

Title:

Tobacco marketing awareness on youth smoking susceptibility and perceived prevalence before and after an advertising ban

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Abstract

Background: The Tobacco Advertising and Promotion Act (TAPA) was implemented in the UK in 2003, although its impact on young people has not been assessed. This study assessed smoking susceptibility (intention to smoke among never smokers) and perceived prevalence across three British cross-sectional samples (aged 11 to 16) before and after the introduction of the ban. **Methods:** Three in-home surveys (n = 1078, 1121 and 1121) were conducted before (1999 and 2002) and after (2004) the implementation of the TAPA. **Results:** Significant declines in awareness of tobacco marketing and perceived prevalence occurred across the three waves. Higher levels of awareness and perceived prevalence were associated with increased susceptibility, but direct measures of susceptibility remained stable. **Conclusions:** The TAPA is successfully protecting young people in the UK from tobacco marketing and reducing perceived prevalence, both of which are linked to susceptibility. The stability of susceptibility across the three waves is probably best explained by both the partial implementation of TAPA at the final survey point and the time such effects take to emerge. The evidence from this and previous studies is, however, that, ultimately, they will appear.

Keywords: tobacco advertising, susceptibility, youth.

Introduction

Smoking represents a serious global health issue given that it has been unequivocally established that exposure to tobacco smoke causes significant mortality and morbidity.¹ Britain, like many countries, has been slow to react to the health threat posed by nicotine consumption, a delay that could have prevented millions of premature deaths.^{2,3} A significant shift in governmental policy was evidenced with the White Paper *Smoking Kills* in 1998,^{4,5} with the UK government promising to implement a series of measures with the aim of reducing smoking prevalence among both young people and adults.⁶ The optimal strategy for reducing tobacco consumption involves integrating a comprehensive tobacco advertising, promotion and sponsorship ban within a stringent tobacco control policy,⁷ which is exactly the multifaceted approach that the UK government has adopted as part of its public health strategy. The government has clearly delivered the promises made back in 1998 by ratifying, subsequently enacting and even extending upon the Framework Convention for Tobacco Control (FCTC) protocol, with a recent survey using the Tobacco Control Scale finding the UK to be the second most progressive European country in terms of tobacco control.⁸ This grading was improved to first place at the 2007 European Conference on Tobacco or Health, following the UK's recent implementation of smokefree public places legislation. However, notwithstanding these encouraging policy developments,⁹ attempting to counterbalance the tobacco industry's powerful^{10,11} and well resourced¹² marketing efforts remains a formidable task.

The UK Tobacco Advertising and Promotion Act (TAPA) of 2002 has been introduced incrementally with the first three phases, the main advertising ban, a ban

on promotional activities, and a ban on sponsorship of domestic sporting events, implemented between February and July 2003. Subsequently, restrictions were placed on point of sale advertising in December 2004 and a ban on brand-sharing and international sponsorship came into effect in July 2005. The TAPA is on a par with the Tobacco Advertising Prohibition Act of Australia and the Tobacco Products Control Amendment Act of South Africa, and is more comprehensive than the Master Settlement Agreement (MSA) in the US and Tobacco Hazard Control Act in Taiwan, both of which allow advertising in magazines and place few restrictions on point of sale advertising. This study is the first to examine the impact of the TAPA on young people, and allows for identification of further changes that may be necessitated to improve upon existing policy.

Although the tobacco industry vehemently denies targeting young people,¹³ internal tobacco industry documents from the UK, US and Taiwan reveal that it does, and indeed that tobacco companies depend on the youth smoking market for their long-term survival.¹⁴⁻¹⁶ Research has consistently revealed that tobacco advertising and promotion increases the likelihood that adolescents will start to smoke, whether employing cross-sectional research,¹⁷⁻²⁴ prospective research,²⁵⁻²⁹ time series studies³⁰ or systematic reviews.³¹ The cumulative evidence indicates that there is a dose-response relationship, where greater exposure to advertising and promotion results in higher risk, even when controlling for known causative factors such as low socioeconomic status, parental and peer smoking.³²

Smoking is a paediatric disease, with onset typically occurring in adolescence.^{22,33} Given the addictive nature of nicotine subsequent quitting often proves very difficult,

for both adults and adolescents alike.^{34,35} The vulnerability of children both to tobacco advertising and to smoking makes prevention a cornerstone of tobacco control.

A particularly useful measure for calibrating the extent to which young people who have never smoked intend to smoke in the future is the concept of 'susceptibility'.^{17,21,26,36} It builds on intention to smoke, which is known to be a strong predictor of future smoking.³⁷⁻³⁹ Previous cross-sectional research has used a measure of susceptibility to assess the impact of a longstanding adban in Norway, showing a clear link between exposure to tobacco marketing and stated intentions to smoke when older.⁴⁰ However, this study, which provides the foundation for the present research, assessed future smoking intentions among both smokers and never smokers (as opposed to only never smokers), which limit the findings somewhat given that recent longitudinal research has found intention to smoke to only have predictive value with never smokers.⁴¹

A further limitation, as the authors acknowledge, was that the study did not examine the interaction between susceptibility and perceived prevalence. It is well established that social influences such as peer, parental and sibling smoking increase the likelihood of smoking initiation and are strongly predictive of smoking behaviour in young people.^{21,42-48} For adolescents, peers, in particular, have a profound influence on tobacco consumption^{23,49} and also a range of potentially addictive behaviours such as drug use,⁵⁰⁻⁵³ alcohol use^{54,55} and gambling behaviour.^{56,57} Peers represent such a strong influence that young people who simply overestimate the prevalence of smoking among their peers, as with other health risk behaviours such as alcohol and drug use, are more likely to engage in these behaviours as a result of these erroneous

beliefs.⁵⁸⁻⁶² Although less well researched, the same appears to apply to susceptible never smokers; the Global Youth Tobacco Survey (GYTS) shows them to have elevated rates of perceived smoking prevalence.²³ This study also found that susceptible never smokers were more involved with tobacco marketing, although this was assessed using only a single item and therefore needs further research.

Our study builds on Braverman and Aaro's study and extends it in two ways. First, it includes a measure of perceived prevalence as well as future intentions to provide a more descriptive measure of susceptibility. Second, the study design comprised surveys before and after the UK adban came into place. Although these are cross sectional, this still gives an indication of the effects an adban can have on the crucial measure of susceptibility.

Methods

Design

Data comes from the first three waves of a long-term study examining the impact of the TAPA on young people. The first wave was conducted in Autumn 1999 (more than three years before the ban), the second in Summer 2002 (approximately six months before the ban) and the third in Summer 2004 (approximately eighteen months after the ban). The fieldwork comprised face-to-face interviews conducted in-home, by professional interviewers, accompanied by a self-completion questionnaire to gather more sensitive data on smoking behaviour. Parental permission and participant consent were secured prior to each interview.

Sample

At each wave, a cross-sectional sample of 11 to 16 year olds was drawn from households across the UK, using random location quota sampling. The initial sampling involved a random selection of 92 electoral wards (88 at wave 1), stratified by Government Office Region and ACORN classification (a geo-demographic classification system that describes demographic and lifestyle profiles of small geographic areas) to ensure coverage of a range of geographic areas and socio-demographic backgrounds. All wards covering the islands, areas north of the Caledonian Canal, or with fewer than 3 urban/sub-urban Enumeration Districts, were excluded from the sampling frame for cost and practicality reasons. Within each of the selected 92 wards a quota sample, balanced across gender and age groups, was obtained. A total of 1078 adolescents participated in wave 1 (W1), 1121 in wave 2 (W2) and 1121 in wave 3 (W3), with our main analyses concentrating on the 1814 never smokers. Table 1 details the characteristics of participants at each survey wave.

TABLE 1: Participant characteristics Waves 1- 3

Measures

General information: Age, gender, social class (occupation of breadwinner) and smoking by mother, father, siblings (if any) and close friends was obtained.

Smoking susceptibility: Never smokers were those who indicated that they had never tried or experimented with smoking, not even a few puffs. Never smokers were further classified as susceptible or nonsusceptible on the basis of their response to the item ‘Which of these best describes whether or not you think you will be smoking cigarettes when you are 18 years old?’ with the response categories; when I’m 18, I

definitely will not be smoking, I probably will not be smoking, I probably will be smoking and I definitely will be smoking. In keeping with previous research,^{[21-23](#), [26,63](#)} nonsusceptible never smokers were those who indicated that they would ‘definitely not’ smoke in the future, with susceptible never smokers those whose response was anything other than definitely not.

Awareness of Tobacco Marketing: Awareness of three broad types of tobacco marketing was assessed: (i) advertising (ii) promotions and (iii) sponsorship (sports/events/shows). For advertising and promotions participants were given a series of 17 cards with examples of different forms of tobacco marketing (see Table 2) and asked to indicate whether or not they had come across cigarettes being marketed in each of these ways. For sponsorship, participants were asked if they could think of any sports or games that are sponsored by or connected with any makes or brands of cigarettes. The number of channels through which participants had noticed marketing was calculated by counting the number of positive responses for each of the 18 channels listed in table 2.

Table 2: Measures of awareness of specific marketing channels

Perception of perceived prevalence: Perceived prevalence of peer smoking was assessed using the item: ‘How many 15 year olds do you think smoke at least one cigarette a week?’ measured on a 7-point scale: none, very few, a few, about half, most, almost all and all. Responses were also dichotomised into ‘overestimated’ and ‘not overestimated’ to allow comparison of those overestimating prevalence at each wave. The nearest ‘correct’ answer would be ‘very few’ or ‘a few’, given that 20% of 15 year olds in this study were regular smokers. To allow comparison of those

overestimating prevalence at each wave responses of ‘about half’ or more were coded as ‘overestimated’.

Statistical Analysis

Data were analysed using SPSS Version 13. Percentages were weighted for age, gender and social class to adjust for slight differences in sample profiles between survey waves. All multivariate analyses were conducted on unweighted data. Logistic regression was used to determine whether any changes occurred, post-ban, in 1) awareness of specific marketing channels, 2) the proportion who overestimated smoking prevalence for 15 year olds, and 3) the proportion of susceptible never smokers. The logistic regression also examined whether any relationship existed between susceptibility and 1) overall tobacco marketing awareness, and 2) perceptions of smoking prevalence among 15 year olds. Multiple regression was used to determine changes across survey waves in 1) the number of channels through which never smokers could recall tobacco marketing and 2) never smokers’ perceptions of smoking prevalence among 15 year olds.

Sixteen separate logistic regression models were run with awareness of each tobacco marketing channel as the dependent variable, controlling for age, gender, social class, parental smoking, sibling smoking, close friend smoking, parental presence during the interview and survey wave. Changes in awareness of marketing among never smokers were examined at W3 (post-ban) relative to W2 (recent pre-ban) and also between the two baseline waves (W1 relative to W2).

Results

After excluding cases missing information for smoking status ($N = 46$), it was found that 56% ($N=1876$) were never smokers. Among these 1876 never smokers, 1814 (97%) provided information on intentions to smoke, with 76% categorised as nonsusceptible and 24% susceptible (see Table 1).

Awareness of tobacco marketing

Awareness of any form of tobacco marketing decreased from a high of 94% at W1 to 76% by W3 (see Table 3). The average number of channels encountered decreased from 4.16 at W1 to 2.35 at W3. Multiple regression analysis showed a negative effect post-ban, relative to W2, on the number of channels encountered ($p < 0.001$, Adjusted R square = .140), when controlling for demographics, smoking related measures and parental presence ($F_{7,1890} = 45.039$, $p < 0.001$, Adjusted R square = .140). In terms of awareness of specific tobacco marketing channels, those with awareness levels below 10% are not presented in Table 3 but are included in the analysis. Prior to the ban the most salient channel was posters/billboards, closely followed by store/shopfront. Following the ban store/shopfront, which had yet to be regulated, became the most salient channel.

TABLE 3: Awareness of Tobacco Marketing and Proportion Overestimating Smoking Prevalence

Awareness decreased across all channels between W1 and W2. Between W2 and W3, awareness decreased in newly regulated channels – posters/billboards, free gifts and special price. Despite regulation, awareness of press advertising did not show a decrease beyond W2. Reductions were seen for some of the channels that had yet to

be regulated. For example, sponsorship and tobacco marketing in store, on which regulation was imminent, decreased from W1 onwards. Awareness of branded clothing, famous people smoking and new pack design, which had not been subject to any new regulation, did not show any reduction beyond W2.

Perceived prevalence of smoking and relationship with tobacco marketing awareness

Multiple regression, comparing W3, post-ban with W2, pre-ban, found that perceived prevalence decreased following the ban ($F_{7,1707} = 26.391$, $p < 0.001$, Adjusted R square = .094, $\beta = -.088$), see Table 3. Perceived prevalence was also positively related to any close friends smoking, either parent smoking, age, lower social class and number of channels through which participants had encountered tobacco marketing. Overall, participants ‘overestimated’ prevalence decreased post-ban (see Table 3). For each additional channel encountered, likelihood of overestimating increased by 19%.

Susceptibility and association with perceived prevalence and tobacco marketing

Logistic regression analysis examined the relationship between susceptibility as the dependent variable and overall tobacco marketing awareness, perceived prevalence of 15 year olds and survey stage, after controlling for demographic, smoking related variables and parental presence (see Table 4). The analysis was run on 1709 (unweighted) never smokers who had provided data on all the necessary independent variables. Susceptibility did not decrease post-ban but it was positively related to the number of channels through which participants encountered tobacco marketing and to their perceptions of the prevalence of smoking. For each additional form of tobacco marketing that never smokers were aware of, their odds of being susceptible increased

by 7%. Compared to never smokers who perceived that ‘very few or none’ 15 year olds smoke, those who perceived ‘a few smoke’ were more than twice as likely to be susceptible (Adjusted OR = 2.14) and those who perceived ‘about half to all smoke’ were more than 2.5 times as likely to be susceptible (Adjusted OR = 2.59).

Susceptibility was also positively related to having any siblings who smoke (Adjusted OR = 1.96) and being female (Adjusted OR = 1.53). It was negatively related to age (Adjusted OR = 0.90), indicating that likelihood of being susceptible lessened as never smokers aged.

TABLE 4: Logistic regression of susceptibility to smoke

Discussion

The linear decrease in awareness across the three survey waves shows that the TAPA has fulfilled its primary purpose of protecting young people from tobacco marketing. It also complements the findings of research with British adults, which shows similar declines in pre- and post-ban awareness.⁶⁴ The effects of the legislation are further demonstrated by the fact that marketing activities not subject to regulation (e.g. new pack designs, cigarette logos on clothing and famous people smoking on TV or films) saw no reduction in awareness following implementation. Although there was a slight drop in awareness between the two pre-ban surveys, this is probably explained by reductions in marketing expenditure in anticipation of the impending ban, which was unexpectedly delayed.⁶⁵

Following the TAPA there has also been a significant drop in the perceived prevalence smoking. This study shows that these achievements are important because

both tobacco marketing awareness and perceived prevalence are, in turn, linked to susceptibility and thus to the onset of smoking. Previous experimental research has indicated that increased tobacco marketing exposure is associated with elevated levels of perceived prevalence.⁶⁶ Cross-sectional research has highlighted the relationship between these two variables and also their predictive value on both current tobacco use⁶⁷ and susceptibility.²³ Our research, looking at a much broader range of tobacco marketing, supports the conclusion that awareness influences smoking susceptibility via peer norms.⁶⁸

Importantly it also shows that each additional form of tobacco marketing that never smokers were aware of leads to a 7% increase in susceptibility. This finding adds to previous research in Norway where, despite a longstanding comprehensive tobacco-advertising ban, even limited marketing exposure was found to play a potent role in future smoking intentions.⁴⁰

We found that 24% of never smokers were classified as susceptible, which is within the 20 to 50% range of previous research.^{21,22,69} The fact that susceptibility did not decrease significantly from waves 1 to 3, even though awareness of tobacco marketing and perceived prevalence did, may be explained in two ways. Firstly, at the time of the third wave the ban was still not fully implemented: whilst most promotion had gone, point of sale (POS) advertising and international sponsorship still had to be restricted. It is well established that steeper declines in smoking result from more comprehensive bans, because marketing resources can be diverted to legal media.^{70,71} The powerful influence of POS advertising is demonstrated by the National Institute on Drug Abuse's Monitoring the Future survey showing that smoking initiation

increased by 8% for each form of it that never smokers could recall;²⁴ very similar to our results. Secondly, it is likely that any decline in smoking susceptibility, as with smoking, will occur gradually. For example, following ad bans in Norway, France, New Zealand and Finland rates of adult, and to a lesser extent youth, smoking dropped considerably over time,⁷ with the lowest reduction found in France, where the legislation was most recent. It may therefore be that the third survey occurred too recently after the legislation to detect any changes, which the reductions in both marketing awareness and perceived prevalence suggest, will eventually result.

The research has two important policy implications. It confirms that ad bans are a valuable tobacco control tool because they reduce perceived prevalence among young people, thereby helping to denormalise tobacco. In the longer term this will result in reduced susceptibility and uptake. It also confirms the need for controls on tobacco advertising and promotion to be comprehensive. Even after the UK ban had been substantially implemented, although tobacco marketing was significantly less prominent, three quarters of UK children were still aware of it. Complete implementation may reduce this a little further, especially once POS advertising is controlled, but it will remain pervasive. This is because tobacco marketing goes beyond overt communication efforts and takes in all forms of marketing, including product design, distribution and pricing. This problem is illustrated with POS activity. In the UK, in-shop advertising has now been limited to one A5 panel, but the display of product remains unrestricted. The fact that product display acts as a form of marketing is being completely overlooked.

This undermines the wisdom of the FCTC's very broad definition of tobacco marketing as '*any form of commercial communication, recommendation or action with the aim, effect or likely effect of promoting a tobacco product or tobacco use either directly or indirectly*'. It provides an invaluable opportunity to tackle all the tobacco industry's marketing activities, and our study confirms that the tobacco control community should seize it.

Study limitations

Cross-sectional studies cannot make deductions about causality; for this a longitudinal design is needed. However two problems discouraged the research team from adopting this approach. First of all is sample attrition, where even with modest drop rates can have a problematic effect on the data⁷² and limit the generalisability of the findings.^{28,73} Second, with an adolescent sample such as ours, increasing age means that respondents rapidly outgrow the study. This is a particular problem in this case, because the research aims to provide a long-term monitor of the impact of the TAPA (and other tobacco control policies) on young people, and is set to continue until at least 2012. It is the only study in the UK – and as far as we can ascertain anywhere in the world - that will provide this type of sustained feedback.

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Conflict of interest statement: None declared.

Key points

- The UK Tobacco Advertising and Promotion ban has led to a reduction in both perceived prevalence and tobacco marketing awareness among young people, but not susceptibility
- Findings indicate that each form of tobacco marketing that young people are aware of leads to a 7% increase in susceptibility
- This study adds further credence to the notion that partial tobacco advertising bans are ineffective, with awareness of unregulated tobacco marketing such as point of sale very high

References

1. World Health Organisation. WHO Framework Convention on Tobacco Control. (2005) World Health Organisation: Geneva.
2. Pollock D. Denial & Delay: The Political History of Smoking and Health, 1951-1964: Scientists, Government and Industry as seen in the papers at the Public Records Office (1999). London: Action on Smoking and Health.
3. World Health Organisation. The World Health Report 2003: Shaping the Future (2003). World Health Organisation: Geneva.

4. McVey D, Stapleton J. Can anti-smoking television advertising affect smoking behaviour? Controlled trial of the Health Education Authority for England's anti-smoking TV campaign. *Tob Control* (2000) 9:273-282.
5. Cairney P. A 'Multiple Lens' approach to policy change: The case of tobacco policy in the UK. *Br Politics* (2007) 2:45-68.
6. Department of Health. Smoking kills - a White Paper on tobacco (1998). London: Stationery Office.
7. Joossens L. The effectiveness of banning advertising for tobacco products (2000). Brussels: International Union Against Cancer.
8. Joossens L, Raw M. The Tobacco Control Scale: A new scale to measure country activity. *Tob Control* (2006) 15:247-253.
9. Smoking Prevention Working Group. Towards a future without tobacco (2006). Scottish Executive: Edinburgh.
10. Anderson S, Hastings G, MacFadyen L. Strategic marketing in the UK tobacco industry. *Lancet Oncology* (2002) 3:481-486.
11. Kotler P, Roberto N, Lee N. Social marketing: Improving the quality of life (2nd Ed) (2002). Sage Publications: Thousand Oaks.

12. Datamonitor. Tobacco in the UK to 2011 (2007).
13. Healton C, Farrelly MC, Weitzenkamp D, et al. Youth smoking prevention and tobacco industry revenue. *Tob Control* (2006) 15:103-106.
14. Hastings G, MacFadyen L. A day in the life of an advertising man: Review of internal documents from the UK tobacco industry's principal advertising agencies. *Br Med J* (2000) 321:366 –371.
15. Cummings KM, Morley CP, Horan JK, et al. Marketing to America's youth: Evidence from corporate documents. *Tob Control* (2002) 11(suppl I):i5-17.
16. Wen CP, Chen T, Tsai Y-Y, et al. Are marketing campaigns in Taiwan by foreign tobacco companies targeting young smokers? *Tob Control* (2005) 14:i38-i44.
17. Evans N, Farkas A, Gilpin EA, et al. Influence of tobacco marketing and exposure to smokers on adolescent susceptibility to smoking. *J Nat Cancer Inst* (1995) 87:1538-1545.
18. Gilpin EA, Pierce JP, Rosbrook B. Are adolescents receptive to current sales promotion practices of the tobacco industry? *Prev Med* (1997) 26:14-21.
19. Feighery E, Borzekowski DL, Schooler C, Flora J. Seeing, wanting, owning: The relationship between receptivity to tobacco marketing and smoking susceptibility in young people. *Tob Control* (1998) 7:123-128.

20. Lam T, Chung S, Betson C, et al. Tobacco advertisements: One of the strongest risk factors for smoking in Hong Kong students. *Am J Prev Med* (1998) 14:217–223.
21. Kaufman NJ, Castrucci BC, Mowery PD, et al. Predictors of change on the smoking uptake continuum among adolescents. *Arch Pediatr Adolesc Med* (2002) 156:581–587.
22. Mowery PD, Farrelly MC, Havilland LM, et al. Progression to established smoking among US youths. *Am J Public Health* (2004) 94:331-338.
23. Ertas N. Factors associated with stages of cigarette smoking among Turkish youth. *Eur J Public Health* (2007) 17:155-161.
24. Slater SJ, Chaloupka FJ, Wakefield M, et al. The impact of retail cigarette marketing prices on youth smoking uptake. *Arch Pediatr Adolesc Med* (2007) 161:440-445.
25. Aitken PP, Eadie DR, Hastings GB, Haywood AJ. Predisposing effects of cigarette advertising on children's intentions to smoke when older. *Br J Addict* (1991) 86:383-390.
26. Pierce JP, Choi WS, Gilpin EA, et al. Tobacco industry promotion of cigarettes and adolescent smoking. *JAMA* (1998) 279:511-515.

27. Biener L, Siegel M. Tobacco marketing and adolescent smoking: More support for a causal inference. *Am J Public Health* (2000) 90:407-411.
28. Audrain-McGovern J, Rodriguez D, Tercyak KP, et al. Identifying and characterizing adolescent smoking trajectories. *Cancer Epidemiol Biomarkers Prev* (2004) 13:2023-2034.
29. Gilpin EA, White MM, Messer K, Pierce, JP. Receptivity to Tobacco Advertising and Promotions Among Young Adolescents as a Predictor of Established Smoking in Young Adulthood. *Am J Public Health* (2007) 97:1489-1495.
30. Pierce JP, Gilpin EA. A historical analysis of tobacco marketing and the uptake of smoking by youth in the United States: 1890-1977. *Health Psychology* (1995) 14:500-508.
31. Lovato C, Linn G, Stead LF, Best A. Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours. *Cochrane Database Syst Rev* (2003) 3:CD003439.
32. DiFranza JR, Wellman RJ, Sargent JD, W et al. Tobacco promotion and the initiation of tobacco use: Assessing the evidence for causality. *Pediatrics* (2006) 117:e1237-e1248.
33. Prokhorov AV, Winickoff JP, Ahluwalia JS, et al. Youth tobacco use: A global perspective for child health care clinicians. *Pediatrics* (2006) 118:e890-e903.

34. Schroeder SA. What to do with a patient who smokes. *JAMA* (2005) 294:482-487.
35. Molyneux A, Lewis S, Coleman T, et al. Designing smoking cessation services for school-age smokers: A survey and qualitative study. *Nic Tob Res* (2006) 8:539-546.
36. Jackson C. Cognitive susceptibility to smoking and initiation of smoking during childhood: A longitudinal study. *Prev Med* (1998) 27:129-134.
37. McNeil AD, Jarvis MJ, Stapleton JA, et al. Prospective study of factors predicting uptake of smoking in adolescents. *J Epidemiol Community Health* (1988) 43:72-78.
38. Kaplan CP, Napoles SA, Stewart SL, Perez-Stable EJ. Smoking acquisition among adolescents and young Latinas: The role of socio-environmental factors. *Addict Behav* (2001) 26:531-550.
39. Morello P, Duggan A, Adger H, et al. Tobacco use among high school students in Buenos Aires, Argentina. *Am J Public Health* (2001) 91:2219-224.
40. Braverman MT, Aaro LE. Adolescent smoking and exposure to tobacco marketing under a tobacco advertising ban: Findings from 2 Norwegian samples. *Am J Public Health* (2004) 94:1230-1238.

41. Stanton WR, Barnett AG, Silva PA. Adolescents' intentions to smoke as a predictor of smoking. *Prev Med* (2005) 40:221-226.
42. O'Loughlin J, Paradis G, Renaud L, Gomez LS. One-year predictors of smoking initiation and of continued smoking among elementary schoolchildren in multiethnic, low-income, inner-city neighbourhoods. *Tob Control* (1998) 7:268-275.
43. Strong CA, Eftychia S. The influence of family and friends on teenage smoking in Greece: Some preliminary findings. *Marketing Intelligence and Planning* (2006) 24:119-126.
44. Picotte DM, Strong DR, Abrantes AM, et al. Family and peer influences on tobacco use among adolescents with psychiatric disorders. *J Nerv Ment Dis* (2006) 194:518-523.
45. Dijk F, de Nooijer J, Heinrich E, de Vries H. Adolescents' views on smoking, quitting and health education. *Health Education* (2007) 107:114-125.
46. Scragg R, Laugesen M. Influence of smoking by family and best friend on adolescent tobacco smoking: Results from the 2002 New Zealand national survey of Year 10 students. *Aust N Z J Public Health* (2007) 31:217-233.
47. Tyas SL, Penderson LL. Psychosocial factors related to adolescent smoking: A critical review of the literature. *Tob Control* (1998) 7:409-420.

48. Mercken L, Candel M, Willems P, de Vries H. Disentangling social selection and social influence effects on adolescent smoking: The importance of reciprocity in friendships. *Addiction* (2007) 102:1483-1492.
49. Kobus K. Peers and adolescent smoking. *Addiction* (2003) 98:37-55.
50. Bahr SJ, Hoffmann JP, Yang X. Parental and peer influences on the risk of adolescent drug use. *J Prim Prev* (2005) 26:529-551.
51. Hwang S, Akers RL. Parental and peer influences on adolescent drug use in Korea. *Asian J Crim* (2006) 1:51-69.
52. Ennett ST, Bauman KE, Hussong A, et al. The peer context of adolescent substance use: Findings from social network analysis. *J Res Adolesc* (2006) 16:159-186.
53. Frisher M, Crome I, Macleod J, et al. Predictive factors for illicit drug use among young people: A literature review. Home Office Online Report (2005). Retrieved 19th August 2007: www.homeoffice.gov.uk/rds/pdfs07/rdsolr0507.pdf
54. Sher KJ, Grekin ER, Williams NA. The development of alcohol use disorders. *Ann Rev Clin Psych* (2005) 1:493-523.
55. Duncan SC, Duncan TE, Strycker LA. A cohort-sequential latent growth model. *Drug Alc Dep* (2006) 81:71-81.

56. Derevensky JL, Gupta R. Adolescents with gambling problems: A synopsis of our current knowledge. *eGambling* (2004) 10. Available:
www.camh.net/egambling/issue10/ejgi_10_derevensky_gupta.html
57. Moodie C, Finnigan F. Prevalence and correlates of youth gambling in Scotland. *Addict Res Theory* (2006) 14:365-385.
58. Simons-Morton BG. Prospective analysis of peer and parents influence on smoking initiation among early adolescents. *Prev Sci* (2002) 3:275-283.
59. Rimal RN, Real K. Understanding the influence of perceived norms on behaviours. *Comm Theory. Intern Comm Assoc* (2003) 13:184-203.
60. Callas PW, Flynn BS, Worden JK. Potentially modifiable psychosocial factors associated with alcohol use during early adolescence. *Addict Behav* (2004) 29:1503-1515.
61. Hastings GB. *Social marketing: Why should the devil have all the best tunes* (2007) Elsevier: Oxford.
62. Juvonen SC, Martino PL, Ellickson DL. "But Others Do It!": Do misperceptions of schoolmate alcohol and marijuana use predict subsequent drug use among young adolescents? *J App Soc Psychol* (2007) 37:740-758.

63. Wakefield M, Klosa DD, O'Malley P M, et al. The role of smoking intentions in predicting future smoking among youth: findings from Monitoring the Future data. *Addiction* (2004) 99:914-922.
64. Harris F, MacKintosh AM, Anderson S, et al. Effects of the 2003 advertising/promotion ban in the United Kingdom on awareness of tobacco marketing: Findings from the International Tobacco Control (ITC) four country survey. *Tob Control* (2006) 15(Suppl.III):iii26-iii33.
65. Elliot C, Lenton P. Advertising and product launch strategies in the light of tobacco advertising legislation. *International J Advertising* (2005) 24:527-37.
66. Wakefield M, Germain D, Durkin S, Henriksen S. An experimental study of effects on schoolchildren of exposure to point-of-sale cigarette advertising and pack displays. *Health Educ Res* (2006) 21:338-347.
67. Stigler MH, Perry CL, Arora M, Reddy KS. Why are urban Indian 6th graders using more tobacco than 8th graders? Findings from Project MYTRI. *Tob Control* (2006) 15(suppl1):i54-i60.
68. Gunther AC, Bolt D, Borzekowski DLG, et al. Presumed influence on peer norms: How mass media indirectly affect adolescent smoking. *J Communication* (2006) 56:52-68.
69. Borzekowski DLG, Gunther AC. The presumed influence model: Linking social and media perceptions with youth smoking susceptibility. *J Adolesc Health* (2004) 34:153.

70. Saffer H, Chaloupka F. Tobacco advertising: Economic theory and international evidence. *J Health Economics* (2000) 19:1117-1137.

71. Lantz PM, Jacobson PD, Warner KE, et al. Investing in youth tobacco control: A review of smoking prevention and control strategies. *Tob Control* (2000) 9:47-63.

72. Brame R, Piquero AR. Selective attrition and the age-crime relationship. *J Quant Crim* (2003) 19:107-127.

73. Jaffe ML. *Adolescence* (1998) New York: John Wiley & Sons, Inc.

TABLE 1: Participant characteristics Waves 1- 3

Variable	NEVER SMOKERS AT WAVES 1-3		
	Weighted		
	Never Smoker	Nonsusceptible	Susceptible
	1814	1385	429
	%	%	%
Sibling smoking			
No siblings smoke	79	82	71
Any siblings smoke	16	14	22
Don't know/not stated	5	5	7
Close friends smoking			
Most do not smoke	80	82	76
Majority smoke	8	8	9
Don't know/not stated	12	11	15
Parental smoking			
Neither parent smokes	49	52	42
Only Dad smokes	12	12	13
Only Mum smokes	10	10	11
Both parents smoke	18	17	21
Not sure/not stated/no mum, no dad	11	10	14
Gender			
Male	51	53	45
Female	49	47	55
Age			
11-12	44	44	46

13-14	32	30	36
15-16	24	26	18
Social Class			
ABC1	40	40	41
C2DE	60	60	59
Survey Wave			
W1 - 1999 - Pre-ban	31	29	35
W2 - 2002 - Pre-ban	35	36	34
W3 - 2004 - Post-ban	34	35	31

Data were weighted by age, gender and social class to standardise across the three survey waves.

TABLE 2: Measures of awareness of specific tobacco marketing channels

Adverts	
1	Adverts for cigarettes on large posters or billboards in the street
2	Adverts for cigarettes in newspapers or magazines
3	Signs or posters about cigarettes in shops or on shopfronts: <i>on shop windows</i> <i>on shop doors</i> <i>on cigarette display units inside shops</i> <i>on clocks inside shops</i> <i>on staff aprons or overalls</i> <i>on signing mats inside shops</i> <i>some other signs or poster about cigarettes (in shops or on shopfronts)</i>
Promotions	
4	Free trial cigarettes being given out or offers to send away for free cigarettes
5	Free gifts from the shop keeper when people buy cigarettes
6	Free gifts when people save coupons or tokens from inside cigarette packs
7	Free gifts when people save parts of cigarette packs
8	Free gifts showing cigarette brand logos being given out at events such as concerts, festivals or sports events
9	Special price offers for cigarettes
10	Promotional mail, from cigarette companies, being delivered to people's homes
11	Clothing or other items with cigarette brand names or logos on them
12	Competitions or prize draws linked to cigarettes
13	Famous people, in films or on TV, with a particular make or brand of cigarettes
14	New pack design or size
15	Internet sites promoting cigarettes or smoking (do NOT include anti-smoking sites)
16	Email messages or mobile phone text messages promoting cigarettes or smoking (do NOT include anti-smoking messages)
17	Leaflets, notes or information inserted in cigarette packs
Sponsorship (of sports and events)	
18	Can you think of any sports or games that are sponsored by or connected with any makes or brands of cigarettes?

Can you think of any other events or shows that are sponsored by or connected with any makes or brands of cigarettes?

TABLE 3: Awareness of Tobacco Marketing and Proportion Overestimating Smoking Prevalence

Dependent Variable 1 = aware, 0 = not	Wave 1	Wave 2	Wave 3	Post-ban v Pre-ban 2002				Pre-ban 1999 v Pre-ban 2002			
	Pre-ban	Pre-ban	Post-ban	Adj	95% CI	95% CI	P	Adj	95% CI	95% CI	P
	1999	2002	2004	OR	Lower	Upper		OR	Lower	Upper	
AWARENESS OF:	%	%	%								
Any tobacco marketing	94	84	76	0.56	0.418	0.744	<0.001	3.18	2.128	4.751	<0.001
Advertisements											
Store/shopfronts	69	56	50	0.79	0.633	0.990	0.04	1.77	1.398	2.231	<0.001
Posters/billboards (R)	78	65	46	0.41	0.327	0.522	<0.001	1.85	1.438	2.388	<0.001
Newspapers/magazines (R)	46	29	27	0.88	0.688	1.131	ns	2.07	1.635	2.628	<0.001
Sponsorship	47	30	21	0.59	0.450	0.782	<0.001	2.28	1.761	2.942	<0.001
Sports sponsorship	46	28	19	0.55	0.413	0.732	<0.001	2.34	1.802	3.036	<0.001
Promotions											
Free gifts (R)	41	24	14	0.49	0.364	0.663	<0.001	2.44	1.891	3.144	<0.001
Special price (R)	36	29	18	0.55	0.417	0.715	<0.001	1.44	1.125	1.833	0.004
Branded clothing	24	14	15	1.07	0.778	1.471	ns	1.59	1.167	2.155	0.003
Famous people in films/TV	17	12	12	0.99	0.706	1.400	ns	1.74	1.266	2.386	0.001
New pack design or size	14	8	9	1.06	0.714	1.587	ns	1.86	1.285	2.679	0.001
Proportion overestimating prevalence among:											
15 year olds	79	77	69	0.69	0.522	0.907	0.008	0.85	0.635	1.140	ns

Odds Ratio (OR)

(R) indicates new regulation was introduced between wave 2 and wave 3.

Data have been weighted for age, gender and social class. Base: never smokers. Weighted base numbers for each wave range as follows: Awareness measures - Wave 1 (558-559), Wave 2 (617-618), Wave 3 (638-639), Smoking Prevalence measures – Wave 1 (507), Wave 2 (565), Wave 3 (564).

TABLE 4: Logistic regression of susceptibility to smoke

Dependent Variable: Susceptibility (1 = Susceptible, 0 = Nonsusceptible)	n 1709	Adj OR	(95% CI) Lower	(95% CI) Upper	P
Sibling smoking					
No siblings who smoke	1377	1.00			<.001
Any siblings smoke	262	1.96	1.46	2.65	<.001
Don't know/not stated	70	2.06	1.23	3.45	0.006
Close friends smoking					
Most do not smoke	1391	1.00			0.058
Majority smoke	128	1.18	0.76	1.81	0.463
Don't know/not stated	190	1.51	1.07	2.13	0.020
Parental smoking					
Neither parent smokes	857	1.00			0.012
Either	696	1.22	0.95	1.57	0.120
Not sure/not stated/no mum, no dad	156	1.80	1.21	2.67	0.003
Gender					
Male	852	1.00			<.001
Female	857	1.53	1.22	1.94	<.001
Social Class					
ABC1	718	1.00			<.001
C2DE	991	0.80	0.63	1.01	0.063
Age		0.90	0.83	0.97	0.006

Parental presence (during interview)					
Not present	526	1.00			0.003
Present all the time	814	0.75	0.57	0.99	0.042
Present some of the time	369	1.22	0.89	1.66	0.210
Number of types of tobacco marketing aware of		1.07	1.01	1.12	0.013
Perception of prevalence of smoking among 15 year olds					
Very few or none smoke	137	1.00			0.002
A few smoke	307	2.14	1.19	3.85	0.011
About half to all smoke	1265	2.59	1.51	4.44	<.001
Survey Wave					
W2 - 2002 - Pre-ban	582	1.00			0.566
W1 - 1999 - Pre-ban	564	1.16	0.87	1.54	0.315
W3 - 2004 - Post-ban	563	1.12	0.84	1.49	0.430

Odds Ratio (OR)