Title: Consumer perceptions of cigarette design in France: A comparison of regular, slim, pink and plain cigarettes

Authors: Karine Gallopel-Morvan PhD[1], Crawford Moodie PhD[2], Romain Guignard MSc[3], Figen Eker MSc[4], Emmanuelle Béguinot MSc[4]

Affiliations:

[1] EHESP School of Public Health, EA 7348 MOS, Rennes, France.

[2] Centre for Tobacco Control Research, University of Stirling, Stirling, Scotland, UK.

[3] Santé publique France (the national public health agency), Saint-Maurice, France.

[4] Comité National Contre le Tabagisme (French National Committee Against Tobacco), Paris, France.

Corresponding author: Karine Gallopel-Morvan, EHESP School of Public Health, Rennes, France. Email: karine.gallopel-morvan@ehesp.fr Tel: (+33) 6 75 36 91 62.

Abstract

Introduction: The cigarette, like the cigarette pack, is used by tobacco companies as a promotional tool. We explore how the cigarette could potentially be used as a dissuasive tool.

Methods: An online survey was conducted with 15-30 year old smokers and non-smokers (N=998) in France to explore their perceptions of a plain cigarette (grey with no brand name) and three branded cigarettes (regular, slim, pink). Participants were randomly assigned to view the plain cigarette and either the regular, slim or pink cigarette. They were asked to rate the cigarettes by Appeal (tastiest, highest quality, most expensive), Harm (most dangerous, most effective for motivating people to talk about tobacco dangers), and Perceived behavioral impact (most effective to convince teenagers not to start, to motivate smokers to reduce consumption and quit).

Results: In comparison to the grey cigarette, each of the branded cigarettes were considered more appealing, less harmful, and more likely to motivate teenagers to start and less likely to motivate smokers to reduce consumption or quit.

Conclusions: The study suggests that altering the appearance of the cigarette may reduce cigarette appeal, increase harm perceptions, and deter both young people and smokers.

Implications

Very little research has focused on dissuasive cigarettes whereas the cigarette stick has become very important for tobacco companies for communication purposes. This is the first study to compare the effect of various branded cigarettes (regular, slim, pink) with a plain grey cigarette on young adult smokers and non-smokers. The findings suggest that a plain grey cigarette can reduce cigarette appeal, increase perceptions of harm, and may deter use among both smokers and non-smokers.

INTRODUCTION

Article 13 of the Framework Convention for Tobacco Control (FCTC) bans all tobacco marketing and recommends plain (or standardized) tobacco packaging.[1] Many countries have adopted comprehensive tobacco advertising bans and some have fully implemented plain packaging. Following Australia in December 2012, France became the second country to require plain packaging in January 2017; the United Kingdom has since followed suit in May 2017.[2] Consequently, the cigarette stick has become more important for tobacco companies for brand communication,[3] with promotional elements often displayed on cigarettes (e.g. brand names, logos, brand descriptors, capsule symbols) and filter innovation (e.g. different shapes and colors) increasingly common.[4]

Tobacco companies' use of branded cigarettes to influence audience preferences has been revealed in past research and in internal documents.[5-8] For instance, slim cigarettes have been marketed at women and associated with advertising campaigns promoting the belief that smoking is an effective way of controlling weight: Philip Morris launched Virginia Slims with its advertising stressing themes of thinness, glamour and independence.[9] Industry research has found that among women smokers, irrespective of age, certain 'superslims' brands and cigarettes were viewed as stylish or projected a feminine elegance.[10,11] Studies have also found that certain slim brands were perceived as less harmful than other cigarettes,[12] although blood cadmium levels have not been found to be lower among females who smoke slim rather than non-slim cigarettes.[13]

Colored and flavored cigarettes have also been developed by tobacco companies to create appeal and communicate favorable brand impressions.[14,15] In the 1950s for instance, pink colored 'Vanity Fair' cigarettes were advertised alongside the slogan 'Be glamorous all day long'.[16] Internal tobacco documents reported that colored tipping or cigarette paper could make smoking more pleasurable for women,[17] with these products perceived as novel by young people.[18] In addition, colored cigarettes are used to communicate flavor and taste,[14]

e.g. black indicates chocolate flavor for the 'Black devil' brand and pink indicates vanilla flavor and sweet taste for the 'Pink elephant' brand.

Rather surprisingly, only a few studies have explored consumer response to cigarettes. Two focus groups studies were conducted in Scotland, one with 15 year old smokers and non-smokers and the other with 12-24 year old female never smokers and occasional smokers, to explore perceptions of a range of cigarettes.[19,20] In both studies, slimmer cigarettes were considered more appealing and less harmful than regular cigarettes with a cork filter and white cigarette paper. Color also influenced product perceptions, with a pink cigarette generating considerable interest among 12-24 female never smokers and occasional smokers, being considered appealing, pleasant tasting and less harmful. A qualitative study with young female smokers in New Zealand found that colored cigarettes (lilac, red, silver-white or gold) were judged to be attractive and improved smokers' social image, with these cigarettes thought to help them look better, be seen as classy, and avoid social stigma.[21] When regular cigarettes with cork or white filters and slim cigarettes were compared, there was a preference for slim and white cigarettes as participants thought that these helped distance themselves from negative associations with smoking by portraying a glamorous, slim, delicate and feminine image. Using a face-to-face survey with a large European sample of current and former adult smokers, Agaku et al. found that colored cigarettes were thought to be sweet tasting and that flavored cigarettes were associated with first smoking experiences and reduced harm perceptions.[22] Finally, an online survey in Australia compared young adults smokers' reactions to different cigarettes, with regular cigarettes rated as more attractive and higher quality than extra-long, short, slim or extra slim sticks.[23] Most participants indicated that they would prefer to smoke the regular stick.

To reduce the appeal of the types of cigarettes on sale in most markets, researchers have begun to explore consumer response to cigarettes designed to be dissuasive. Few studies have explored the impact of plain, unattractively colored cigarettes. A qualitative study and an online

survey in New Zealand both found that green or yellow-brown cigarettes were considered aversive and rated as less appealing than regular cigarettes.[21,24] Focus groups in Scotland also found that young people perceived brown cigarettes as particularly strong and harmful.[19,20] These findings suggest that altering the color of cigarettes may be able to influence how they are perceived, the image they convey and smoking intentions.

Research has yet to compare the effect of a plain, unattractively colored cigarette, with a number of different cigarette styles which are available in most countries. In this study, we explore how young adult smokers and non-smokers perceive a plain grey colored cigarette (designed for this study) and three cigarettes (regular, slim and brightly colored) that were on sale in France at the time of the study, in terms of appeal, harm and behavioral impact.

METHODS

Design and sample

An online survey was conducted in France from 4th to 16th December 2013 (before the implementation of tobacco plain packaging in 2017), with 998 smokers and non-smokers aged 15-30 years. The sample was chosen because prevalence of daily smoking is high in France for this population (33.4%).[25] A quota sample was sought, balanced by gender, age group, socio-economic status, geographic area (nine broad areas that cover all of France) and size of urban unit (<2000 inhabitants; 2000-20,000; 20,000-100,000; >100,000; and the Ile de France region, which includes Paris, with 12 million inhabitants), following the national percentages of the general population indicated by the National Institute of Statistics and Economics Studies (see Table 1 for sample characteristics). Almost two-fifths (38%) were smokers (of which 67% were daily smokers) and 62% were non-smokers (of which 39% were former smokers).

Procedure

Participants were recruited by an established market research company (LH2), in collaboration with its partner 'Survey Sampling International'. Members of their online panel were sent an email invitation explaining that the survey was part of a national public health study on tobacco prevention messages; the email invitation and survey were both in French. We do not have the response rate as recording contact, participation and refusal rates is impractical when using this sampling methodology. Participants received a modest incentive, in the form of 'points' which can be redeemed for vouchers, as is common with online panels.

For those eligible for inclusion, they were randomly assigned to view one of three images: 333 were shown an image of a regular cigarette with the brand name 'Marlboro' written on the stick and a grey plain cigarette (PC); 332 were shown an image of a slim cigarette with the brand name 'Vogue' displayed on the tip and a grey cigarette; 333 were shown an image of a pink cigarette with the symbol of the brand (an elephant) displayed on the tip and a grey PC (see Figure 1: cigarettes shown to participants). These three branded cigarettes (regular, slim and pink) were chosen because they were sold on the French market when the study was conducted: regular sticks were the most commonly sold cigarettes, with slim and pink cigarettes, targeted at women and young people, also available.[26, pages 57-60] Grey was selected for the PC because previous research in France found that grey tobacco packaging was perceived as unattractive compared to white and brown packs,[27] with grey reported to be the color that French consumers disliked the most in a study that compared 190 color pairs.[28] Participants were asked about Appeal, Harm and Perceived behavioral impact, with the ordering of the questions randomised. The study was ethically approved by the Institut National de Prévention et d'Education pour la Santé (INPES).

Measures

Demographic information

Smoking status, gender and socio-economic status (based on occupation of the head of the household) was assessed. To assess smoking status, we used the same items employed in the European Commission's Eurobarometer survey. Participants were asked: 'Are you: 1/ a non-smoker; 2/ an occasional smoker (you do not smoke daily); 3/ a regular smoker (you smoke at least one cigarette per day)'.

Appeal

Participants were asked, in three separate questions: 'of these two cigarettes, which one do you consider: the most expensive, tastiest, the highest quality'. These three items were taken from past research on plain packaging.[29,30]

Harm

Participants were asked in two questions: 'of these two cigarettes, which one do you consider: the most dangerous, the most effective to make people talk about tobacco dangers'.

Perceived behavioral impact

Participants were asked in three questions: 'of these two cigarettes, which one do you consider: the most effective for convincing teenagers not to start, the most effective for motivating smokers to quit and the most effective for motivating smokers to reduce consumption'.

For all questions, participants had the option to select either image, 'Don't know', or 'None'.

Analysis

Using Stata/SE 13.1 software, all analyses were conducted on weighted data that reflected the demographic structure of the national population. Adjusted Wald tests for weighted data were used to examine differences in the proportion of participants selecting each cigarette. Logistic regression models were run to examine differences in perceptions of the different cigarettes. For each cigarette, the dependent variables for *Appeal* were 'most expensive', 'tastiest', 'highest quality' (where 0 = selecting the PC and 1 = selecting the branded cigarette). The dependent variables for *Harm* were 'most dangerous' and 'most effective to make people talk about tobacco dangers' (where 0 = selecting the branded cigarette and 1 = selecting the PC). For *Perceived behavioral impact*, the dependent variables were 'most effective in convincing teenagers not to start', 'most effective for motivating smokers to quit', and 'most effective for motivating smokers to reduce consumption' (where 0 = selecting the branded cigarette and 1 = selecting the PC). Gender, age (15-20; 21-24; 25-30), smoking status (non-smoker *vs.* occasional smokers *vs.* daily smoker) and type of cigarette (regular *vs.* slim *vs.* pink) were entered as predictor variables in each of the models.

RESULTS

Perceptions of the plain cigarette (in comparison to the regular, slim or pink cigarettes)

The branded regular, slim, and pink cigarettes were viewed as more appealing (the most expensive, the tastiest and the highest quality) than the PC, and less likely to have a greater impact on smoking initiation and cessation (most effective to convince teenagers not to start, and motivate smokers to reduce consumption and quit) (see Table 2: perceptions of regular, slim, pink and PC). While the regular and the pink cigarettes were viewed as less dangerous than

the PC, there were no significant differences with respect to making people talk about the dangers of tobacco. As for the slim cigarette, it was perceived as less harmful than the PC (least dangerous, least effective in making people talk about the dangers of tobacco).

Perceptions of cigarettes according to participants' profiles and type of cigarette

Logistic regression models were conducted to examine the effect of gender (reference: male), age (reference: 15-20), smoking status (reference: non-smoker) and type of cigarette (reference: regular cigarette) on selecting the PC or branded cigarette (see Table 3). Wald tests were computed to test the differences in odds-ratios between 21-24 and 25-30 year olds, and between occasional and daily smokers.

Females were significantly more likely than males to select the branded cigarette (regular, slim or pink) as highest quality and the PC as the most effective for convincing teenagers not to start, for motivating smokers to quit and to reduce tobacco consumption. Those aged 25-30 years were significantly more likely than 15-20 year olds to report the PC as most effective for motivating smokers to quit. There was no significant difference between 21-24 and 25-30 year olds. As for smoking status, occasional smokers were more likely than non-smokers to choose the branded cigarettes as highest quality and to select the PC as most effective for motivating teenagers not to start. Daily smokers were less likely than non-smokers to consider the PC as most effective for motivating smokers to quit. Occasional smokers were more likely than daily smokers to select the branded cigarettes as tastiest and highest quality, and they were more likely to select the PC as most effective for convincing teenagers not to start and most effective for motivating smokers to quit.

With respect to type of cigarette, participants exposed to the 'pink cigarette / PC' option (compared to those exposed to 'regular cigarette / PC') were more likely to select the branded cigarette as the most expensive and less likely to choose it as the highest quality. For perceived

behavioral impact, participants exposed to the 'pink cigarette / PC' option were less likely to select the PC as the most effective for motivating smokers to quit and to reduce their consumption compared to those exposed to 'regular cigarette / PC' option. Participants exposed to the 'slim cigarette / PC' image were less likely to select the branded cigarette as tastiest compared to those exposed to the 'regular cigarette / PC' option. They were also more likely to select the PC as the most dangerous and the most effective to make people talk about tobacco dangers, and they were less likely to choose the PC as the most effective for motivating smokers to quit and to reduce consumption (compared to those exposed to the 'regular cigarette / PC' option).

DISCUSSION

Almost three decades ago, an advertising agency suggested that Philip Morris *"brand the cigarette",* proposing that "*colors and designs could be carried through to the cigarette itself – a visible extension of the personality of the brand (and the user)".*[31] We found that cigarettes, whether brightly colored or with a slim or regular design, and with a brand name or symbol displayed on the stick, were more likely than a plain grey cigarette to influence perceptions of appeal, harm and behavioral impact. The regular, slim and pink cigarettes were considered the most expensive, highest quality, tastiest and less dangerous than the PC. The PC, in contrast, was perceived as a more effective means of preventing initiation among teenagers and motivating smokers to reduce consumption and quit. These results suggest that the appearance of a cigarette, in terms of its color (bright or dull), size (slim or regular), and presence of a brand name, can influence product perceptions and perceived behavioral impact. This is also true for regular cigarettes; the white cigarette paper may help consumers distance themselves from the health risks associated with smoking.[21] These findings are similar to research on plain

packaging, where the use of a darker pack color can reduce the attractiveness of the pack, increase harm beliefs and motivation to quit.[29,30]

We found no significant differences with respect to the cigarettes being more likely to make people talk about the dangers of tobacco, except between the PC and the slim cigarette. As such, an unattractive color alone may be insufficient to provoke such reactions. Some research has revealed that displaying a warning message on cigarettes was considered a reminder of health risks. For instance, cigarettes displaying a 'minutes of life lost' message have been found to increase smokers' intentions to quit,[32] and sticks displaying 'minutes of life lost' or 'smoking kills' warnings were rated as less appealing than regular cigarettes among smokers.[24] Other studies have also found that on-cigarette message ('smoking kills') may help to put teenagers off starting[33] and would be less likely to encourage product trial among young adult smokers and non-smokers.[34] Future research could explore cigarettes combining unattractive colors and health warnings, as recommended in previous research with marketing experts.[35]

We identified differences in how the cigarettes were perceived by gender, age, smoking status and cigarette type. Branded cigarettes had a stronger influence on females compared to males in conveying quality, with females more likely than males to view the PC as most effective for convincing teens not to start and for motivating smokers to reduce consumption or quit. These results are in line with research that showed that women are more likely than men to view fully branded cigarette packs as attractive compared to plain packs.[36] Cigarette design also had a stronger impact on occasional smokers than non-smokers and daily smokers, with branded cigarettes more likely to be selected as the highest quality stick (and the tastiest compared to daily smokers) than the PC. In addition, the PC was more often chosen as the most effective cigarette for convincing teens not to start among occasional smokers than among non-smokers and as the most effective for convincing smokers to quit than among daily smokers. It may be that occasional smokers are more vulnerable to the impact of tobacco marketing (and

thus the design of cigarettes) as they are more concerned with their image when they smoke.[37]

Participants' reactions differed according to the type of branded cigarette they were exposed to. In the regular/PC option, the regular cigarette was more often selected as the tastiest and highest quality compared to the slim/PC and the pink/PC options, but less often chosen than the slim/PC or pink/PC options as the most effective cigarette for convincing smokers to reduce consumption and to quit. This may be explained by the fact that people are more familiar with the regular cigarette style and may consider it is reassuring regarding taste and quality, whereas slim and pink sticks may be perceived as newer products of which the taste/quality they are less able to discern. In the slim/PC option, participants less often selected the slim stick as the most dangerous, consistent with previous research which has found that slim cigarettes are perceived as less harmful, cleaner and safer than regular cigarettes.[19-21]

Several conclusions can be drawn from these results. First, our study suggests that dissuasive sticks may be worth considering in countries, such as France, that have implemented plain packaging. In such markets, while smokers can hide their packs because they are unattractive, they cannot hide the cigarettes when they smoke. Second, if a pack a day smoker (20 cigarettes) is exposed to cigarettes approximately 70,000 times per year (with around 10 puffs per cigarette),[4] then removing branding from cigarettes and standardizing the color may help reduce the attractiveness of cigarettes. Third, branded cigarettes, whether regular, slim or colored, appear to be more misleading than PC and, as such, regulation of the cigarette itself may be warranted. These regulations may be particularly important in developing countries where cigarettes are often sold by the stick.[38]

There are certain limitations that need to be considered. First, as the branded cigarettes we tested differed from the plain cigarette in a number of respects (color, shape and brand name or symbol displayed on the cigarette), our research does not allow us to isolate the specific effect

of each attribute on participants' reactions. Nevertheless, should policy makers legislate for unattractively colored cigarettes without any markings, consumers will be confronted with a similar scenario to the one presented in this study, in that cigarettes on sale, which currently have brand names and/or symbols, will no longer have any of these features. Second, we assessed behavioral intentions rather than actual behavior. Third, forced exposure of our experimental design may have had an impact on responses. Fourth, while we intentionally explored young adults' perceptions of cigarette design, given that this is a key demographic for public health, we are unable to provide any insight into the response of older smokers.

In conclusion, our paper highlights that cigarettes, like cigarette packs, can be a powerful communication tool. Research could meaningfully extend this study by exploring other types of branded cigarettes, including cigarettes with flavored capsules in the filter that have been found to be particularly appealing to young people.[39,40] In addition, PC colors other than grey could be examined in future research.

Competing interests: None declared

REFERENCES

1 World Health Organisation. Guidelines for implementation of Article 13 of the WHO Framework Convention on Tobacco Control (Tobacco advertising, promotion and sponsorship). www.who.int/fctc/guidelines/article_13.pdf (accessed 25 September 2017).

2 Canadian Cancer Society. Plain packaging – international overview. June 14, 2016

www.smokershelp.net/wp-content/uploads/2016/07/Canadian-Cancer-Society-International-Overview.pdf (accessed 25 September 2017).

3 Rossell S. Ready to roll. Tob Reporter 2017;2:44–5.

4 Smith KC, Washington C, Welding K, et al. Cigarette stick as valuable communicative real estate: a content analysis of cigarettes from 14 low-income and middle-income countries.

Tob Control 2016;26:604–7. doi: 10.1136/tobaccocontrol-2016-053148.

5 Cummings KM, Morley CP, Horan JK, et al. Marketing to America's youth: evidence from corporate documents. Tob Control 2002;11(suppl 1):5–17. doi: 10.1136/tc.11.suppl_1.i5.

6 Cook BL, Wayne GF, Keithly L, et al. One size does not fit all: how the tobacco industry has altered cigarette design to target consumer groups with specific psychological and psychosocial needs. Addiction 2003;98(11):1547–61.

7 Carpenter CM, Wayne GF, Connolly GN. Designing cigarettes for women: new findings from the tobacco industry documents. Addiction 2005;100(6):837–51. doi: 10.1111/j.1360-0443.2005.01072.x.

8 Wayne GF, Connolly GN. How cigarette design can affect youth initiation into smoking: Camel cigarettes 1983-93. Tob Control 2002;11(suppl 1):32–9. doi: 10.1136/tc.11.suppl_1.i32.

9 Ernster V, Kaufmanm N, Nichter M, et al. Women and tobacco: moving from policy to action. Bull World Health Organ 2000;78:891–901.

10 Unknown. Operating plan Asia. 1995. RJ Reynolds records. Bates No. 516541768/1834. http://legacy.library.ucsf.edu/tid/jei41d00 (accessed 25 September 2017).

11 Barnewolt D, Thrane D. Review of imagery appealing to women smokers. 1986. Brown and Williamson records. Bates No. 682121192/1203.

https://industrydocuments.library.ucsf.edu/tobacco/docs/#id=hgfm0132 (accessed 25 September 2017).

12 Richter P, Beistel D, Pederson L, et al. Small-group discussions on menthol cigarettes: listening to adult African American smokers in Atlanta, Georgia. Ethn Health 2008;13:171–82.

13 Matsunaga Y, Agaku IT, Vardavas CI. The association between cigarette rod length, slim design, and blood cadmium levels among U.S. smokers: NHANES 1999–2010. Prev Med 2014;65:87–91. doi: 10.1016/j.ypmed.2014.04.021.

14 Lewis MJ, Wackowski O. Dealing with an innovative industry: a look at flavored cigarettes promoted by mainstream brands. Am J Public Health 2006;96:244–51. doi: 10.2105/AJPH.2004.061200.

15 Connolly G. Sweet and spicy flavours: new brands for minorities and youth. Tob Control 2004;13:211–2. doi: 10.1136/tc.2004.009191.

16 Deanna. Filter, flavor, color too with glamorous Vanity Fair cigarettes. 18 May 2012. www.kitsch-slapped.com/2012/05/filter-flavor-color-too-with-glamorous-vanity-fair-cigarettes/ (accessed 25 September 2017).

17 Idea Bank. Sharing some insights on women of today… An individual's brainstorming. Philip Morris records. Bates No.2050901054-2050901060. May 1995. www.industrydocumentslibrary.ucsf.edu/tobacco/docs/xlbk0053 (accessed 25 September 2017).

18 Opinion Research Corporation. Smoking behavior and smoker motivation - Their implications for packaging. Marketing to youth MSA collection. Bates No.1001811426-1001811544. 1961 November. www.industrydocumentslibrary.ucsf.edu/tobacco/docs/hqmx0045 (accessed 25 September 2017).

19 Moodie C, Ford A, Mackintosh AM, et al. Are all cigarettes just the same? Female's perceptions of slim, coloured, aromatised and capsule cigarettes. Health Educ Res 2015;30:1–12. doi: 10.1093/her/cyu063.

20 Ford A, Moodie C, Mackintosh AM, et al. Adolescent perceptions of cigarette appearance. Eur J Public Health 2014;24:464–8. doi:10.1093/eurpub/ckt161.

21 Hoek J, Robertson C. How do young adult female smokers interpret dissuasive cigarette sticks? Journal of Social Marketing 2015;5:21–39.

22 Agaku IT, Omaduvie UT, Filippidis FT, et al. Cigarette design and marketing features are associated with increased smoking susceptibility and perception of reduced harm among smokers in 27 EU countries. Tob Control 2015;24:233–40. doi: 10.1136/tobaccocontrol-2014-051922.

23 Borland R, Savvas S. Effects of stick design features on perceptions of characteristics of cigarettes. Tob Control 2013;22:331–37. doi:10.1136/tobaccocontrol-2011-050199.

24 Hoek J, Gendall P, Eckert C, et al. Dissuasive cigarette sticks: the next step in standardised ('plain') packaging? Tob Control 2016;25:699–705. doi:10.1136/tobaccocontrol-2015-052533.

25 INPES (Institut National de Prévention et d'Education Pour la Santé). Baromètre santé 2014. www.inpes.sante.fr/Barometres/barometre-sante-2014/index.asp (accessed 25 September 2017).

26 Comité National Contre le Tabagisme. Etude de l'opportunité de l'instauration de cigarettes neutres. Rapport d'étude pour l'INPES; September 2015.

27 Gallopel-Morvan K, Gabriel P, Le Gall-Ely M, et al. Plain packaging to help public health. The case of tobacco control. J Bus Res 2013;66:133–6. doi:10.1016/j.jbusres.2012.09.004. 21.

28 Ou L-C, Luo MR, Sun P-L, et al. A cross-cultural comparison of colour emotion for two-colour combinations. Color Res Application 2011;37:23–43. doi: 10.1002/col.20648.17.

29 Moodie C, Stead M, Bauld L, et al. Plain tobacco packaging: A systematic review. Stirling: Centre for Tobacco Control Research, University of Stirling; 2012.

30 McNeill A, Gravely S, Hitchman SC, et al. Tobacco packaging design for reducing tobacco use. Cochrane Database System Rev 2017;Issue 4:Art. No: CD011244.

31 Kelly Weedon Shute Advertising. Philip Morris cigarette marketing – a new perspective. Philip Morris Records. Bates No. 2501057693-2501057719. November 1989 (accessed 25 September 2017).

32 Hassan LM, Shiu E. No place to hide: two pilot studies assessing the effectiveness of adding a health warning to the cigarette stick. Tob Control 2015;24:3–5. doi:10.1136/tobaccocontrol-2013-051238.

33 Moodie C, MacKintosh AM, Gallopel-Morvan K, et al. Adolescents' perceptions of an on-cigarette health warning. Nicotine Tob Res 2017;19(10):1232–7.

https://doi.org/10.1093/ntr/ntw165.

34 Moodie C, Gendall P, Hoek J, et al. The response of young adult smokers and nonsmokers in the United Kingdom to dissuasive cigarettes: an online survey. Nicot Tob Res 2017. https://doi.org/10.1093/ntr/ntx261

35 Moodie C. Novel ways of using tobacco packaging to communicate health messages: Interviews with packaging and marketing experts. Addict Res Theory 2016;24:54–61. https://doi.org/10.3109/16066359.2015.1064905.

36 Moodie C, Ford A. Young adult smokers' perceptions of cigarette pack innovation, pack colour and plain packaging. Australasian Marketing J 2011;19:174–80.

37 Hines D, Fretz AC, Nollen NL. Regular and occasional smoking by college students: personality attributions of smokers and nonsmokers. Psych Reports 1998;83:1299–306.

38 de Ojeda A, Barnoya J, Thrasher JF. Availability and costs of single cigarettes in Guatemala. Nicot Tob Res 2013;15:83–7. doi: 10.1093/ntr/nts087.

39 Abad-Vivero EN, Thrasher JF, Arillo-Santillán E, et al. Recall, appeal and willingness to try cigarettes with flavour capsules: assessing the impact of a tobacco product innovation among early adolescents. Tob Control 2016;25:113–9. doi: 10.1136/tobaccocontrol-2015-052805.

40 Thrasher JF, Abad-Vivero EN, Moodie C, et al. Cigarette brands with flavour capsules in the filter: trends in use and brand perceptions among smokers in the USA, Mexico and Australia, 2012–2014. *Tob Control* 2016;25:275–83. doi: 10.1136/tobaccocontrol-2015-052805.

Table 1. Sample characteristics (weighted data)

	Smokers (n=375)	Non-smokers (n=623)	Total (n=998)	p-value
Age group				
15-20 years	33%	39%	37%	0.185
21-24 years	26%	24%	25%	
25-30 years	41%	36%	38%	
Gender				0.437
Male	52%	50%	51%	
Female	48%	50%	49%	
Cigarette consumption per day (daily smokers)				
Less than 11	41%			
11-20	43%			
21-30	8%			
31 or more	1%			
It varies	8%			
Tobacco most often smoked				
Manufactured cigarettes	85%			
Roll-Your-Own cigarettes	14%			
Cigars or pipe	1%			
Intention to quit				
No	18%			

Yes, in the next 30 days	22%
Yes, in the next 6 months	27%
Yes, but not in the next 6 months	15%
Don't know	18%

Table 2. Perceptions of regular, slim, pink and plain cigarettes (PC) (%)

	Regular cigarette (Marlboro)	Plain Cigarette	None [a]	Don't know [a]	p-value [b]
Appeal					
Most expensive	61	14	13	12	***
Tastiest	58	6	21	15	***
Highest quality	61	6	24	9	***
Harm					
Most dangerous	25	44	19	12	***
Most effective to make people talk about tobacco dangers	38	29	17	16	ns
Perceived behavioral impact					
Most effective for convincing teenagers not to start	13	49	29	10	***
Most effective for motivating smokers to quit	6	52	34	8	***
Most effective for motivating smokers to reduce consumption	7	54	30	9	***
	Slim cigarette (Vogue)	**Plain Cigarette**	**None [a]**	**Don't know [a]**	**p-value [b]**
Appeal					
Most expensive	67	14	7	12	***
Tastiest	48	19	17	17	***

	Pink cigarette (Pink Elephant)	Plain Cigarette	None [a]	Don't know [a]	p-value [b]
Highest quality	61	11	18	11	***
Harm					
Most dangerous	14	55	17	14	***
Most effective to make people talk about tobacco dangers	20	38	19	24	***
Perceived behavioral impact					
Most effective in convincing teenagers not to start	16	46	27	11	***
Most effective in motivating smokers to quit	13	48	30	8	***
Most effective in motivating smokers to reduce consumption	16	44	28	12	***
	Pink cigarette (Pink Elephant)	**Plain Cigarette**	None [a]	Don't know [a]	**p-value [b]**
Appeal					
Most expensive	69	4	12	14	***
Tastiest	65	4	16	15	***
Highest quality	47	13	26	14	***
Harm					
Most dangerous	23	40	23	14	***
Most effective to make people talk about tobacco dangers	30	27	22	22	ns
Perceived behavioral impact					

Most effective in convincing teenagers not to start	18	45	26	11	***
Most effective in motivating smokers to quit	10	44	35	11	***
Most effective in motivating smokers to reduce consumption	10	46	34	10	***

[a] These responses were removed from the chi-square analysis

[b] ns: not significant ; *** p<0.001

Table 3. Binary logistic regression: odds-ratios for the selection of branded / plain rather than plain / branded cigarettes by gender (reference = male), age (reference = 15-20), smoking status (reference = non-smoker) and type of branded cigarette displayed (reference = regular cigarette)

	Gender (Female)	Age (21-24)	Age (25-30)	p-value 21-24 / 25-30	Occasional smoker	Daily smoker	p-value occasional / daily	Pink cigarette	Slim cigarette
Likelihood of selecting the branded cigarettes (1)									
Most expensive	1.29	1.03	0.88	ns	1.31	0.80	ns	**4.03***	1.21
Tastiest	1.36	1.14	1.16	ns	1.65	0.67	*	2.01	**0.29***
Highest quality	**2.24***	0.97	1.48	ns	**2.65***	1.07	*	**0.39****	0.64
Likelihood of selecting the plain cigarette (PC) (2)									
Most dangerous	1.22	0.76	0.80	ns	1.31	1.47	ns	1.03	**2.31***
Most effective to make people talk about tobacco dangers	1.15	0.87	1.18	ns	1.29	1.17	ns	1.09	**2.44***
Most effective for convincing teenagers not to start	**1.62***	0.62	0.73	ns	**2.26***	0.72	**	0.69	0.78

Most effective for motivating smokers to quit	**1.92****	1.32	**2****	ns	1.14	**0.53***	*	**0.50***	**0.44****
Most effective for motivating smokers to reduce consumption	**1.95****	0.75	1.11	ns	0.57	0.69	ns	**0.52***	**0.32*****

*p<0.05; **p<0.01; *** p<0.001; ns: not significant

[1] It was predicted that positive attributes ('most expensive, tastiest and highest quality') would be associated with branded cigarettes, which is why participants were asked about the likelihood of selecting branded cigarettes.

[2] It was predicted that negative attributes ('most dangerous, most effective to make people talk about tobacco dangers, most effective for convincing teenagers not to start, most effective for motivating smokers to quit/to reduce') would be associated with the plain cigarette, which is why participants were asked about the likelihood of selecting plain cigarettes.

Figure 1. Cigarettes shown to participants

Image 1: Regular cigarette ('Marlboro') and Grey cigarette (n=333)

Image 2: Slim cigarette ('Vogue') and Grey cigarette (n=332)

Image 3: Pink cigarette ('Pink Elephant') and Grey cigarette (n=333)