

**ASSESSING THE EFFECTIVENESS OF STANDARDISED PACKAGING AS A  
TOBACCO CONTROL MEASURE IN SINGAPORE: MARKETING AND  
CONSUMER PSYCHOLOGY PERSPECTIVES**

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## 1. Background and Objectives

As part of the guidelines submitted to the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), *standardised packaging*, or *plain packaging*, is defined as measures to “restrict or prohibit the use of logos, colours, brand images, or promotional information on packaging (of tobacco products) other than brand names and product names displayed in a standard colour and font style” (WHO, 2016; p. 5). Standardised packaging was first adopted by Australia in December 2012, with France and the United Kingdom (UK) following suit in January 2017 and May 2017, respectively.

The Ministry of Health (MOH) in Singapore is currently considering the addition of this policy to the country’s comprehensive suite of tobacco control measures, following the ban of point-of-sale display of tobacco products as of 1 August 2017. This report aims to assess the effectiveness of standardised packaging to control tobacco use in Singapore from the perspectives of marketing, branding, and consumer psychology.

In particular, we are asked to assess whether, based on a review of the relevant literature, there is reasonable basis to conclude that standardised packaging:

1. reduces the appeal of tobacco products;
2. increases the noticeability and effectiveness of health warnings;
3. reduces the ability of the packaging of tobacco products to mislead about the harmful effects of smoking; and
4. eliminates the effects of tobacco packaging as a form of advertising and promotion,

and ultimately contributes to reducing smoking prevalence over the long term.

Appendix A explains how we curated the research articles that we reviewed for this report and drew our conclusions.

## **2. The Role of Packaging in Product Advertising and Promotion**

### *2.1 The Increasing Importance of Packaging in Marketing*

Packaging plays a vital role in a product's advertising and promotional mix. Packaging involves designing and producing the container or wrapper for a product. Traditionally, the primary function of a package was to hold and protect the product. However, with increased competition and clutter on retail store shelves, packaging now performs many sales and marketing functions, from attracting attention and describing the product, to influencing attitudes and inducing purchase of the product (Bloch, 1995; Moskowitz, et al., 2009; Schoormans & Robben, 1997; Underwood & Klein, 2002; Underwood, Klein, & Burke, 2001).

Furthermore, companies are increasingly harnessing the power of packaging to create instant consumer recognition of the company or brand. Effective packaging draws the consumer in and encourages choosing the product. It can also serve as a "five-second commercial" for the product. For instance, moon cake boxes have deviated from the traditional square paperboard cake-box style to feature, say, jewellery box-like style that opens up uniquely. Such creative packaging attracts attention to the brand and product whose inherent quality may remain unchanged.

Unlike advertising, packaging is a marketing and communication tool that is tangible, and thus mobile and ubiquitous. TV and radio commercials and Instagram posts come and go, whereas packaging resides in the home, at the workplace, and within social environments. For individuals who have no or limited prior knowledge about a

product, packaging is likely to be the key marketing tool that influences consumer expectations.

Several factors contribute to the burgeoning use of packaging as a strategic marketing tool by companies:

1. *Self-service* – More products are being sold on a self-service basis. Effective packaging must perform many of the sales tasks: attract attention, describe product features, create consumer confidence, and make a favourable overall impression.
2. *Consumer affluence* – Consumers are willing to pay a little more for the convenience, appearance, dependability, and prestige of superior packaging.
3. *Company and brand image* – Packaging contributes to instant recognition of the company or brand (e.g., Pantene shampoo bottles are easily recognisable) and influences perception.
4. *Innovation opportunity* – Companies can incorporate unique materials and features that make the brand distinctive (e.g., resealable aluminium Coke cans in Japan).
5. *Protecting intellectual property rights* – Unique package shapes and sophisticated printing techniques can help deter counterfeiters.

## 2.2 Package Design, Consumer Inference, and Brand Identity

One of the most important roles of packaging lies in the development of brand meaning (Keller, 2007). Although a product's packaging does not directly impact the performance of the product, it has considerable impact on the inferences that consumers draw about the product and its brand. In particular, consumers often infer the intrinsic properties of a product based on the extrinsic characteristics of the product's packaging, a process also known as "sensation transfer" (Bero, 2003; DiFranza, Clark, & Pollay, 2002). For example, consumers may judge the volume of a product based simply on

the shape of its packaging (Folkes & Matta, 2004; Krishna, 2006; Raghubir & Greenleaf, 2006), or infer the weight of a product based on the location of the product's picture on the packaging (Deng & Kahn, 2009; Kahn & Deng, 2010). Such inferences, in turn, create expectations about the product and its brand, expectations that serve as benchmarks against which consumers use when evaluating and making consumption and purchase decisions about the product and its brand. Accordingly, marketers often employ packaging design strategically to create "sensory signatures" for brands, build desired brand associations, and develop strong brand identities (Lindstrom, 2006).

Likewise, product packaging can be used effectively to communicate particular value propositions to appeal to specific target segments, even though the inherent qualities of the product are essentially the same across variant packaging. As a case in point, while the packaging of a pregnancy test kit targeted at aspiring parents may feature a cherubic infant smiling at the shopper from the test kit's pastel pink box, the same test kit (manufactured by the same company but priced substantially lower) may be contained in a more clinically looking package that features "no smiling baby, just brick-red lettering against a mauve background" (Koselka, 1994, p. 78). In the same vein, consumers who are willing to purchase ecologically packaged products may differ from those who do not (Schwepker & Cornwell, 1991).

The visual aspects of a product's packaging often dominate other sensory modalities (e.g., touch; Krishna, 2006), activating imagery and affective processing, and prompting the consumer to imagine how the product contained within the package looks, tastes, feels, smells, or sounds (Hoegg & Alba, 2007; Hoegg, Alba, & Dahl, 2010; Hsee & Rottenstreich, 2004; Kumar & Garg, 2010; Lee, Amir, & Ariely, 2009; Paivio, 1986; Underwood, Klein, & Burke, 2001). Aesthetic considerations related to the visual information on product packaging, such as colour, layout, typography, and

graphics can be used to attract attention, as well as to communicate information about brand meanings and product attributes (Aydinoğlu & Krishna, 2011; Garber, Burke, & Jones, 2000; Hagtvedt & Patrick, 2008; Hine, 1995; Labrecque, Patrick, & Milne, 2013; MacInnis & Price, 1987; McGill & Anand, 1989; Orth & Malkewitz, 2008; Patrick, 2016; Rettie & Bruwer, 2000; Underwood, Klein, & Burke, 2001; Underwood & Klein, 2002).

One potential explanation why visuals are more effective relative to text in eliciting consumer responses is the picture superiority effect. First, pictures are more vivid than words, making pictures more noticeable and easier to recall. Second, the accessibility-diagnostics framework (Feldman & Lynch, 1988) suggests that compared to the more pallid verbal information, pictures are more accessible and serve as a diagnostic cue about the product as long as consumers assume that the picture portrays the product's characteristics. Third, pictures elicit imagery processing more so than words (Paivio, 1986). A consumer looking at a picture on the packaging is more likely to imagine how the product looks, tastes, feels, and smells. Positive imaging improves brand beliefs, more favourable brand evaluations, and hence, higher purchase likelihood; while packaging that elicits poor product imagery is unlikely to result in the brand being in an individual's consideration set.

Together, the greater accessibility of the visual information on a product's packaging compared to textual information, coupled with the perceived diagnosticity of such vivid information, contributes toward the formation of product attitudes that could guide product decisions and influence consumption experience (Feldman & Lynch, 1988).

Nonetheless, the extent to which the visual imagery on a product's packaging affects perceived product characteristics and brand meaning depends on a host of

factors. For instance, the visual cues on a product's packaging are less likely to affect product inferences when consumers are familiar with the brand or the product (Underwood, Klein, & Burke, 2001; c.f., Kisielius & Sternthal, 1986), when they are able to judge the product's quality based on the intrinsic attributes of the product (Zeithaml, 1988), and when they are not under time pressure (Pieters & Warlop, 1999).

### *2.3 Research on Packaging and Visual Processing in Singapore*

While there has been a substantial body of work on product packaging and visual information processing in the extant marketing and consumer psychology literature, research in these domains that is specific to the Singapore context is limited.

Henderson and colleagues (2003) found that consumers in China and Singapore process visual brand stimuli (i.e., product logos) in similar ways, such that the use of elaborate, natural, and harmonious logo designs leads to positive feelings and quality perceptions – effects that the researchers opine would also hold in the US. Lwin, Morrin, and Krishna (2010) explore the effects of olfactory and pictorial stimuli on consumers' recall of verbal information about a product on a direct mailer insert. They found super-additive effects of scent and pictures on verbal recall, such that olfactory input boosts the positive effects of pictorial input on recall—both aided and unaided—of verbal information after a time delay.

More pertinent to the topic of product packaging, Lwin and her co-researchers (2014) recently examined the effects of nutrition seals and claims on perceived product healthfulness on food packaging. They found that nutrition claims on “healthy products” (e.g., oatmeal and cereal) and nutrition seals of approval (i.e., the “Healthier Choice Symbol”) on “unhealthy” products (e.g., pizza and cake) are effective at

enhancing perceived product healthfulness for consumers who attempt to restrict their food intake, but not for unrestrained eaters.

### **3. Packaging for Advertising and Promoting Tobacco Products**

#### *3.1 The Influence of Packaging on Product Perception and Brand Image*

In the tobacco industry, product packaging plays an even more vital role in advertising and promoting tobacco products, given that more conventional forms of tobacco advertising and promotion have been banned in most countries (Moodie & Hastings, 2010). Essentially, the cigarette pack becomes the “five-second commercial” whenever it is drawn from the shelf or one’s pocket, held in the palm of a hand, or placed in full view on the table.

As stated by Mawditt (2006), “. . . we will increasingly see the pack being viewed as a total opportunity for communications – from printed outer film and tear tape through to the inner frame and inner bundle. Each pack component will provide an integrated function as part of a carefully planned brand or information communications campaign” (cited in Freeman, Chapman, & Rimmer, 2008). Cigarette packaging is regarded by tobacco companies as “an integral component of marketing strategy and a vehicle for (a) creating significant in-store presence at the point of purchase, and (b) communicating brand image” (Wakefield, et al., 2002, p. i73). Indeed, tobacco companies tend to exploit all elements of packaging to promote and advertise their tobacco products (Moodie & Hastings, 2010).

The power of cigarette packaging is so strong that different types of packaging for the same cigarettes can drastically influence smokers’ taste perception and other characteristics of the cigarettes (Wakefield, et al., 2002).



One packaging design element that is central to the notion of standardised packaging and has been found to influence consumers is colour. Colour is an important marketing tool that is often used to (1) attract attention, and (2) influence perception. It is an important marketing tool because it is vivid, affect-loaded and memorable as a visual element. A key element of brand identity (Keller, 2007), colours in packaging provide brand identification and visual distinction. They can also produce emotions and associations that reinforce a brand's benefit or personality, provide contrast or novelty (Garber, Burke, & Jones, 2000).

Consumers experience colour in packaging at three levels (Hine, 1995):

1. *Physiological* – Somewhat universal and involuntary, seeing the colour red speeds up the pulse while the colour green slows it down.
2. *Cultural* – Visual conventions may have established over time such as black evoking images of wealth and elegance in Europe.
3. *Associational* – This concerns the colour expectations for a particular product category as a result of marketing efforts over time. Colour can be used to suggest abstract qualities (e.g., green for environmentally friendly and less fattening), different product categories (e.g., bright colours for detergents, white for medicine), and variations within a category (e.g., yellow for lemon, blue for peppermint, and green for menthol in candies).

In the food industry, many foods do not display their natural colour. Instead, food producers select, modify, heighten or standardise the colours that we see and come to associate with specific foods. The effects of conditioned food colour associations in colour-associated foods become so ingrained that an unexpected pairing of a given food with a novel colour can render the food unpalatable. Garber, Hyatt, & Starr (2000)

found that food colour affected not only people's ability to correctly identify the flavour, but also their formation of distinctive flavour preferences.

Likewise in the tobacco literature, colour is used to influence perceptions. For example, tobacco companies use red and brown packaging to suggest a full, rich, and satisfying flavour, blue for mild and mellow flavours, and green for menthol, cool, and fresh flavours; lighter colours, on the other hand, are generally used to suggest lower strength or milder cigarettes (Koten, 1980; Lempert & Glantz, 2016a, 2016b; Pollay & Dewhirst, 2002). Packaging colour can also be used strategically to influence the perceived image of a brand of cigarettes. Freeman, et al. (2008) cited R. J. Reynolds' launch of a new Camel cigarette targeted at women: *Camel No. 9*, packaged in black and pink or teal (for menthol version) was designed to conjure a sophisticated image of women "dressed to the nines." They noted favourable comments about the packaging from Internet sites including:

*“. . . yeah my husband bought them for me last night because I was so turned on by the black and pink package.”*

*“I don't smoke at all but I keep seeing this [sic] ads for Camel No. 9. The packaging alone makes me want to try them. It looks damn good and doesn't follow that style that seemingly every other carton out there does.”*

Lighter colours in general denote low strength (Lempert & Glantz, 2016a); tobacco companies often manipulate packaging colours to make the cigarettes inside more attractive to consumers by influencing perceptions of better quality, prestige, and upscale.

Koten (1980) suggested “red packs connote strong flavour, green packs connote coolness or menthol and white packs suggest that a cigarette is low tar. White means sanitary and safe. And if you put a low tar cigarette in a red package, people say it tastes

stronger than the same cigarette packaged in white” (cited in Pollay & Dewhurst, 2002, p. 24).

The use of colour to influence perception is also opined by Lempert & Glantz (2016a) in their review of tobacco packaging and their supplemental file (Lempert & Glantz 2016c). They cited several industry research including that by RJ Reynolds and Philip Morris. Below are four quotes from their article that reflect their view of how the tobacco industry has used colour in their packaging to influence perception:<sup>1</sup>

*“In the 1960s, Louis Cheskin Associates conducted ‘association tests’ with 1800 cigarette smokers to help PM [Philip Morris] determine which of three proposed pack colour combinations would most effectively create ‘favourable associations’ (e.g., ‘high quality tobacco,’ ‘rich tobacco flavour’ ‘mild,’ and ‘low-tar and nicotine’) and be less likely to create ‘unfavourable associations’ (e.g., ‘low quality tobacco,’ ‘little tobacco flavor,’ ‘strong’ and ‘high tar and nicotine’). These associations were based on the packages alone; the respondents never smoked the cigarettes. Packages with certain colour and label combinations (e.g., brown pack with a brown label) were more effective than others (e.g., 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.’” (p. 2)*

*“In 1979, RJR [RJ Reynolds] 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). . . . 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.” (p. 3)*

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<sup>1</sup> Lempert & Glantz (2016a) referred to the following sources: Cheskin L. (1965). File No. 1965 A-1 Confidential Report Association Tests: Philip Morris Filter (Brown) Packages. 26 March 1965. Philip Morris. <http://legacy.library.ucsf.edu/tid/tid05e00>; Etzel EC. (1979). Camel Filter revised packaging test, consumer research proposal. RJ Reynolds. <http://legacy.library.ucsf.edu/tid/qxb79d00>; [Author unknown] *Viceroy Rich Lights product, pack, and advertising testing of blue and silver packs*. 1978. Brown & Williamson. <http://legacy.library.ucsf.edu/tid/ews00f00>; Ferris, R. P. & Oldman, M. (1978). Application of repertory grid technique: I. an investigation of brand images report No. RD.1617. 27 September 1978. Brown & Williamson. <http://legacy.library.ucsf.edu/tid/ebm00f00>.

*“To verify that the proposed package design [royal blue pack] for the new-tar cigarette supported the desired product perceptions, B&W [Brown and Williamson] tested Viceroy Rich Lights in royal blue versus silver blue and silver packs that, unbeknownst to them, contained identical cigarettes, they rated the cigarettes from each pack on different attributes. 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.” (p. 4)*

*“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, and are more exciting or relaxing or are especially appealing to men, women or young people.” (p. 5)*

### 3.2 Graphic Health Warnings

At the same time, health policy makers have also leveraged upon the power of packaging to implement more stringent tobacco marketing restrictions (Chow, et al., 2017; Henriksen, 2012), in particular, the placement of graphic warning labels on cigarette packs. Building on the literature on the vividness, diagnosticity and imagery-eliciting characteristics of pictures, the use of graphic pictorial warning labels has been shown to generate more fear and anxiety, greater attention to and awareness of the health warnings, and a stronger impact in discouraging smoking behaviours (e.g., quitting, smoking less, attending smoking cessation programmes) than using text-only warning labels (Borland, et al., 2009; Guydish, et al., 2016; Hammond, et al., 2007; Kees, et al., 2006, 2010; Loeber, et al., 2011; Mutti-Packer, et al., 2017; Nicholson, et al., 2017; Noar, et al., 2016; Schneider, Gadinger, & Fischer, 2012; Strasser, et al., 2012).

Strasser, et al., (2012) studied graphic warning labels in cigarette advertising and found correct recall of the warning labels to be higher (83% vs 50%) in the graphic label condition versus the text-only label condition. Additionally, the time to first viewing of the graphic warning label was faster and the dwelling time (time spent

looking) was longer for graphic than text-only labels. They concluded that graphic warning labels drew attention more quickly and resulted in longer dwelling times which were associated with improved recall of the warning.

For tobacco products, packaging is the most accessible form of communication in social settings when a smoker brings the pack out to get a stick or to leave it on the table, with information in the pictorial element on the packaging being conveyed more easily than the verbal content. In a four-country longitudinal study involving smokers in Australia, Canada, the UK and the US, Hammond, et al., (2007) demonstrated that the implementation of larger warnings on cigarette packaging led to these warnings being more noticeable and rated more effective by smokers, with sustained impact in Canada and Australia.

Studies on pictorial warnings on tobacco packaging have also been shown to curb smoking. Kees, et al., (2006) demonstrated that adding the visual warning to the warning statement decreases the perceived attractiveness of the package and creates higher levels of fear or anxiety. The pictorial-verbal warning combination also increases smokers' perceived intention to quit smoking compared to warning statements alone. In a later study, Kees, et al., (2010) varied the degree of fear induced in the graphic warning and found that the more graphic pictorial warnings are, the higher is smokers' intention to quit smoking.

Nonetheless, in a review, Freeman, et al. (2008) argue that the body of tobacco package research consistently shows brand imagery arising from original cigarette packaging to distract smokers from, and therefore reduce, the impact of health warnings. Research has also shown that the effects of graphic warning labels on reducing tobacco use can backfire for heavier smokers, who may respond defensively to these warnings when confronted with mortality salience or experience greater

craving for cigarettes (in this regard, the addition of appropriate self-efficacy and self-affirming messages<sup>2</sup> on cigarette packaging could help to alleviate these adverse effects; Arndt, et al., 2009, 2013; Arndt & Goldenberg, 2017; DiBello, Neighbors, & Ammar, 2015; Gallopel-Morvan, et al., 2011; Goldenberg & Arndt, 2008; Hansen, Winzeler, & Topolinski, 2010; Martin & Kamins, 2010; Romer, et al., 2013).

Moreover, consistent exposure to graphic warning labels after a period of time can raise consumers' perceptual threshold, leading to psychological adaptation and potential wear-out, and necessitating alternate efforts such as adopting novel package designs (e.g., pack inserts and cigarettes that display health messages) to remind consumers of the hazards of cigarette smoking and motivate cessation (Borland, et al., 2009; Hammond, et al., 2007; 2013; Moodie, 2016a; Moodie, 2016b; White, et al., 2014; Yong, et al., 2013).

While prior research suggests that graphic health warning labels may be effective in discouraging smoking among adults in Singapore (Ng, et al., 2010), desensitisation and wear-out effects were recently documented in a study in Singapore and London (Ratneswaran, et al., 2016). In this study, the researchers conducted structured interviews on smokers and non-smokers recruited among patients from the general respiratory units in two hospitals, recording the participants' emotional and cognitive responses to 10 graphic health-warning labels. Compared to participants in London, those in Singapore (53% smokers) who were exposed to these labels reported

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<sup>2</sup> Self-efficacy refers to an individual's sense of their abilities, of their capacity to deal with the particular sets of conditions that life puts before them (Bandura 1977). In the context of cigarette smoking, self-efficacy would enhance a smoker's perceived ability, and hence motivation, to quit.

Self-affirmation arises from *self-affirmation theory* which posits that the overall goal of the self system is to protect an individual's image of self-integrity. Self-affirmation can be accomplished by engaging in activities that remind a person of the values and roles they hold to be important. In the context of cigarette smoking and graphic health warnings, more self-affirmed smokers are less likely to perceive graphic health warnings as threatening and process such information defensively.

lower feelings of disgust and lower degrees of cognitive processing of the labels, presumably because Singapore (2004) had introduced the use of graphic health warning labels earlier than the UK (2008) despite having refreshed the labels in 2006. These effects were independent of ethnicity, gender differences, occupation status, and the proportion of smokers and non-smokers in each country. Interestingly, the same effects were found for smokers and non-smokers alike, suggesting that even non-smokers may be susceptible to adaptation and desensitisation effects.

Nonetheless, regularly changing the packaging may help to minimise adaptation. When the same packaging is used for an extended period, people adapt to the packaging and become less attentive to what was shown or written. Their perceptual threshold level to notice the warning label is raised. Regularly changing the packaging mitigates such tedium and wear-out, and makes the new packaging and its warning label more noticeable. Moreover, refreshing the images could help lower the perceptual threshold and encourage continued involvement and engagement with the images. Consistent with this possibility, Yong, et al's (2013) Thailand-Malaysia study on smokers showed that pictorial health warnings were more effective in getting Thais to notice, read, think of the risks, think of quitting, forgo and even avoid smoking than Malaysians, an effect that sustained over 18 months; the researchers concluded that Thailand's success in sustaining the effects of the warnings was due in part to its refreshing of pictorial images on the packaging.

#### **4. Effects of Standardised Packaging on Advertising and Promotion of Tobacco Products**

To curtail the marketing and branding effects of tobacco product packaging, one approach is to implement standardised packaging, following the footsteps of Australia,

France, and the UK. Such a policy could also help counter the wear-out effects of the use of graphic health warning labels on cigarette packaging.

A growing stream of research has empirically examined the impact of standardised packaging compared to regular branded packaging around the world using a variety of methodologies (see Appendix B for a summary of prior findings). These empirical studies have attempted to investigate the influence of standardised packaging on diverse target segments, varying in age, gender, smoking habits, and socioeconomic status. Besides documenting the effects of standardised packaging, many of these studies also attempt to uncover the underlying mechanisms for the effectiveness (or lack thereof) of standardised packaging while illuminating the conditions under which standardised packaging is most effective in suppressing the use of tobacco products.

In the following sections, we shall systematically evaluate the effectiveness of standardised packaging of tobacco products along each of the four dimensions mentioned in Section 1, drawing upon the existing pool of empirical findings while applying concepts from marketing and consumer psychology.

#### *4.1 Reducing the Attractiveness and Appeal of Tobacco Products*

Research has shown that the use of standardised packaging or plain packaging may be effective in suppressing a smoker's craving for cigarettes as well as inducing thoughts of quitting (see Moodie, et al., 2013; Stead, et al., 2013 for reviews of quantitative studies on standardised packaging). These effects apply not only to regular adult smokers (Brose, et al., 2014; Gallopel-Morvan, et al., 2012; Hogarth, Maynard, & Munafò, 2015; Moodie, et al., 2011; Nonnemaker, et al., 2016; Thrasher, et al., 2011; Wakefield, et al., 2012; Wakefield, et al., 2015; Wakefield, Germain, & Durkin, 2008; Webb, et al., 2017; White, et al., 2012; Zacher, et al., 2014) but also to both regular and



experimenting adolescent smokers (Andrews, et al., 2016; Arora, et al., 2013; Hoek, et al., 2011; Mutti, et al., 2016, 2017). For non-smokers, particularly adolescents, standardised packaging could also be effective in discouraging smoking initiation (Arora, et al. 2013; Ford, et al., 2013; Gallopel-Morvan, et al., 2012; Mannocci, et al., 2015; McCool, et al., 2012; Mutti, et al., 2017).<sup>3</sup>

While the reduced appeal of tobacco products has mainly been shown in people's self-report beliefs and attitudes about cigarettes and smoking after being exposed to standardised packaging (vs. other types of packaging), there is also some evidence that the reduced appeal also manifests after actual smoking in a standardised packaging environment. In a recent longitudinal study conducted in Australia, Webb and his colleagues (2017) found that the implementation of standardised packaging resulted in less smoking and increased intentions to quit seven months after (vs. three months before) implementation, especially among smokers who had identified strongly with their preferred cigarette brand.

In another longitudinal study (Swayampakala, et al., 2017) in which 2,699 adult smokers in Australia were administered surveys every four months for two years after the implementation of standardised packaging, smokers' decision to forego cigarettes due to health warning labels on the cigarette package increased linearly over time across age groups, even though this effect was stronger among younger than older smokers. Similarly, in another study conducted in Scotland in which 140 young adult smokers were asked to smoke cigarettes from regular branded packs or "plain" packs for two weeks each, participating smokers reported more negative feelings, smoking less around others, more thoughts about quitting when smoking from the plain packs than

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<sup>3</sup> Contrast against Gallopel-Morvan, Hoek, and Rieunier (2017) who found no difference in self-reported smoking intentions between plain and regular packaging among French adult smokers and non-smokers (see p. 20).

from the regular packs (Moodie, et al., 2011). These findings are consistent with the results of an observation study in which Zacher and his collaborators (Zacher, et al., 2014) studied smoking behavior in public places such as cafés, restaurants and bars with outdoor seating both before and after the implementation of plain packaging in Australia; they found a 23% decline in active smoking between the two periods.

Several reasons could explain why smokers and non-smokers may perceive tobacco products and smoking to be less attractive with standardised packaging:

1. Standardised packaging may make cigarettes appear “cheap” and hence inferior in taste and quality (Brose, et al., 2014; Doxey & Hammond, 2011; McCool, et al., 2012; Moodie, et al., 2011; Mutti, et al., 2017; Wakefield, et al., 2012; Wakefield, Germain, & Durkin, 2008; White, et al., 2012). Some evidence also suggests that female smokers may perceive cigarettes from standardised packaging to be less effective in helping them control their appetite and stay slim – reasons that presumably motivate many figure-conscious females to smoke (Doxey & Hammond, 2011).
2. Standardised packaging may lead people to infer smokers to possess less positive traits, such as “uncool,” “unpopular,” and lacking in style, glamour, and sophistication (Brose, et al., 2014; Doxey & Hammond, 2011; Lund & Scheffels, 2013; Moodie, et al., 2011; Mutti, et al., 2017; Wakefield, et al., 2012; Wakefield, Germain, & Durkin, 2008; White, et al., 2012).
3. Standardised packaging may accentuate the salience of graphic health warning labels on cigarette packaging (Maynard, et al., 2017; Moodie, et al., 2011; Shankleman, et al., 2015; Swayampakala, et al., 2017); we shall discuss this effect of standardised packaging in greater detail in the next section.

4. Due to these various effects and negative perceptions, standardised packaging may induce various negative feelings in people, from fear and anxiety, to guilt, shame, and embarrassment (Andrews, et al., 2016; Hardcastle, et al., 2016; Moodie, et al., 2011).
5. These effects and negative perceptions can also weaken smokers' affiliation with their preferred cigarette brands and with other smokers who smoke the same brands (Webb, et al., 2017).

While consumer perceptions typically concern product characteristics—such as price, taste, effectiveness, cool factor, and popularity—psychological theories (e.g., Fishbein's Multiattribute Attitude Model) suggest that perception is an antecedent to attitude. If a product is perceived as cheap or inferior, attitude towards a brand is likely to be less favorable than towards another brand that is perceived to be better value for money or superior. This attitude, in turn, influences behavioural intentions such as smoking cessation. Hence, while some past research may not have specifically asked how appealing a tobacco brand is, psychological theories would suggest that such brand attitudes are likely to be less favourable when perceptions are inferior, and more favourable when perceptions are superior.

Despite these findings, there are some exceptions to the seemingly overwhelming body of evidence for the demotivating effects of standardised packaging on smoking. Schüz, et al. (2016) found, using Ecological Momentary Assessment (EMA)<sup>4</sup> monitoring to assess participating smokers' cognition over four weeks during the transition period between the introduction and full implementation of plain

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<sup>4</sup> EMA involves repeated sampling of participants' current behaviours and experiences in real time within participants' natural environments. EMA aims to minimise recall bias, maximise ecological validity, and allow the study of micro-processes that influence behaviour in real-world contexts.

packaging in Australia (Study 2), that smoking from a plain pack was not related to higher intentions to quit than smoking from a regular, branded pack. Gallopel-Morvan, Hoek, and Rieunier (2017) did not observe a difference in self-reported smoking intentions between plain packaging with pictorial warning labels and regular branded packaging with pictorial warning labels in their interviews of 338 adult smokers and non-smokers in France.<sup>5</sup> Similarly, 60% of the smokers and non-smokers in a survey (N = 1,065) conducted in Italy (Mannocci, et al., 2015) also reported that they would still have started smoking anyway if plain packaging had been implemented (although one could argue that this judgment is susceptible to hindsight bias; Hawkins & Hastie, 1990).

While empirical studies may carry varying degrees of methodological limitations<sup>6</sup>, these studies suggest that demonstrations of seeming non-effectiveness of standardised packaging in demotivating smoking could perhaps be partly attributed to the doubt and resistance that some smokers experience when confronted by the graphic warning labels on plain packaging, and their low perceived relevance of these risks to their own health (Arndt & Goldenberg, 2017; Goldenberg & Arndt, 2008; Hardcastle, et al., 2016).

To gain a deeper understanding of the situations under which standardised packaging would work better in curbing the use of tobacco products, some researchers have examined a number of boundary conditions. In particular, studies have found that

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<sup>5</sup> Contrast against Gallopel-Morvan, et al. (2012) who observed that plain packaging suppressed adult smokers' craving for cigarettes and non-smokers' smoking initiation, particularly adolescents (see p. 17).

<sup>6</sup> Gallopel-Morvan, Hoek, and Rieunier (2017) measured self-reported intentions where the possibility of social desirability bias to appear independent especially among smokers may not reflect the effectiveness of plain packaging. In Mannocci, et al. (2015), respondents reported whether they would still have started smoking if plain packaging had been implemented. Such a response may have elicited hindsight bias.

the use of standardised packaging together with the use of gain-framed (vs. loss-framed)<sup>7</sup> warnings (Mays, et al., 2014), pictorial labels of sufficient size (White, et al., 2012), enclosed (vs. open) point-of-sale display of cigarette packs (Nonnemaker, et al., 2016), and the elimination of product descriptors (White, et al., 2012) could further enhance the effectiveness of standardised packaging.

#### *4.2 Enhancing the Noticeability and Effectiveness of Graphic Health Warnings*

One of the key benefits of standardised packaging in helping to discourage and suppress tobacco use is making the graphic health warnings on cigarette packs more salient and noticeable, making these warnings more effective in deterring smoking. In support of this expected benefit of standardised packaging, several studies have documented consistent findings among both smokers and non-smokers irrespective of age (Arora, et al., 2013; Moodie, et al., 2011; Wakefield, et al., 2015).

In an eye-tracking study conducted in the UK (Shankleman, et al., 2015), 30 young adults who were not current smokers were found to pay greater attention to health warnings when these warnings were presented on plain packs than on regular branded packs. Similar findings were earlier reported by Munafò and colleagues (2011) in another eye-tracking study in which they compared the amount of visual attention participants placed on health warnings versus brand information on cigarette packs, although the effect only existed for non-smokers and weekly smokers but not daily smokers (see also Loeber, et al., 2011). Such greater attention to health warnings is consistent with the confusion and overwhelming feeling that people may experience

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<sup>7</sup> “Gain-” vs “Loss-” frames stem from Prospect Theory, which concerns how information is conveyed and hence subjectively evaluated. In the case of anti-smoking, an example of a gain-framed message is one that emphasizes the benefits of quitting smoking (e.g., better health); while an example of a loss-framed message is one that highlights the risks of smoking (e.g., higher probability of contracting lung cancer).

from the mixture of warning text, imagery, and branding on regular branded packs (McCool, et al., 2012). The above findings are also consistent with a recent report, WHO (2016), indicating that plain packaging increases the salience of health warnings beyond the effect of larger size of the health warning labels.

Further, another study conducted in the UK involving both eye-tracking and functional magnetic resonance imaging (fMRI) revealed that controlling for the amount of visual attention participants (N=58) placed on health warnings based on their eye-tracking fixations, there were higher levels of visual cortical activation in response to plain packaging than to branded packaging of cigarettes (Maynard, et al., 2017). Although the degree of attention people place on health warning labels may not change (and may even decline; Swayampakala, et al., 2017) with standardised packaging, the amount of cognitive elaboration of these warnings may increase, especially among younger smokers (Swayampakala, et al., 2017). (See White, et al., 2015 for an exception; the researchers found in cross-sectional surveys that they administered to close to 8,000 students aged 12 to 17 in Australia that standardised packaging did not change how frequently the students attended to, thought of, or talked about health warnings on cigarette packaging.)<sup>8</sup>

#### *4.3 Reducing the Ability of Tobacco Product Packaging to Mislead Consumers about the Harmful Effects of Smoking*

Given that standardised packaging may render the graphic warning labels on cigarette packs more noticeable, may it also leave less room for tobacco marketers to mislead consumers, particularly in terms of the health risks of smoking or the attributes

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<sup>8</sup> Our review revealed that there were significantly more studies that demonstrated the greater noticeability of and attention to graphic health warnings due to standardised packaging than studies that demonstrated otherwise. We were able to find only one study (White, et al., 2015) that showed such packaging to yield no difference.

of the cigarettes within the packs? Based on the results of empirical studies in the existing literature, the answer to this question seems mixed.

In a cross-sectional study that surveyed students (who were mainly non-smokers) both a year before and a year after the introduction of standardised packaging in Australia, participants' awareness that smoking causes bladder cancer increased, as with their agreement that smoking is a leading cause of death and blindness (White, et al., 2015). Another more recent study (Harris, et al., 2017) conducted in Uruguay involving conjoint analysis and 164 current smokers found that plain packaging significantly increased the perceived health risks of cigarettes compared to regular branded packaging and a modified packaging with a dark-brown colour but distinctive brand elements. Both studies suggest that if not for plain packaging, people's perception of the health risks associated with smoking would have been (mistakenly) lower if original packaging were used.

Indeed, prior research suggests a strong relationship between packaging design and perception of risk (Bansal-Travers, et al., 2011; Hammond & Parkinson, 2009; Hammond, et al., 2009). Colour as a design variant, for instance, affects risk perception. According to WHO (2016), the tobacco industry is well aware of this effect; the report cites a 1990 tobacco industry document that recognises lighter coloured packs to have a clean, healthy connotation (Philip Morris, 1990). Plain packaging could thus minimise the use of packaging designs (e.g., design variants based on colour) to mislead consumers regarding the health consequences of smoking.

Yet, several other studies found that while standardised packaging may reduce the appeal of cigarettes as discussed previously, it may not result in significant changes in the perceived risk or harmfulness of smoking (Brose, et al., 2014; Doxey & Hammond, 2011; Wakefield, et al., 2015), the perceived tar level in cigarettes or

volume of smoke (Doxey & Hammond, 2011; Skaczkowski, et al, 2017), nor any difference in taste or strength across different brands of cigarettes (Wakefield, et al., 2015).

Together, these seemingly contradictory results suggest that although standardised packaging may not necessarily reduce the ability of tobacco product packaging to mislead consumers, it at least would not aggravate any potential misleading claims that tobacco companies may make on cigarette packs about their cigarettes or smoking in general.

#### *4.4 Eliminating the Effects of Tobacco Packaging as a Form of Advertising and Promotion*

More broadly, to what extent would standardised packaging eliminate the effects of tobacco packaging as a form of advertising and promotion? To answer this question, one could take either a consumer's or a marketer's perspective.

From a consumer's perspective, the lower appeal and more negative associations of cigarettes caused by standardised packaging may generate feelings of guilt, shame, or embarrassment. These negative feelings could, in turn, result in avoidance behaviour among smokers, such as putting cigarette packs in a face-down position on the table (Zacher, et al., 2014), transferring the cigarettes to a separate container or a saved, branded pack (Guillaumier, Bonevski, & Paul, 2015; Hardcastle, et al., 2016; Zacher, et al., 2014), or concealing or keeping the plain packs out of public view altogether (Hardcastle, et al., 2016; Moodie, et al., 2011; Zacher, et al., 2014).

To the extent that cigarette packs represent a form of mobile advertisement for tobacco companies, standardised packaging could hence significantly reduce the advertising and promotion function of tobacco packaging. However, some research also



suggests that such avoidance behaviour could be reactionary and not permanent, and people could become desensitised to the graphic warning labels even though these labels may be made more salient on plain packaging (Guillaumier, Bonevski, & Paul, 2015).

We also note that standardised packaging may have the effect of placing brands on a level playing field. In a cross-sectional study involving telephone interviews of adult smokers in Australia (Wakefield, et al., 2015) revealed that participating smokers were less likely to agree that brands differed in prestige after the implementation of standardised packaging in Australia. Smokers were asked to rate their current cigarettes as “higher”, “lower” or “about the same” compared to a year ago in terms of quality, satisfaction, appeal, and value for money. Smokers thought that cigarettes in the original packaging was of higher value. When standardised packaging was used, the same cigarettes stripped of its original packaging were not perceived as having as much value. Hence, packaging influenced smokers’ perception of value, suggesting that standardised packaging may have the effect of standardising the perceived value and brand image across different cigarette brands.

Further, by eliminating such particularised pictures of each brand and using a common illustration, standardised packaging increases brand-merit competition by curtailing imagery stemming from individual brand’s illustrations that may influence perceptions, attitude and purchase intention. Instead, competition will be based on inherent brand/product merits rather than peripheral illustration-driven imagery.

From a marketer’s perspective, standardised packaging may lead tobacco companies to find other more creative means (involving all available elements of the marketing mix) to differentiate their products from those of their competitors or to discriminate among the different products in their own product line. In particular,

companies may use variant names and brand descriptors to communicate product information (e.g., level of prestige, target segment) and imagery previously conveyed through packaging design, as well as discount pricing strategy to encourage volume purchase (Greenland, 2016; Greenland, Johnson, & Seifi, 2016; Morton & Greenland, forthcoming).

Reviewing and analysing variant names reported in 27 tobacco manufacturer ingredient reports in Australia from 2006 to 2015, Greenland (2016) found that the implementation of standardised packaging had not deterred tobacco companies from introducing new brands and variants. Colour variant names, in particular, increased by 73.6% and became the norm, with lighter colours dominating and perpetuating notions of less harmful cigarettes. This implies that the use of colour variant names ought to be regulated as tobacco companies may be innovative in responding to such regulations. In Australia, for instance, tobacco companies communicate the notion of less harmful content through the use of lighter colours such as blue, silver and gold. Moodie (2016a, 2016b) has argued for more severe measures following standardised packaging to tighten the reins on tobacco companies given such possible innovation.

Indeed, despite having to face an increasingly hostile environment to market their products, tobacco companies may continue to exercise their creativity and find ways to circumvent any advertising and marketing restrictions (Assunta & Chapman, 2004; Carter, 2003). This has led some (e.g., Moodie, 2016a; 2016b) to call for even further, more severe measures (such as adding warning messages in the form of pack inserts, banning the use of colour descriptors) following standardised packaging to impose more stringent restrictions on tobacco companies, so as to eradicate these companies' use of packaging as an advertising and promotion tool.

The results of a recent study conducted in Australia pointedly underscore the power of brands and packaging in influencing consumers' consumption experience (Skaczkowski, et al., 2017). In this study, 81 participants who typically smoked at least five or more cigarettes a day were asked to smoke and evaluate two cigarettes: one from a plain pack featuring a premium brand name, and the other from a plain pack featuring a value brand name. Unbeknownst to the participants, the two cigarettes were identical and came from either an actual premium brand or an actual value brand, randomly determined. The results of this study are illuminating: while the perceived taste of actual premium and value cigarettes did not differ, participants rated the cigarettes retrieved from a plain pack featuring a premium brand to have an overall better taste than the same cigarettes retrieved from a plain pack featuring a value brand. These results suggest that in a standardised packaging environment, the effects of previous brand associations or any brand perceptions arising from descriptors of the brand could significantly affect consumption experience.

#### *4.5 Generalising the Effects of Standardised Packaging to the Singapore Context*

It is important to note that all, except one (Arora, et al. 2013), of these empirical studies were conducted outside of Asia (let alone in Singapore), raising the question of whether these findings would generalise to the Singapore context.

Several reasons may lead one to conclude that these documented effects of standardised packaging would carry over to the local context:

1. *Basic cognitive drivers of standardised packaging's effects:* First, given that many of the effects of standardised packaging pertain to universal basic cognitive functions such as attention, perception, inference, expectation, there is no reason to expect these effects not to apply to Singapore consumers. While these cognitive

antecedents can be conceived as primary drivers of the effects of standardised packaging on consumption, cultural antecedents (if any) of these effects (see the next two items in this discussion) can be conceived as secondary drivers.<sup>9</sup> That the effects of standardised packaging have been demonstrated consistently across different countries and demographic factors (e.g., gender and socioeconomic status) using a variety of empirical methodologies lends considerable support to the robustness and generalisability of these effects.

2. *Social drivers of cigarette avoidant responses to standardised packaging:* To the extent that some of the effects are driven by social factors (e.g., perceived smoker characteristics, feelings of shame and embarrassment), and that Singapore is arguably more multicultural and thus more collectivistic than many western societies (Chen, Ng, & Rao, 2005; Inglehart, 1997; Menon, et al., 2010), one may expect these socially driven effects of standardised packaging (e.g., concealing one's cigarette pack from the view of social others, reluctance to smoke because of negative perceived smoker characteristics) to be stronger in Singapore. That these effects may be strong in Singapore is explained by the greater reliance on social norms and concern for impression management in driving people's behaviour in more collectivistic cultures, where the opinion of others is perceived and processed as diagnostic information rather than a heuristic cue in product judgment and decision-making (Aaker & Maheswaran, 1997; Chen, Ng, & Rao, 2005; Kacen & Lee, 2002; Rook & Fisher, 1995), especially if using the focal product is socially visible (Zhang & Gelb, 1996).
3. *Cultural variations in risk aversion:* Prior research has shown that members of collectivist cultures tend to be more prevention-focused and risk-averse than

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<sup>9</sup> Primary drivers are the more dominant causal factors compared to secondary drivers.

members of individualist cultures (Hsee & Weber, 1999; Lee, Aaker, & Gardner, 2000; Mandel, 2003), particularly in the academic and medical domains (but not in the financial domain). Thus, to the extent that the culture in Singapore is more collectivistic than individualistic, one might expect the negative effects of smoking, made more salient and noticeable through the graphic health warning labels on standardised cigarette packs, to be more severe, and therefore, the ability of standardised packaging to demotivate smoking to be stronger. Nonetheless, some research has suggested that consumers in Singapore are similarly skeptical toward health claims than their American counterparts (Tan & Tan, 2007). Moreover, as the world becomes increasingly mobile, connected, and culturally diverse, one would expect the various effects of standardised packaging documented in the literature to be at least comparable in strength, if not stronger, in Singapore.

Future research on smoking in Singapore may examine the “smoking sensibilities” of tobacco users, particularly the “sensorial and embodied aspects of smoking practices” beyond their rational aspects as suggested by Tan (2012).

## **5. Branding in a Reduced Physical Space on Tobacco Packaging**

No doubt, the implementation of standardised packaging in Singapore would present significant challenges for tobacco companies to continue relying on packaging to advertise and promote their tobacco products. Would an alternative proposal in which tobacco companies are allowed to retain the use of their trademark and branding in a reduced physical space (i.e., on the sides, top, and bottom of tobacco packaging) be sufficient to eliminate the advertising and promotion effect of tobacco packaging?

While empirical studies that directly investigate this question are non-existent to the best of our knowledge, some empirical findings suggest that the availability of more “real estate” for branding and advertising purposes on cigarette packaging could weaken the previously discussed effects of standardised packaging. In particular, Hoek and colleagues (2011) tested 12 packaging options, varying the size of the graphic warning label on the front of cigarette pack (30%, 50%, and 75%) and the level of branding (normal brand imagery, brand background colour with stylised logo only, standardised brand name, product category name—“cigarette”—in standardised font) along with a pure, plain pack (“cigarette” in standardised font but no warning). The results of the study suggest that plain packaging that feature large graphic health warnings are significantly more likely to promote cessation among young adult smokers, compared to fully or partially branded packaging. In another study conducted in Brazil involving 640 adult female smokers and non-smokers (White, et al., 2012), retaining brand descriptors in plain packaging (but removing all brand imagery) significantly increased ratings of appeal, taste and smoothness, as well as associations with positive smoker attributes (i.e., “stylish” and “sophisticated”).

Thus, the alternative proposal of allowing tobacco companies to retain some advertising and branding space on cigarette packs—a form of compromise arrangement—may render standardised packaging less effective. This alternative proposal of giving advertising and branding space on cigarette packs undermines the purpose of standardised packaging on four fronts – in reducing the appeal of tobacco products, in increasing the noticeability and effectiveness of health warnings, in reducing the tendency to mislead on the harmful effects of smoking arising from packaging, and in eliminating the effects of tobacco packaging as a form of advertising and promotion. In particular, as the cigarette pack is a source of mobile advertising

(taking the cigarette pack out of the pocket and placing it from one table to another in full view of others), the alternative proposal weakens the effect of standardised packaging in minimising the role of cigarette packs as an advertising and promotion tool.

## **6. Conclusion**

In summary, standardised packaging gives rise to myriad effects, which together, could negatively impact the appeal of smoking and reduce tobacco use in Singapore. Nonetheless, it is important to bear in mind that many of the empirical findings discussed in this report involve self-reported attitudes, perceptions, and behavioural intentions, rather than actual behaviour.

While one may question the generalisability of these findings to a real consumption context, it is encouraging that the results of several longitudinal studies (Moodie, et al., 2011; Webb, et al., 2017; Swayampakala, et al., 2017) involving actual smoking in a more naturalistic environment converge toward the same general conclusions as earlier survey-based or experimental studies conducted in the lab (which mostly involved participants' responding to different types of cigarette packaging), lending some degree of confidence to the robustness of the findings.

Moreover, several other studies involving methods that range from pure observations (Zacher, et al., 2014) to more objective methods such as the use of fMRI and eye tracking (Maynard, et al., 2017; Munafò, et al., 2011; Shankleman, et al., 2015) provide further evidence for the potential desirable effects of standardised packaging in discouraging tobacco use. Nonetheless, further empirical studies that involve more rigorous research methodologies along with objective measures (e.g., actual cessation

or attendance of cessation programmes, reduced sale of cigarettes) would lend stronger support.

Furthermore, while there is growing convergent evidence that standardised packaging would make graphic health warning labels on cigarette packs more salient and noticeable as well as prompt consumers to cognitively process these labels, whether these labels would lead to greater perceived harmfulness of smoking or not is less clear. Due to the greater negative social perceptions and repercussions of smoking that standardised packaging can bring about, coupled with the relative resistance of habitual smokers (vs. non-smokers) against measures to control tobacco use (e.g., see Hardcastle, et al., 2016; Loeber, et al., 2011; Munafò, et al., 2011), standardised packaging may have a stronger effect in discouraging smoking initiation and experimentation among non-smokers (particularly youths who may be more conscious of their social image) than in encouraging existing smokers to quit. The negative social effects of smoking in a standardised packaging environment is evident in people's association of smoking from plain packs with more negative smoker characteristics (Doxey & Hammond, 2011; Lund & Scheffels, 2013; Wakefield, et al., 2012; White, et al., 2012), smokers' self-reported feelings of shame and embarrassment when smoking from a plain pack of cigarettes (Hardcastle, et al., 2016; Moodie, et al., 2011), and especially in the increased incidence of smokers' engaging in avoidant behaviours (e.g., concealing their plain cigarette packs, thus diminishing the power of cigarette packs as a form of mobile advertisement) following the implementation of standardised packaging in Australia (Guillaumier, Bonevski, & Paul, 2015; Hardcastle, et al., 2016; Zacher, et al., 2014).

Collectively, the empirical evidence to date seems to suggest that the four stated objectives (reducing tobacco appeal, increase noticeability of health warning, reducing



misleading, and eliminating packaging as a form of advertising) can be achieved through standardised packaging, although the effectiveness of standardised packaging in achieving each objective is unlikely to be similar.

Importantly, standardised packaging will no doubt pose significant challenges to tobacco companies that have hitherto relied substantially on packaging to advertise and promote their tobacco products. Nevertheless, these tobacco companies would most certainly devise strategies to circumvent the marketing limitations of packaging, such as using variant names and brand descriptors (Greenland, 2016; Greenland, Johnson, & Seifi, 2016; Morton & Greenland, forthcoming). Therefore, to completely eliminate tobacco companies' ability to use packaging as an advertising and promotion device, it may be necessary for policy makers to introduce further measures on cigarette packaging beyond standardised packaging (e.g., Moodie, 2016a; 2016b).

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## **APPENDIX A: Literature Review Methodology and Analyses**

We conducted a search on several databases including JSTOR, Factiva, and BMJ of research articles using search terms relevant to this project. The search terms we used included “standardised packaging,” “plain packaging,” and “tobacco packaging.”

From the articles containing these key terms, we also gathered other relevant articles from the references cited in these articles, as well as relevant articles that cited these focal articles. When gathering these articles from the databases, some databases would also suggest other related articles.

Together, these sources added to the body of articles we considered in our literature review, articles related to our expertise in consumer psychology and marketing, such as those pertaining to picture superiority and packaging.

From these various sources, we reviewed over 130 articles related and/or relevant to standardised packaging.

These articles are published in academic research journals where they would have undergone an editorial process of peer reviews before being accepted for publication.

These articles also span a broad spectrum of disciplines – marketing, medicine, organisational behavior, pharmacology, psychology, and public health.

Appendix B gives a summary of 34 articles that we found on the effects of standardised packaging.

The research documented in these 34 articles were conducted in a variety of countries – Australia, Brazil, Canada, France, India, Italy, New Zealand, Mexico, Norway, Scotland, Singapore, Spain, Thailand, United Kingdom, United States and Uruguay – and published from 2008 to 2017.

These articles also used a range of research methodologies in studying the effects of standardised packaging, including experiments, focus group interviews, surveys, fMRI, and eye-tracking.

The participants of these studies varied in smoking status (smokers vs. non-smokers), gender, age, and socioeconomic status.

Given the comprehensiveness of the literature reviewed in terms of the databases used, editorial review process, disciplines covered, countries studied, period of study, research methodology used, and target participants studied, we based the conclusions that we drew on the collective body of research.

**APPENDIX B: Summary of Empirical Findings on the Effects of Standardised Packaging**

<i>Reference</i>	<i>Methodology</i>	<i>Location of Study</i>	<i>Sample Size</i>	<i>Target Participants</i>	<i>Comparisons</i>	<i>Dependent Measures</i>	<i>Main Findings (Selected)</i>
Andrews, et al., 2016	Experimental (online)	USA	375	Adolescents experimenting with smoking; 50% male, age: 15% (13-14 years), 33% (15-16 years), 52% (17-18 years)	2 (Plain pack branding: logo present, logo absent) X 2 (graphic visual warning: absent, low, medium, high); between-subjects	Cigarette craving, evoked fear, pack feelings, thoughts of quitting	<ul style="list-style-type: none"> <li>Graphic health warnings were effective in suppressing adolescent cigarette craving, evoking fear, reducing pack feelings, and inducing thoughts of quitting across participants in all three countries.</li> <li>Independently, plain pack branding had similar effects but only for USA adolescent smokers.</li> </ul>
		Spain	337				
		France	354				
Arora, et al., 2013	Focus groups, opinion poll (interviewer-administered)	India	12 focus groups (N=124)	Both tobacco users and non-users: <ul style="list-style-type: none"> <li>4 focus groups with adult males (age: 19-64)</li> <li>4 with adult females (age: 19-64)</li> <li>2 with boys (age: 12-17)</li> <li>2 with girls (age: 12-17)</li> </ul>	N/A	Reactions to dummy plain packs	<ul style="list-style-type: none"> <li>Most participants thought that young children would find the packs less appealing and thus help prevent initiation and experimentation.</li> <li>They also agreed that plain packs would make warnings more prominent.</li> <li>However, they were not sure of the effect of plain packaging on tobacco users.</li> <li>Some of them were also concerned that people might migrate to other tobacco products other than cigarettes.</li> </ul>
			Opinion poll (N=346)	51.2% current tobacco users; 52.9% male; median age: 31 (IQR = 25-40)			<ul style="list-style-type: none"> <li>69% strongly approved of plain packaging, with 5.5% somewhat or strongly disapproved of it.</li> <li>The majority of participants agreed that plain packaging would reduce the attractiveness of tobacco products for users (81.8%) and non-users (83.2%).</li> <li>83.2% thought plain packaging could motivate tobacco users to quit, while 91.6% felt it could make pictorial warnings more effective.</li> <li>More current tobacco users than never-users reported that plain packaging could reduce the attractiveness of tobacco products.</li> </ul>
Brose, et al., 2014	Experimental	UK	98	Regular and occasional smokers; 24%-53% male (varied by condition); mean age: 22-24	Preferred regular cigarette pack vs. another (non-preferred) branded pack vs. standardised pack; between-subjects	Craving and motivation to stop at baseline and post-exposure; package design perceived smoker characteristics, effects on behavior at post-exposure	<ul style="list-style-type: none"> <li>Standardised pack was perceived to be less appealing (reduced craving), less motivating (to buy cigarettes), and lower in taste.</li> <li>Smokers smoking from standardised pack perceived to be less popular and stylish.</li> <li>No effects on perceived cigarette harm, motivation to stop smoking, or reduction in consumption.</li> </ul>
Doxey & Hammond, 2011	Experimental (online)	Canada	512	Women; both smokers and non-smokers; age: 18-25	4 between-subjects conditions: <ul style="list-style-type: none"> <li>Fully-branded female brands;</li> </ul>	Perceived appeal, taste, tar, health risks, smoker 'traits'	Plain packaging rated as: <ul style="list-style-type: none"> <li>Significantly less appealing than other types of packaging;</li> <li>Having significantly lower perceived taste;</li> <li>Being associated with less positive smoker traits (e.g., glamorous, cool, popular, attractive, sophisticated);</li> </ul>

Reference	Methodology	Location of Study	Sample Size	Target Participants	Comparisons	Dependent Measures	Main Findings (Selected)
					<ul style="list-style-type: none"> <li>• Same brands without descriptors (e.g., 'slims');</li> <li>• Same brands without brand imagery or descriptors;</li> <li>• Fully-branded non-female brands</li> </ul>		<ul style="list-style-type: none"> <li>• Less likely to help people stay slim and control their appetite with smoking.</li> </ul> <p>No differences in:</p> <ul style="list-style-type: none"> <li>• Perceived tar level;</li> <li>• Perceived health risks.</li> </ul>
Ford, et al., 2013	Cross-sectional in-home survey	UK	1025	Adolescent never-smokers (72% susceptible to smoking); ~ 50% male; age: 11-16	Novelty packaging (3 types) vs. regular packaging vs. plain packaging; within-subjects	Pack appraisal, pack receptivity	<ul style="list-style-type: none"> <li>• Plain packaging was rated as less appealing than novelty and regular packaging.</li> <li>• Participants were less receptive to plain packaging than novelty packaging (but not regular packaging).</li> <li>• Participants' responses to plain packaging did not differ as a function of their susceptibility to smoking.</li> </ul>
Gallopel-Morvan, et al., 2012	Experimental (online)	France	836	Adult smokers (33.2%) and non-smokers; 48% male; age: >=18 (young adults 18-24 years more likely to be smokers than non-smokers)	Regular branded packs vs. limited-edition packs (with novel designs or innovations) vs. plain packs (with all branding, including colour, removed); within-subjects	Choice of 3 types of packaging (for 3 brands: <i>Camel</i> , <i>Lucky Strike</i> , and <i>Gauloises</i> ) in terms of their relative attractiveness, effectiveness in getting consumers' attention, and discouraging purchase and smoking	<p>Compared to the regular-branded packs and the limited-edition packs, the plain packs were perceived to be:</p> <ul style="list-style-type: none"> <li>• Least attention grabbing;</li> <li>• Least attractive;</li> <li>• Least effective for motivating youth to purchase the pack;</li> <li>• Most effective in convincing non-smokers not to start;</li> <li>• Most effective in motivating smokers to quit;</li> <li>• Most effective in motivating smokers to reduce consumption</li> </ul> <p>Smokers motivated to quit were significantly more likely than those not motivated to quit to select the plain packs when asked which pack they thought would motivate smokers to quit.</p>
Gallopel-Morvan, Hoek, & Rieunier, 2017	Experimental (face-to-face interviews)	France	338	Adult smokers (46.2%) and non-smokers (including 25.4% former smokers); 52.8% male; age: 15-35	2 (package: plain pack vs. branded pack) X 2 (warning: pictorial warning labels vs. text-only); between-subjects	Smoking intentions, behaviours related to cigarette packs in a social context	<p>For smokers:</p> <ul style="list-style-type: none"> <li>• Text-only warnings were more effective in decreasing "desire to buy a pack" and "desire to take a cigarette from it" when featured on a plain versus a branded pack.</li> <li>• No difference between packaging types in terms of "motivation to quit," "reducing consumption," or "hiding the pack in front of friends and family."</li> </ul> <p>For non-smokers:</p> <ul style="list-style-type: none"> <li>• Text-only warnings were more effective in decreasing "desire to buy a pack" when featured on a plain versus a branded pack.</li> <li>• No difference between package types in terms of "strengthening motivation not to start or resume smoking;" "motivation to use pack to encourage family and friends to quit."</li> </ul> <p>Mean differences between the "plain pack combined with pictorial warning labels" and the "branded pack combined with pictorial warning</p>

Reference	Methodology	Location of Study	Sample Size	Target Participants	Comparisons	Dependent Measures	Main Findings (Selected)
							labels” were not significant with respect to any of the behavioural intentions examined among smokers or non-smokers.
Guillaumier, Bonevski, & Paul 2015	Focus groups	Australia	6 focus groups (N=51)	Socioeconomically disadvantaged adult smokers; 53% male; age (57%: 18-39; 43%: >= 40)	Time of focus groups (1-3 before introduction of plain packaging [PP], 4-6 after full implementation of plain packaging)	Pre-PP: awareness and expectations of PP; post-PP: reactions to and impact of plain packaging and new health warning labels; reactions to three anti-smoking TV ads	<ul style="list-style-type: none"> <li>The idea of being desensitised to the graphic images in health warning labels (on plain packaging) was repeatedly mentioned.</li> <li>Some participants engaged in avoidance behaviours after implementation of plain packaging (e.g., putting cigarettes into separate tins and tossing the plain pack), but such behaviour were reactionary and not permanent.</li> </ul>
Hardcastle, et al., 2016	Questionnaire (qualitative; open-ended questions)	Australia	160	Daily smokers; 37% male; mean age: 33.43 (SD = 11.87)	N/A	Emotional responses to packaging, skepticism of health warnings, cessation behaviour, avoidance coping behaviours	<ul style="list-style-type: none"> <li>Many of the smokers reported that the plain packaging resulted in negative emotional reactions including feelings of shame.</li> <li>Despite the confrontational images on the packs, participants seem to be somewhat doubtful and critical of the health effects these packages promote; some appeared to find the health warnings largely irrelevant to their own personal risk of dying prematurely from a smoking-related disease.</li> <li>A minority of participants reported increased intentions to quit or had reduced smoking behaviour in response to the packaging.</li> <li>A consistent emergent theme was the adoption of coping behaviours to avoid the health warnings. Most participants’ found the greater prominence of the health warnings on the plain packaging disturbing and fear-arousing. The main coping behaviour reported to manage these affective reactions was hiding the packages or concealing the images. A common strategy was to buy a cigarette case and transfer the cigarettes into that. Others reported re-using and transferring cigarettes into packs that do not have the plain packaging.</li> <li>Smokers in the current study reported feelings of guilt, shame, or embarrassment in response to the graphic health warnings, although cessation-related thoughts and behaviour were not evident in the present study.</li> </ul>
Harris, et al., 2017	Experimental (conjoint analysis)	Uruguay	164	Current smokers; ~50% males; mean age: 36.2 (range: 19-65)	Plain packaging (standardised brand description and dark brown background colour) vs. current packaging vs. modified packaging (with distinctive brand elements and dark-brown background colour)	Risk perception	Plain packaging significantly increased the perceived health risk of stimulus cigarettes compared to both the current package design and the modified package design.
Hoek, et al., 2011	Experimental (face-to-face interviews)	New Zealand	292	Young adult smokers	3 (warning size: 30%, 50%, 75% pack front) X 4 (branding level: normal	Intention to quit smoking	<ul style="list-style-type: none"> <li>Of the 13 options tested, respondents were significantly less likely to choose those featuring fewer branding elements or larger health warnings. Options that featured more branding elements were still</li> </ul>

Reference	Methodology	Location of Study	Sample Size	Target Participants	Comparisons	Dependent Measures	Main Findings (Selected)
					brand imagery, stylised logo only, standardised brand name, standardised “cigarettes” only) + plain-packaging control; within-subjects		preferred even when they also featured a 50% health warning, but were significantly less likely to be chosen when they featured a 75% warning. <ul style="list-style-type: none"> <li>Comparison of the status quo (branded with 30% front-of-pack warning) and a plain pack (with a 75% warning) revealed that the latter would be significantly more likely to elicit cessation-related behaviours.</li> </ul>
Hogarth, Maynard, & Munafò, 2015	Experimental (Pavlovian to instrumental [PIT])	UK	Exp. 1: 24 Exp. 2: 128	Smokers (50% daily smokers); 50% male	3 conditions: branded pack, plain pack, no-stimulus; within-subjects	Tobacco-seeking response	<ul style="list-style-type: none"> <li>Branded packs primed a greater percentage of tobacco seeking (62%) than plain packs (53%) and the no-stimulus condition (52%).</li> </ul>
Lund & Scheffels, 2013	Experimental	Norway	1022	Young smokers (21.5%) and non-smokers; 41.8% male; age: 15-22	3 conditions: branded pack, plain pack, plain pack with descriptor; between-subjects	Perceived smoker characteristics	Compared to the branded pack, the plain packaging was associated with less positive smoker attributes (less glamorous, stylish, sophisticated) among adolescents and young adults. For girls, this effect held up after controlling for confounds.
Mannocci, et al., 2015	Survey	Italy	1065	Adult smokers (37.7%) and non-smokers; 47% male; mean age: 43.2	3 (type of packaging: current, plain with pictorial warnings, plain with textual warnings) X 8 (pictorial warnings); within-subjects	Perceived effectiveness in motivating smoking reduction or cessation, and preventing onset of smoking	<ul style="list-style-type: none"> <li>Among the three types of packaging, plain packaging with pictorial warnings were considered the most effective in motivating quitting, reducing and preventing smoking habits in all tobacco users and age groups.</li> <li>More non-smokers (60%) than smokers (43%) or ex-smokers (54%) believed that plain packaging would help to prevent smoking initiation.</li> <li>60% of smokers and former smokers said they would still have started smoking anyway if there had been just plain packaging.</li> </ul>
Maynard, et al., 2017	Cross-sectional observational study (fMRI and eye-tracking)	UK	58	19 non-smokers (53% male; mean age: 24.0); 19 weekly smokers (53% male, mean age: 21.3); 20 daily smokers (55% male, mean age: 22.6)	3 (smoking status: non-smoker, weekly smoker, daily smoker) X 2 (location of fixation: branding, health warning label) X 2 (pack type: plain packs, branded packs)	Activation in amygdala (emotion) and nucleus accumbens (reward)	<ul style="list-style-type: none"> <li>Taking into account visual attention to health warnings (based on eye-tracking fixations), there were highly levels of activation in the visual cortex in response to plain packaging compared with branded packaging of cigarettes – health warnings appeared to be more salient on “plain” cigarette packs than branded packs.</li> <li>There was no main effect of pack type on either amygdala activation or nucleus accumbens activation.</li> </ul>
Mays, et al., 2015	Experimental (online)	US	740	Young smokers; 55% male; mean age: 23.8 (range: 18-30); 74.9% white, 10.7% black	2 (packaging: branded vs. plain) X 2 (warning-message framing (gain vs. loss); within-subjects; Gain frame example: “Quitting smoking reduces the risk of cancer”; Loss frame example: “Cigarettes cause cancer”	Motivation to quit in response to cigarette packs	<ul style="list-style-type: none"> <li>Gain-framed warnings on plain packs led to greater motivation to quit than loss-framed warnings on plain packs for warnings about lung disease, cancer, and mortality. Effect did not exist for warnings about stroke/heart disease.</li> <li>On branded packs, pictorial warnings about gain-framed and loss-framed message text prompted similar cessation motivations.</li> </ul>
McCool, et al., 2012	Focus groups	New Zealand	12 focus groups (80)	Secondary school students; smokers and non-smokers; 45% male; age: 14-15	Plain cigarette pack prototype with just the graphic label vs. 2 branded	Initial impressions of cigarette packs, perceived impact on self and other	<ul style="list-style-type: none"> <li>Some participants reported being overwhelmed by the confusion of text, imagery, and branding on branded packs.</li> </ul>

Reference	Methodology	Location of Study	Sample Size	Target Participants	Comparisons	Dependent Measures	Main Findings (Selected)
					packets ( <i>Horizon and Holiday</i> )	(e.g., deterrent to smoking initiation among non-smokers)	<ul style="list-style-type: none"> <li>• Plain cigarette packs were unanimously perceived as a strong, direct, and radical step towards making smoking “look budget” and thus unattractive.</li> <li>• The packs were perceived to “increase clarity” and operate by increasing the salience and impact of the warning labels, increasing perception of the harm caused by smoking, and reducing the social appeal of smoking.</li> </ul>
Moodie, et al., 2011	Survey (longitudinal; 2 surveys in each of 4 weeks) + post-study interview for subsample based on naturalistic behaviour	Scotland	Survey: 140 (48 completed study); Subsample for interview: 18	Young adult smokers; mean age: 27 (range: 18-35)	Usage of brown “plain” packs for 2 weeks and usage of regular packs for 2 weeks; within-subjects (order randomised)	Pack perceptions, pack feelings, feelings about smoking, perceptions about health warnings, behavioural change/avoidant behaviour	<ul style="list-style-type: none"> <li>• Participants rated plain packs more negatively than regular packs (not stylish, unfashionable, cheap, uncool, unattractive, poor quality, unappealing).</li> <li>• They reported more negative feelings (embarrassed, ashamed, unaccepted) about using the plain packs, and reported smoking from the plain packs to be less enjoyable and satisfying. Overall ratings did not vary across time.</li> <li>• Only in the first two surveys were the warnings on the plain pack rated as more noticeable. Only in the fourth survey were the warnings on the plain pack rated as more serious.</li> <li>• When using the plain pack, participants were more likely to keep the pack out of sight, cover the pack, smoke less around others, and think about quitting.</li> <li>• 1/3 participants in the small subsample (mostly women) for the post-study interview felt they were smoking cheap cigarettes or that the cigarettes did not taste as good when smoking from the plain pack.</li> </ul>
Munafò, et al. 2011	Experimental (eye tracking)	UK	43	Adult smokers (14 weekly smokers, 64% male, mean age=24; 14 daily smokers, 71% male, mean age=25) and non-smokers (15, 67% male, mean age=23);	3 (smoking status: non-smokers, weekly smokers, daily smokers; between-subjects) x 2 (packaging type: branded vs. plain; within-subjects); mixed design	# saccades (eye movements) towards health warnings on cigarette packs	<ul style="list-style-type: none"> <li>• More eye movements (i.e., greater visual attention) towards health warnings were registered compared to brand information on plain packs versus branded packs. This effect was observed among non-smokers and weekly smokers, but not daily smokers.</li> </ul>
Mutti, et al., 2017	Experimental	Mexico	359	Young adults smokers (57.1%) and non smokers; 48.5% male; age: 16-18	Branded vs. plain pack between-subjects; participants rated 12 cigarette packs in assigned condition	Appeal, taste, harm to health, and smoker-image traits; respondents chose one of four (branded or plain) packs to keep	<ul style="list-style-type: none"> <li>• Plain packs perceived to be less appealing and to contain inferior tasting cigarettes, but were not perceived as less harmful.</li> <li>• People who smoke the branded packs rated as having more positive smoker-image traits overall, with particularly strong differences found among non-smokers for the traits “glamorous,” “stylish,” “popular,” and “sophisticated.”</li> </ul>
Nonnemaker, et al., 2016	Experimental (virtual store shopping)	US	1,313	Adult smokers (63.7%; the rest were recent quitters); 49.1% male; age: >=18 (18-34: 25.1%; 35-54: 40.5%); 90.4% white, 6.9% black	2 (POS tobacco product display: open vs. enclosed) X 2 (packaging: full-colour vs. plain); between-subjects	Urge to smoke after completing shopping task, attempt to purchase tobacco in virtual store	<ul style="list-style-type: none"> <li>• Urge to smoke was significantly lower in the enclosed/plain condition than in the open/plain condition.</li> <li>• Urge to smoke did not differ significantly between colour and plain packs, regardless of whether display was enclosed or not.</li> <li>• Enclosed display had a significant main effect on urge to smoke among recent quitters and on lowering tobacco purchase attempts among current smokers.</li> </ul>



Reference	Methodology	Location of Study	Sample Size	Target Participants	Comparisons	Dependent Measures	Main Findings (Selected)
							<ul style="list-style-type: none"> <li>• Plain packaging and ads were not associated with a main effect on tobacco purchase attempts among recent quitters.</li> <li>• For current smokers, plain packaging and ads had a significant main effect on reducing the likelihood of tobacco purchase attempts.</li> </ul>
Schüz, et al., 2016 <sup>13</sup> <small>SEP</small>	Ecological Momentary Assessment (EMA)	Australia	Study 1: 37	Adult smokers; 61% male, mean age: 39.6	Reactions to health warning when encountered within close proximity to smoking a cigarette or not	Health worry, self-efficacy beliefs, quitting intentions upon encountering health warning	<ul style="list-style-type: none"> <li>• Higher health worry and self-efficacy were related to higher quitting intentions. However, viewing graphic health warnings was not associated with increases in quitting intentions, health worry, or self-efficacy. No significant differences in reactions upon encountering health warning within close proximity of smoking a cigarette versus not.</li> </ul>
			Study 2: 62	Adult smokers; 63% male, mean age: 38.8	Smoking from standardised pack vs. branded pack	Health worry, self-efficacy beliefs, quitting intentions upon encountering health warning after smoking a cigarette	<ul style="list-style-type: none"> <li>• Smoking from a plain pack was not related to higher intentions to quit, health worry, or self-efficacy compared to smoking from a branded pack. However, greater health worry and self-efficacy beliefs were associated with higher intentions to quit smoking.</li> </ul>
Shankleman, et al., 2015	Experimental (eye tracking)	UK	30	Young adult non-current smokers; 20% male, mean age = 23	2 (packaging style: branded vs. plain) X 3 (warning type: black & white text, colour text, colour images with text); within-subjects	Mean proportion of a 5-second viewing period spent gazing at the warning-label region of the cigarette packet	<ul style="list-style-type: none"> <li>• Attention towards all categories of warnings increased when presented on plain packs than on branded packs.</li> <li>• Longer gaze times for colour text compared to colour image and text, and for colour image and text compared to black &amp; white text.</li> </ul>
Skaczkowski, et al, 2017	Experimental (outdoor; recruited through professional telephone panel)	Australia	81	Adult smokers (5 or more cigarettes/day); 55.6% male; mean age: 28.4 (19-39)	2 (actual type of cigarette smoked: premium vs. value) x 2 (brand name on packaging: premium vs. value); real smoking in plain-packaging environment	Visual analogue scales for various sensory attributes of cigarettes, purchase intent	<ul style="list-style-type: none"> <li>• Perceived taste of actual premium and value cigarettes did not differ.</li> <li>• Cigarettes presented as being a premium brand were rated as having better overall taste, and as less harsh and dry than identical cigarettes presented as a value brand.</li> <li>• No effect of brand name on ratings of tar level, strength, volume of smoke, or lightness.</li> </ul>
Swayampakala, et al., 2017	Survey (longitudinal; every 4 months over 2 years)	Australia  *Study was also conducted in Canada but did not involve plain packaging	2,699	Adult smokers (46.4%); 47% male; age: 18-64		Response to health warning labels (attention, cognitive elaboration, decision to forgo smoking)	<ul style="list-style-type: none"> <li>• Overall, attention to health warning labels declined, but cognitive elaboration and forgoing responses to health warning labels increased.</li> <li>• Compared to older smokers, younger smokers reported greater increases in cognitive responses to health warning labels and forgoing cigarettes due to these labels over time.</li> </ul>
Thrasher, et al., 2011	Experimental (auctions)	US	402	Adult smokers; 56% female; mean age: 38	Participants bid on 2 out of 4 cigarette packs with the same warning message but different warning label	Willingness to pay (WTP) for product	<ul style="list-style-type: none"> <li>• Average WTP for the plain pack (D) was significantly lower than the WTP for all the other three packs.</li> </ul>

Reference	Methodology	Location of Study	Sample Size	Target Participants	Comparisons	Dependent Measures	Main Findings (Selected)
					formats: (A) text on 50% of pack side; (B) text on 50% of pack front and back; (C) text with a graphic picture on 50% of the pack front and back; and (D) same as previous format, but without brand imagery.		
Wakefield, et al., 2012	Experimental (online)	Australia	1,203	Adult smokers (91% smoked daily, 63% more than 10 cigarettes/day); 44.7% male; 38% aged 18-29.	3 (size of front-of-pack pictorial health warnings: 30%, 70%, 100%) X 2 (type of pack: branded, plain); between-subjects	Rating of cigarette brands, smoking attitudes and intentions, purchase intent	<ul style="list-style-type: none"> <li>• Larger pictorial health warnings were associated with less positive pack characteristics and smoker characteristics.</li> <li>• Plain packaging was associated with less positive pack characteristics and smoker characteristics, more negative smoker characteristics (boring), and less negative taste characteristics.</li> <li>• Participants were less likely to purchase plain cigarette packs than branded packs, regardless of age group or size of the pictorial health warnings.</li> <li>• Plainness and size of pictorial health warnings interacted in predicting ratings of positive pack characteristics, such that when packs were plain, increasing the size of pictorial health warnings above 30% did not further reduce ratings.</li> </ul>
Wakefield, et al., 2015	Cross-sectional surveys (telephone)	Australia	Pre-plain packaging [PP]: 2176; Transition: 759; First year of implementation: 4240	Adult smokers; 55% female; age: 18-69 (44%-47% aged 30-49)	Time of survey (Pre-PP: Apr-Sep 2012; Transition: Oct-Nov 2012; 1 <sup>st</sup> year of implementation: Dec 2012 – Nov 2013)	Overall appeal of packaging, health warning effectiveness, perceived harm	<ul style="list-style-type: none"> <li>• Over the three periods, more smokers disliked their cigarette pack, perceived lower pack appeal, lower cigarette quality, lower satisfaction and lower value, and disagreed brands differed in prestige.</li> <li>• No change in perceived differences in taste of different brands, nor perceived exaggeration of harms.</li> <li>• More smokers noticed the graphic health warnings, attributed much motivation to quit to graphic health warnings, avoided specific graphic health warnings when purchasing, and covered packs.</li> <li>• Increased proportion believed that brands did not differ in harmfulness, but no change in the belief that variants did not differ in strength or the perceived harmfulness of cigarettes compared to a year ago.</li> <li>• Greater change for four outcomes assessing aspects of appeal (pack disliking, quality, satisfaction, brands did not differ in taste) among young adults, and two appeal outcomes (prestige, brands did not differ in taste) among mid-aged adults.</li> </ul>
Wakefield, Germain, & Durkin, 2008	Experimental (online)	Australia	813	Adult regular smokers (47% smoked > 15 cigarettes per day on average); 38% male, 81% aged 30 years and above	3 (brand types) x 4 (degree of plain packaging: original, plain pack with original branded font, plain pack with standard font, plain pack with smaller	Brand image, smoker attributions, inferred smoking experience	<p>Compared with current cigarette packs with full branding, cigarette packs that displayed progressively fewer branding design elements were perceived increasingly unfavorably in terms of:</p> <ul style="list-style-type: none"> <li>• Smokers' appraisals of the packs;</li> <li>• Perceived characteristics of smokers who might smoke such packs (i.e., less trendy/stylish, less sociable/outgoing, less mature);</li> </ul>

<i>Reference</i>	<i>Methodology</i>	<i>Location of Study</i>	<i>Sample Size</i>	<i>Target Participants</i>	<i>Comparisons</i>	<i>Dependent Measures</i>	<i>Main Findings (Selected)</i>
					standard font); between-subjects		<ul style="list-style-type: none"> <li>Perceived characteristics of cigarettes (i.e., less rich in tobacco, less satisfying, of lower quality tobacco).</li> </ul>
Webb, et al., 2017	Survey (longitudinal)	Australia	178	Adult smokers; 67.5% male; mean age: 34.8	Time of survey (3 months before and seven months after implementation of plain packaging policy); within-subjects	Sense of identification with fellow smokers of their brand, positive brand stereotypes, quitting behaviours and intentions, and smoking intensity	Smokers, especially those who initially identified strongly with their brand, experienced a significant decrease in their brand identity following the introduction of plain packaging, and this was associated with less smoking and increased intentions to quit.
White, et al., 2012	Experimental (online)	Brazil	640	Adult female smokers and non-smokers	3 conditions: standard branded package, same packs without brand imagery (plain packaging), same packs without brand imagery or descriptors such as flavours; between-subjects	Perceived appeal, taste, health risk, smoothness, smoker attributes; selection of free gift – behavioural measure of appeal	<ul style="list-style-type: none"> <li>Branded packs were rated as significantly more appealing, better tasting, and smoother on the throat than plain packs.</li> <li>Branded packs were also associated with a greater number of positive smoker attributes including style and sophistication, and were perceived as more likely to be smoked by females than the plain packs.</li> <li>Removing descriptors from the plain packs further decreased the ratings of appeal, taste and smoothness, and also reduced associations with positive attributes.</li> <li>In the pack offer, participants were three times more likely to select branded packs than plain packs.</li> </ul>
White, et al., 2015	Cross-sectional surveys (before vs. after introducing standardised packaging)	Australia	Before: 3888 After: 3852	Students (mainly non-smokers); 45-50% male; age: 12-17	Time of survey (before: 2011 vs. after: 2013)	Perceived health consequences of smoking, cognitive processing of warnings	<ul style="list-style-type: none"> <li>Awareness that smoking causes bladder cancer increased between 2011 and 2013.</li> <li>There was high agreement with statements reflecting health effects featured in previous warnings or advertisements with little change over time. Exceptions to this were increases in the proportion agreeing that smoking was a leading cause of death and causes blindness.</li> <li>The frequency of students reading, attending to, thinking or talking about the health warnings on cigarette packs did not change.</li> </ul>
White, Williams, & Wakefield, 2015	Cross-sectional surveys (before vs. after introducing standardised packaging)	Australia	Before: 6338 After: 5915	Students (8-10% smokers); 49-51% male; age: 12-17	Time of survey (before: 2011 vs. after: 2013)	Perceived character of four popular cigarette brands; agreement regarding differences between brands on ease of smoking, quitting, addictiveness, harmfulness and look of pack; positive and	<ul style="list-style-type: none"> <li>Positive character ratings for each brand reduced significantly between 2011 and 2013.</li> <li>Significantly fewer students in 2013 than 2011 agreed that 'some brands have better looking packs than others,' with larger decreases found among smokers.</li> <li>Packs were rated less positively and more negatively in 2013 than in 2011. The decrease in positive image ratings was greater among smokers.</li> </ul>

<i>Reference</i>	<i>Methodology</i>	<i>Location of Study</i>	<i>Sample Size</i>	<i>Target Participants</i>	<i>Comparisons</i>	<i>Dependent Measures</i>	<i>Main Findings (Selected)</i>
						negative perceptions of pack image	
Zacher, et al., 2014	Observational (before vs. after introducing plain packaging [PP])	Australia	N/A	N/A	Time of observation (Pre-PP: Oct 2011 – Apr 2012 vs. Post-PP: Oct 2012 – Apr 2013)	Number of patrons, smokers and tobacco packs at cafés, restaurants and bars with outdoor seating; pack type (fully branded, plain or unknown) and orientation; rates of pack display; smoking and pack orientation	<ul style="list-style-type: none"> <li>• Pack display declined by 15%, driven by a 23% decline in active smoking between phases.</li> <li>• The decline in pack display coincided with the full implementation of plain packaging in December 2012, was stronger in venues with children present, and was limited to areas of mid and high socio-economic status (SES).</li> <li>• The proportion of packs orientated face-up declined from 85.4% of fully branded packs pre-PP to 73.6% of plain packs post-PP. Alternatively, the proportions concealed by telephones, wallets or other items (4.4% of fully branded packs pre-PP and 9.5% of plain packs post-PP) and in an external case (1.5–3.5% of all packs) increased. Low SES areas evidenced the greatest increase in pack concealment and the greatest decline in face-up pack orientation.</li> </ul>

## **APPENDIX C: Information about the Authors**

**Ang Swee Hoon** is Associate Professor of Marketing at National University of Singapore (NUS) Business School, having also spent teaching stints in China-Europe International Business School (Shanghai, China), Helsinki School of Economics and Business Administration (Finland), and University of California (Berkeley, USA). She received her PhD in Marketing from the University of British Columbia.

Her research papers have been published in international journals including *Journal of Advertising*, *Journal of the Academy of Marketing Science*, *Journal of Business Research*, *Journal of Cross-Cultural Psychology*, *Journal of Pragmatics*, *Long Range Planning*, *Marketing Letters*, and *Social Indicators Research*. According to Google Scholar, Swee Hoon's research has been cited over 3862 times as of August 2017. Her article on counterfeiting received 576 citations and her research on metaphoric advertising 217 citations.

Swee Hoon is also a co-author of *Marketing Management: An Asian Perspective* and *Principles of Marketing: An Asian Perspective* with Philip Kotler, Leong Siew Meng, and Tan Chin Tiong; now in their 7<sup>th</sup> and 4<sup>th</sup> edition respectively. These are the leading Marketing textbooks in Asia. They have been translated into short and long-form Chinese Mandarin, Thai, and Bahasa Indonesia. Her textbook *Marketing Management: An Asian Perspective* has been cited 1104 times.

Swee Hoon is also known as an outstanding educator having received the university's Teaching Excellence Award three times, putting her on the Honour Roll. The university gives this award to only 2% of the faculty annually. To have been awarded three times consecutively and put on the Honour Roll goes to an even select few.

Her sharing of knowledge has seen her undertaking several consultancy projects and executive education seminars, some of which involved service quality evaluation, customer profiling, and feasibility studies.

Professionally, Swee Hoon sits on the editorial board of the *Journal of Advertising* and *Journal of Consumer Marketing*. She has also served as a reviewer for *Long Range Planning*, *Journal of Business Ethics*, *Journal of International Marketing*, and *Journal of Marketing*.

**Leonard Lee** is Associate Professor of Marketing and Dean's Chair at the National University of Singapore (NUS) Business School. Prior to joining NUS in 2014, he was an Associate Professor of Marketing at Columbia Business School where he spent the first eight years of his academic career. His research focuses on investigating how emotional and cognitive factors influence consumer judgment and decision-making, public policy, and psychological wellbeing. He is also interested in understanding why and how consumers shop in real-world environments, and how experiential and environmental factors affect their shopping behavior. His research has been published in major academic journals such as the *Journal of Consumer Research*, *Journal of Marketing Research*, *Journal of Consumer Psychology*, and *Psychological Science*, and featured in popular media such as *The New York Times*, *Financial Times*, and *The Wall Street Journal*. His work has been recognized in marketing research awards such as the Paul Green Award (Finalist) for the best article published in the *Journal of Marketing Research*, the Franco Nicosia Best Competitive Paper Award from the *Association for Consumer Research*, and the Robert Ferber Award (Honourable Mention) from the *Journal of Consumer Research*.

Leonard is an Associate Editor of the *Journal of Consumer Research* and the *Journal of Consumer Psychology*, a co-editor of the *Journal of the Association for Consumer Research* (Issue on "Consumer Emotions in the Marketplace"), and a previous Area Editor of the

*International Journal of Research in Marketing*. He also currently serves on the Advisory Panel of the *Society for Consumer Psychology*. At NUS, he teaches the Consumer Behaviour module and a core doctoral seminar in Experimental Methods in Behavioural Research. Leonard holds a BSc in Computer and Information Sciences from NUS, a MS in Computer Science from Stanford University, and a PhD in Management (Marketing) from the MIT Sloan School of Management.