Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

HHS Public Access

Author manuscript

Tob Control. Author manuscript; available in PMC 2018 December 03.

Published in final edited form as:

Tob Control. 2016 November ; 25(6): 648–655. doi:10.1136/tobaccocontrol-2015-052498.

Assessing tobacco marketing receptivity among youth: integrating point of sale marketing, cigarette package branding and branded merchandise

Sandra Braun[1,2], **Christy Kollath-Cattano**[3], **Inti Barrientos**[4], **Raúl Mejía**[1,2], **Paola Morello**[2], **James D Sargent**[5], and **James F Thrasher**[3,4]

[1]Hospital de Clínicas Universidad de Buenos Aires, Buenos Aires, Argentina

[2]Department of Health Economy & Society, Centro de Estudios de Estado y Sociedad, Buenos Aires, Argentina

[3]Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, South Carolina, USA

[4]Department of Tobacco Research, Center for Population Health Research National Institute of Public Health, Cuernavaca, Mexico

[5]Department of Pediatrics, Dartmouth Medical School, Hanover, New Hampshire, USA

Abstract

Background—As countries prohibit tobacco marketing through traditional channels, marketing at point of sale (PoS) and through tobacco packaging is increasingly important for promoting tobacco consumption.

Objectives—Assess the validity of a novel marketing receptivity index that considers frequency of PoS exposures, tobacco brand recall and ownership of branded merchandise.

Methods—Data come from a cross-sectional survey of 3172 secondary school students in Argentina. Questions assessed frequency of going to stores where tobacco is often sold; cued recall of brand names for 3 cigarette packages with brand name removed and ownership of branded merchandise. A four-level marketing receptivity index was derived: low PoS exposure only; high PoS exposure or recall of 1 brand; recall of 2 or more brands; and ownership of branded merchandise. Indicators of marketing receptivity and smoking involvement were regressed on the

Correspondence to Dr James F Thrasher, Department of Health Promotion, Education, and Behavior, 915 Greene St, 534D, University of South Carolina, Columbia, SC 29208, USA; thrasher@sc.edu.

Twitter Follow Inti Barrientos-Gutierrez at @intibarr

Contributors SB led the development of the paper. CK-C conducted the analysis and helped draft the paper. IB, RM and PM provided substantial feedback on paper drafts and contributed to the design of the data collection tools. JDS contributed to the conceptualisation of the research idea, advised the data analyses and helped draft the paper. JFT designed the study, conceptualised the research idea and helped draft the paper. All authors helped revise the paper and approved the final manuscript.

Competing interests None declared.

Ethics approval Centro de Educación Médica e Investigaciones Clínicas, Buenos Aires.

Provenance and peer review Not commissioned; externally peer reviewed.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

index, including in adjusted models that controlled for sociodemographics, social influences and sensation seeking.

Findings—Among never-smokers, the index had independent positive associations with smoking susceptibility (ie, adjusted OR (AOR)$_{2v1}$=1.66; AOR$_{3v1}$ = 1.64; AOR$_{4v1}$=2.95), willingness to try a specific brand (ie, AOR$_{2v1}$=1.45; AOR$_{3v1}$=2.38; AOR$_{4v1}$=2.20) and positive smoking expectancies (ie, B$_{adj\ 2v1}$ =0.09; B$_{adj\ 3v1}$=0.18; B$_{adj\ 4v1}$=0.34). A more marked dose–response independent association was found with current smoking behaviour (ie, AOR$_{2gv1}$=2.47; AOR$_{3v1}$ =3.16; AOR$_{4v1}$=3.62).

Conclusions—The marketing receptivity index was associated with important variation in smoking-related perceptions, intentions and behaviour among Argentine adolescents. Future research should determine the predictive validity and generalisability of this measure to other contexts, including the explanatory power gained by integrating cigarette package brand recognition tasks.

INTRODUCTION

Because tobacco marketing promotes youth smoking,[1–4] the WHO's Framework Convention on Tobacco Control (FCTC) recommends banning all tobacco advertising, promotion and sponsorship.[5] Over 180 countries have ratified the FCTC, and many have banned marketing through traditional channels, such as television, radio, print media and billboards.[6] With marketing through traditional channels prohibited, tobacco packaging increasingly has become important as a marketing vehicle for communicating brand essence and building brand equity.[7] Furthermore, the vast majority of countries permit cigarette package displays at the point of sale (PoS) for tobacco products, exposing youth to brand imagery across a range of retail establishments where youth purchase goods.[8] This study aimed to develop and validate an index of marketing receptivity that integrates a novel method for assessing cigarette package brand recall with more established measures of marketing exposure[9] and impact.[10]

Background

Receptivity to tobacco marketing spans initial exposures to marketing messages, noticing and remembering these messages, and having positive affective responses towards and identification with particular brands.[1112] Indeed, many studies have confirmed associations between these different levels of marketing engagement and youth smoking initiation and progression.[413] Our conceptualisation of how tobacco marketing influences youth draws from a marketing receptivity heuristic, which is based on hierarchy of effects models in advertising[14] and applied to adolescent substance use (figure 1).[15] The initial stages of this model involve exposure to marketing that shapes smoking-related norms and expectancies. The middle stages involve encoding and identification of information about the product and brand, which are critical for building consumer preference and communicating preferences to network members. This process culminates in brand allegiance. In this model, as marketing receptivity grows, so does the level of interaction with marketing and the frequency of consuming the branded product.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

As traditional mass media strategies for marketing tobacco have been prohibited, the tobacco industry has come to spend most of its marketing resources at the PoS.[8] PoS marketing includes promotions, advertising and cigarette pack displays, which are often the most prominent marketing materials around the point of product purchase, where all customers, including youth, pay for the products they buy. Youth's self-reported frequency of shopping in stores where tobacco is sold independently predicts smoking uptake and performs as well as more complex marketing exposure assessment methods that consider the amount of marketing material at the PoS.[16,17] Furthermore, the generality of this measure may make it less prone to biases that might accompany self-reported frequency of exposure to tobacco marketing.

Tobacco industry internal documents show the importance of marketing strategies to promote adolescent brand recognition and, as a consequence, to increase smoking experimentation and progression towards regular use.[18–20] Tobacco brand recognition and recall is a reliable indicator of youth exposure and receptivity to tobacco marketing.[18] Indeed, establishment of preferences for cigarette brands during adolescence predicts long-term smoking behaviour.[18,19] Some brand recognition tasks assess attention and memory by showing participants marketing materials, such as a still from a television ad or a print ad. Participants who recall the brand name are considered to have more deeply engaged with the marketing materials.[17] While this type of research has been done for tobacco advertisements,[11] no prior research has used cigarette packages as stimuli for assessing marketing receptivity.

In the marketing receptivity heuristic,[15] ownership of branded merchandise is associated with the development of a consumer identity and brand loyalty, which accompanies greater attachment to tobacco-related products.[21] Across a range of studies, owning branded merchandise is a consistent and strong predictor of multiple smoking and drinking outcomes.[12,22–24] Ownership of branded merchandise is only an example of the growing importance of interactivity with marketing, such as visiting company websites, joining consumer mailing lists and engaging in open-source marketing campaigns.[25]

Study context

According to the 2012 Global Youth Tobacco Survey (GYTS), 24.1% of Argentines aged 13–15 years had used some kind of tobacco product in the prior 30 days, with 19.6% smoking cigarettes,[26] among the highest in Latin America.[27] Furthermore, smoking is responsible for over 40 000 deaths (13.6% of all deaths) each year in Argentina, costing approximately 12% of all health expenses or about 1% of the Gross National Product.[28]

The 2013 National Tobacco Control Law adopted a range of policies that the FCTC recommends, including comprehensive smoke-free policies and banning most tobacco advertising and promotions, including distribution of branded merchandise.[29] However, the 2013 Law allows direct marketing to those who are older than 18 (eg, through direct consumer mail advertising), as well as marketing at PoS. Indeed, PoS is perhaps the primary venue for exposing Argentine youth to direct marketing of tobacco products,[29,30] and advertisements can be as large as 30 cm by 30 cm but are not supposed to be visible from

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

outside the venue and are supposed to include a health message provided by the Ministry of Health that covers 20% of the lower part of the advertisement.

Within the Argentine context, this paper aims to assess the validity of a novel marketing receptivity index that considers PoS marketing exposures, recall of the most popular tobacco brands (when showing tobacco packages) and ownership of branded merchandise. We hypothesise that greater marketing receptivity will be associated with greater smoking involvement (susceptibility, willingness to try, positive expectancies, current use), with a stronger association found when considering current behaviour.

METHODS

Protocol and study sample

A convenience sample of 33 schools from three large cities in Argentina (ie, Buenos Aires, Córdoba, Tucumán) participated in the study (n=15, 8, 10, respectively), with public schools identified by the Ministry of Health and Ministry of Education (n=18) and private schools identified through personal contacts (n=15; 26% of Argentine students attend private schools).[31] Schools were informed of the study and cooperation solicited from school principals. Participation involved passive consent from parents or caretakers and active consent from students, allowing for follow-up using an anonymous linking procedure.[32]Surveys were administered between May and July 2014, among students enrolled in the first year of secondary school (the US equivalent of 8th grade), with 83% of enrolled students participating. Self-administered questionnaires were completed under supervision of trained research staff unaffiliated with the schools. The survey questions were mainly drawn from adolescent surveys in Argentina, Mexico and the USA[33–35] and pilot tested to ensure adequate understanding of questions, instructions and confidentiality statements. The research protocol was approved by the Human Subjects Research Board at the Centro de Educación Médica e Investigaciones Clínicas, Buenos Aires.

Measures

Marketing exposure and receptivity—We operationalised the measurement of marketing receptivity as shown in figure 1B. Adapting a question from prior research,[17] we assessed marketing exposure by asking how often students went to convenience stores (ie, kiosks) around their schools (ie, within 5 blocks of the school), along with a parallel question for stores that were not close to their schools (ie, more than 5 blocks away from their school). Responses (0=never; 1=sometimes; 2=often; 3=very often) were summed across the two questions, and scores were dichotomised into low and high exposure (ie, 1 or less vs 2 or more).

We selected the three most popular cigarette brands based on self-reported brand preferences (ie, Philip Morris=47%, Marlboro=15%, Lucky Strike=14%) among youth smokers in the 2012 GYTS.[26] Images of packages for the most popular variety for each brand family were digitally altered by removing the brand name (see figure 2). Pack images were inserted into the middle of the survey, with ordering of pack presentation, from left to right, randomised across surveys. Students were asked to write out the name of the brand, as in other research

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

on cued recall of brands that shows print ads or stills from television spots.[16] Misspelled brand names were classified as correctly recognised if the letters used clearly distinguished the brand family from others (eg, 'Marbro' 'Luky'). The number of correctly recalled brand names was summed (range 0–3). We also asked if students owned any branded merchandise, using phrasing from the GYTS (Do you have something (eg, t-shirt, pen, backpack) with a tobacco product brand logo on it?).[26]

The marketing receptivity index was derived by creating a four-level variable that progressed from marketing exposure to brand recall and ownership of branded merchandise: (1) never or sometimes visit convenience stores AND no brands recalled AND no ownership branded merchandise; (2) visit convenience stores often or very often OR recall of one pack brand AND no ownership of branded merchandise; (3) recall of two or more pack brands AND no ownership of branded merchandise; (4) ownership of branded merchandise.

Smoking susceptibility, expectancies and behaviour—Smoking susceptibility was measured using validated questions for those who did not smoke, asking their intention to smoke both during the next year and if a friend offered them a cigarette, with four response options ranging from 'definitively yes' to 'definitively no'. As in prior research,[36] participants who stated 'definitely not' to both questions were coded as 'not susceptible never-smokers' (1), and the rest were coded as 'susceptible never-smokers' (0). Five statements on smoking-related expectancies (eg, smoking is cool; smoking helps you have a good time) to which students indicated level of agreement were drawn from prior research.[37] These had high internal consistency (α=0.79) and were averaged. After the brand recall task, students were also asked to indicate which presented brand, if any, they would be willing to try, with the option to indicate that they would not try any of the brands. Non-smokers were classified as indicating that they would try a brand (1) or not (0). Finally, youth who indicated that they had smoked in the prior 30 days were classified as current smokers.

Control variables—Sociodemographic variables were also assessed, including age (12 and younger, 13, 14 and older), gender and parental education (≤7, 8–12, ≥12 years). Smoking-related variables included smoking status of parents (any smoker vs none), siblings (any smoker vs none) and five closest friends (any smoker vs none). We also included sensation seeking, which is a robust predictor of smoking behaviour, including in Latin America,[38] and has also been associated with marketing receptivity.[39]

Analysis

All analyses were conducted using STATA V.13, with bivariate and adjusted models adjusting for clustering of observations within schools. After limiting the sample to never-smokers, logistic regression models were estimated to determine correlates of (1) susceptibility to smoke, and (2) interest in trying a brand shown in the recall task; smoking-related expectancies were regressed on study variables in linear regression models among never-smokers. Next, all observations were analysed in logistic models that regressed current smoking status on study variables. Finally, smoking-related expectances were regressed on study variables among current smokers only. For each outcome, we assessed bivariate relationships, as well as independent associations in models that adjusted for covariates

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

described above. Finally, a series of sensitivity analyses were conducted, including estimation of bivariate and adjusted models for each outcome, treating the four-level index as a continuous variable. To further characterise the relative contribution of PoS and brand recognition to the index, we estimated a series of adjusted models for each outcome that included either the four-level PoS exposure variable or the four-level brand recognition variable, as well as models including both variables along with the branded merchandise variable.

RESULTS

Of all eligible students (N=3826), 45 (1.3%) had parents who refused participation, 173 (4.5%) declined participation and 436 (11%) were absent on the day of the survey. The final sample included 3172 students: 1664 from Buenos Aires, 983 from Córdoba and 525 from Tucumán (see table 1). The mean age of participants was 12.8 years (SD=0.95), 42% were female and most parents had more than 8 years of education. The prevalence of ever smokers was 21.1% (n=665), and 10% (n=314) were current smokers. Among never-smokers, 26.5% were susceptible to smoking, and 37% indicated they would try one of the presented brands.

Table 2 shows crude and adjusted ORs for the relationship between susceptibility to smoking and study variables among never-smokers. Higher scores on the marketing receptivity index were associated with significantly higher crude odds of being susceptible to smoking, including in adjusted models (ie, AOR_{2v1}=1.66, 95% CI 1.27 to 2.14; AOR_{3v1}=1.64, 95% CI 1.24 to 2.18; AOR_{4v1}=2.95, 95% CI 2.04 to 4.27). Being female; older; having greater sensation seeking tendencies; and smoking among parents, siblings and friends were also independently associated with greater likelihood of susceptibility to smoking.

Further analyses of never-smokers estimated logistic models regressing interest in trying a branded cigarette pack on study variables (see table 2). Higher marketing receptivity scores were associated with greater interest in trying a branded pack, including in adjusted models (ie, AOR_{2v1}=1.45, 95% CI 1.15 to 1.83; AOR_{3v1}=2.38, 95% CI 1.69 to 3.34; OR_{4v1}=2.20, 95% CI 1.45 to 3.35). In the adjusted model, interest in trying a branded pack was associated with having a parent who smokes, having a friend who smokes and higher sensation seeking.

Table 3 shows the results of the logistic regression analyses predicting current smoking, using the entire sample. Marketing receptivity was associated with a greater adjusted odds of being a current smoker (ie, AOR_{2v1}=2.47; AOR_{3v1}=3.16; AOR_{4v1}=3.62). Having a friend who smokes was the strongest independent predictor of current smoking status (AOR=10.50, 95% CI 6.20 to 17.70), although having a sibling who smokes and reporting higher sensation seeking were also independently associated.

Models regressing smoking-related expectancies on study variables were estimated separately for never-smokers and current smokers (see table 4). Among never-smokers, higher marketing receptivity exhibited a dose–response relationship with more positive expectancies, although the relationship was statistically significant in the adjusted model only when comparing the two highest levels with the lowest (ie, $B_{adj\ 3v1}$=0.18;

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

$B_{adj\ 4v1}$=0.34). In models among current smokers, only the contrast between the highest and lowest levels of the index was associated with more positive expectancies, and this association was not statistically significant in the adjusted model.

Sensitivity analyses

When the index was treated as a continuous variable (see online supplementary appendix tables 1A–5A), it was independently associated with outcomes in a manner that was consistent with prior analyses (ie, statistically significant, positive associations with susceptibility, willingness to try and positive expectancies among never-smokers, as well as with current smoking; unassociated with expectances among current smokers). In adjusted models for susceptibility, where PoS exposure and brand recall were analysed separately, PoS exposure has a positive, independent association with susceptibility (AOR_{1v0}=1.27, p=0.22; AOR_{2v0}=1.66, p=0.001; AOR_{3vo}=1.96, p<0.001), whereas the association with brand recall was not statistically significant. In adjusted models for willingness to try, the independent association with brand recall (AOR_{1v0}=1.96, p<0.001; AOR_{2v0}=2.22, p<0.001; AOR_{3v0}=2.74, p<0.001) appeared somewhat stronger than for PoS exposure (AOR_{1v0}=1.14, p=0.45; AOR_{2v0}=1.38, p=0.01; AOR_{3v0}=1.51, p=0.004). In adjusted models for positive expectancies among never-smokers, a similar pattern of results was found for brand recall (B_{1v0}=0.06, p=0.35; B_{2v0}=0.13, p=0.05; B_{3v0}=0.23, p=0.02) compared with PoS exposure (B_{1v0}=0.09, p=0.35; B_{2v0}=0.08, p=0.05; B_{3v0}=0.13, p=0.062). Both PoS exposure and brand recall were independently associated with current smoking, although brand recall showed a dose–response effect (AOR_{1v0}=1.42, p=0.14; AOR_{2v0}=1.49, p=0.04; AOR_{3v0}=2.34, p=0.003), whereas associations with PoS exposure were more indicative of a threshold effect (AOR_{1v0}=2.67, p=0.002; AOR_{2v0}=2.73, p<0.001; AOR_{3v0}=3.09, p<0.001). Neither variable was associated with positive expectancies among current smokers. The direction, statistical significance and point estimates were very similar in all adjusted models that included PoS exposure, brand recall and ownership of branded merchandise.

DISCUSSION

This study suggests that the marketing receptivity index is a valid measure that explains variation in smoking involvement, independent of a range of established psychosocial and social predictors of smoking initiation and progression. Construct validity was indicated by the index's independent positive associations with smoking susceptibility, positive expectancies and willingness to try a specific brand among never-smokers, as well as with a more marked dose–response association with current smoking behaviour. No independent associations were found between the marketing receptivity index and smoking-related expectancies among current smokers. This is generally consistent with the heuristic model, where the effects of marketing on expectancies should be stronger in earlier stages than in later stages of receptivity, which are characterised by greater behavioural engagement and formation of brand loyalties.[15] Indeed, questions that capture more intense engagement with marketing (eg, visiting tobacco websites) and its effects (eg, communication of brand preferences to friends) may need to be integrated into the index in order to better understand marketing effects on the progression towards addiction, when nicotine plays an increasingly important role.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

A novel feature of our study involved the masked brand recall task, similar to protocols used in studies of more traditional advertising.[1639] Variation in the index that involved contrasting recall of fewer compared with more brands (ie, levels 1 and 2) did not appear to provide additional explanatory power when assessing the outcome of smoking susceptibility, as indicated by the similar strength of association for each of these index levels compared with no receptivity (ie, AOR_{2v1}=1.66; AOR_{3v1}=1.64). Nevertheless, recall of relatively more brands had a stronger association with outcomes in models for greater engagement with smoking, whether assessing positive smoking expectancies (ie, $B_{adj\ 2v1}$=0.09; $B_{adj\ 3v1}$=0.18) or interest in trying brands (ie, AOR_{2v1}=1.45; AOR_{3v1}=2.38) among never-smokers, or when estimating associations with current smoking behaviour (ie, AOR_{2v1}=2.47; AOR_{3v1}=3.16). This pattern of results is consistent with the sensitivity analyses that assessed the relative contribution of the original four-level brand recall and PoS exposure variables. More frequent PoS exposures exhibited relatively stronger dose–response associations with susceptibility, whereas greater brand recall appeared to be a relatively stronger correlate of willingness to try and positive expectancies among never-smokers. Future research should determine whether the extent of brand recall matters for longer term smoking-related outcomes, as well as whether package-based marketing that promotes brand differentiation and appeal can be reduced by policies that limit brand variants, as in Uruguay[40] or by policies that prohibit brand imagery on packs, as in Australia.[41]

In our study, the highest level of marketing receptivity involved ownership of branded merchandise, which was generally associated with greater smoking involvement, as in prior research.[1223–25] One exception was when assessing willingness to try a brand, where it did not appear to explain any additional variance compared with greater recall of brands (AOR_{3v1}=2.38; AOR_{4v1}=2.20). This may be because of the questions on willingness to try focused on the same brands that were used in the cued recall task, whereas the branded merchandise question was general and did not refer any particular brand. In other words, recall of a specific brand should be correlated with willingness to try that same brand. Indeed, our sensitivity analyses found that the original four-level brand recall variable exhibited a dose–response relationship with this outcome, which would be expected since the brand recall task used the same brands as the willingness to try question. On the other hand, the merchandise that students possessed may or may not have used the same brand as in the recall task. No level of the index was independently associated with smoking expectancies among current smokers, which may be due to their having already initiated smoking behaviour. By contrast, the highest levels of the receptivity index had more of a dose–response relationship when predicting positive smoking expectancies (ie, $B_{adj\ 3v1}$=0.18; $B_{adj\ 4v1}$=0.34) among non-smokers, as well as when predicting smoking susceptibility (AOR_{3v1}=1.64; AOR_{4v1}=2.95) and current smoking (AOR_{3v1}=3.16; AOR_{4v1}=3.62), which were unlinked to any particular brands.

Sensation seeking and social influence variables (ie, friend, sibling and parental smoking) were consistently associated with all smoking outcomes. The only exception was the association between parental smoking and current smoking, which was no longer statistically significant in the adjusted model, where friend smoking was an extremely strong correlate (AOR=10.50). Indeed, the effects of parental smoking may matter more for smoking initiation and attenuate as peer influence becomes more important and adolescents

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

progress towards heavier smoking.[4243] Future longitudinal research should examine the potentially dynamic interplay between different social influences, psychological predispositions, such as sensation seeking, and marketing over trajectories of smoking progression. Implementation of marketing bans in many jurisdictions around the world, including comprehensive bans that cover PoS, will create opportunities to examine the role of social influence in the presence of different types and intensities of exposure to tobacco marketing, including indirect marketing and promotion of tobacco use through entertainment media.

Limitations of the study include its cross-sectional nature, and longitudinal research should be conducted to determine the predictive validity of the marketing receptivity index. Although our integration of a cued brand recall task that focuses on tobacco packaging appears to have provided a meaningful adjunct to other measures, the task was limited to only three brands, albeit brands that are preferred by three-quarters of Argentine youth who smoke. Youth brand preferences in other countries may spread across a greater variety of brands, which may require integration of more brand stimuli into the recall task. Furthermore, fully capturing marketing receptivity would likely require a more comprehensive set of questions, such as those that measure smoker identity and different types and intensities of interactivity with marketing, including detailed questions about brands on and types of merchandise owned. This would likely require studies in older samples with more smokers, including those who smoke at greater intensities. Our assessment also did not consider other tobacco products, such as waterpipe and e-cigarettes, whose marketing and use may also promote cigarette use. To date, however, combustible cigarettes remain the primary preference for Argentine youth. Future development of the marketing receptivity index may require that questions encompass other tobacco products.

Our results may not generalise to Argentine secondary school youth, because schools were not randomly selected. However, participating students were from public and private schools representing a wide range of socioeconomic status groups;[44] schools were in three large cities where 37% of Argentines live,[45] and 91% of Argentines live in urban areas.[45] Furthermore, the prevalence of tobacco use in our study was similar to nationally representative surveys such as the 2012 GYTS[26] (18% among 13 years old) and the Word School Health Survey[46] (14% among 13 years old) These data suggest that the results from our study may be broadly representative of urban Argentine middle school students.

In sum, our study provides evidence for the validity of a novel measure of marketing receptivity that integrates more established indicators with a brand recall task cued by masked tobacco packaging stimuli. Assessment of youth responses to cigarette packaging is likely to grow in importance in future marketing research, as internal tobacco industry documents indicate the increasing stress they have placed on tobacco packaging for promoting brand recognition and equity.[3] This measurement approach may be useful for future research on tobacco marketing on youth perceptions and behaviour, especially in countries where marketing is restricted to PoS, where cigarette package displays are dominant at PoS and where packaging is a fundamental vehicle for marketing.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Funding Funding for data collection, analysis and manuscript writing for this study were provided by the Fogarty International Center at NIH (grant R01 TW009274 −01).

REFERENCES

1. Borzekowski DL, Cohen JE. International reach of tobacco marketing among young children. Pediatrics 2013;132:e825–31. [PubMed: 24081996]
2. Wellman RJ, Sugarman DB, DiFranza JR, et al. The extent to which tobacco marketing and tobacco use in films contribute to children′s use of tobacco: a meta-analysis. Arch Pediatr Adolesc Med 2006;160:1285–96. [PubMed: 17146027]
3. National Cancer Institute. The role of the media in promoting and reducing tobacco use. Tobacco Control Monograph N° 19. Bethesda, MD: Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 2008. NHI publication 07–6242.
4. US Department of Health and Human Services. Preventing tobacco use among youth and young adults: a report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.
5. WHO. WHO Framework Convention on Tobacco Control. 2003 Update reprint 2004, 2005. http://www.who.int/tobacco/framework/WHO_FCTC_english.pdf
6. WHO. Status of the WHO Framework Convention on Tobacco Control (FCTC). http://www.fctc.org/images/stories/docs/ratifications/latest_ratifications.pdf (accessed Mar 2015).
7. Wakefield M, Morley C, Horan JK, et al. The cigarette pack as image: new evidence from tobacco industry documents. Tob Control 2002;11(Suppl 1):173–80. [PubMed: 12198262]
8. Henriksen L Comprehensive tobacco marketing restrictions: promotion, packaging, price and place. Tob Control 2012;21:147–53. [PubMed: 22345238]
9. Lovato C, Watts A, Stead LF, et al. Impact of tobacco advertising and promotion on increasing adolescent smoking behaviors. Cochrane Database Syst Rev 2011;(5): CD003439. [PubMed: 21975739]
10. Pierce JP, White VM, Emery SL. What public health strategies are needed to reduce smoking initiation? Tob Control 2012;21:258–64. [PubMed: 22345263]
11. Evans N, Farkas A, Gilpin E, et al. Influence of tobacco marketing and exposure to smokers on adolescent susceptibility to smoking. J Nat Cancer Inst 1995;87:1538–45. [PubMed: 7563188]
12. Pierce JP, Choi WS, Gilpin EA, et al. Tobacco industry promotion of cigarettes and adolescent smoking. JAMA 1998;279:511–15. [PubMed: 9480360]
13. DiFranza JR, Wellman RJ, Sargent JD, et al. Tobacco promotion and the initiation of tobacco use: assessing the evidence for causality. Pediatrics 2006;117:e1237–48. [PubMed: 16740823]
14. Barry TE, Howard DJ. A review and critique of the hierarchy of effects in advertising. Int J Advert 1990;9:121–35.
15. McClure AC, Stoolmiller M, Tanski SE, et al. Alcohol marketing receptivity, marketing-specific cognitions, and underage binge drinking. Alcohol Clin Exp Res 2013;37(Suppl 1):E404–13. [PubMed: 23256927]
16. Dauphinee AL, Doxey JR, Schleicher NC, et al. Racial differences in cigarette brand recognition and impact on youth smoking. BMC Public Health 2013;13:170. [PubMed: 23442215]
17. Feighery EC, Henriksen L, Wang Y, et al. An evaluation of four measures of adolescents′ exposure to cigarette marketing stores. Nicotine Tob Res 2006;8:751–9. [PubMed: 17132522]
18. Smith RE, Swinyard WR. Cognitive responses to advertising and trial: belief strength, belief confidence and product curiosity. J Advert 1988;17:3–14.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

19. Ray ML. Advertising and communication management. Englewood Cliffs, NJ: Prentice Hall, 1982.
20. Braun S, Mejia R, Ling P, et al. Tobacco industry targeting youth in Argentina. Tob Control 2008;17:111–17. [PubMed: 18299308]
21. Unger JB, Cruz TB, Schuster D, et al. Measuring exposure to pro- and anti-tobacco marketing among adolescents: intercorrelations among measures and associations with smoking status. J Health Commun 2001;6:11–29. [PubMed: 11317421]
22. Sargent JD, Dalton M, Beach M, et al. Effect of cigarette promotions on smoking uptake among adolescents. Prev Med 2000;30:320–7. [PubMed: 10731461]
23. Sargent JD, Dalton MA, Beach M, et al. Cigarette promotional items in public schools. Arch Pediatr Adolesc Med 1997;151:1189–96. [PubMed: 9412593]
24. Biener L, Siegel M. Tobacco marketing and adolescent smoking: more support for a causal inference. Am J Public Health 2000;90:407–11. [PubMed: 10705860]
25. Freeman B, Chapman S. Open source marketing: Camel cigarette brand marketing in the ″Web 2.0″ world. Tob Control 2009;18:212–17. [PubMed: 19211615]
26. Ministerio de Salud de la Nación. EMTJ. Encuesta Mundial de Tabaquismo en jóvenes. Argentina: 2012 http://www.msal.gov.ar/ent/index.php/vigilancia/publicaciones/encuestas-poblacionales (accessed Mar 2015).
27. Eriksen M, Mackay J, Ross H. El Atlas del tabaco. Cuarta ed. Atlanta, GA: Sociedad Americana contra el Cáncer; Nueva York, NY: Fundación Mundial del Pulmón, 2012.
28. Pichon-Riviere A, Alcaraz A, Bardach A, et al. Carga de Enfermedad atribuible al Tabaquismo en Argentina. Documento Técnico IECS N° 7. Buenos Aires, Argentina: Instituto de Efectividad Clínica y Sanitaria Mayo de, 2013.
29. Ley 26.687 Regulación de la publicidad, promoción y consumo de los productos elaborados con tabaco Boletín Oficial de la República Argentina. Buenos Aires, 14 dejunio de 2011 Año CXIX. Número 32.170. http://www.msal.gov.ar/tabaco/index.php/institucional/legislacion (accessed May 2015).
30. Decreto 602/2013 Boletín Oficial de la República Argentina. Buenos Aires, 29 de mayo de 2013 Número 32.649. Mayo, 2013. http://www.msal.gov.ar/tabaco/index.php/institucional/legislacion (accessed May 2015).
31. Botinelli L ¿Por que crece la educacion Privada? Le Monde Diplomatique. 2013;166 http://www.eldiplo.org/pdfs/el-diplo-2001380.pdf
32. Galanti MR, Siliquini R, Cuomo L, et al. Testing anonymous link procedures for follow-up of adolescents in a school-based trial: the EU-DAP pilot study. Prev Med 2007;44:174–7. [PubMed: 16979751]
33. Thrasher JF, Jackson C, Arillo-Santillán E, et al. Exposure to smoking imagery in popular films and adolescent smoking in Mexico. Am J Prev Med 2008;35:95–102. [PubMed: 18617078]
34. Dal Cin S, Worth KA, Dalton MA, et al. Youth exposure to alcohol use and brand appearances in popular contemporary movies. Addiction 2008;103:1925–32. [PubMed: 18705684]
35. Alderete E, Kaplan CP, Gregorich SE, et al. Smoking behavior and ethnicity in Jujuy, Argentina: evidence from a low-income youth sample. Subst Use Misuse 2009;44:632–46. [PubMed: 19360537]
36. Pierce JP, Choi WS, Gilpin EA, et al. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. Health Psychol 1996;15:355–61. [PubMed: 8891714]
37. Wahl SK, Turner LR, Mermelstein RJ, et al. Adolescents′ smoking expectancies: psychometric properties and prediction of behavior change. Nicotine Tob Res 2005;7:613–23. [PubMed: 16085531]
38. Thrasher JF, Sargent JD, Huang L, et al. Does exposure to smoking in films promote smoking in middle-income countries? A longitudinal study among Mexican adolescents. Cancer Epidemiol Biomarkers Prev 2009;18:3444–50. [PubMed: 19959694]
39. Henriksen L, Feighery EC, Schleicher NC, et al. Receptivity to alcohol marketing predicts initiation of alcohol use. J Adolesc Health 2008;42:28–35. [PubMed: 18155027]
40. Gravely S, Fong GT, Driezen P, et al. The impact of the 2009/2010 enhancement of cigarette health warning labels in Uruguay: longitudinal findings from the International Tobacco Control (ITC)

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Uruguay Survey. Tob Control Published Online First: 15 12 2014. doi:10.1136/tobaccocontrol-2014-051742

41. White V, Williams T, Wakefield M. Has the introduction of plain packaging with larger graphic health warnings changed adolescents′ perceptions of cigarette packs and brands? Tob Control 2015;24:ii42–9. [PubMed: 28407611]
42. Kelly AB, O′Flaherty M, Connor JP, et al. The influence of parents, siblings and peers on pre- and early-teen smoking: a multilevel model. Drug Alcohol Rev 2011;30:381–7. [PubMed: 21355905]
43. Scalici F, Schulz PJ. Influence of perceived parent and peer endorsement on adolescent smoking intentions: parents have more say, but their influence wanes as kids get older. PLoS ONE 2014;9:e101275. [PubMed: 24991921]
44. Linetzky B, Mejia R, Ferrante D, et al. Socioeconomic status and tobacco consumption among adolescents: a multilevel analysis of Argentina′s Global Youth Tobacco Survey. Nicotine Tob Res 2012;14:1092–9. [PubMed: 22394595]
45. Argentina. Instituto Nacional de Estadística y Censos. Censo nacional de población, hogaresy viviendas 2010: censo del Bicentenario: resultados definitivos, Serie B n° 2. 1a edn. Buenos Aires: Instituto Nacional de Estadística y Censos—INDEC, 2012 http://www.censo2010.indec.gov.ar/index_cuadros_2.asp
46. Ministerio de Salud de la Nación. 2da encuesta mundial de salud escolar. Argentina, 2012 http://www.msal.gov.ar/ent/index.php/vigilancia/publicaciones/encuestas-poblacionales (accessed May 2015).

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

What this paper adds

- Many studies have found a relationship between marketing receptivity and youth involvement with smoking but none have included brand recognition of masked cigarette packages when assessing marketing receptivity.
- We assessed whether a novel marketing receptivity index that considers PoS marketing exposures, tobacco brand recall and ownership of branded merchandise was associated with smoking involvement among Argentinean youth.
- The index was positively associated with smoking susceptibility, positive expectancies and willingness to try a specific brand among never-smokers and current smoking behaviour.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

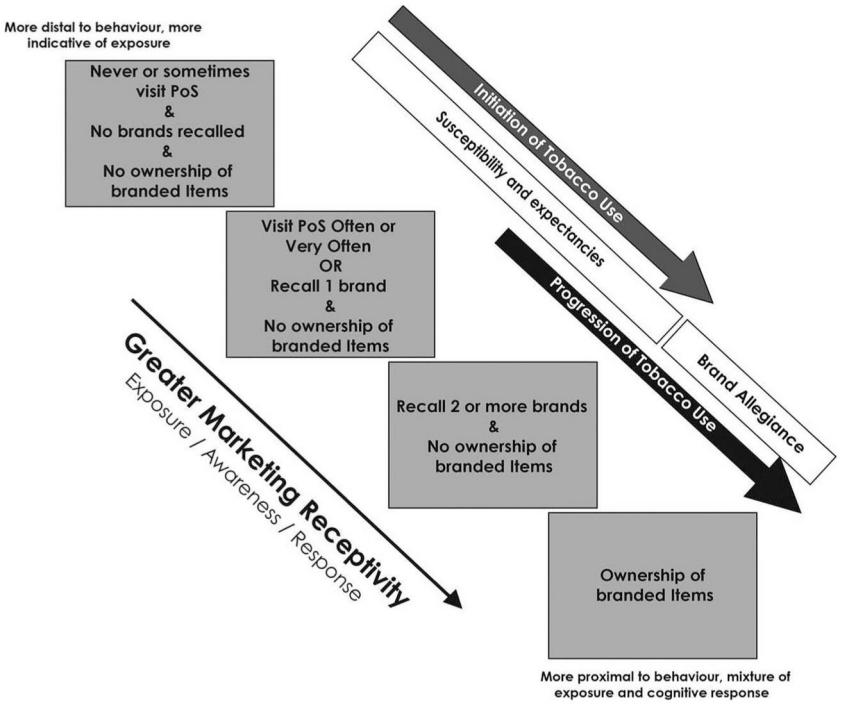

Figure 1.
Operationalisation of the marketing receptivity model (PoS, point of sale).

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Figure 2.
Unbranded packages used for the brand recognition task.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1

Characteristics of the sample of Argentine secondary school students

Variable	Total (n=3172) n (%)
Gender	
Female	1335 (42.4)
Age (years)	
≤12	1341 (42.3)
13	1170 (36.9)
≥14	658 (20.8)
Parental education (years)	
≤7	204 (7.4)
8–12	1265 (46.1)
≥12	1275 (46.5)
Household and peer smoking	
Either parent smokes	1334 (42.1)
Any sibling smokes	459 (14.5)
One or more best friends smoke	1350 (42.8)
Personal smoking involvement	
Never-smoker, not susceptible	1537 (42.4)
Never-smoker, susceptible	656 (26.5)
Tried smoking, not current	665 (21.1)
Current smoker	314 (10.0)
Frequency of visiting stores	
Never/sometimes (0–1)	1653 (53.1)
Often/very often (2–6)	1462 (46.9)
Brands correctly recalled	
None	2015 (63.5)
1 brand	534 (16.9)
2 brands	404 (12.7)
3 brands	219 (6.9)
Ownership of branded merchandise	276 (8.8)
Marketing receptivity index	
1=Not receptive	1050 (33.7)
2=High PoS exposure OR some brand awareness	1253 (40.2)
3=High brand awareness	535 (17.2)
4=Ownership of branded merchandise	276 (8.9)

PoS, point of sale.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 2

Susceptibility and willingness to try a branded pack among secondary school students who never smoked

	Susceptibility to smoke				Willingness to try a branded pack			
	OR	**(95% CI)**	**AOR**	**(95% CI)**	**OR**	**(95% CI)**	**AOR**	**(95% CI)**
Gender (ref=male)	1.21†	(1.04 to 1.41)	1.45‡	(1.23 to 1.72)	0.93	(0.78 to 1.11)	1.00	(0.80 to 1.25)
Age								
12 and younger	1		1		1		1	
13	1.34†	(1.03 to 1.73)	1.24	(0.92 to 1.68)	0.87	(0.69 to 1.09)	0.81 ‡	(0.67 to 0.99)
14 and older	1.90§	(1.40 to 2.60)	1.49	(1.01 to 2.20)	1.01	(0.76 to 1.33)	0.86	(0.63 to 1.17)
Parental education level (years)								
≤7	1		1		1		1	
8–12	0.79	(0.56 to 1.14)	0.72	(0.49 to 1.07)	1.09	(0.72 to 1.63)	0.93	(0.60 to 1.44)
≥12	0.68	(0.46 to 1.00)	0.67	(0.45 to 1.01)	1.09	(0.71 to 1.66)	0.98	(0.64 to 1.49)
Either parents smokes	1.37§	(1.15 to 1.63)	1.31 ‡	(1.07 to 1.61)	1.42§	(1.25 to 1.62)	1.23†	(1.05 to 1.43)
Any sibling smokes	1.82§	(1.44 to 2.31)	1.33†	(1.02 to 1.75)	1.64§	(1.32 to 2.05)	1.29	(0.98 to 1.70)
Any friend smokes	2.58§	(2.08 to 3.21)	2.22§	(1.69 to 2.92)	1.55§	(1.29 to 1.87)	1.56§	(1.30 to 1.88)
Sensation seeking	1.60§	(1.43 to 1.78)	1.52§	(1.33 to 1.75)	1.40§	(1.27 to 1.55)	1.30§	(1.15 to 1.47)
Marketing receptivity								
1=Not receptive	1		1		1		1	
2=High PoS exposure or some brand awareness	1.97§	(1.60 to 2.42)	1.65§	(1.27 to 2.14)	1.60§	(1.26 to 2.02)	1.45‡	(1.15 to 1.83)
3=High brand awareness	2.02§	(1.52 to 2.68)	1.64‡	(1.24 to 2.18)	2.76§	(2.00 to 3.80)	2.38§	(1.69 to 3.34)
4=Ownership of branded merchandise	4.65§	(3.47 to 6.23)	2.95§	(2.04 to 4.27)	3.07§	(2.00 to 4.71)	2.20§	(1.45 to 3.35)

† p<0.05;

‡ p<0.01;

§ p<0.001.

PoS, point of sale.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 3

Correlates of current smoking behaviour among secondary school students

	Current smoking			
	OR	**(95% CI)**	**AOR**	**(95% CI)**
Gender (ref=male)	1.16	(0.82 to 1.64)	1.41	(0.97 to 2.03)
Age				
12 and younger	1		1	
13	1.93‡	(1.28 to 2.92)	1.26	(0.81 to 1.96)
14 and older	7.47§	(5.07 to 11.0)	4.14§	(2.82 to 6.08)
Parental education level (years)				
≤7	1		1	
8–12	0.64	(0.40 to 1.04)	0.75	(0.46 to 1.21)
≥12	0.41 ‡	(0.24 to 0.68)	0.71	(0.46 to 1.08)
Either parents smokes	1.74§	(1.42 to 2.12)	1.15	(0.86 to 1.53)
Any sibling smokes	3.14§	(2.29 to 4.31)	2.04‡	(1.34 to 3.09)
Any friend smokes	17.85§	(11.01 to 28.94)	10.50§	(6.20 to 17.7)
Sensation seeking	1.85§	(1.62 to 2.10)	1.51§	(1.31 to 1.74)
Marketing receptivity				
1=Not receptive	1		1	
2=High PoS exposure or some brand awareness	2.69§	(1.90 to 3.82)	2.47§	(1.65 to 3.70)
3=High brand awareness	5.40§	(3.96 to 7.38)	3.16§	(2.09 to 4.78)
4=Ownership of branded merchandise	8.74§	(5.52 to 13.84)	3.62§	(1.92 to 6.82)

†p<0.05.

‡p<0.01.

§p<0.001.

PoS, point of sale.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 4

Correlates of higher smoking expectancies among secondary school students

	Never-smokers				Current smokers			
	B	**(SE)**	**B_{adj}**	**(SE)**	**B**	**(SE)**	**B_{adj}**	**(SE)**
Gender (ref=male)	−0.09‡	(0.03)	0.01	(0.03)	−0.09	(0.09)	−0.08	(0.14)
Age								
12 and younger	1		1		1		1	
13	0.04	(0.04)	0.01	(0.05)	0.11	(0.15)	0.01	(0.16)
14 and older	0.12	(0.07)	−0.01	(0.05)	−0.11	(0.15)	−0.17	(0.15)
Parental education level (years)								
≤7	1		1		1		1	
8–12	−0.02	(0.09)	−0.07	(0.12)	−0.17	(0.19)	−0.07	(0.18)
≥12	−0.11	(0.09)	0.15	(0.08)	−0.15	(0.21)	−0.06	(0.19)
Either parents smokes	0.20§	(0.03)	0.16§	(0.03)	0.04	(0.09)	−0.22†	(0.10)
Any sibling smokes	0.23‡	(0.07)	0.09	(0.09)	0.09	(0.10)	0.21	(0.11)
Any friend smokes	0.28§	(0.04)	0.19§	(0.04)	0.40	(0.21)	0.39	(0.23)
Sensation seeking	0.25§	(0.01)	0.21§	(0.02)	0.26§	(0.06)	0.22†	(0.08)
Marketing receptivity index								
1=Not receptive	1		1		1		1	
2=High PoS exposure or some brand awareness	0.17§	(0.04)	0.09	(0.04)	0.12	(0.18)	0.11	(0.23)
3=High brand awareness	0.36§	(0.07)	0.18‡	(0.06)	0.12	(0.20)	0.08	(0.25)
4=Ownership of branded merchandise	0.54§	(0.07)	0.34‡	(0.10)	0.40†	(0.17)	0.18	(0.19)

†p<0.05;

‡p<0.01;

§p<0.001.

PoS, point of sale.