Original article

Adolescents’ Perceptions of Cigarette Brand Image: Does Plain Packaging Make a Difference?

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Abstract

Purpose: To examine the effect of plain packaging on adolescents’ perceptions of cigarette packs, attributes of smokers, and expectations of cigarette taste, and to identify the effect of increasing the size of pictorial health warnings on appraisal of plain packs.

Methods: We used a 5 (degree of plain packaging and graphic health warning) × 3 (brand type) between-subjects experimental design, using a Web-based methodology to expose adolescents to one randomly selected cigarette pack, during which respondents completed ratings.

Results: When brand elements such as color, branded fonts, and imagery were progressively removed from cigarette packs, adolescents perceived packs to be less appealing, rated attributes of a typical smoker of the pack less positively, and had more negative expectations of cigarette taste. Pack appeal was reduced even further when the size of the pictorial health warning on the most plain pack was increased from 30% to 80% of the pack face, with this effect apparent among susceptible nonsmokers, experimenters, and established smokers.

Conclusions: Removing as much brand information from cigarette packs as possible is likely to reduce positive cigarette brand image associations among adolescents. By additionally increasing the size of pictorial health warnings, positive pack perceptions of those who are at greater risk of becoming regular addicted adult smokers are most likely to be reduced. © 2009 Society for Adolescent Medicine. All rights reserved.

Keywords: Tobacco; Adolescents; Packaging; Labeling; Experimental

Reducing youth smoking is an important public health priority. Approximately half of the adolescents who continue to smoke regularly will die prematurely as a result of their smoking [1]. Although trends reveal a decline in adolescent smoking over the past decade in Australia [2], a survey of Australian high school students conducted in 2005 indicated that by the time they reach their final year of school, one in five students had smoked in the past month, and approximately one in six had smoked in the past week [2]. Even before they begin to smoke, adolescents develop beliefs and intentions about smoking, which increase their risk of future experimentation with tobacco [3,4].

There is strong evidence that tobacco advertising and promotion influence adolescents’ beliefs about tobacco in a way that increases their susceptibility to future tobacco use [5]. Cigarette packaging is an important part of overall tobacco marketing strategy [5]. The aim of the cigarette pack has been to “… create a desire to purchase and try” and to “… look new and different enough to attract the attention of the consumer.” [6] The sophistication of today’s packs is the culmination of decades of industry research into how color, images, logos, fonts, and the three-dimensional pack can be manipulated to convey certain brand personalities and influence sensory and health perceptions of the cigarette [7–9]. It is expected that tobacco industry investment in pack design will increase further when bans on point-of-sale tobacco displays become legislated, as is already the case in some countries [7].

Despite the tobacco industry’s denial of marketing to youth, evidence from industry documents suggests that this
Demographic is critical to the survival of the tobacco industry [10,11]. Brand imageries are developed to address the emotional challenges of adolescence [12] and to project the personality traits that adolescents want for themselves [13], because this is the stage when smoking is initiated [14], brand loyalties are low, and brand preferences are being established [15].

During the mid-1990s, calls for the introduction of plain cigarette packaging arose, whereby packs would be stripped of colors, brand imagery, corporate logos, and trademarks and only the brand name would be printed in a mandated size, font, and location, in addition to required health warnings and other legally mandated information [7,16]. Descriptive studies of plain cigarette packaging suggested that compared with branded packs, plain cigarette packs were perceived as “boring” and “unattractive” [17,18], detracted from brand imagery established by cigarette brands [19,20], and made health warnings more noticeable [19–21].

Despite these studies providing evidence of the potential effect of plain cigarette packaging, until recently, no research had examined the effects of plain packaging on smoker’s perceptions of taste, strength, or quality of the product. In addition, little attention has so far been focused on the testing of different versions of plain pack against each other. An experimental study recently conducted by the authors demonstrated that by progressively removing brand-associated elements and fonts from a cigarette pack, adult smokers’ rated the cigarette pack itself more negatively and perceived attributes of smokers and sensory characteristics of cigarettes from the pack [22].

The present study aims to extend our previous research by examining the effect of removing brand-associated elements from cigarette packs on ratings of pack characteristics, personality attributes of smokers of the pack, and perceived sensory qualities of the pack’s contents among adolescents. In addition, we aim to examine the effect on ratings of the plainest pack by increasing the size of the graphic health warning from 30% (as currently mandated in Australia) to 80% of the front of the pack face.

Methods

Design

This study used a 5 (degree of plain packaging and graphic health warning) × 3 (brand types) between-subject design, using a Web-based methodology to expose adolescents to one randomly selected cigarette pack, during which respondents completed ratings of the pack.

Ethical approval to conduct this study was obtained from The Cancer Council Victoria Human Research Ethics Committee.

Procedure

Members of an existing national online panel who were identified as having children between the ages of 14 and 17 years comprised the sampling frame for the study. Panel members were originally sourced from various methods including computer-assisted telephone interviews and face-to-face and online market research databases. Panel members were contacted by e-mail and asked whether they were willing to allow their child to complete an online survey about cigarette packaging being conducted by The Cancer Council Victoria. Parents were informed that the study results would help to guide the development of tobacco control policies in Australia and that their child would get the chance to win one of 10 $100 iTunes vouchers if they complete the survey. The e-mail included a Web link to the survey. Consenting parents were asked to allow their child to complete the survey independently so as to reduce the participants’ likelihood of giving socially desirable responses. A reminder e-mail was sent 5 days after the initial e-mail, and a final reminder was sent again 5 days later.

We estimated that a sample size of 1,000 (approximately n = 66 per cell) would allow the detection of small to medium effect sizes for main effects (|r| <.50; p = .05; power = .99) [20].

Experimental conditions

Respondents were randomly allocated to view one of 15 pack conditions that varied by brand, extent of plain packaging, and/or size of graphic health warning. We used the three most popular Australian brands (Winfield; Peter Jackson; Longbeach) [24,25]. Pack variants (Winfield “Blue”; Peter Jackson “Rich”; Longbeach “Rich”) were those that were most popular among adult smokers [25].

Four of the five pack design conditions were taken from our [19] previous plain packaging study: (1) Original pack: an existing pack one could purchase today; (2) Plain pack 1: a plain cardboard brown pack that maintained the brand name font (i.e., original font size, style and position) and positioning of brand and/or descriptor; (3) Plain pack 2: a plain cardboard brown pack, with brand name in standard font in a prominent position on the pack and descriptor information in standard font at the bottom; and (4) Plain pack 3: a plain cardboard brown pack, with brand name in smaller standard font positioned at the bottom, and “(xx number) cigarettes” in larger font in a prominent position on the pack. All the conditions mentioned had the same graphic health warning visible on the top (i.e., 30% of the pack face) as required by Australian Government legislation [26]. An additional condition, plain pack 4, added a large graphic health warning (covering 80% of the front of the pack) to the plainest pack tested (plain pack 3). Figure 1 displays the 15 pack conditions.

Questionnaire and procedure

On accessing the survey, respondents’ gender, age, and residential postcode were collected. The postcode was used to determine the respondent’s socioeconomic status (SES) using the Socio-Economic Index for Areas [27]. Respondents were allocated to view a sequence of the packs, with each pack presented sequentially in random order. The packs were presented in 5 blocks, with each block consisting of 3 packs. The order of the blocks was also randomised to control for sequence effects. Respondents were placed at the conclusion of the survey to determine their willingness to participate in future study.

An introductory slide displayed the 15 pack conditions.

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On accessing the survey, respondents’ gender, age, and residential postcode were collected. The postcode was used to determine the respondent’s socioeconomic status (SES) using the Socio-Economic Index for Areas [27]. Respondents
were considered to be of low SES if they scored within the bottom 40% of the Socio-Economic Index for Areas distribution, moderate SES if their score was between 41% and 80%, and high SES if their score was above 80%.

For gauging experience with smoking, respondents were asked: “Have you ever smoked even part of a cigarette?” (“no”; “yes, just a few puffs”; “yes, I have smoked fewer than 10 cigarettes in my life”; “yes, I have smoked more than 10 but less than 100 cigarettes in my life”; or “yes, I have smoked more than 100 cigarettes in my life”); “Have you smoked cigarettes in the last four weeks?” (“yes”; “no”); “Do you think you will smoke a cigarette soon?” (“definitely not”; “probably not”; “probably yes”; or “definitely yes”); “Do you think you will be smoking cigarettes this time next year?” (“certain NOT to be smoking”; “very unlikely to be smoking”; “unlikely to be smoking”; “likely to be smoking”; “very likely to be smoking”; “certain to be smoking”; or “can’t decide how likely”). Stage of smoking uptake was determined by responses to these questions [3]. Those who said they had never smoked a cigarette and were certain of not smoking in the future were considered nonsusceptible nonsmokers. Susceptible nonsmokers were those who had never smoked a cigarette but had also failed to state that they would certainly not be smoking in the next 12 months. Respondents who had previously had at least a puff of a cigarette but less than 100 cigarettes in their lifetime were considered experimenters, whereas those who had smoked 100 or more cigarettes in their lifetime were considered established smokers.

Respondents were then randomly assigned to view one of the 15 pack conditions. Before being shown their assigned pack, respondents who were about to see one of the plain pack versions were told, “The following is an alternative design for cigarette packs, which might one day replace currently available packs. We would like you to imagine that these cigarette packs are already currently available in stores. With this in mind, we would like you to examine the pack and gain your opinions of this pack.” Those assigned to view an original pack were told, “We would now like you to examine the displayed pack, and to gain your opinions of this pack.”

While viewing their assigned pack, respondents gave ratings by completing likert scales from 1 (“strongly disagree”) to 5 (“strongly agree”). Attributes to be rated were modified from past tobacco industry packaging studies [28,29]. Respondents were first asked to rate attributes of the displayed pack including: “This pack looks as if it would be...”: “popular among smokers”; “attractive”; “good value for money”; “an exclusive/expensive brand”; and “a brand you might try/smoke.” Looking at the same pack, respondents were then asked to rate a number of attributes of typical smokers of the pictured cigarette pack, including: “A typical smoker of this pack is...”: “trendy/stylish”; “young”; “masculine”; “lower class”; “sociable/outgoing”; and “confident/successful”. Finally, looking at the same pack, respondents were asked to think about how a cigarette from the pictured pack might taste and to rate a number of descriptions on how well they relate to the pack shown, including: “I think these cigarettes might...”: “be rich in tobacco flavour”; “be low in tar and nicotine”; “taste of cheap tobacco”; “be satisfying”; “be like a light cigarette”; “be of the highest quality tobacco”; and “be harsh...
on the throat.” Within each of the questions, attributes were presented randomly to avoid order effects. Finally, after the pack was removed from view, respondents were asked “Thinking back to the pack you just saw, please write down the health warning that appeared at the top of the pack.”

**Statistical analysis**

Analyses were conducted using SPSS version 14.0. Analysis of variance and chi-square tests were performed to check that random assignment yielded equivalent groups.

A principal components analysis using oblique rotation was performed to examine which components within each outcome measure category (i.e., pack characteristics, smoker characteristics, sensory perceptions) loaded together. Eigenvalues, scree plots, and component loadings were inspected to determine the number of distinct components within each outcome measure category. Variables loading on a distinct component at >.4 were summed and averaged to create subscales. These consisted of (1) positive pack characteristics—“popular among smokers”; “attractive pack”; “good value for money”; “exclusive/expensive”; “a brand you might try/smoke” (α = .83); (2) positive smoker characteristics—“trendy”; “young”; “masculine”; “sociable”; “confident” (α = .85); (3) negative taste—“cheap”; “harsh” (α = .62); (4) light taste—“low tar”; “light” (α = .73); (5) positive taste—“rich”; “satisfying”; “high quality” (α = .75). The variable “lower class” was kept separate because it did not load above .4 on any specific component.

Analysis of variance tests was conducted to explore mean differences in ratings of plain packs 1, 2, and 3 as compared with original branded packs. Analyses of variance was also conducted to compare plain pack 3 with plain pack 4, to examine the effect on pack ratings of adding a large graphic health warning to 80% of the front of the pack.

The interaction between smoking experience and pack condition on pack ratings was analyzed. Finally, chi-square analyses were conducted to examine respondents’ recall of the graphic health warning by pack condition. Wherever multiple pairwise comparisons were conducted, Bonferroni adjustments were made.

**Results**

**Sample characteristics and group assignment**

Overall, 1087 adolescents completed the survey, yielding a response rate of 15% of all the e-mail invitations sent. Table 1 shows that neither respondents’ demographic characteristics nor smoking experience varied significantly across the different pack conditions. An average of 217 respondents (minimum = 204; maximum = 224) were randomly allocated to each of the five pack conditions, with a relatively equal distribution of the three brands across these five conditions.

**Effect of increasingly plain packaging on perceptions**

For all brands combined, pack condition was a significant predictor of ratings of “positive pack characteristics”, “positive smoker attributes”, “positive taste characteristics”, and perceptions of the pack being “lower class”. Table 2 shows that as branding and color were progressively removed from the pack, mean ratings of positive perceptions reduced and...
Table 2
Analysis of variance: ratings of original pack compared with plain packs 1, 2, and 3

<table>
<thead>
<tr>
<th>Pack condition</th>
<th>Original (ref)</th>
<th>Plain pack 1</th>
<th>Plain pack 2</th>
<th>Plain pack 3</th>
<th>Main effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 232)</td>
<td>(n = 204)</td>
<td>(n = 224)</td>
<td>(n = 220)</td>
<td></td>
</tr>
<tr>
<td>Positive pack characteristics^a</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Positive smoker attributes^b</td>
<td>2.31 (.8)</td>
<td>2.07 (.7)</td>
<td>2.00 .09 (.9)</td>
<td>1.90 .06 (.8)</td>
<td>10.54</td>
</tr>
<tr>
<td>Positive taste characteristics^c</td>
<td>2.65 (.8)</td>
<td>2.42 (.8)</td>
<td>2.39 (.9)</td>
<td>2.23 .07 (.8)</td>
<td>9.71</td>
</tr>
<tr>
<td>Cheap tasting^d</td>
<td>2.71 (.9)</td>
<td>2.52 (.9)</td>
<td>2.62 (.9)</td>
<td>2.38 (.9)</td>
<td>8.88</td>
</tr>
<tr>
<td>Light tasting</td>
<td>3.27 (.9)</td>
<td>3.42 (.9)</td>
<td>3.50 (.1)</td>
<td>3.45 (.1)</td>
<td>2.60</td>
</tr>
<tr>
<td>Lower class</td>
<td>2.95 (1.1)</td>
<td>3.16 (1.0)</td>
<td>3.09 (1.1)</td>
<td>3.24 (1.2)</td>
<td>2.72</td>
</tr>
</tbody>
</table>

\^a Positive pack characteristics are "popular brand"; "attractive pack"; "value for money"; "exclusive"; "brand would try/smoke."
\^b Significantly different from original pack after Bonferroni adjustment.
\^c Positive smoker attributes = "trendy"; "young"; "masculine"; "sociable"; "confident."
\^d Positive taste characteristics = "rich"; "satisfying"; "high quality."
\^e Cheap tasting = "cheap"; "harsh on throat."

perceptions of the pack being “lower class” became stronger.

Plain pack 1 was rated more negatively in terms of “positive pack characteristics” (p < .01) and “positive smoker attributes” (p < .01) as compared with ratings of the original pack. On all other dimensions, plain pack 1 was rated as similar to the original pack. For plain pack 2, “positive pack characteristics” (p < .001) and “positive smoker attributes” (p < .001) were also rated more negatively than the original pack. Finally, in comparison with the original pack, plain pack 3 was rated more negatively in terms of “positive pack characteristics” (p < .001), “positive smoker attributes” (p < .001), and “positive taste” (p < .001). Respondents who saw plain pack 3 also rated smokers of the pack to be more “lower class” than did those who saw the original branded pack (p < .01).

There were no significant interactions between pack condition and smoking experience in predicting pack perceptions. However, for all pack ratings except “lower class,” main effects indicated that respondent’s smoking status predicted responses (p < .05). Mean rating scores indicated that regardless of pack condition, established smokers had the most favorable perceptions of all the cigarette packs (Figure 2).

There was a significant interaction between pack condition and brand in predicting ratings for one outcome variable only, namely, that of “light taste” (F[6,868] = 2.784, p < .05). A series of analysis of variances conducted separately for each brand, indicated that ratings of “light taste” differed significantly across pack conditions only for the Longbeach brand (F[3,284] = 4.70, p < .01). Longbeach’s plain pack 3 and plain pack 1 were rated as less “light tasting” (mean = 2.05 [SD= .91] and mean = 2.22 [SD=.89], respectively) as compared with the original Longbeach pack (mean = 2.57 [SD=.79]).

Overall, 58% of the sample correctly recalled the graphic health warning and this did not vary by pack condition (p > .10).

**Effect of graphic health warning on perceptions**

To study the effect of adding a large graphic health warning to the plainest pack, we compared those who saw
plain pack 3 (the pack with the least branding) and those who saw plain pack 4 (pack with graphic health warning covering 80% of the pack face). Analysis of variance indicated that those who were exposed to plain pack 4 rated their pack lower on “positive pack characteristics” (mean = 1.6, SD = .7; F [1,425] = 13.87, p < .001) than did those who saw plain pack 3 (mean = 1.9, SD = .8). Ratings of all other outcome variables (i.e., “positive smoker attributes”; “positive taste characteristics”; “cheap tasting”; “light tasting; and “lower class”) did not differ between these two packs.

Further analysis indicated a significant interaction between respondent’s smoking experience and pack condition on ratings of “positive pack characteristics” (F [3,419] = 4.45, p < .01). Figure 3 illustrates that adding a large graphic health warning to the plainest pack elicited lower ratings of “positive pack characteristics” as compared with the plainest pack having smaller warning, among experimenters (mean = 1.6 [SD = .7] vs. mean = 2.1 [SD = .8]; F [1,75] = 11.59, p < .01), established smokers (mean = 2 [SD = 1] vs. mean = 2.7 [SD = .8]; F [1,75] = 1.16, p < .01) and susceptible nonsmokers (mean = 1.5 [SD = .4] vs. mean = 1.8 [SD = .6] F [1,58] = 4.31, p < .05), but no effect on nonsusceptible nonsmokers (mean = 1.5 [SD = .7] vs. mean = 1.6 [SD = .7]; F [1,211] = .47, p > .10). Significant main effects for smoking status and ratings of “positive pack characteristics” (F [3,419] = 25.70, p < .001) indicate that regardless of pack condition, established smokers’ perceptions of both packs were more favorable as compared with other respondents.

Results of an analysis of variance model between pack condition (plain pack 3 vs. plain pack 4) and brand for pack perceptions indicated there was no significant interaction. A chi-square test indicated there was no difference between those who saw plain pack 3 or plain pack 4 in recalling the correct graphic health warning (plain pack 3 [61.4%] and plain pack 4 [53.6%]; p > .10).

Discussion

Our study demonstrates that when a cigarette pack is progressively stripped of its color, imagery, and branded fonts, adolescents perceive packs as less appealing. Progressively removing branding from a pack also resulted in less favorable perceived attributes of a typical smoker of the pack, and more negative expectations of cigarette taste. Our experimental findings support previous descriptive research [17,18,20], indicating that among adolescents branded cigarette packs communicate stronger brand personality and convey more positive taste characteristics than the same pack void of color, imagery, and branded fonts. Our findings extend the results of Wakefield et al.’s [22] experimental study of adult smokers, and show that cigarette pack branding also influences adolescents’ perceptions.

Our findings also demonstrate that larger front of pack graphic health warning on the plainest pack reduced respondent’s ratings of positive pack characteristics as compared with a smaller warning. Research conducted for the Canadian Government found that warnings occupying 75% of a branded pack’s face were more effective in eliciting negative perceptions and conveying information about the health risks of smoking to adult smokers as compared with warnings occupying 50% of a branded pack’s face [30]. However, this study also found that to have the same effect among adolescents, warning sizes would need to be increased to 90% of the pack face [31]. Our findings support the increased effect of covering the majority of the pack face among adolescents.

Our study found that larger pictorial warnings reduce perceptions of positive pack characteristics among established smokers, experimenters, and susceptible nonsmokers. Nonsusceptible nonsmokers rated packs more negatively than adolescents who had smoked, and this did not differ with the size of the pictorial warning. These findings suggest that plain cigarette packs with graphic health warnings covering 80% of the pack face would elicit more negative perceptions among those who are at greater risk [32,33] of becoming addicted adult smokers, and would also sustain negative perceptions held by nonsusceptible nonsmokers.

Unlike early studies [18–20], our study did not demonstrate that graphic health warnings of smaller or larger size were recalled more often when placed on a pack devoid of branding as compared with a branded pack. However, as our survey instructed respondents to examine the pack closely, this has resulted in higher recall of the warnings than would be expected from natural exposure. In addition, familiarity with the gangrene health warning was likely to have been high, as this warning had been on Australian cigarette packs for approximately 3 years at the time of the survey, and was also the subject of an Australian television advertising campaign. Using this familiar warning may have reduced our ability to detect differences in recall across conditions. Future studies might consider using less familiar warnings.

There were a number of potential study limitations. First, as we tested three variations of plain pack whereby each condition removed several design elements at one time, we could not determine which specific brand element...
contributed to the deterioration of adolescent’s positive perceptions. However, the alterations made to each pack allowed us to identify the effects of systematically removing major design elements (such as typeface or color). Second, respondents viewed packs using an Internet image that did not permit a three-dimensional experience of the pack. However, this is likely to have led to underestimation of differences between pack conditions rather than to overestimates, and so these study results may be conservative. Third, sourcing respondents through their parents may have elicited desirable responses from adolescents. Adolescents may have sought their parents’ or others’ input into their responses and it was not possible to control the degree of supervision of responses. However, the randomized design should mean that this kind of interference in responses was equally distributed across conditions. Fourth, few of the attributes of typical smokers of the packs were negative, and future research might seek to include a more balanced mix of positive and negative features to avoid concerns about potential response bias. Finally, as our sample was sourced from an existing online panel with a consequently low response rate, respondents may not have been representative of the general population of 14- to 17-year-olds. However, as this was an experimental study rather than a population survey, the primary purpose of the online panel was to source a sampling frame for random allocation to experimental conditions, rather than a representative population sample. We achieved successful randomization as was judged by the fact that groups did not differ in composition, from which we were able to examine differences between conditions, which was the primary purpose of this study.

Because restrictions on tobacco promotion and advertising have become even more stringent across the world, it is expected that the tobacco industry’s investment in developing innovative packaging designs will continue to increase [7]. Our study extends the existing evidence based on plain packaging by demonstrating that plain cigarette packs are perceived less favorably than the existing branded packs by adolescents, and that plain packs with the least branding elements have the least appeal. Our study also suggests that by increasing the size of the front of pack graphic health warning to 80% on the plainest packs, cigarette packs are even less appealing to adolescents, especially those most at risk for a lifetime of smoking.

Q2 Uncited References

Acknowledgments

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References


