

Packaging colour research by tobacco companies: the pack as a product characteristic

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ABSTRACT

Background Tobacco companies use colour on cigarette packaging and labelling to communicate brand imagery, diminish health concerns, and as a replacement for prohibited descriptive words ('light' and 'mild') to make misleading claims about reduced risks.

Methods We analysed previously secret tobacco industry documents to identify additional ways in which cigarette companies tested and manipulated pack colours to affect consumers' perceptions of the cigarettes' flavour and strength.

Results Cigarette companies' approach to package design is based on 'sensation transference' in which consumers transfer sensations they derive from the packaging to the product itself. Companies manipulate consumers' perceptions of the taste and strength of cigarettes by changing the colour of the packaging. For example, even without changes to the tobacco blends, flavourings or additives, consumers perceive the taste of cigarettes in packages with red and darker colours to be fuller flavoured and stronger, and cigarettes in packs with more white and lighter colours are perceived to taste lighter and be less harmful.

Conclusions Companies use pack colours to manipulate consumers' perceptions of the taste, strength and health impacts of the cigarettes inside the packs, thereby altering their characteristics and effectively creating new products. In countries that do not require standardised packaging, regulators should consider colour equivalently to other changes in cigarette characteristics (eg, physical characteristics, ingredients, additives and flavourings) when making determinations about whether or not to permit new products on the market.

INTRODUCTION

Tobacco companies have long understood that pack colours influence consumers' purchasing decisions. On reviewing previously secret internal industry documents available at the time, Wakefield *et al* demonstrated that tobacco companies use pack design to communicate brand imagery and influence consumers' perceptions of taste, strength and harm as an important element in their overall marketing strategies.¹ Subsequent studies showed that companies use pack colours to play an important role in communicating brand imagery and product characteristics,² to target specific groups³⁻⁶ and to diminish health concerns,^{1,7} sometimes developing pack and promotional concepts before product development.⁸ Cigarettes from packs with brand descriptors including 'light', 'low', 'mild', 'smooth', 'silver' and 'gold' are perceived as having lower health risks.⁹⁻¹⁴ Before descriptors such as 'light' and 'mild' were prohibited,¹⁵ the companies

associated them with specific package colours to make the same misleading claims about reduced risks without using words.^{10,13,14,16-24} To address this practice, the WHO Framework Convention on Tobacco Control (FCTC) commits signatories to implement national laws that ensure that tobacco product packaging and labelling do not promote tobacco products by any means that are false or misleading²⁵ and recommends standardised packaging.²⁶ Companies understand that pack structures, shapes, openings, descriptors and colours communicate brand imagery and influence perceptions of product quality, strength and taste.²⁷

In 1954, psychologist and marketing pioneer Cheskin²⁸ described using scientific testing to analyse the impact of colour on consumers' purchasing choices and explained how colour could be used to design effective packaging. Tobacco companies followed the work of Cheskin and his Color Research Institute (CRI) on consumers' emotional responses to packages and the impact that package colour had on their perceptions of how the product inside the package tasted. Cheskin revealed that on an unconscious level 'people transferred sensations of color and design to sensations of taste', which he called 'sensation transference'.²⁸ He demonstrated that consumers transfer sensations or impressions they have about packaging to the product itself; indeed, consumers do not distinguish between the package and the product.²⁸

The existing literature focuses on how colour is used in package design to 'communicate information' such as product identification and brand imagery (eg, the red chevron shouts 'Marlboro'), targeted groups (eg, pastels say 'women's cigarettes') or reduced health risks (eg, silver whispers 'ultra-light' cigarettes). Since Wakefield's 2002 study,¹ more than 6 million documents have been added to the Truth Tobacco Industry Documents library that match her search terms, and more than 200 000 more documents have been added using narrower search terms that focus on taste. Building on Wakefield's work, we show how the industry relied on Cheskin's work to use pack designs and colours not only to communicate marketing information, but also to influence consumers' experiences of smoking the cigarettes themselves by altering their perceptions of the cigarettes' taste. This understanding distinguishes between using pack colours to *communicate information* about a brand or sub-brand that might be associated with a particular taste versus using pack colours to *manipulate consumer perceptions* of the cigarette's taste.

As of March 2016, 180 countries had become Parties to the WHO FCTC, which calls for tobacco



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product regulation (including packaging), and the USA enacted the Family Smoking Prevention and Tobacco Control Act (FSPTCA). Since pack colours alter smokers' experience of the cigarettes' taste and strength, one can argue that pack colour changes are tantamount to product changes, which could have implications for laws regulating the introduction of new tobacco products.

METHODS

Between January 2013 and December 2014, we analysed previously secret tobacco company documents available at the UCSF Truth Tobacco Documents Library (TTDL, <https://industrydocuments.library.ucsf.edu/tobacco/>) on the industry's internal research on how cigarette package colours influence consumers' perceptions of the cigarettes inside the package, in particular the cigarettes' taste. We used standard snowball search techniques,²⁹ beginning with the search terms '(flavor OR flavour) AND (color OR colour)' (106 169 documents), 'taste AND (color OR colour)' (98 460), 'taste perception AND pack*' (3384), '(color OR colour) and "taste perception" and pack' (1110), '(color OR colour) code' (3654), 'sensory science' (181) and 'sensation transference' (11); additional documents were found by reviewing adjacent documents (Bates numbers). We narrowed our initial searches to documents detailing the companies' market research and scientific literature reviews concerning the use of colour in package design to influence consumers' perceptions of the cigarettes' taste and other sensory experiences. We reviewed ~400 documents; this paper is based on 54 documents showing what the tobacco companies researched and understood about pack colours' influence on consumers' perceptions of cigarettes' taste.

RESULTS

Sensation transference: the package is the product

Since the 1950s, tobacco companies conducted extensive social science and psychology research to better understand how package colour affects consumers' perceptions of the cigarettes inside the packs.^{28 30–35} Companies including Philip Morris (PM),³⁶ RJ Reynolds (RJR),^{33 37} Lorillard,^{38 39} Brown and Williamson (B&W)⁴⁰ and British American Tobacco (BAT)⁴¹ incorporated Cheskin's theory of 'sensation transference'²⁸ in their market research and package design testing and worked to design cigarette packages that would affect their customers' sensations and perceptions of the taste of the cigarettes inside the packs.

PM hired Cheskin and CRI to help redesign its Marlboro pack in the 1950s.^{42 43} CRI conducted psychological studies on how colour could inform pack design, resulting in the new Marlboro flip-top pack with its distinctive chevron design, red colour and brand name lettering.⁴² PM spent 7 years engaged in 'an extraordinary degree of calculation, thoughtful planning and scientific testing' on the new Marlboro packaging, refuting the industry cliché that 'no one smokes the package'.⁴⁴ By adding red to the mostly white package, PM converted Marlboro from a 'woman's cigarette' to a new brand that was 'high quality' and 'full flavor',^{42 43} with Marlboro's new 'macho' image further developed by Leo Burnett's 'Marlboro Man' advertising campaign.⁴⁵

RJR's 'Brand Marketing Training Module' emphasises how package changes are tantamount to changes in the physical product itself: "Your primary concern is *consumers'* reaction to and *perceptions of the product inside the package*, not their judgment as to which is the most attractive package [emphasis added]."³⁷ Moreover, "a package is much more than a

container; it ... generates expectations and people generally get what they expect. *In repeated tests, consumers will declare one product superior to another although only the packages or labels [not the cigarettes] are different [emphasis added].*"³⁷ The manual states that designing an effective new package is important not only because it could be "the major factor in a new marketing strategy by *significantly improving consumer perceptions of the total product,*" but also because "a package change can create a 'new' product" by giving customers the existing product in a new form (emphasis added).³⁷

Company research demonstrating that altering pack colour changes perceptions of cigarettes' characteristics

Building on Cheskin's work and sensation transference, as early as the 1950s the companies used ocular measurements (eye movements),³⁰ tachistoscopic testing (consumers' recall time after flashing a picture of the package)⁴⁶ and repertory grid techniques (colour's influence on consumers' assessment of the products' sensory properties)⁴¹ alongside traditional market surveys to determine how cigarette pack colours not only enhanced the visual prominence of their brands and supported brand imagery, but also influenced consumers' experience of smoking the cigarettes. Table 1 compiles internal industry research documents focusing on the impact that cigarette pack colours have on particular perceptions of the taste of the cigarettes inside the pack. These documents generally show that consumer perceptions of full, rich or strong flavoured cigarettes are associated with red and dark colours such as brown or black, whereas consumer perceptions of mild, smooth and mellow flavours are associated with light colours such as light blue or silver. Menthol and 'cool' or 'fresh' are universally associated with green, and low strength is associated with white or very light shades. Even subtle changes in colour tones, such as using a lighter beige background, can have these effects.

Taste and strength

Particular pack colours led consumers to perceive the cigarettes had what companies considered 'good' and 'bad' attributes, including full or enhanced flavour, rich tobacco taste, strong taste, good aftertaste, taste like Marlboro, smooth, satisfying, mild, mellow, low strength, artificial taste, cool, fresh or menthol flavoured. Since pack colours influence consumers' perceptions of the cigarettes' taste and strength, selecting or changing package colours was seen not only as part of brand and image development, but also as part of 'product development', similar to selecting the cigarettes' physical ingredients (table 1).

In the 1960s, Louis Cheskin Associates conducted 'association tests' with 1800 cigarette smokers to help PM determine which of three proposed pack colour combinations would most effectively create 'favourable associations' (eg, 'high quality tobacco', 'rich tobacco flavour', 'mild' and 'low-tar and nicotine') and be less likely to create 'unfavourable associations' (eg, 'low quality tobacco', 'little tobacco flavour', 'strong' and 'high tar and nicotine').³¹ These associations were based on the packages alone; the respondents never smoked the cigarettes. Packages with certain colour and label combinations (eg, brown pack with a brown label) were more effective than others (eg, brown package with red-brown label) at leading consumers to believe that the cigarettes inside the pack had 'rich tobacco flavour', 'high quality tobacco' and 'low-tar and nicotine'.³¹

RJR studied how package colour influences consumers' perceptions of cigarette taste and strength when it began researching a new package for Camel Filters in 1975. They aimed to develop a contemporary package that would appeal to young

Table 1 Summary of industry research on effects of package colour on smoker perceptions of the flavour and taste of cigarettes in the package

Consumer perceptions	Colour	Company	Year	
Full flavour	Red	PM	1950s ⁴³	
		RJR	2001 ⁴⁷	
		RJR	1991 ⁴⁸	
		RJR	1987 ⁴⁹	
		BAT	1986 ⁵⁰	
		RJR	1984 ⁵¹	
		RJR	1984 ⁵²	
		RJR	1980s ³⁷	
		PM	1965 ³¹	
		Rich tobacco taste, flavourful	Red	PM
PM	1981 ⁵⁴			
Blue	RJR		1984 ⁵¹	
	RJR		1979 ⁵⁵	
Beige	B&W		1978 ⁵⁶⁻⁵⁸	
	B&W		1977 ⁴⁰	
	PM		1999 ⁵⁹	
	PM		1998 ⁶⁰⁻⁶²	
	RJR		1987 ⁶³	
	RJR		1986 ⁶⁴	
Satisfying	Red	RJR	1986 ⁶⁵	
		RJR	1984 ⁶⁶	
	Blue	B&W	1994 ⁶⁷	
		B&W	1999 ⁵³	
	Beige	RJR	1984 ⁵¹	
		RJR	1984 ⁵¹	
	Strong taste	Black	B&W	1978 ⁵⁸
			B&W	1986 ⁶⁴
		Brown	RJR	1986 ⁶⁵
			RJR	1984 ⁵¹
Red		RJR	1979 ⁶⁸	
		B&W	1994 ⁶⁷	
		PM	1981 ⁵⁴	
		RJR	1987 ⁴⁹	
		RJR	1984 ⁵²	
		RJR	1979 ⁶⁸	
Tastes like Marlboro	Red	RJR	1984 ⁵²	
	Red	RJR	2001 ⁴⁷	
	Green	RJR	2001 ⁴⁷	
Enhances flavour	Red	RJR	2001 ⁴⁷	
	Green	RJR	2001 ⁴⁷	
Good aftertaste	Silver	B&W	1978 ⁵⁸	
	Blue	B&W	1978 ⁵⁸	
Smooth	Blue	B&W	1978 ⁵⁸	
	Gray	RJR	1986 ⁶⁴	
Artificial taste	Gray	RJR	1986 ⁶⁴	
	White, lighter shades	RJR	1979 ⁶⁸	
Low strength	White, lighter shades	RJR	1979 ⁶⁸	
	Blue	PM	1999 ⁵⁹	
Mild	Blue	PM	1998 ⁶⁰⁻⁶²	
		PM	1981 ⁵⁴	
	Silver	B&W	1978 ⁵⁸	
		B&W	1986 ⁶⁴	
	Gray	RJR	1986 ⁶⁴	
		RJR	1987 ⁴⁹	
	Mellow	Blue	B&W	1978 ⁵⁸
		Green	RJR	2001 ⁴⁷
	Menthol	Green	RJR	1991 ⁴⁸
			RJR	1987 ⁴⁹
Blue		RJR	1987 ⁴⁹	
		RJR	1987 ⁴⁹	
Menthol		BAT	1986 ⁵⁰	
		RJR	1984 ⁵¹	
Cool		RJR	1980s ³⁷	
		RJR	2001 ⁴⁷	
Fresh		Green	RJR	1987 ⁴⁹
			RJR	2001 ⁴⁷
	Silver	B&W	1978 ⁵⁸	

men while retaining the cigarette's flavour quality perception. RJR contracted Data Development Corporation to conduct a package study to test consumers' perceptions of the product's taste attributes (as well as brand imagery).⁷⁰⁻⁷² Study respondents first rated how they perceived the cigarettes would taste based only on seeing four different test packages, and next rated the cigarettes' taste 'attributes' after smoking cigarettes from one of the test packs.⁷⁰⁻⁷² The study found no significant differences in how consumers perceived the cigarettes' characteristics after smoking them and concluded that the risk of adopting any of the proposed alternative packs would outweigh the potential gains of younger imagery: "Younger" imagery seems to be increasing at the expense of some [perceived] *flavor* quality of the cigarette. The current pack is seen more than the others as denoting a cigarette for people who are looking for *flavor* [emphasis added].⁷⁰

In 1979, RJR began testing revised Camel Filters packaging. RJR sought to reduce consumers' perception that Camel Filters were stronger than most other cigarettes while at the same time maintain desired product perceptions (taste, satisfaction, 'tar' and nicotine, smoothness) and brand attributes (masculine, young adult, rugged).⁶⁸⁻⁷³ Test respondents viewed package prototypes and measured their perceptions of the product's strength, harshness, taste, quality, smoothness, 'satisfaction' and tar perception, in addition to measuring the pack's visual prominence.⁶⁸ The tests revealed that small pack refinements such as increasing white space, reducing the red band and lightening brown colour tones could influence how consumers perceived cigarette strength (figure 1).⁶⁸

Although Marlboro Ultra Lights were not actually marketed until the late 1990s, in 1981 PM conducted internal consumer taste preference studies in which smokers tested identical Marlboro Ultra Lights cigarettes in a blue pack versus a red pack.⁵⁴ Marlboro smokers generally preferred the cigarettes in the red package and perceived the cigarettes in the red pack to have more taste than those in the blue pack. Some found cigarettes in the blue package 'too mild' or 'not easy drawing', while others perceived the cigarettes in the red pack as 'too strong' or 'harsher' than those in the blue pack.⁵⁴

In 1984, RJR launched 'Project XG' to create a product that would replace Marlboro as the most relevant brand among younger adult smokers....⁷⁴ RJR recognised that to achieve this goal they needed to use package colours and design and 'non-menthol taste cues' to improve consumers' perceptions of XG's product attributes, resulting in more smoothness, more strength, more tobacco taste, less harshness and "a positive taste benefit similar to Marlboro but smoother..." (table 1).⁵¹

Maintaining full flavour in reduced tar cigarettes

Beginning in the 1970s, tobacco companies sought to create and market products that reportedly had reduced tar to address consumers' health concerns while still delivering 'full flavour' that met consumers' taste preferences.^{40 67 68 73 75-77}

In 1977, responding to growing consumer health concerns and consistent with broader industry marketing practices, B&W began testing pack designs for a new Viceroy low-tar cigarette and examined how changes in package colours could lead consumers to believe that the cigarettes inside were low-tar and full taste.⁴⁰ B&W faced the problem that perceptions of tar level and taste are not independent; low-tar is associated with weak taste and high-tar is associated with full taste. Researchers sought a pack design that would receive the same taste ratings

Figure 1 Details of proposed refinements in a 1979 new package design for Camel Filters, consisting mainly of increasing the amount of white space, reducing the red band and lightening the brown colour tones to reduce consumers' perceptions of the cigarettes' strength.⁶⁸

Refinements in the Package consist mainly of increasing the amount of white space on the pack and lightening the brown color tones. While other changes were made these were essential to give the revised package the appearance of reduced strength.

<u>Refinements Made in Package</u> <u>New vs Original 85's</u>	<u>Rational for Change</u>
A. Color/surface Area Changes	
1. The red band was reduced in size which increased the amount of white surface area in the upper portion of the pack.	Reduce strength perceptions.
2. Lighter brown color tones in the lower portion of the package.	Reduce strength perceptions.
3. The closure seal was changed from brown to white and a red stripe was added to match the red banding.	Reduce strength perceptions, improve quality look, better brand name recognition.
4. The bottom panel was changed from brown with white print to white with brown print. A red stripe was also added to match the red band.	Reduce strength perceptions, better brand name recognition.
5. Color of the word CAMEL was made a lighter brown.	Reduce strength perceptions.
6. The camel itself was rendered in two colors, yellow and brown, and was also reduced in size. Ground shadows were also added beneath the camel to improve dimensionality.	Improve quality image.

as, but lower tar ratings than, Marlboro Lights.⁴⁰ After initially finding variations in pack design produced only minor changes in the taste/tar perception,³⁹ B&W researchers recommended using a royal blue pack to make a clear statement about 'taste' and 'impact' and letting advertising pull down the perceived tar level (table 1).⁵⁶

To verify that the proposed package design for the new low-tar cigarette supported the desired product perceptions, B&W tested Viceroy Rich Lights in royal blue versus silver packs in 1978.⁵⁷ After participants smoked cigarettes from royal blue and silver packs that, unbeknownst to them, contained identical cigarettes, they rated the cigarettes from each pack on different attributes.⁷⁸ B&W analysed respondents' taste perceptions and concluded, "The blue pack outscored the silver pack on satisfaction, full taste, tobacco taste. The silver pack achieved higher score for aftertaste, mildness, smoothness, mellowness, freshness".⁵⁸ The test also showed that the silver pack was perceived as 'low-tar' cigarettes and 'for women', while the blue pack was perceived as 'average-tar' and 'for men' (table 1).⁵⁸

In 1979, RJR began 'Project BY', an effort to enter the non-menthol, full-flavour, low-tar ('FFLT') market category, and conducted a study to inform new BY packaging alternatives, aiming to appeal to its target market of FFLT male smokers aged 25–34.⁵⁵ In addition to examining the overall appeal and user imagery associated with alternative packages, the study assessed how changes in pack design affected consumers' 'product perceptions' including 'satisfaction', 'taste', 'tar and nicotine' and 'smoothness'.⁵⁵ RJR's study based on viewing (not smoking) 27 proposed packs including variations on names, colours and designs concluded that these elements work together to create product perceptions (eg, wedge and diagonal

designs could mitigate high tar perceptions from dark colours but maintain positive taste perceptions), effectively contributing to product development.⁵⁵

RJR's changes in Camel pack designs from 1930 to 2005 (figure 2, top) illustrate that they used pack colours to influence consumers' perceptions of the cigarettes' taste. In 1930, Camel packs used a dark tan background above and below the camel, a dark brown camel and dark lettering.⁷⁹ In 1961, the dark background was removed above the camel and lightened below the camel, and the camel colour was lightened.⁸⁰ In 1972, all of the background was white, the lettering was lightened and the tab was changed from dark blue to white for its 'low tar Camel taste'.⁸¹ In 1990, the dark pyramid was removed, and the lettering was further lightened for 'extra mild Camel taste'.⁸² In 2005, the tan trees were removed, the camel was made lighter, and the pyramid was silver for 'extra smooth and mellow' taste and 'ultra-lights' cigarettes.⁸³

In 2010, shortly after FSPTCA's enactment, RJR introduced the Camel 'Break Free Adventure' campaign⁸⁴ aimed at young adults and hipsters. Since FSPTCA forbade the use of terms such as 'light' and 'mild' seen in the 1972 and 1990 packs, the 2010 pack used the identifier 'Blue' and a white background to connote 'light', but also used colours, themes and geographic references that appeal to their target young consumers. In 2014, RJR re-introduced Camel Crush, a novel tobacco product containing a capsule with menthol-flavoured liquid (subsequently pulled from the market by the Food and Drug Administration (FDA) in 2015). Camel Crush packs⁸⁵ used the same concepts that Cheskin highlighted in the 1950s, with 'bold tasting' products using black and red packs and 'menthol fresh' products using white and green packs (figure 2, bottom).



Figure 2 Top: Examples of changes in Camel pack designs from 1930 through 2005, illustrating how RJR changed pack colours in ways that the research presented in this paper indicate would affect consumers' perceptions of the cigarettes' taste, with progressively lighter colours and more white conveying 'low tar' taste, 'extra mild' taste and 'extra smooth and mellow' taste.⁷⁹⁻⁸³ Bottom: Examples of Camel pack designs after enactment of the US Family Smoking Prevention and Tobacco Control Act in 2009, including a 2010 pack⁸⁴ from RJR's 'Break Free Adventure' that uses the word 'Blue' in lieu of the newly forbidden identifiers 'low', 'light' or 'mild', and Camel Crush packs⁸⁵ that use black and red colours for 'bold taste' and green and white colours for 'menthol fresh' taste.

Attractiveness

The companies found that they could manipulate package colours to make the cigarettes inside more attractive to consumers by influencing perceptions that the cigarettes are higher quality, more prestigious or upscale, convey trust or responsibility, are more exciting or relaxing or are especially appealing to men, women or young people (table 1). For example, in the 1970s BAT began using the repertory grid technique to quantify how important brand image variables, including colour, are to individuals' assessments of cigarettes' sensory properties.⁸⁶ Based on psychologist George Kelly's theory that individuals develop personal 'constructs' (basic terms expressed as contrasts between two ideas) to describe their experience, respondents

were shown cigarette packs with design variations (including changes in colours, lettering, dominant design shapes elements and motifs or crests)⁴¹ and asked what associations the pack appearance created, what type of smoking experience they would expect from the cigarettes inside those packs and the general personality of people they would expect to smoke those cigarettes.⁸⁶ Interviewers elicited sets of descriptive terms ('constructs') and created lists of opposite terms ('binary grids') to describe the 'smoke character' (figure 3) (as well as other attributes) associated with each pack,^{70 86} and BAT hoped that this initial study would demonstrate how the repertory grid technique could quantify consumers' subjective perceptions of cigarette characteristics.

Figure 3 Binary grid used by British American Tobacco researchers in 1978 to describe consumers' perceptions of the 'smoke character' associated with cigarette packs.⁸⁶

FOR SMOKE CHARACTER

- | | | |
|-------------------------------------|---|---------------------------|
| A. HOT | : | COOL |
| B. ROUGH | : | SMOOTH |
| C. HARD DRAW | : | EASY DRAW |
| D. SATISFYING | : | UNSATISFYING |
| E. MUSTY/STALE | : | FRESH |
| F. MORE BODY/SUBSTANTIAL SMOKE FEEL | : | LESS BODY/THIN SMOKE FEEL |
| G. LESS SIDESTREAM | : | MORE SIDESTREAM |
| H. UNMODIFIED TOBACCO-EY TASTE | : | MODIFIED TOBACCO TASTE |
| I. SOFT/LESS IRRITATING | : | HARSH/IRRITATING |
| J. INSIPID FLAVOUR/TASTE | : | FULL FLAVOUR/TASTE |

DISCUSSION

As early as the 1950s, tobacco companies developed a sophisticated understanding that by changing pack colours they could not only alter brand appeal and make misleading health claims,^{1 9 11–13 27 87 88} but could also change consumers' perceptions of the taste, strength and other sensory attributes of the cigarettes inside the packages without changing the physical ingredients of the cigarettes themselves. The companies use pack colours to alter the characteristics of the products, just as they use tobacco blends, flavourings and additives to change the products' physical characteristics to manipulate consumers' perceptions of the cigarettes' flavour and taste. They design packages that create the ideal balance between 'low-tar' and 'full-flavour' attributes. For example, the companies understand that by merely increasing the use of red on packs, consumers perceive the cigarettes inside to have fuller, stronger, richer tobacco taste,^{37 47–51 53 68} and by lightening the pack's colour palette or increasing the amount of white, companies can reduce perceptions of the cigarette's strength without changing the cigarette's formula.^{48–51 63–66 68} Importantly, RJR's manual stated that beyond marketing, designing new packages was important because "a package *change can create a 'new' product*" by giving customers the existing product in a new form (emphasis added).³⁷

Implications for tobacco product regulation

The FCTC⁸⁹ (to which USA is not a party) and FSPTCA⁹⁰ regulate new tobacco product introductions, ingredients disclosures and packaging and labelling. The Guidelines for Implementation of FCTC Articles 9 (product content regulation) and 10 (product disclosures regulation) recommend that Parties prohibit or restrict ingredients that may be used to increase the attractiveness of tobacco products, that have certain colouring properties that make the products more appealing or create the impression that they have a health benefit.⁹¹ The Guidelines for Implementation of Article 11 (packaging and labelling) seek to counter established industry tactics for circumventing tobacco packaging and labelling regulation and urge Parties to consider adopting standardised packaging measures to prevent the industry from continuing to use packaging and labelling to mislead consumers and promote its products.²⁶

Our findings provide evidence of how tobacco companies adjust pack designs and colours to manipulate consumers by altering their perceptions of the products inside the packs and to create the impression that some cigarettes are less harmful than others. This evidence can be used to support adoption of measures to prevent companies from using packaging to deceive consumers and to regulate the introduction and marketing of new tobacco products. In particular, these findings and the accompanying legal analysis (see online supplementary text) support mandatory reporting of package designs along with the mandatory reporting of physical product contents, because package designs influence consumers' perceptions of the cigarettes' taste as do physical tobacco constituents (eg, additives and flavourings) that would be required to be disclosed under such reporting laws. For example, under Canada's tobacco reporting regulations, manufacturers and importers must provide Health Canada with annual reports that include tobacco product ingredients, toxic constituents, toxic emissions as well as information on product packaging.^{92 93} Our findings support regulations that would specifically mandate the reporting of colour changes in packaging reports and would support adoption of similar measures by other countries.

Packaging and labelling colour should be treated as tobacco product ingredients

The FSPTCA requires companies to obtain authorisation from FDA before introducing new tobacco products into the market, and products with different characteristics (including changed ingredients and designs) will not be authorised unless it is demonstrated that the changes would be appropriate for the protection of public health.⁹⁴ The industry documents summarised here demonstrate that tobacco companies routinely change colours in cigarette packaging and labelling not merely to communicate information about the product, but also to change consumers' perceptions of the product's taste and strength, thereby changing the product's ingredients and effectively creating a 'new product'. Since these design changes do not involve words, they allow tobacco companies to evade laws and regulations designed to prevent the companies from manipulating consumers. Indeed, package design experts wrote in 1995 that colour is a potent tool because it is "beyond the law. Words can be regulated, and so can pictures, but color cannot."³⁴

FDA initially stated that it would consider tobacco product labels and packaging as 'part' of the product in its premarket reviews,⁹⁵ but then retreated from this position^{96 97} after industry pressure and lawsuits.^{98 99} FDA's original position was appropriate and consistent with industry understanding and practices, and it should be followed (see online supplementary text). Likewise, other countries should treat products with packaging changes as new products when implementing FCTC Article 11.^{25 26}

Implications for standardised packaging

Australia became the first country to mandate standardised packaging along with product standardisation in December 2012,¹⁰⁰ and in 2015 Ireland¹⁰¹ and the UK¹⁰² passed similar laws. In December 2015, France passed a standardised packaging law,¹⁰³ in March 2016, Canada announced plans to adopt standardised packaging¹⁰⁴ and Finland, Norway, Sweden and New Zealand were expected to follow suit, with the European Union as a whole also considering the measure.¹⁰⁵

Before Australia's law was implemented, several papers suggested that standardised packaging may help reduce misperceptions of risk communicated through pack design^{3 4 6 7 9 11 16 88} and help promote cessation, especially among youth.^{87 106 107} Standardised packaging may reduce smoking in current smokers by making the packs less appealing,^{108 109} by producing less craving and motivation to seek tobacco^{110 111} and by increasing attention to health warnings.^{112 113} Since the introduction of standardised packaging in Australia, evidence among adult smokers suggests that plain packaging has achieved its specific objectives and reduced the appeal of tobacco products, increased the effectiveness of health warnings, helped reduce the extent to which smokers are misled about the harms of smoking^{114 115} and reduced the ability of the pack to appeal to young people.¹¹⁶ The industry documents reviewed in this paper can be used to support standardised packaging by confirming that companies use the colours on packaging to manipulate and impact consumers' perceptions about taste, strength and relative risk of the cigarettes inside the pack.

CONCLUSION

Tobacco companies use cigarette pack colours to manipulate not only consumers' brand choices and perceptions of harm, but also smokers' experiences of the taste and strength of the

cigarettes inside the pack to effectively create new products, just as they would by making changes to the cigarette's ingredients or physical properties. Since changes in packaging colours influence consumers' perceptions and experiences of smoking the cigarettes, including leading consumers to believe that the products taste better, these package changes effectively create new tobacco products. In countries that do not require standardised packaging, regulators should recognise this reality and consider colour equivalently to other changes in cigarette characteristics (eg, ingredients, additives and flavourings) when determining whether to permit new products on the market.

What this paper adds

- ▶ Cigarette pack colours are used not only to manipulate consumers' brand choices and perceptions of harm, but also to change smokers' perceptions of the taste and strength of the cigarettes inside the pack without changing the cigarettes themselves.
- ▶ When tobacco companies change pack colours, they effectively create new tobacco products, just as when they make changes to the cigarettes' ingredients, additives or flavourings; all new tobacco products should be subject to equivalently rigorous new tobacco product review.

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