bottle or make-up box; males were generally disinterested in shape or style of opening. Participants were shown these same three plain packs (regular, slide, Superslims) in another study, an online survey with 10-17 year old smokers and non-smokers (N=658), and asked which pack, if any, they liked the most (Moodie et al, 2011). For susceptible never-smokers, 31% chose the slide pack, 14% the Superslims pack and only 6% the flip-top pack; the remainder stated that they did not like any of the packs or didn't know. Susceptible never smokers were significantly more likely to favour the Superslims pack than non-susceptible never smokers (14% vs 5%).

### **Warning Salience and Effectiveness**

Research in the UK has helped to explore the impact of warnings on plain packs using online surveys, eye-tracking and naturalistic research. As previously explained, researchers in the UK were the first to use these last two approaches. While these eye-tracking studies involved forced exposure, and gauged response over a brief period of time, eye-tracking methodology nevertheless provides an objective measure of visual attention towards the branding and health warnings on cigarette packs. One study found that in comparison to fully branded packs, warnings on plain packs were more salient for weekly smokers, but not daily smokers

(Munafò et al, 2011). Another study found that warnings were more salient on plain packs for less than weekly and weekly smokers, but not daily smokers (Maynard et al, 2013). These findings should be considered in light of research which has found that it is occasional smokers, rather than regular smokers, who are more likely to view warnings as a deterrent to smoking (Moodie, MacKintosh & Hastings, in press). Moodie et al (in press) explored how 11-16 year olds responded to health warnings on cigarette packs in the UK in 2008 and 2011 (N=2,774); in 2008 text warnings appeared on the front and back of packs and in 2011 text warnings appeared on the front of packs and pictorial warnings on the back. At both waves, only 13-14% of regular smokers thought that health warnings put them off smoking, compared to 79-86% of occasional smokers. Similarly, at both waves, 20-21% of regular smokers thought that warnings made them less likely to smoke, compared to 78-86% of occasional smokers. Given that stopping occasional smokers from becoming regular smokers is a key objective in tobacco control, these findings collectively add weight to the potential benefits of plain packaging.

In respect to regular smokers, two naturalistic studies, in which young adult daily smokers used plain packs for a period of one or two weeks (and their own fully branded packs for an equivalent period of time), found, similar to the eye-tracking research, that warnings on plain packs were not significantly more salient than for branded packs (Moodie et al, 2011; Moodie & MacKintosh, 2013). One of these studies also explored attention to warnings and the extent to which smokers process these messages (Moodie & MacKintosh, 2013). It was found that when using plain packs in real-world settings, daily smokers were significantly more likely to report looking closely at the health warnings, and thinking more about what they were telling them, than they were when using fully branded packs. While the study only included young women smokers, required to use plain packs for just one week, it suggests that an outcome of plain packaging may be that it leads at least some regular smokers to pay closer attention to the on-pack health warnings and process them more deeply.

### **Perceptions of Product Harm**

A number of studies from the UK have helped shed light on how multiple elements of packaging can influence perceptions of harm, including colour, shape and pack descriptors.

In respect to pack colour, all UK studies have used brown as a base colour for plain packs, although one study also used white plain packs (Hammond et al, 2009) and one study has also used white, blue, red and green plain packs (Moodie et al, 2011). All studies that have made comparisons between packs have found that in comparison to fully branded packaging, brown plain packaging increases harm perceptions and white plain packaging decreases harm perceptions. While studies in the UK, as elsewhere, use plain packs that feature information that could potentially be used to influence perceptions of harm, such as a brand name, one study has assessed the isolated influence of pack colour. In a web survey with young people aged 10-17 years old, they were shown an image of four coloured plain packs (Figure 4) and asked what pack, if any, would have the strongest (and weakest) tasting cigarettes and the most (least) harmful cigarettes (Moodie et al, 2011). Response options included the four colours, they're all the same, and don't know. Approximately half the sample made associations between pack colour and strength and level of harm. The red pack was associated with the strongest taste (29% Red, 14% Green, 5% Light Blue, 3% White) and greatest harm (22% Red, 12% Green, 7% Light Blue, 3% White) whereas the lighter coloured packs were associated with weakest taste (27% White, 15% Light Blue, 7% Green, 4% Red) and least harm (18% White, 15% Light Blue, 11% Green, 3% Red). Ever-smokers and susceptible never-smokers were more likely to associate pack colour with harm ( $p < 0.01$ ). The

pattern, however, was similar for the entire sample, irrespective of smoking status. The findings are consistent with tobacco industry documents (Wakefield et al, 2002), highlighted by one pack designer who noted that “Red packs connote strong flavour... white packs suggest that a cigarette is low tar. White means sanitary and safe” (Koten, 1980).

**Figure 4: Plain packs displaying only the health warning Smoking Kills**



In respect to pack shape, plain packaging studies which explored consumer perceptions of the Silk Cut Superslims pack found that this pack was considered to carry a reduced risk of harm (Moodie & Ford, 2011; Hammond et al, 2013; Ford et al, 2013a; Ford et al, 2013b). For instance, in a focus group study with 15 year olds, one comment made was: “*I think that one [plain pack] looks like you’d be more ill if you kept smoking them but they ones [Silk Cut Superslims] look like you wouldn’t be so unwell if you smoked them for ages*” (Ford et al, 2013a). This was true even for a plain version of this pack. Hammond et al (2013) found that when participants were shown ten plain versions of female-oriented brand variants (Figure 3), the percentage agreeing that the pack they were exposed to delivered less tar and had less of a health risk compared to other brands was highest for the plain Silk Cut Superslims pack.

For pack descriptors, it is well established that these mislead consumers, who often use them as a barometer of risk (Pollay & Dewhirst, 2001; Hammond & Parkinson, 2009). The first study to explore the impact of descriptors on plain packs was an online survey in the UK with adult smokers (N=516) and youth smokers and non-smokers (N=806) (Hammond et al, 2009). It was found that even on otherwise identical plain packs, participants rated packs with the descriptor ‘Smooth’ or ‘Gold’ as significantly lower tar, lower health risk and easier to quit smoking than packs with the descriptor ‘King Size’. Subsequent research has also found that descriptors on otherwise identical plain packs can influence perceptions of tar and nicotine delivery and harmfulness (e.g. Borland & Savvas, 2013).

## **Attitudes, Beliefs, Intentions and Behaviour**

A number of studies in the UK have assessed the potential impact that plain packaging may have on smoking intentions and behaviour, and one study explored the potential impact on smoking prevalence. Pechey et al (2013) gauged the extent to which experts within the tobacco field (from the UK, Australasia and North America) thought that plain packaging may impact upon smoking prevalence among adult smokers and also children within two years of being implemented. While each experts’ estimate is subjective, and they were asked to provide estimates within a fixed time-frame, the median estimate for the absolute change two years after the hypothetical introduction of plain packaging was –1% for adult smoking prevalence and –3% for the percentage of children trying smoking. None of the sample viewed an increase in smoking as the most likely outcome of plain packaging.

In terms of reducing the number of children trying smoking, often considered a main aim of introducing plain packaging, research with 1,373 children (11-16 years) involved the sample being shown an image of five different packs (see Figure 2), including a plain pack, a regular pack and three novelty packs (Ford et al, 2013b). Logistic regression analysis found that those with a positive appraisal of the ‘novelty’ packs were between 2.20 and 2.51 times as likely to be susceptible to smoking than those giving a non-positive appraisal ( $p < 0.001$ ). Those with a positive appraisal of the ‘regular’ pack were 2.05 times as likely to be susceptible ( $p = 0.002$ ). There was no association, however, between positive appraisal of the plain pack and susceptibility ( $p = 0.914$ ). In addition, whereas those receptive to the novelty packs were between 2.42 and 4.42 times as likely to be susceptible ( $p < 0.001$ ), there was no association between receptivity to the ‘regular’ pack and susceptibility ( $p = 0.064$ ) or receptivity to the plain pack and susceptibility ( $p = 0.863$ ).

While the potential for plain packaging to impact upon the smoking behaviour of current adult smokers is often overlooked in the debate on plain packaging, two studies from the UK have explored the short-term impact of using plain packaging in real-world settings on self-reported smoking behaviour (Moodie et al, 2011; Moodie & MacKintosh, 2013). In both studies, participants reported being more likely to engage in avoidant behaviours such as hiding or covering the pack ( $p < 0.01$ ), and cessation behaviours such as smoking less around others ( $p < 0.01$ ) and thinking about quitting ( $p < 0.05$ ), when using the plain pack in comparison to their own fully branded packs. One of these studies, with 187 young adult women smokers, also found that in comparison with fully branded packaging, plain packaging was associated with missing out cigarettes ( $p < 0.05$ ) and reduced consumption ( $p < 0.05$ ). Results did not differ by dependence level or socioeconomic status.

## **Summary of Research in the UK**

Plain packaging research from the UK has helped contribute to existing knowledge in this area. The use of innovative methodologies has permitted new insights into what the potential impacts of plain packaging may be. Research suggests that plain packaging may increase warning salience for occasional smokers, a key target group for public health, if not for regular smokers, although they may think more about what the warnings are telling them. The findings also show that while plain packaging reduces appeal in comparison to regular branded packaging, innovative branded packaging (e.g. Superslims packs) increases the appeal in comparison to regular branded packaging. This has important implications for the UK market given the growing number of packaging innovations to the UK market since the Tobacco Advertising and Promotion Act (Moodie & Hastings, 2011; CTCR, 2012) and the likelihood that this trend will continue.

In terms of harm, research from the UK has demonstrated the isolated impact of pack colour and pack shape in misleading consumers, highlighting the need for pack standardisation. The findings from the UK also provide clues on the continuing role that pack descriptors may have on harm perceptions, even if all packs on a market are plain (Hammond et al, 2012). Just as pack colour has a misleading effect on consumers, colour descriptors appear to do likewise. In Australia, the 12 leading cigarette brands, which account for approximately 90% of total cigarette volume sales, are reported to have 115 variants, almost half of which use colour descriptors (Greenland, 2013), suggesting that the use of colour descriptors on plain packs may still continue to mislead some smokers about product harm. Finally, research from

the UK is unable to gauge the impact of plain packaging on youth uptake and adult smoking behaviour as it has not been introduced. The use of a naturalistic design however does permit an insight into the short-term impact of plain packaging for smokers. Young adult smokers reported being more likely to engage in cessation related behaviours when using plain packs, such as missing out cigarettes, reduced consumption and thinking about quitting. Research with children also suggests that whereas fully branded packaging is linked with susceptibility to smoke, plain packaging is not. Both these findings are in line with the opinion of experts within the tobacco field, who predicted that plain packaging would, in time, help bring down smoking prevalence.