

Although many nations have restricted tobacco marketing, tobacco product packaging continues to communicate brand imagery, thereby maintaining brand salience and potentially diminishing the effect health warnings. This study analyses the growing importance of tobacco packaging and draws on respondent conditioning theory to predict how disruption of brand imagery would affect the attractiveness of known, unknown and generic tobacco packages. A best-worst study found that familiar branding offset the negative connotations created by a pictorial warning label (PWL); by contrast, generic packs were more likely to stimulate cessation attempts and deter smoking initiation. To counter on-going tobacco promotions, control measures must recognise the marketing potential of non-traditional media; mandating plain packaging would remove an increasingly important marketing medium and extend the frontier of tobacco control.

Extended Abstract

Several countries have imposed restrictions on tobacco marketing to deter smoking initiation and promote cessation attempts. However, despite these moves, there is still a discrepancy between smoking prevalence targets and actual smoking penetration. While the tobacco industry has used these findings to suggest marketing restrictions have had no influence on consumers' behaviour tobacco control researchers argued that restrictions on mass media advertising are incomplete measures and have not stopped tobacco companies from marketing their products. More specifically, they claim that extensive covert marketing, undertaken via packaging and branding, has undermined the effectiveness of advertising bans, enabled tobacco companies to maintain the salience of their brands, and thus allowed them to continue attracting new smokers.

After traditional media options were restricted, tobacco companies turned to non-traditional media and employed retail promotions, such as displays, event sponsorship, such as dance parties and bar promotions, and youth media, such as internet sites to feature their brands. More recently, even more novel strategies, including the use of media, such as packaging, point of sale and product placement have evolved.

The importance of maintaining a strong brand presence is evident from marketing literature and is also apparent in tobacco industry documents, which reveal detailed consideration of how tobacco imagery could maintain a high profile, should promotion restrictions be introduced. Among the options considered, packaging became increasingly important as it has high utility and thus considerable potential for exposing brand imagery, including the colors, shapes, words and logos featured on a package. Pollay (1995) exposed the extensive research undertaken to design cigarette brand livery, while Hammond (2004) explained how this reassures smokers who feel anxious about the medical consequences of their addiction. Mahood (1999) also warned that sophisticated pack design elements, such as aspirational brand names, colors and designs, reduce the visibility and impact of health warnings (see also Carter 2003b).

Document analyses illustrate how carefully tobacco companies researched package designs, particularly the imagery and logos these feature. Furthermore, they highlight the critical role packaging plays in marketing cigarettes: *"The user must be hurled into a situation where he wants to buy the container for itself because it is attractive. The ultimate target was to make the container as appealing [as], not to say more so [than], ... the content."* The Framework Convention on Tobacco Control (FCTC) recognized that brand values, and the desires these reflect and inspire, are communicated via packaging and set out two regulatory measures to address this: stronger and more salient on-pack warnings, and plain (or generic) packaging.

Pictorial warning labels (PWLs) has addressed concerns that text-only warnings do not adequately inform smokers about the risks they face; they are more specific, more personal, and less easily avoided; they thus go some way towards providing specific and explicit risk information for which researchers have called. In addition, PWLs reduce the attractiveness of tobacco packages and disrupt the connotations evoked by brand imagery. The effect of PWLs could be enhanced if plain packaging was introduced, since this would have a uniform colour, shape, size and texture, and brand names would be presented in a standard type font (shape, size, colour, and location). If tobacco products were presented in plain packages devoid of competing

stimuli such as brand logos, colors and corporate symbols, PWLs would be more impactful and may generate stronger behavioral responses (Cunningham and Kyle 1995).

During the late 1980s and early 1990s, some jurisdictions considered introducing generic packaging for all tobacco products, and research undertaken at this time found that plain packs were regarded more negatively than branded cigarette packs. Young respondents regarded plain packages as old fashioned and boring, and thought fewer people would smoke if cigarettes were sold in plain packages. A New Zealand study of young people (average age 13) conducted when causal text warnings were introduced in 1990 examined branding and plain packaging and found reducing brand imagery was associated with higher recall of health warnings (Beede and Lawson 1990; 1991).

These findings suggested that reductions in brand imagery would diminish the attractiveness of tobacco products, promote cessation-related behaviours among some smokers, and reduce initiation. However, despite these findings and the enthusiasm among some regulators for plain or generic packaging, recent regulatory initiatives have focused on other initiatives, particularly PWLs and the elimination of misleading descriptors. Since the early 1990s, few studies have examined the likely effects of plain packaging or its interaction with other tobacco control measures, and none have explored the combined effects of plain packaging and PWLs or examined young adults' responses to these measures. Research that examines this demographic has become increasingly important, since recent evidence suggests the age of smoking initiation has been deferred as a result of more stringent tobacco supply regulations.

Behaviour modification theory has an explicit focus on external or environmental stimuli; tobacco branding uses respondent conditioning to pair brand names, colors and other imagery with psychological and emotional attributes. These act as heuristics that do not require systematic or detailed processing, but instead provide reassurance by eliciting learned responses and expectations, which are likely to reduce the salience and effectiveness of competing stimuli. These benefits may be sufficiently powerful to offset negative stimuli, such as PWLs. However, unfamiliar brand imagery, although more attractive than a generic pack, will not have developed the emotional pairings necessary to offset PWLs. We thus hypothesized that a familiar brand with a PWL would be more attractive than a generic pack featuring a text warning while an unfamiliar brand with a PWL would be less attractive than a generic pack with a text warning.

A 3*2 experimental design used three brand options (familiar, unfamiliar and plain pack) and two warning formats (text and PWL) that were tested in a Best-Worst (BWS) experiment. BWS requires respondents to evaluate and compare the utilities of different attribute levels that are presented to them. Face-to-face interviews with a systematically selected sample of 245 young adult respondents were conducted; respondents were asked to imagine themselves in a scenario in which they had just moved to university and were living in a hostel (college) where they had developed a new group of friends with whom they had started smoking socially. They were asked to select the pack they would be most likely (best) and least likely (worst) to buy to share with their new friends.

The familiar brand, Holiday, was the most preferred option when paired with a text warning, followed by the unfamiliar brand (Kool), also when combined with a text warning. The PWL

Tobacco Branding and Plain Packaging: The New Frontier in Tobacco Control?

Introduction

Smoking is widely regarded as the leading preventable cause of death (US Surgeon General 2004; CDC 2007); however, regulating tobacco marketing has proved both contentious and difficult. Governments' attempts to curb tobacco marketers' influence on consumers have sometimes led to protracted legal proceedings, and the need for a strong evidence base is arguably more important in this field than in any other. Several countries, including Canada, New Zealand and Australia have introduced legislation that restricts tobacco marketing, decreases mass media opportunities for tobacco promotion, and reduces the visibility and perceived normality of smoking. Specific provisions include bans on the advertising and sponsorship of tobacco products, and on sales promotions, and restrictions on retail displays.

However, the tobacco industry has responded by increasing their investment in alternative media such as packaging, which remains a highly visible marketing medium. Although Canadian and New Zealand health officials attempted to place plain packaging on the regulatory agenda during the 1990s, volatile political climates meant no action was taken at that time. More recently, as the range of marketing media has become more restricted, attention has turned again to packaging, which continues to offer important branding opportunities. This paper traces the evolution of plain packaging proposals, examines the research undertaken in conjunction with these, and explores the importance of packaging to the tobacco industry. We then present the results of an experiment that estimated the effects of branding, including plain packaging, on

depressed pack attractiveness, although brand familiarity offset this negative stimulus and even when the Holiday brand was paired with a PWL, respondents were still more likely to prefer it to a generic pack with a text only warning. However, when the unfamiliar Kool brand featured a PWL, it was slightly less attractive than the generic pack with a text warning. These findings suggest familiar brand imagery overrides negative stimuli, even when these are intrusive and disconcerting. More generally, the findings support concerns that branding may reduce the impact of health warning information. Furthermore, the difference between the familiar brand and plain pack was greater than the difference between the text and PWL warning; this suggests that plain packaging could decrease the attractiveness of smoking beyond the effects of PWLs.

Smokers' preference for branded packs with text warnings was stronger than non-smokers'; smokers were also more likely than non-smokers to identify packs with PWLs as their "worst" choice. While familiar branding offset the PWL among non-smokers, smokers' preferences for the familiar brand paired with a PWL and the plain pack featuring a text warning were similar. PWLs and plain packaging had similar effect sizes with respect to smokers whereas the plain packs had a stronger effect on non-smokers than did the PWLs. This finding suggests that branding may be important in attracting initial attention, and that plain packs would reduce the visibility and attractiveness of tobacco products among non-smokers, thus potentially deterring experimentation and initiation.

The findings suggest removal of brand imagery could deter smoking initiation and promote cessation by extinguishing the "badge" status of tobacco products and eliminating an important communication channel relied upon by tobacco marketers. The PWL decreased the attractiveness of tobacco packages, particularly among smokers, and generic packages were markedly less attractive than branded packages, particularly when they featured a PWL. However, the study estimated the perceived appeal of different options, not actual behaviour and further work is required to test behavioral outcomes. Nevertheless, generic packaging appears likely to increase the salience and impact of PWLs, and reduce the influence of brand imagery. While preliminary, the findings illustrate how the importance of tobacco branding may be quantified, support the introduction of pictorial warning labels, and demonstrate how plain packaging could extend the frontier of tobacco control.

tobacco pack attractiveness, and analyze the interaction between tobacco branding and graphic (pictorial) warning labels. Finally, we suggest how the findings could inform further research and tobacco control policy.

Marketing Restrictions

Over the last forty years, several countries have imposed restrictions on tobacco marketing, particularly where this has been directed at promoting smoking to young people. Tobacco consumption has decreased in countries where marketing restrictions are most comprehensive (Laugesen and Meads 1991), although smoking penetration rates typically remain higher than the US Centre for Disease Control's international goal of 12% for the year 2010 (Mendez and Warner 2004). The discrepancy between smoking prevalence targets and actual smoking penetration reveals that, despite national statutes and international treaties, such as the Framework Convention on Tobacco Control (FCTC), smoking initiation is still occurring and remains a serious problem.

Slow declines in smoking prevalence following the introduction of marketing restrictions have been interpreted as evidence that the restrictions had no influence on consumers' behaviour (Boddewyn 1988; 1994; Luik 1993). However, tobacco control researchers have been quick to respond that smoking is addictive, thus rapid changes in prevalence would be unlikely. Furthermore, they have argued that restrictions on mass media advertising have not stopped tobacco companies from marketing their products (Hoek, 1999). More specifically, they claim that extensive covert marketing, undertaken via packaging and branding, has undermined the

effectiveness of advertising bans, enabled tobacco companies to maintain the salience of their brands, and thus allowed them to continue attracting new smokers (Hastings *et al* 2006).

After traditional media options were restricted, tobacco companies turned to non-traditional media and employed retail promotions, such as displays, event sponsorship, such as dance parties and bar promotions, and youth media, such as internet sites to feature their brands (Carter 2003b). As these options became subject to more stringent regulation, even more novel strategies, including the use of media, such as packaging, point of sale and product placement evolved (Freeman *et al*, 2008). Thus, while legislation has removed most tobacco advertising and sponsorship, tobacco manufacturers arguably maintain wide reach by using more subtle stimuli to attract new smokers and reassure existing smokers (Hoek 2004).

Industry documents reveal the importance of maintaining a strong brand presence and indicate that other media were considered as replacement options, should advertising restrictions be introduced (Wakefield *et al* 2002). Maintaining brand salience through on-going exposure of tobacco imagery helps construct and reinforce the message that smoking remains a normal, acceptable and desirable social behaviour. As a Philip Morris document noted: "*Marlboro remains our largest selling brand, the world's number one selling cigarette and our best weapon against the competition. The brand is still young and vibrant and we plan to keep it that way through marketing and promotions aimed at young smokers.*" (Philip Morris International 1989 - 1993 business plan, p. 12).

Marketing restrictions have disrupted these plans, which were not confined to Philip Morris, and prompted a re-analysis of media options. Among the media now used to promote tobacco products, packaging has grown in importance, particularly since many countries have also prohibited sponsorship, the tobacco industry's first choice replacement for advertising. More than a decade ago, Slade (1997) wrote: "*As advertising restrictions loom or become a reality, the surfaces of the pack itself remain available for communication to customers and potential customers*" (p. 169).

Packaging as a Marketing Medium

Tobacco packaging is unusual as it not removed and discarded but functions as a container until the product has been consumed. Because of this, it remains highly visible and brand imagery, including the colors, shapes, words and logos featured on a package, are exposed to users (and others) on multiple occasions. As a result, packages deliver branding messages, reinforce brand livery, and maintain brand salience, all of which may promote trial, support purchase, and militate against cessation.

The significance of on-pack imagery is also evident from the trademark registration granted to distinctive devices. Pollay (1990) noted the particular importance of tobacco branding and imagery to young smokers, whom he argued gained and communicated a sense of identity from the brands they consume. He described tobacco as a "*badge product*" that provides: "*a living testimonial endorsement of the user on behalf of that brand and product*" and enables users to access and employ "*some of the identity and personality of the brand image*". This reasoning suggests tobacco products are reflexive, as they allow smokers to construct their self-identity,

and expressive, as the public nature of branding assists smokers to communicate to others the identity they have constructed. Eadie et al's (1999) research examined similar themes; they suggested that, paradoxically, familiar brands both facilitate peer approval and enable individuals to express their personal taste. Recently, Grant et al (2007) reiterated the importance of brands to young people and concluded that marketing draws heavily on emotional imagery to establish the symbolic significance of brands.

These analyses all recognise the effect powerful branding has on consumers' choices (see also Dewhirst & Davis, 2005), a fact evident in tobacco industry documents, which reveal how marketing has continued via point of sale displays and packaging. As Carter (2003a) concluded, imagery once communicated by advertising is now disseminated via other media. Of these alternative media, packaging has grown in importance, particularly since many countries prohibited sponsorship, in which tobacco companies invested heavily once mass advertising was no longer available to them.

Pollay (1995) exposed the extensive research undertaken to design cigarette brand livery, while Hammond (2004) explained how this reassures smokers who feel anxious about the medical consequences of their addiction. Mahood (1999) also warned that sophisticated pack design elements, such as aspirational brand names, colors and designs, reduce the visibility and impact of health warnings (see also Carter 2003b).

Document analyses confirm the importance of packaging to the tobacco industry; these illustrate how tobacco companies have carefully researched package designs, particularly the imagery and

logos these feature. Furthermore, they highlight the critical role branding plays in marketing cigarettes: *"In the cigarette category brand image is everything. The brand of cigarettes a person smokes is their identity. Cigarettes tell others who they are as a person. There is a strong emotional connection to the brand, the image it projects about the smoker, not only to themselves but to others."* (RBH-003911, 1996).

The fact that this imagery is effectively conveyed via packaging is also apparent from industry documents. For example, Hault (1989), a tobacco company executive, stated: *"Clearly, the package does communicate the cigarette they're smoking and we believe that people choose their cigarettes according to what those cigarettes are, and that includes imagery"* (p.136). Other industry evidence reveals that the package was arguably even more important than its contents; Heman (1994) outlined the role of packaging: *"The user must be hurled into a situation where he wants to buy the container for itself because it is attractive. The ultimate target was to make the container as appealing [as], not to say more so [than], ... the content."*

The development of imagery that could attract smokers in the ways described above is also evident from tobacco brand names, which are often depicted in a highly stylized format. Brands such as "Holiday", "Longbeach", "Freedom", "Horizon", "KOOL" and "Merit" evoke aspirational connotations and promote smoking as a conduit through which smokers may access dreams they cannot otherwise realize. Knowledge that brand values, and the desires these reflect and inspire, are still skillfully communicated via product packaging has led tobacco control researchers to argue for two regulatory measures: stronger and more salient on-pack warnings, and plain (or generic) packaging. Articles 11 (1b) and 13 (4, 5) of the Framework Convention on

Tobacco Control (FCTC) support these initiatives and, to date, many nations, including Canada, Australia, Brazil and New Zealand have required tobacco products to feature pictorial warning labels.

Pictorial (Graphic) Warning Labels

The introduction of pictorial warning labels (PWLs) has addressed concerns that text-only warnings do not adequately inform smokers about the risks they face. Chapman and Liberman (2005) suggested warnings should *"bring clearly and emphatically to the mind of a consumer the risks associated with use"* (p. 11) and argued these should feature specific risks in a clear and explicit manner. When compared to text only warnings, pictorial warnings are more specific, more personal, and less easily avoided; they thus go some way towards providing specific and explicit risk information for which researchers have called.

Canadian research suggests that pictorial warnings reduce the attractiveness of tobacco packages and disrupt the connotations evoked by brand imagery. These findings are consistent with research emerging from Canada, the first country to introduce pictorial warning labels. Consecutive waves of the International Tobacco Control survey have shown that smokers' awareness of health risks has increased since the introduction of pictorial warning labels and that the prevalence of smoking has continued to decline (Hammond *et al*, 2006; 2007).

Evidence of the effects of PWLs on tobacco branding provides policy makers with at least two options that could reduce the role packaging plays in tobacco marketing. First, they could mandate PWLs or, where these are already required, increase the proportion of packaging

allocated to them. Larger warnings would reduce the brand imagery packs could feature, and may increase knowledge and salience of smoking risks, and hence prompt cessation-related behaviours and decrease initiation. The second option is to present tobacco products in plain packages from which all brand logos, colors and corporate symbols had been removed – everything except the brand name. Plain packages would have a uniform colour, shape, size and texture, and brand names would be presented in a standard type font (shape, size, colour, and location). Although PWLs have made health warnings more overt and less avoidable, their impact could be enhanced if tobacco products were presented in plain packages devoid of competing stimuli such as brand logos, colors and corporate symbols (Cunningham and Kyle 1995).

In 1989, the New Zealand Toxic Substances Board recommended introducing generic packaging for all tobacco products, and other countries also considered this proposal. At that time, research into pack design undertaken for W.D. & H.O. Wills noted that: “*generic packaging is likely to have a major impact on brand imagery*” (p. viii). While some addicted smokers thought changes to packaging would not influence their future brand choice, others noted that “*packaging might have played some role in their initial brand choice*” (Campbell, Hoare & Wheeler, p. 21).

This impression is supported by other studies undertaken in the 1990s, when plain packaging was being considered by some regulators. Rootman & Flay (1995) examined impressions of plain packaging among American and Canadian young people (aged 12 to 14); they found that evaluations of plain packs were consistently negative compared to branded cigarette packs.

Young respondents regarded plain packages as old fashioned and boring, and thought fewer people would smoke if cigarettes were sold in plain packages. A New Zealand study of young people (average age 13) conducted when causal text warnings were introduced in 1990 examined branding and plain packaging and found reducing brand imagery was associated with higher recall of health warnings (Beede and Lawson 1990; 1991).

Overall, both studies found that reducing brand imagery diminished the physical and social attractiveness of tobacco products, and suggested that plain packaging would promote cessation attempts and reduce initiation among experimenters. Goldberg et al (1999) reported similar findings after testing young (14 to 17 year old) smokers’ and experimenters’ recall of text warnings featured on branded and unbranded packaging. Their results suggest plain packaging enhanced recall of short direct messages, although longer, more complex warnings significantly depressed recall.

Overall, these findings suggested that reductions in brand imagery would diminish the attractiveness of tobacco products, promote cessation-related behaviours among some smokers, and reduce initiation. However, despite these findings and the enthusiasm among some regulators for plain or generic packaging, recent regulatory initiatives have focused on other initiatives, particularly PWLs and the elimination of misleading descriptors. Since the early 1990s, few studies have examined the likely effects of plain packaging or its interaction with other tobacco control measures, and none have explored the combined effects of plain packaging and PWLs.

Before plain packaging can be considered as a regulatory option, further research is required. While the studies from the 1990s provide important preliminary insights into plain packaging's potential impact, the results have several limitations. First, the Wills study was designed to examine smokers' responses to increases in the size of text-based health warnings; comments about plain packaging were incidental and thus were not explored in detail. Similarly, although earlier studies specifically examined plain packaging, they took place prior to the introduction of pictorial warnings, so could not assess the interaction between plain packaging and pictorial warnings.

Furthermore, these studies typically examined recall of warnings and did not estimate other outcome variables, such as product attractiveness, perceptions of smoking, or likely behaviour. In addition, all three studies examined younger teenagers' (age 12-17 years) views. No studies have specifically examined older teens or young adults in their early twenties, even though these groups are at higher risk of smoking. Recent statistics suggest tobacco supply restrictions have deferred smoking initiation and reductions in smoking by young teenagers' have been largely paralleled by higher prevalence rates among young adults and older teenagers (Ministry of Health, 2008). Given that responses to marketing interventions often vary by age, research is required to investigate how plain packaging would affect young adults, the group currently at higher risk of smoking initiation.

Theoretical Rationale

To explore these questions, we drew on behaviour modification theory, which has an explicit focus on external or environmental stimuli. Nord and Peter (1980), who explored how this

framework could be applied to marketing decisions, noted: "*many marketing objectives can be... accomplished... by simply studying environmental conditions and manipulating them to influence consumer behaviour*" (p. 36). They explained how respondent conditioning, which refers to behaviours governed by precursor stimuli, pairs a neutral stimulus with a previously conditioned stimulus, thus eventually enabling the neutral stimulus to elicit the same response. Nord and Peter concluded that a great deal of conditioning occurs naturally in society and, over time, learned associations may develop. For example, images may become heuristics, discriminative stimuli that activate previously experienced contexts and that reduce the central processing that would otherwise be required. Because conditioned stimuli create cognitive shortcuts, they have the potential to simplify access the demands made on consumers and facilitate their responses.

Theoretically, tobacco brand imagery functions via respondent conditioning since brand names, colors and other imagery become paired with psychological and emotional attributes (Pollay, 2004). These peripheral cues act as heuristics that do not require systematic of detailed processing, but that are instead implicitly relied on by smokers as peripheral cues that move them from their actual self to their desired self (Arnett and Terhanian 1998; Hastings and MacFadyen 1998). Behavioral modification theory suggests familiar brand imagery will provide reassurance by eliciting learned responses and expectations, which are likely to reduce the salience and effectiveness of competing stimuli, such as PWLs (Childers and Houston 1984; Pieters and Wedel 2004).

A behavioral approach thus implies that introducing unfamiliar and strident imagery, such as graphic warning labels, will disrupt the connections made with familiar and reassuring imagery.

Furthermore, removal of the conditioning images will enhance the emotional impact of the warning labels, thereby increasing the probability that these will elicit a behavioral response.

Despite this reasoning, the tobacco industry has consistently opposed restrictions on tobacco marketing or that might encroach on their trademarks. Industry retained researchers have argued that plain packaging would have little effect on youth smoking initiation and may even increase smoking prevalence, since manufacturers could respond by lowering prices to remain competitive, thus making tobacco more affordable (Luik 1998). Although Freeman *et al* (2008) rejected these arguments; further research is required to estimate the influence of tobacco branding and its interaction with warning information. These findings will provide regulators with a stronger evidence base on which to draw when determining whether plain packaging is an appropriate and proportionate tobacco control measure.

Methodology

Respondent conditioning theory and findings from industry and independent studies into tobacco branding suggest tobacco brand imagery reassures smokers and confers a sense of identity on them (Wakefield and Letcher 2002). The benefits gained from brand familiarity may therefore be sufficiently powerful to offset negative stimuli, such as PWLs. However, unfamiliar brand imagery, although more attractive than a generic pack, will not have developed the emotional pairings necessary to offset PWLs. We thus hypothesized that:

H1 A familiar brand with a PWL will be more attractive than a generic pack featuring a text warning.

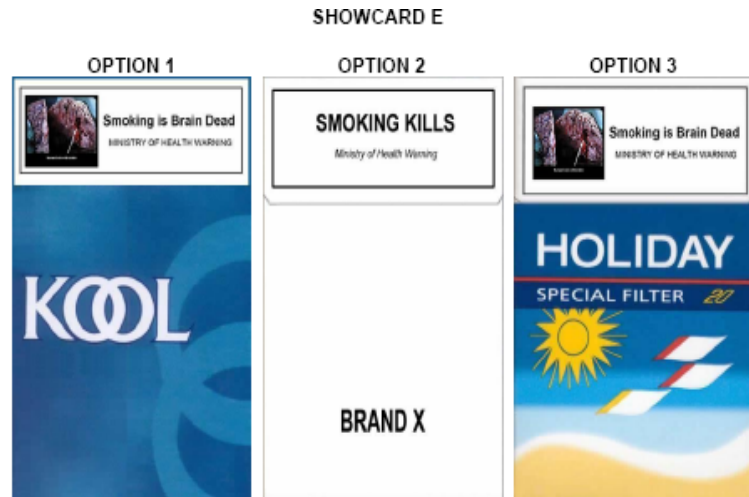
H2 An unfamiliar brand with a PWL will be less attractive than a generic pack featuring a text warning.

To test the interaction between brand familiarity and warning label format, we designed a 3*2 experimental design that included three brand options and two warning formats. New Zealand Ministry of Health data showed *Holiday* was the most popular young adult brand. A second brand, *Kool*, was selected as an unfamiliar brand, as it is not sold in New Zealand. Finally, a plain or generic pack was developed. Each brand was used in a pack image that featured one of two warnings. The first, a text warning, read: "Smoking Kills" and is widely regarded as the strongest of the text-only warnings (authors, 2006). The second was a PWL featuring a dissected human brain and the text: "Smoking is Brain Dead"; earlier research had established this as a powerful message that resonates with young adults (authors, 2006). This process resulted in six brand-warning combinations that were used in a Best-Worst (BWS) experiment.

BWS was first outlined by Finn and Louviere (1992) as an alternative to discrete choice experiments. It requires respondents to evaluate and compare the utilities of different attribute levels that are presented to them; they then select both the best (highest utility) and the worst (lowest utility) option from the choices they have viewed. BWS assumes respondents select the pair of options that differ most on an underlying subjective dimension, such as "degree of preference" (Auger, Devinney and Louviere 2004). This technique offers several advantages over data collected via rating scales and ranking questions, which frequently produce tied items. By contrast, BWS estimates enable ratio-scaled comparisons between the attributes estimated

(Flynn et al, 2006). Figure 1, below, contains an example of the showcards respondents evaluated.

Figure 1: BWS Choice Set



Face-to-face interviews with a systematically selected sample of 245 young adult respondents were conducted on a university campus over seven days. This cohort is of particular interest, since, as noted above, recent survey findings have suggested that tobacco supply restrictions are delaying the age of smoking initiation. Smoking is less a behaviour seen among rebellious early teens and is increasingly associated with the rites of passage involved in leaving home and relinquishing the social constraints that apply in that environment (MoH, 2008).

Respondents were asked to imagine themselves in a scenario in which they had just moved to university and were living in a hostel (college) where they had developed a new group of friends

with whom they had started smoking socially. A balanced incomplete block design (BIBD) using 10 showcards was developed and respondents were asked to select the pack they would be most likely (best) and least likely (worst) to buy to share with their new friends.

Among our sample, 55% were female and respondents' average age was 22. Two-thirds (66%) had smoked at least one cigarette, 10% currently smoked daily and a further 11% smoked less frequently. The majority of smokers had started smoking while at school, though 35% of our sample commenced between the ages of 18-22, a finding that highlights the importance of researching tobacco control measures among this demographic.

Results and Discussion

To test four research hypotheses, we first developed a general model that examined the overall pattern of preference. Table 1 contains these results. The first column contains the sum of the best minus the worst score counts while the second column contains standardized scores which are calculated thus:

$$\text{Standard Score} = \frac{\text{Count best} - \text{Count worst}}{5 * 245 \text{ (no. of exposures * sample size)}}$$

Table 1: BWS Estimates of Pack-Warning Preference

Pack Design and Warning	Best - Worst Scores	Standardized B-W Scores ¹
Holiday Text warning	863	.70
Kool Text warning	513	.42
Holiday PWL	37	.03
Generic Text warning	-171	-.14
Kool PWL	-361	-.29
Generic PWL	-881	-.72
Effect Size²		
Text cf. PWL warning = .65		
Familiar brand cf. unfamiliar brand = .30		
Familiar brand cf. plain pack = .80		
Unfamiliar brand cf. plain pack = .50		

1. The standardized scores are conceptually equivalent to standardized regression coefficients with the signs taken into account. They thus indicate the relative perceived effectiveness of the information formats tested.
2. Effect sizes were calculated by averaging the standardized differences between the variables of interest. Thus the text warning effect = $((.70-.03)+(.42+.29)+(-.14 + .72)/3) = .65$

The familiar brand, Holiday, was the most preferred option when paired with a text warning, followed by the unfamiliar brand (Kool), also when combined with a text warning. Although the PWL depressed pack attractiveness, brand familiarity offset this negative stimulus. Thus, even when the Holiday brand was paired with a PWL, respondents were still more likely to prefer it to a generic pack with a text only warning. By contrast, when the unfamiliar Kool brand featured a PWL it was slightly less attractive than the generic pack with a text warning. These findings support the hypotheses and suggest familiar brand imagery overrides negative stimuli, even when these are intrusive and disconcerting. More generally, the findings support concerns that branding reduces the impact of health warning information.

The effect sizes show the difference between the familiar brand and plain pack was greater than the difference between the text and PWL warning (.80 cf. .65); this suggests plain packaging could decrease the attractiveness of smoking beyond the effects of PWLs. At the time the

fieldwork was conducted, PWLs had not been introduced to New Zealand, thus potential “wear out” effects would not explain the patterns in Table 1. To examine whether plain packaging and PWLs affect smokers and non-smokers differently, separate analyses were undertaken. Table 2 contains these results.

Table 2: BWS Estimates of Pack-Warning Preference by Smoking Status

Pack Design and Warning	Current Smoker (n=51)		Current Non-Smoker (n=194)	
	B - W Score	Standardized B - W Scores	B - W Score	Standardized B - W Scores
Holiday Text warning	206	.81	657	.68
Kool Text warning	130	.51	383	.39
Holiday PWL	-18	-.07	55	.06
Generic Text warning	-16	-.06	-155	-.16
Kool PWL	-98	-.38	-263	-.27
Generic PWL	-204	-.80	-677	-.70
Effect Size Smokers			Effect Size Non-Smokers	
Text cf. PWL warning = .84			Text cf. PWL warning = .61	
Familiar cf. unfamiliar brand = .30			Familiar cf. unfamiliar brand = .31	
Familiar brand cf. plain pack = .87			Familiar brand cf. plain pack = .80	
Unfamiliar brand cf. plain pack = .50			Unfamiliar brand cf. plain pack = .49	

Smokers’ preference for branded packs with text warnings was stronger than non-smokers’; smokers were also more likely than non-smokers to identify packs with PWLs as their “worst” choice. Although familiar branding offset the PWL among non-smokers, smokers’ preferences for the familiar brand paired with a PWL and the plain pack featuring a text warning were similar. These findings partly support the first hypothesis, but, not surprisingly, suggest smokers find the PWLs more impactful than do non-smokers. PWLs and plain packaging had similar effect sizes with respect to smokers (.84 cf. .87) whereas the plain packs had a stronger effect on non-smokers than did the PWLs (.80 cf. .61). This finding suggests that branding may be important in attracting initial attention, and that plain packs would reduce the visibility and

attractiveness of tobacco products among non-smokers, thus potentially deterring experimentation and initiation.

Conclusions

Respondent conditioning theory suggests removal of brand imagery would deter smoking initiation and promote cessation by extinguishing the “badge” status of tobacco products and eliminating an important communication channel relied upon by tobacco marketers. Our findings support these hypotheses; the PWL decreased the attractiveness of tobacco packages, particularly among smokers, and generic packages were markedly less attractive than branded packages, particularly when they featured a PWL. The results suggest PWLs disrupt brand imagery; each option was less attractive when paired with a PWL than with a text warning, and attractiveness declined in line with brand familiarity.

However, our study estimated the perceived appeal of different options, not actual behaviour, thus further work is required to test behavioral outcomes as well as the extent to which these apply to other populations. Nevertheless, our results suggest generic packaging would increase the salience and impact of PWLs, and reduce the influence of brand imagery. While preliminary, these findings are nevertheless the first to estimate the interaction between brand imagery and PWLs. They quantify the importance of tobacco branding, support the introduction of pictorial warning labels, and illustrate how plain packaging could extend the frontier of tobacco control.

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