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Perceptions of branded and plain cigarette packaging among Mexican youth

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Summary

Plain cigarette packaging, which seeks to remove all brand imagery and standardize the shape and size of cigarette packs, represents a novel policy measure to reduce the appeal of cigarettes. Plain packaging has been studied primarily in high-income countries like Australia and the UK. It is unknown whether the effects of plain packaging may differ in low-and-middle income countries with a shorter history of tobacco regulation, such as Mexico. An experimental study was conducted in Mexico City to examine perceptions of branded and plain cigarette packaging among smoking and non-smoking Mexican adolescents ($n = 359$). Respondents were randomly assigned to a *branded* or *plain* pack condition and rated 12 cigarette packages for *appeal*, *taste*, *harm* to health and smoker-image traits. As a behavioral measure of appeal, respondents were offered (although not given) four cigarette packs (either *branded* or *plain*) and asked to select one to keep. The findings indicated that *branded* packs were perceived to be more appealing ($\beta = 3.40$, $p < 0.001$) and to contain better tasting cigarettes ($\beta = 3.53$, $p < 0.001$), but were not perceived as less harmful than *plain* packs. Participants rated people who smoke the *branded* packs as having relatively more positive smoker-image traits overall ($\beta = 2.10$, $p < 0.001$), with particularly strong differences found among non-smokers for the traits 'glamorous', 'stylish', 'popular' and 'sophisticated' ($p < 0.001$). No statistically significant difference was found for the proportion of youth that accepted when offered *branded* compared with *plain* packs. These results suggest that plain packaging may reduce brand appeal among Mexican youth, consistent with findings in high-income countries.

Key words: tobacco policy, plain packaging, marketing, low and middle-income countries

INTRODUCTION

As tobacco use continues to decline in high-income countries, tobacco companies are increasingly turning their focus to markets in low- and middle-income countries (LMICs), due to their large populations and less stringent regulatory environments. The tobacco disease burden is now concentrated in LMICs, where 80% of the world's smokers reside (World Health Organization, 2008a).

At the same time, countries around the world have increasingly banned marketing and advertising through traditional channels (e.g. television, radio, billboards, print), leading tobacco companies to heighten their focus on the cigarette pack as the primary marketing vehicle (Kotnowski and Hammond, 2013). Previous research conducted in high-income countries, like Canada, the US, the UK and Australia, has shown that cigarette packaging is associated with false beliefs about the health risks of smoking, and that brands labeled as 'smooth' and those with lighter colors are perceived as less harmful than 'regular' brands or those with darker colors (Hammond *et al.*, 2009; Hammond and Parkinson, 2009; Mutti *et al.*, 2011). Qualitative studies conducted among young adults in Norway and New Zealand highlight the powerful influence of cigarette packaging on establishing brand appeal by conveying desirable brand attributes, such as being feminine or 'cool' (Scheffels, 2008; Gendall *et al.*, 2011; Hoek *et al.*, 2012; Scheffels and Saebo, 2013).

The World Health Organization's Framework Convention on Tobacco Control (WHO FCTC) aims to reduce the tobacco disease burden worldwide through the implementation of evidence-based policies. The guidelines for implementation of articles 11 (packaging and labeling of tobacco products) and 13 (tobacco advertising, promotion and sponsorship) recommend plain packaging, which prohibits brand imagery (i.e. colors, logos and fonts) on cigarette packs (World Health Organization, 2008b, c). Plain packaging measures aim to decrease smoking rates by: reducing brand appeal, particularly among youth; enhancing the impact of health warning labels by reducing competing information on the package and eliminating misunderstandings about the relative harm of cigarettes that packaging promotes. One recent systematic review found substantial evidence for these pathways of plain packaging effects (Stead *et al.*, 2013). For example, previous research has shown that plain packs are consistently rated as less appealing than branded packs among young adults (Germain *et al.*, 2010; Hammond, 2010; Gendall *et al.*, 2012; Scheffels and Saebo, 2013), and young women in particular (Doxey and Hammond, 2011; Hammond *et al.*, 2011; Hammond *et al.*, 2013).

In 2012, Australia became the first country in the world to implement plain packaging policy, alongside increasing the size of its health warnings (Parliament of the Commonwealth of Australia, 2011). Studies evaluating this policy have found evidence that brand appeal has gone down among youth (White *et al.*, 2015a) and that warnings have become more effective among adult smokers (Wakefield *et al.*, 2015).

Plain packaging legislation in Australia has faced three separate legal challenges from the tobacco industry, in the areas of constitutional, trade and investment law (Mitchell and Studdert, 2012), but has nonetheless been implemented as planned. To date, only one challenge from the Australian High Court has been determined and the ruling was in favor of the legislation. However, other challenges, including those at the World Trade Organization and bilateral trade agreement disputes, citing the violation of intellectual property rights, have yet to be heard and settled. Nevertheless, the industry has signaled its intent to pursue litigation in any other jurisdiction that seeks to implement plain packaging. More recently, legal challenges have been filed against the UK and have been threatened against Ireland over their plain packaging legislation. There is a need to continue building the evidence base for plain packaging, to address industry opposition. Emphasis should also be placed on generating evidence from LMIC contexts, given that most studies on this policy measure have been conducted in high-income countries.

The current study took place in Mexico, an upper-middle-income country, where close to one-fifth of the adult population smokes. As in many LMICs, adult-smoking prevalence is significantly higher among males (25 versus 8% of females) (Ministry of Health, Mexico, 2009), whereas there is little difference in smoking prevalence by sex among 12- to 15-year-old adolescents, at about one-quarter of both males and females (Centers for Disease Control and Prevention, 2011). Between 2007 and 2010 (prior to data collection for the current study), a range of FCTC-recommended policies were implemented in Mexico, including tobacco tax increases that reduced consumption (Saenz de Miera *et al.*, 2010; Saenz de Miera *et al.*, 2014); smoke-free policies and accompanying media campaigns that made smoking less socially acceptable (Thrasher *et al.*, 2010, 2011a) and bans on traditional advertising except in magazines that target adults and at point of sale, where cigarette packs are prominently displayed (Pérez-Hernández *et al.*, 2012). This relatively rapid policy implementation contrasts with high-income countries like Australia and the UK (in which plain packaging has primarily been studied), where a long history of tobacco control policies and programs has likely resulted in greater 'denormalisation' of smoking (Chapman and Freeman, 2008). Plain packaging may have stronger effects in Mexico, because it can build upon more recently generated, and therefore more salient, sentiment against smoking. On the other hand, its effects may be weaker due to reactance against further attempts to influence behavior (Dillard and Shen, 2005; Raines, 2013). Thus, the current study sought to examine perceptions of *branded* and *plain* packaging among a sample of youth (smokers and non-smokers) in Mexico. Specifically, this study examined perceptions of *plain* (versus *branded*) packaging on: (i) ratings of brand *appeal*, *taste* and *harm*; (ii) associations

with positive smoker-image traits and (iii) a behavioral measure of accepting an offer of a cigarette pack.

METHODS

Trained interviewers conducted 20-minute field experiments between June and August 2010, using computer-assisted personal interviewing. Respondents were recruited using a standardized 'intercept' technique whereby people were counted as they passed a geographical landmark and every third individual was approached for participation (Sudman, 1980). Study sites were selected to capture geographic and demographic diversity within the city, and for logistical reasons, and included two public parks, a bus terminal, and outside of five Walmart stores in Mexico City. Respondents were given a 50-peso phone card or gift card (equivalent to ~$4 USD) as a token of appreciation.

Youth (age 16–18) recruited for this study included non-smokers in addition to smokers, since this group is seen as susceptible to smoking. Prior to beginning the protocol, respondents were given information about the study and asked to provide verbal consent. The study was reviewed by and received ethics clearance from the Office of Research Ethics at the University of Waterloo.

Protocol

A between-subjects design was used wherein each respondent was randomly assigned to view (on a computer screen) images of cigarette packs according to one of three experimental conditions: (1) *fully-branded* packs, (2) *plain* packs with brand and descriptors or (3) *plain* packs with no descriptors (i.e. brand name only). This study examined only youth assigned to conditions (1) and (2): *branded* and *plain with descriptors*. Please see Supplementary Material for details on the experimental conditions.

Respondents viewed a gender-specific series of 12 individual packs, one at a time, in random order. Analysis of tobacco industry documents has demonstrated the use of marketing tactics such as color, pack shape and size, and design motifs, by the tobacco industry to attract their target markets (Wakefield *et al.*, 2002). Packs were thus selected on the basis of their female or male orientation. For example, pink and purple were considered to be 'female' color schemes, whereas blue and black were considered to be 'male' color schemes. In terms of pack shape and size, slimmer, 'lipstick' style packaging was considered to have a female orientation. A total of 22 packs were tested: males and females each saw 10 unique packs plus two gender neutral packs that were the same for both (one international, and one locally available)—please see Supplementary Material for all tested packs.

Of the 22 packs, 6 were locally available, 9 were international designs for brands available in Mexico and the remaining 7 were international brands not available in Mexico. Each pack was rated on measures of brand *appeal*, *taste* and *harm*, as well as seven smoker-image traits.

At the end of the study, respondents were told, 'As part of this study, we would like to send you a pack of cigarettes to thank you for participating in this study. Please select from one of the choices below. You can also choose not to receive a pack'. Four packs were displayed on screen, randomly selected from the 12 packs previously viewed (according to the experimental condition). The outcome was whether participants chose any pack. Youth were informed immediately after making their selection that they would not actually receive any cigarette packs because the investigators did not want to endorse smoking. A full description of the methodology is available at: http://davidhammond.ca/supplemental-materials/.

MEASURES

Brand ratings

Respondents were asked to rate each package on three measures: (i) *appeal* (compared with other brands, how appealing is this brand of cigarettes? Less appealing than other brands, no difference or more appealing than other brands); with similar questions for (ii) *taste* and (iii) *harm*. Responses were coded as: '1' (more appealing/better taste/less harmful), '0' (no difference/don't know) or '−1' (less appealing/worse taste/more harmful). Overall indexes for *appeal*, *taste* and *harm* were created by summing scores across the 12 packages for each of the three measures to yield a score between −12 and +12.

Smoker-image ratings

For each package, respondents were asked, 'In your opinion, is someone who smokes this brand regularly *more likely to be . . .*' for seven smoker-image traits: (1) female/male, (2) glamorous/not glamorous, (3) stylish/not stylish, (4) popular/not popular, (5) cool/not cool, (6) sophisticated/not sophisticated and (7) slim/overweight. The more desirable trait (e.g. 'cool') was scored a '1', and the less desirable trait (e.g. 'not cool') was scored a '−1', 'no difference', and 'don't know' were scored a '0'. The female/male question was recoded so that a score of '1' was applied when they identified the brand as being smoked by someone of their own sex; '−1' for the opposite sex; and '0' for 'no difference' and 'don't know'.

Smoker-image traits were based on previous research using similar methodology. For example, in an online between-subjects experimental study, Wakefield and

colleagues (2008) asked Australian adult smokers to rate a cigarette pack (with varying degrees of branding and plain packaging) on typical smoker attributes, including 'trendy/stylish', 'young' and 'masculine'. In another similar online experimental study, Gendall and colleagues (2012) asked young adult smokers and non-smokers from Norway to describe tobacco product positioning for seven cigarette brands as well as a 'basic' brand using 15 adjectives or attributes, including 'sophisticated', 'masculine', 'feminine' and 'cool'. These attributes were based on terms used in internal tobacco industry research on perceptions of cigarette packaging, including the traits and characteristics consumers associated with smokers of different brands, in studies designed to gather information to better market and position their products.

An index variable was created for each of the seven smoker-image traits by summing the number of desirable traits endorsed by respondents across the 12 packages to yield a score between −12 and +12. An 'overall positive smoker-image trait' index variable was created by calculating the mean score across each of the index variables for the seven positive smoker-image traits, across all packs.

Demographics and smoking behavior

Demographic variables included sex and age. *Daily smokers* were defined as respondents who reported smoking 'daily'. *Non-daily smokers* were defined as respondents who reported smoking 'weekly', or 'monthly'. *Non-smokers* reported smoking 'not at all in the last 30 days', and were further categorized as either 'susceptible' or 'non-susceptible' to smoking. In the linear regression models examining brand *appeal*, *taste* and *harm*, dummy categories were created to examine differences between all levels of the smoking status variable. For the interaction term of condition by smoking status, smoking status was dichotomized into smokers (daily and non-daily) and non-smokers (susceptible and non-susceptible), for greater statistical power.

Susceptibility was determined based on responses to three questions: (i) 'do you think in the future you might try smoking cigarettes?', (ii) 'if one of your best friends were to offer you a cigarette, would you smoke it?' and (iii) 'at any time during the next year, do you think you will smoke a cigarette?'. Respondents who reported a firm commitment not to smoke ('definitely not' for all three measures), were categorized as 'non-susceptible', and all others were categorized as 'susceptible', as per previous research (Pierce *et al.*, 1996).

ANALYSES

All analyses were conducted in SPSS version 20.0. Mean scores were computed for brand ratings of *appeal*, *taste* and *harm*. Chi-square tests were conducted to identify differences in the proportions of respondents selecting *branded* and *plain* packs. Linear regression models were used to examine the effect of experimental condition for brand ratings of *appeal*, *taste* and *harm*, as well as positive smoker-image traits. To examine individual-level predictors, age, gender and smoking status were entered as covariates in the models. In a model examining only smokers, intentions to quit were also entered in subsequent steps. Interaction terms for age, sex and smoking status by condition (*branded* versus *plain*) were entered into each model, individually.

RESULTS

Sample characteristics

Table 1 presents the sample characteristics. No differences in characteristics were observed between conditions, with the exception of intentions to quit. Significantly higher proportions of males and females in the branded condition reported planning to quit 'sometime in the future'. A greater proportion of females reported that they were 'not planning to quit' in the *plain* condition.

Brand appeal, taste and harm ratings

Figure 1a and b illustrate the differences between mean index scores for brand *appeal*, *taste* and *harm* for *branded* and *plain* packs, among smokers and non-smokers. Higher scores indicate higher levels of agreement with measures of brand *appeal*, *taste* and *harm*. Figure 1a and b show that *branded* packs received significantly higher ratings of *appeal* and *taste* compared with *plain* packs.

Linear regression models were conducted using index scores for brand *appeal*, *taste* and *harm*, across all 12 packs, combining the male and female packs, to examine overall differences between experimental conditions, as well as sociodemographic predictors. Supplementary Material, Table S2 presents the regression coefficients for the appeal, taste and harm indexes.

A significant main effect of condition was found, such that packs in the branded condition were rated as significantly more *appealing* and to have better *taste*, than packs in the *plain* condition ($\beta = 3.40$, $p < 0.001$ and $\beta = 3.53$, $p < 0.001$), although no main effect was observed for the *harm* index score.

Sex emerged as a significant predictor when entered into all three models, in that females were more likely to give greater *appeal* and *taste* ratings, and were more likely to rate packs as 'less harmful', than males ($\beta = 7.43$, $p < 0.001$, $\beta = 6.52$, $p < 0.001$ and $\beta = 4.25$, $p = 0.02$, respectively). Age was significant only in the model testing *harm*, such that 17- and 18-year-old respondents were more

Table 1: Sample characteristics

Characteristics	Overall, N = 359, % (n)	Branded		Plain	
		Female, n = 89, % (n)	Male, n = 87, % (n)	Female, n = 96, % (n)	Male, n = 87, % (n)
Age					
16 years	35.9 (129)	34.8 (31)	33.3 (29)	30.2 (29)	46.0 (40)
17 years	31.8 (114)	37.1 (33)	26.4 (23)	39.6 (38)	23.0 (20)
18 years	32.3 (116)	28.1 (25)	40.2 (35)	30.2 (29)	31.0 (27)
Current smoking status					
Daily smoker	35.1 (72)	16.9 (15)	23.0 (20)	22.9 (22)	17.2 (15)
Non-daily smoker[a]	64.8 (133)	31.5 (28)	40.2 (35)	37.5 (36)	39.1 (34)
Non-smoker (susceptible)[b]	84.2 (128)	43.8 (39)	31.0 (27)	32.3 (31)	37.9 (33)
Non-smoker (non-susceptible)[b]	15.8 (24)	7.9 (7)	5.7 (5)	7.3 (7)	5.7 (5)
Cigarette consumption (mean)					
Daily smokers (n = 72), cigarettes per day	5.4 (SD = 4.6; range = 1–26)	4.7 (SD = 4.6; range = 1–20)	6.6 (SD = 5.6; range = 1–26)	4.8 (SD = 4.6; range = 1–20)	5.2 (SD = 3.3; range = 1–12)
Non-daily (weekly) smokers (n = 87), cigarettes per week	7.4 (SD = 6.5; range = 1–30)	6.5 (SD = 4.4; range = 2–20)	9.6 (SD = 8.3; range = 1–30)	5.8 (SD = 5.0; range = 1–20)	8.0 (SD = 7.6; range = 1–30)
Non-daily (monthly) smokers (n = 46), cigarettes per month	9.6 (SD = 13.9; range = 1–70)	17.8 (SD = 17.3; range = 5–50)	7.0 (SD = 6.4; range = 1–20)	8.0 (SD = 14.28; range = 1–50)	9.8 (SD = 17.07; range = 2–70)
Quit intentions[c]					
Within the next month	9.8 (20)	14.0 (6)	9.1 (5)	10.3 (6)	6.1 (3)
Within the next 6 months	18.0 (37)	18.6 (8)	18.2 (10)	13.8 (8)	22.4 (11)
Sometime in the future	31.7 (65)	39.5 (17)	43.6 (24)	20.7 (12)*	24.5 (12)*
Not planning to quit	40.5 (83)	27.9 (12)	29.1 (16)	55.2 (32)**	46.9 (23)

[a]Non-daily = weekly or monthly smokers.

[b]Among non-smokers only (total non-smokers n = 154; two respondents did not report susceptibility, Table 1, n = 152), where susceptible is defined as the absence of firm commitment not to smoke (i.e. anything other than 'definitely not' on all three susceptibility measures; 'try in the future', 'accept friend offer' and 'smoke in the next year').

[c]Among current smokers (daily and non-daily) only (overall n = 205; branded female n = 55; plain female n = 58; branded male n = 43; plain male n = 49).

*Significant differences (χ^2 tests for categorical variables and t-test for continuous variables) between branded and plain conditions by sex, where *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
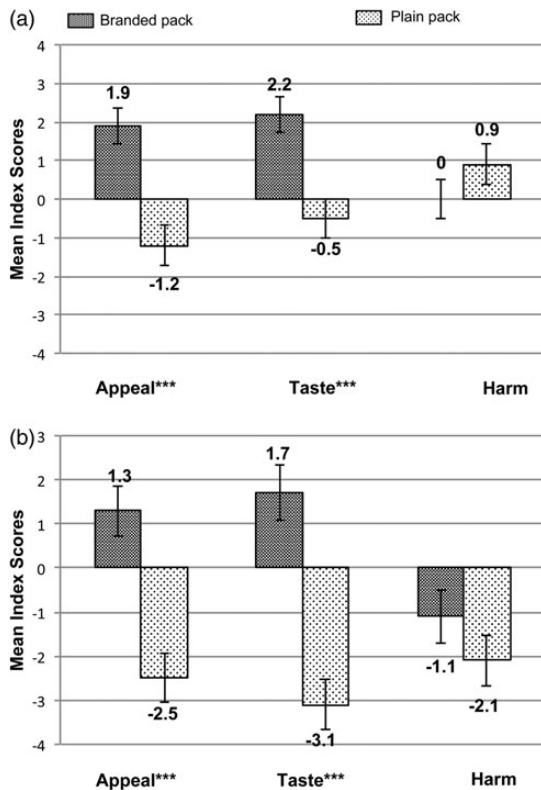
Fig. 1: Difference between appeal, taste and harm index scores for 'branded' and 'plain' pack conditions, among smokers (a) and non-smokers (b). Appeal, taste and harm index scores: mean brand ratings based on overall indexes for appeal, taste and harm, where responses were coded as: '1' (more appealing/better taste/less harmful), '0' (no difference/don't know) or '−1' (less appealing/worse taste/more harmful), and scores were summed across the 12 packages for each of the three measures to yield a score between −12 and 12. Higher scores indicate higher levels of agreement with measures of appeal, taste and harm. Asterisks indicate statistical significance between branded versus plain conditions. $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

likely to report that some packs were 'less harmful' than others, compared with 16-year-olds ($\beta = 1.95$, $p = 0.005$ and $\beta = 1.53$, $p = 0.03$).

Non-daily smokers were more likely to give greater *appeal* and *taste* ratings, and more likely to report that some packs were 'less harmful' than other packs, when compared with susceptible non-smokers ($\beta = 1.24$, $p = 0.04$; $\beta = 2.01$, $p = 0.001$ and $\beta = 2.81$, $p = 0.02$). Non-daily smokers were also more likely to give higher taste ratings, and also more likely to report that some packs were 'less harmful' than others, compared with non-susceptible non-smokers ($\beta = 4.29$, $p \leq 0.001$; $\beta = 1.63$, $p = 0.01$).

Daily smokers were more likely than non-susceptible non-smokers to give higher *taste* ratings ($\beta = 3.31$,

$p = 0.007$). Daily smokers were also more likely to report that some packs were 'less harmful' than others, compared with susceptible non-smokers and non-susceptible non-smokers ($\beta = 2.67$, $p = 0.04$ and $\beta = 2.76$, $p = 0.04$). Compared with non-susceptible non-smokers, susceptible non-smokers were more likely to give higher *taste* ratings ($\beta = 2.28$, $p = 0.04$).

The interaction term of condition by sex was found to be significant for brand *appeal*, ratings of *taste* and ratings of *less harm* ($\beta = 4.47$, $p < 0.001$; $\beta = 3.54$, $p = 0.001$ and $\beta = 2.63$, $p = 0.02$). No differences were detected for the interactions between condition and smoking status or between condition and age, in any of the three models. In a model conducted with only smokers, intentions to quit were found to be a significant predictor for ratings of *less harm*, such that those who were not intending to quit were more likely to believe that some packs were *less harmful* than others ($\beta = 1.81$, $p = 0.02$).

Smoker-image ratings

Respondents were asked to rate each pack along seven smoker-image traits. Figure 2a and b illustrate the differences between mean index scores for the seven positive smoker-image traits (gender, glamorous, stylish, popular, cool, sophisticated and slim), in addition to the 'overall positive smoker-image' index, among smokers and non-smokers. Higher scores indicate higher levels of agreement with positive smoker-image traits. Figure 2a and b illustrate that non-smokers rated branded packs significantly higher on all positive smoker-image traits, compared with plain packs ($p < 0.05$), whereas smokers rated branded packs significantly higher on two positive smoker-image traits, 'stylish' and 'sophisticated' ($p < 0.05$).

In a linear regression model in which all of the smoker-image traits across all packs were combined into a single 'overall positive smoker-image' trait index (where higher scores indicated more positive smoker-image traits), a main effect of condition was found, such that packs in the *branded* condition were given higher positive trait scores than packs in the *plain* condition, ($\beta = 2.10$, $p \leq 0.001$). Supplementary Material, Table 2 presents the regression coefficients for the 'overall positive smoker-image' trait index.

Daily smokers were more likely to rate packs as higher on positive smoker-image traits than both susceptible non-smokers and non-susceptible non-smokers ($\beta = 1.73$, $p = 0.004$ and $\beta = 2.97$, $p = 0.002$, respectively), as were non-daily smokers ($\beta = 1.07$, $p = 0.03$ and $\beta = 2.32$, $p = 0.009$). Compared with 16- and 17-year-olds, 18-year-olds were more likely to rate packs higher on positive smoker-image traits ($\beta = 1.76$, $p < 0.001$ and $\beta = 1.33$, $p = 0.01$,
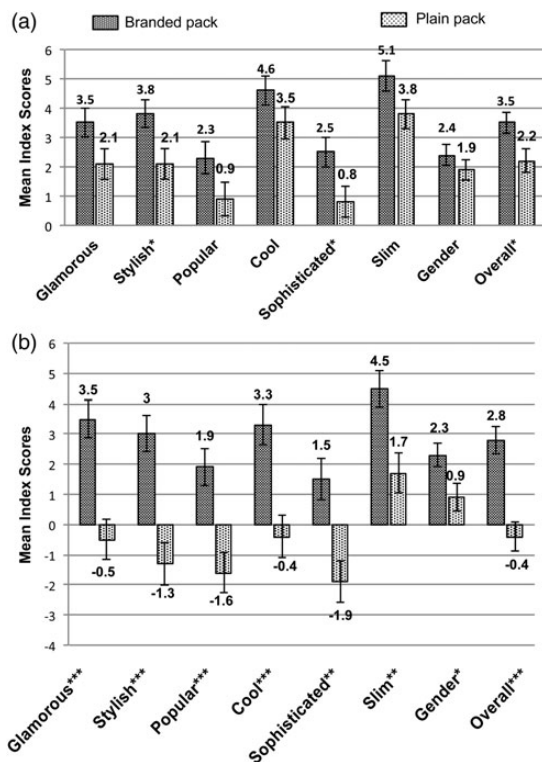
Fig. 2: Differences between positive smoker-image trait index scores for 'branded' and 'plain' pack conditions, among smokers (a) and non-smokers (b). Positive smoker-image trait index scores: an index variable was created for each of the seven positive smoker-image traits by summing the number of desirable traits endorsed by respondents across the 12 packages to yield a score between −12 and 12. An 'overall smoker image' index variable was created by calculating the average across each of the index variables for the seven positive smoker-image traits, across all packs. Higher scores indicate higher levels of agreement with the seven positive smoker-image traits. Asterisks indicate statistical significance between branded versus plain conditions *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

respectively). The interaction between condition and sex was significant ($\beta = 2.84$, $p = 0.001$), such that females in the branded condition were more likely to rate packs higher on positive smoker-image traits. The interaction between condition and smoking status was also significant ($\beta = 1.82$, $p = 0.03$), indicating that smokers in the branded condition were more likely to rate packs higher on positive smoker-image traits. Among smokers, intentions to quit were not a significant predictor of positive smoker-image ratings.

Pack selection task

Lastly, respondents were offered a pack of cigarettes that would be given to them upon conclusion of the study.

Youth were informed immediately after making their selection that they would not actually receive any cigarette packs because the investigators did not want to endorse smoking. Overall, 92.2% of youth accepted the offer and selected a pack.

Among youth offered *branded* packs, overall 93.2% ($n = 164$) accepted a pack, of which 36.6% ($n = 60$) were non-daily smokers, 36.0% ($n = 59$) were susceptible non-smokers, 20.7% ($n = 34$) were daily smokers and 6.7% ($n = 11$) were non-susceptible non-smokers.

Among youth offered *plain* packs, overall 91.3% ($n = 167$) accepted a pack, of which 38.3% ($n = 64$) were non-daily smokers, 34.1% ($n = 57$) were susceptible non-smokers, 21.0% ($n = 35$) were daily smokers and 6.6% ($n = 11$) were non-susceptible non-smokers. Overall, no significant differences emerged between youth accepting a pack when offered *plain* or *branded* packs, nor were there any differences by age, sex or smoking status.

DISCUSSION

The current study suggests that cigarette packaging continues to be an effective marketing tool in an upper-middle-income country like Mexico. The findings that youth perceived branded packs as more appealing and better tasting are in line with much of the experimental evidence from high-income countries (Wakefield *et al.*, 2008; Gendall *et al.*, 2012). Furthermore, we found more pronounced effects among female youth, suggesting that females may be more sensitive to package branding, particularly female-oriented packaging, than males in Mexico. The female-oriented packaging used in this study appears to have resonated strongly with its target audience, as in previous experimental studies among female youth in Canada, the US and the UK (Doxey and Hammond, 2011; Hammond *et al.*, 2011; Hammond *et al.*, 2013). The consistency of the current study findings with those from high-income countries suggests that implementation of plain packaging in Mexico would likely produce results among youth similar to those in Australia (White *et al.*, 2015a). Hence, the context of rapid implementation of an array of FCTC-recommended tobacco control policies does not appear to weaken the effects of plain packaging, relative to what would be expected in countries with longer histories of tobacco control. Differences in ratings of *taste* and *harm* between smokers and non-smokers in the current study were also notable. In general, both daily and non-daily smokers gave higher taste ratings, were more likely to report that some brands were less harmful and rated packs higher on positive smoker-image traits, compared with their non-smoking counterparts. Among non-smokers, those who were susceptible to smoking gave

more positive *taste* ratings, possibly because package design and labeling promotes false beliefs about smoking that drive some non-smokers' openness to trying smoking.

With respect to the symbolic properties of tobacco branding, this study found that in comparison to plain packs, branded packs were more likely to be associated with positive smoker-image traits. For example, people who smoked branded packs were more likely to be perceived as 'cool', 'stylish' and 'glamorous', consistent with qualitative research from New Zealand and Norway (Scheffels, 2008; Gendall *et al.*, 2011; Hoek *et al.*, 2012; Scheffels and Saebo, 2013). Similarly, Wakefield and colleagues (2008) found that plain packs were considered less attractive and less popular than branded packs, and smokers of plain packs were rated as significantly less 'trendy' and 'stylish'. More recent evidence from Australia shows similar effects after the implementation of plain packaging, alongside the implementation of new, larger health warnings (from 30 to 75% of the front of the pack). A cross-sectional school-based survey of adolescents conducted prior to implementation of plain packaging and then again 7–12 months after implementation found a decrease in positive smoker-image ratings, compared with ratings at pre-implementation (White *et al.*, 2015a).

However, other research based on the same cross-sectional school-based data found no change in cognitive processing (thinking about, reading, attending to) of health warnings on plain packs (White *et al.*, 2015b). There was also little change found in levels of awareness of health risks from pre- to post-implementation. The finding from this study that no main effect was observed in ratings of *harm* between *branded* and *plain* packs is also of note. Together, these findings suggest that perhaps more time needs to pass in order for plain packaging to significantly impact cognitive processes that may lead to greater perceptions of harm. Continuing evaluation of plain packaging in Australia and any other countries that implement similar regulations is necessary to better understand the impact of such policies after repeated exposure to plain packs, over a longer period of time.

The final 'pack offer' behavioral task was meant to assess overall pack appeal. In this study, almost all respondents, whether they were offered *branded* or *plain* packs, accepted the pack (no packs were given). In Brazil, where a similar study protocol was carried out, it was found that respondents were three times more likely to select the *branded* packs (White *et al.*, 2012). The finding that almost the entire sample in this study accepted a pack, including those who did not smoke, may underscore the high value attributed to a pack of cigarettes in Mexico. In other words, participants may have seen an opportunity to sell the free pack they were offered. The lack of

discrimination between *plain* and *branded* packs may be because of widespread availability, purchase and consumption of single cigarettes (Kuri-Morales *et al.*, 2005; Thrasher *et al.*, 2009), for which the package is less important. In the end, however, the extremely high acceptance rate for *both* package types may be due to cultural norms around gift exchange and the rudeness of refusing a gift.

Limitations

Although a heterogeneous cross-section of respondents was recruited using the intercept technique, the sample was not representative of all Mexican youth. In addition, self-reported evaluations of cigarette packs and the face-to-face format of the surveys may have encouraged socially desirable responses, leading to lower *appeal* ratings for branded packs than may have otherwise been observed in a real-world setting. Thus, it is likely that the observed effects of branding in this study have been underestimated. Although efforts were made to keep interviews as private as possible, they were conducted in public places and, as such, other people present may have influenced responses; however, the directionality of any influence is unclear.

Pack images were displayed to respondents on computer screens; therefore, pack elements including the shape and size of cigarette packs may have been more difficult to discern compared with what would have been the case with 'real' packs. Nevertheless, experimental research in Mexico on the impact of different types of pictorial warning labels on cigarette packs has found similar results for studies that display packs on a computer (Hammond *et al.*, 2012) and that produce 'mock' cigarette packs that people can handle (Thrasher *et al.*, 2012). Pack images for this study also included pictorial warnings that were implemented in the months after the study was conducted, which introduced additional novel pack characteristics to which people might have been responding. The same warnings were used across experimental conditions to control for their influence, but their greater visual salience in the plain pack conditions may have enhanced the effects of plain packaging, as shown in other studies (Thrasher *et al.*, 2011b).

CONCLUSION

The findings from this study support the implementation of plain packaging legislation and add to the limited evidence base examining plain packaging in low-and-middle income countries. The findings are consistent with those in high-income countries and suggest that novel policies like plain cigarette packaging may work in a similar manner

across diverse populations and help to reduce the promotional appeal of cigarette packaging among youth.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Health Promotion International* online.

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