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The role of reported tobacco-specific media exposure on adult attitudes towards proposed policies to limit the portrayal of smoking in movies

Kelly D Blake¹, K Viswanath¹, Robert J Blendon², and Donna Vallone³

¹ Department of Society, Human Development, and Health, Harvard School of Public Health and Dana-Farber Cancer Institute Boston, Massachusetts, USA

² Department of Health Policy and Management, Harvard School of Public Health, Boston, Massachusetts, USA

³ American Legacy Foundation, Washington, DC, USA

Abstract

Objective—To assess the relative, independent contribution of reported tobacco-specific media exposure (pro-tobacco advertising, anti-tobacco advertising, and news coverage of tobacco issues) to US adults' support for policy efforts that aim to regulate the portrayal of smoking in movies.

Methods—Using the American Legacy Foundation's 2003 American Smoking and Health Survey (ASHES-2), multivariable logistic regression was used to model the predicted probability that US adults support movie-specific tobacco control policies, by reported exposure to tobacco-specific media messages, controlling for smoking status, education, income, race/ethnicity, age, sex, knowledge of the negative effects of tobacco and state.

Results—Across most outcome variables under study, findings reveal that reported exposure to tobacco-specific media messages is associated with adult attitudes towards movie-specific policy measures. Most exposure to tobacco information in the media (with the exception of pro-tobacco advertising on the internet) contributes independently to the prediction of adult support for movie-specific policies. The direction of effect follows an expected pattern, with reported exposure to anti-tobacco advertising and news coverage of tobacco predicting supportive attitudes towards movie policies, and reported exposure to pro-tobacco advertising lessening support for some movie policies, though the medium of delivery makes a difference.

Conclusion—Media campaigns to prevent tobacco use and exposure to secondhand smoke have had value beyond the intended impact of single-issue campaigns; exposure to anti-tobacco campaigns and public dialogue about the dangers of tobacco seem also to be associated with shaping perceptions of the social world related to norms about tobacco, and ideas about regulating the portrayal of smoking in movies.

INTRODUCTION

Approximately 80% of tobacco users initiate use before they are 18, and an estimated 6.4 million children younger than 18 who are living today will die prematurely as adults because

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Correspondence to Dr Kelly D Blake, 44 Binney Street, MS LW703, Boston, MA 02115, USA; kellyblake@post.harvard.edu.

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they began to smoke during adolescence.¹ The Centers for Disease Control and Prevention's National Youth Tobacco Survey reports that from 2002 to 2004, there was a lack of substantial decreases in the use of almost all tobacco products among middle and high school students, underscoring the need for strategies that are effective in preventing youth tobacco use.²

Several studies and a systematic review of the evidence examining the effects of smoking in movies showed that exposure to movie smoking makes adolescent viewers' attitudes and beliefs about smoking more favourable, and has a dose-response relation to adolescent smoking.³⁻⁶ A 2008 National Cancer Institute (NCI) report concluded that 'The total weight of evidence from cross-sectional, longitudinal, and experimental studies indicates a causal relationship between exposure to depictions of smoking in movies and youth smoking initiation'.⁷

In 1998, the tobacco industry signed the Master Settlement Agreement (MSA) with state attorneys general, prohibiting direct and indirect cigarette advertising to youths and paid product placement in movies.⁸ Despite these restrictions, tobacco use remained prevalent in movies after the MSA.⁹ Beginning in 2002, the amount of smoking in movies was greater in youth-rated (G/PG/PG-13) films than adult-rated (R) films, significantly increasing adolescent exposure to movie smoking.^{6, 10} The 2008 NCI report noted that the depiction of cigarette smoking in movies continues to be pervasive, occurring in three-quarters or more of contemporary box-office hits, and that identifiable cigarette brands appear in about one-third of movies.⁷ A 2006 study concluded that nearly all US youths aged 12-17 also were exposed to images of tobacco on television, via movie trailer advertising.¹¹

Because strong empirical evidence indicates that exposure to portrayals of smoking in movies increases adolescent smoking initiation, tobacco control advocates have suggested several regulations to limit the portrayal of smoking in movies.^{12, 13} It has been recommended that the film industry amend the movie-rating system to rate movies containing smoking as 'R', in order to reduce youth exposure and subsequent youth smoking behaviour. In addition, policies such as restricting brand identification in movies and certifying that producers and actors have not received payment for tobacco imagery have been suggested.^{3, 12} Because some studies have shown that viewing antismoking advertisements before movies with smoking seems to lessen the effects on adolescent smoking uptake, there is some support for policies requiring anti-smoking public service advertisements (PSAs) before movies which portray tobacco use.¹⁴ Little is known about factors that shape public support for, or opposition to, these proposed measures to limit the portrayal of smoking in movies.

Some studies suggest that media not only are key sources in defining the importance and relevance of health issues, but also in shaping the public's perceptions of who is responsible for public health problems and their solutions, thus 'framing' issues for the public.¹⁵⁻¹⁸ Studies have shown that the importance the public assigns to some issues correlates strongly with media exposure and media content,^{17, 19-21} and that media discourse shapes public opinion among the heavily exposed.^{22, 23} Some research has confirmed an independent contribution of tobacco-related media exposure and media content on adult attitudes towards smoke-free air policies,^{24, 25} and many studies have revealed demographic differences and heterogeneity among smokers and non-smokers in attitudes towards smoking restrictions and other tobacco policies.^{26, 27} Some research has suggested that smokers attend to tobacco messaging in the media selectively compared to non-smokers, though one national survey showed no selective attention bias to media messages about secondhand smoke.²⁵

A review of public opinion polls assessing support for tobacco control policy efforts between 1957 and 1998 showed that only one in 10 Americans thought that Hollywood and popular culture have the most influence on young smokers.²⁸ The study also showed that despite the public's complex and varied opinions across tobacco control measures, there is broad support for government actions to protect teenagers.²⁸ Similarly, a survey conducted in upper-midwestern US communities to assess public attitudes towards policy interventions to moderate the use of alcohol, tobacco and high-fat foods showed that interventions designed to protect children were most strongly endorsed.²⁹

While a plethora of public opinion studies exist to assess support for general tobacco control policies, few studies have examined support for movie-specific tobacco control measures, with the exception of some descriptive work using the Social Climate Survey of Tobacco Control.³⁰ With such limited investigation in this area, there has not been a deeper assessment of factors that shape adult opinions about policies to regulate the portrayal of smoking in movies. This study attempts to address these gaps, by assessing the relative, independent contribution of reported tobacco-specific media exposure to US adults' support for proposed movie-specific tobacco control policies.

Research questions

- Does reported tobacco-specific media exposure (represented by anti-tobacco advertising, news coverage of tobacco issues, and pro-tobacco advertising) have a role in the prediction of adult support for policy efforts to regulate the portrayal of smoking in movies?
- Are the observed effects of reported tobacco-specific media exposure on movie policy support differential for smokers and non-smokers?

METHODS

Data

This study utilises the American Smoking and Health Survey (ASHES-2), a random digit dial survey sponsored by the American Legacy Foundation. The survey was designed to produce a nationally representative sample of adults aged 18 years and older, and was conducted in two cross-sectional waves in 2002 and 2003. ASHES-2 (2003) contains 2849 completed interviews of US adults. Survey administration entailed a complex sampling design, whereby strata were formed to control sample distribution by census region, and African-Americans and Hispanics were oversampled. Analysis weights were calculated for household probability of selection and adjusted for non-response within each sampling stratum and were post-stratified to the most current census population estimates by census region, age, gender and racial/ethnic group to obtain final analysis weights. Further sampling and data collection details have been outlined elsewhere.³¹ The response rate for ASHES-2 was 27.8%. Sponsors of the study conducted an experimental analysis to test for systematic differences between responders and non-responders by demographics, smoking status and other measures. The analysis showed no evidence of differential response rates across groups, and the resultant ASHES-2 sample tracked closely with US census data.³¹ Sample characteristics are outlined in table 1.

Outcome variables: responses in support of proposed movie policies

Respondents were asked a series of questions related to proposed regulations to limit the portrayal of smoking in movies. The five dependent variables in the current study include responses in support of or opposition to requiring anti-smoking PSAs before movies that show smoking and before televised movie trailers that show smoking; regulating producers'

and actors' acceptance of money for portrayals of smoking in movies; limiting the appearance of tobacco brands and logos in movies; and requiring movies that show smoking to be rated 'R'. Outcomes were dichotomised for the purpose of logistic regression, modelling respondent probability of agreeing with proposed regulations versus disagreeing or taking a neutral stance. Unadjusted prevalence estimates for each outcome variable are presented in table 2.

Predictor variables

Key predictor variables assessed respondents' reported exposure to tobacco-specific media messages, including reported exposure to anti-tobacco advertising, news coverage of tobacco issues and pro-tobacco advertising. Exposure questions were asked only of respondents who reported at least some media exposure in the past 30 days (eg, via television, radio, newspaper, magazine or internet). Exposure to news coverage of tobacco and anti-tobacco messaging was assessed using three items that asked whether, in the past 30 days, the respondent had seen (a) news coverage of or (b) advertising about the dangers of children being around cigarette smoke, or (c) advertising related to talking to children about avoiding tobacco. Exposure to pro-tobacco messaging was assessed using three items that asked whether, in the past 30 days, the respondent had seen advertising or promotions for cigarettes or other tobacco products in (a) newspapers, (b) magazines or (c) on the internet. None of the tobacco-specific media exposure variables assessed reported exposure to information related to smoking in movies explicitly, given the lack of national communication efforts specific to this topic.

Covariates

Sociodemographic and personal characteristics of respondents were assessed and include education, income, race/ethnicity, age, sex, smoking status, knowledge of the negative effects of tobacco and state of residence. Current smokers were defined as having smoked 100 cigarettes over the lifetime and currently smoking every day or some days, former smokers were defined as having smoked 100 cigarettes over the lifetime and now not smoking at all, and never smokers were defined as not having smoked 100 cigarettes over the lifetime. To control for the potential contribution of previous knowledge of the negative effects of tobacco, respondents were asked whether they believed that smoking cigarettes has been proved to cause lung cancer.

Statistical analysis

Multivariable logistic regression was used to model the predicted probability that US adults support movie-specific tobacco control policies, by reported exposure to tobacco-specific media messages (with referent categories representing no exposure), controlling for: smoking status, education, income, race/ethnicity, age, sex, knowledge of the negative effects of tobacco and state of residence. All question predictors representing reported exposure to tobacco-specific media messages were entered into each model simultaneously, to control for their independent contribution in a media environment that is often crowded with conflicting messages. As such, each policy outcome under study employed one full model. A complete case analysis was utilised. Tests of significance were estimated at the $p < 0.05$ level. To adjust for unequal probabilities of selection due to the complex sampling design and oversampling African-Americans and Hispanics, and to adjust for potential non-response bias, individual weighting factors were applied to all estimates.

To assess the presence of effect modification by smoking status, interaction terms for each reported media exposure variable and smoking status variable (never smokers and former smokers compared to current smokers) were included in the models, to assess whether there was a statistically significant modification of the previously established measures of

association, enabling us to examine whether exposure to tobacco-specific media messages matters more for never and former smokers than for current smokers in the development of opinions about movie-specific tobacco control policies.

RESULTS

Table 3 reports ORs and 95% CIs for fitted logistic regression models that describe respondent odds of support for movie-specific tobacco control policies, by reported exposure to tobacco-specific media messages. Policy-specific findings are summarised below.

Requiring PSAs

Those who report seeing news coverage about the dangers of children being exposed to cigarette smoke and those who report seeing advertising about talking to children about smoking are significantly more likely than those not exposed to this type of tobacco-specific media messaging to think that anti-smoking PSAs should be required before movies which show smoking (ORs=1.29 and 1.34, respectively) and before movie trailers on television which show smoking (ORs=1.23 and 1.22, respectively). Policies requiring PSAs before television movie trailers also are more likely to be supported by those who report seeing anti-tobacco advertising related to the dangers of children being exposed to cigarette smoke (OR=1.26). PSA policies are not differently supported or unsupported by those who have been exposed to pro-tobacco advertising by the tobacco industry compared to those unexposed to pro-tobacco advertising.

Restricting producers' and actors' ability to profit from smoking

The majority of US adults (69%) agree that producers and actors should not be allowed to accept money for including smoking in movies; support does not vary by reported exposure to tobacco-specific media messages, except in one case. If people have seen anti-tobacco advertising about the dangers of children being exposed to cigarette smoke, they are 30% more likely than those who haven't see this type of advertising to support restrictions on producer and actor profits (OR=1.30). Exposure to news coverage of tobacco issues and purposive anti-tobacco advertising related to talking to children about smoking do not seem to differentially predict support, nor does exposure to pro-tobacco advertising in any medium.

Restricting images of cigarette brand names

Those who report having seen anti-tobacco advertising related to the dangers of kids being around cigarette smoke are almost 40% more likely to support brand name restrictions in movies than those unexposed to such anti-tobacco advertising (OR=1.39). Those who have seen pro-tobacco advertising or promotions for cigarettes have differing attitudes about brand name restrictions compared to those who have not been exposed to pro-tobacco advertising, though the direction of effect is different depending on the medium in which the pro-tobacco advertising appeared. Those who have seen ads for cigarettes in a newspaper are significantly more likely to support brand name restrictions than those who have not seen an cigarette ads in a newspaper (OR=1.35), while those who have seen ads for cigarettes in a magazine are significantly less likely to support brand name restrictions (OR=0.71) than those who have not seen cigarette advertising in magazines. Potential explanations for the observed differences by medium are presented in the discussion section of this paper.

'R' ratings

Our data reveal that, in 2003, 'R' ratings had the least public support (40%) among the movie-specific tobacco control measures we examined, and that reported media exposure indeed has a role in the prediction of attitudes towards 'R' ratings. (It should be noted that estimates of support for this measure have been reported elsewhere in more recent surveys, and show growing support for 'R' ratings among adults and among parents; in 2006, 70% of adults and ~68% of parents believed that movies with smoking should be rated 'R').³⁰

Pursuant to our research questions, we found from ASHES-2 that people who report exposure to both to news coverage and anti-tobacco advertising related to the dangers of children being around cigarette smoke are significantly more likely than those unexposed to support 'R' ratings (ORs=1.25 and 1.30, respectively). Similar to our finding regarding brand name restrictions, we found that reported exposure to pro-tobacco advertising also independently predicts support for 'R' ratings, though the direction of effect is differential when the ads are seen in newspapers versus magazines. Those adults who report exposure to cigarette ads in newspapers are significantly more likely to support 'R' ratings (OR=1.25) than those not exposed to ads in newspapers, while those who report exposure to cigarette ads in magazines are significantly less likely to support 'R' ratings (OR=0.79) than those unexposed to ads in magazines. We provide potential explanations for these observations in our discussion section.

Effect modification by smoking status

Never smokers and former smokers are significantly more likely than current smokers to support almost all movie-specific tobacco policies. With the exception of 'R' ratings policies where there were no differences by smoking status, odds ratios for former smokers versus current smokers for the other movie policies under investigation ranged between 1.44 ($p<0.01$) and 1.67 ($p<0.01$), and ORs for never smokers versus current smokers were between 1.34 ($p<0.01$) and 1.53 ($p<0.001$). Nonetheless, pursuant to our research question about effect modification, we found no evidence that smoking status modifies the observed effects of reported tobacco-specific media exposure on movie policy attitudes (table 4). This indicates that, consistent with our hypothesis and with other studies using ASHES,²⁵ tobacco messages in the media are not attended to or perceived differentially by smokers and non-smokers when it comes to forming attitudes about movie-specific tobacco control policies—measures intended to reduce adolescent smoking initiation.

DISCUSSION

Across most outcome variables under study, our findings reveal that reported exposure to tobacco-specific media messages is associated with adult attitudes towards movie-specific policy measures. Results indicate that most exposure to tobacco information in the media (with the exception of pro-tobacco advertising on the internet) contributes independently to the prediction of adult support for movie-specific policies, when controlling for potential confounders and covariates. The direction of effect mostly follows a pattern we may expect, with reported exposure to anti-tobacco advertising and news coverage of tobacco issues predicting supportive attitudes towards movie policies, and reported exposure to pro-tobacco advertising working in favour of the tobacco industry to lessen support for some movie policies, though the medium of delivery makes a difference in how pro-tobacco advertising impacts observed policy attitudes. We offer some potential explanations. First, we were not surprised that respondents who reported seeing cigarette ads in magazines were less likely than those not exposed to cigarette ads in magazines to support policies related to 'R' ratings and restricting brand names/logos in movies. Magazines are a major vehicle for tobacco industry advertising, and editorial content related to tobacco control is more muted in this

medium⁷; the sheer number of tobacco ads and their attractive formats (colour, etc) in magazines serve as contextual cues that could be lessening readers' sensitivity to the dangers of smoking generally, and the impact of Hollywood stars' smoking on youths specifically. As was well stated in the 1989 Surgeon General's report, tobacco advertising and promotion are likely to affect social norms such that 'the ubiquity and familiarity of tobacco advertising and promotion may contribute to an environment in which tobacco use is perceived by users to be socially acceptable, or at least less socially objectionable and less hazardous than it is in fact'.³² Our finding that reported exposure to pro-tobacco advertising in newspapers makes people more likely to support two movie-specific policies is somewhat harder to explain. While we have controlled for socioeconomic status and therefore some of the known predictors of newspaper readership, it is possible that those who see pro-tobacco advertising in newspapers are savvier consumers of information and therefore understand the potential impact of tobacco imaging on children, or perhaps they are influenced by editorial content in newspapers that may serve to blunt the advertising effects intended by the tobacco industry. Research suggests that the general tenor of tobacco coverage in newspapers is towards tobacco control.⁷ Because we did not test these hypotheses explicitly, we can only speculate as to why exposure to pro-tobacco advertising in newspapers serves to benefit tobacco control efforts specific to public support for movie-specific policies related to brand names/logos and 'R' ratings.

Sustained media exposure is a condition usually necessary for media effects on individual judgments and behaviour,³³ and studies in framing have demonstrated that the importance assigned to some issues by the public correlates strongly with media exposure and media content.^{17, 19-21} By examining the extent to which exposure and no exposure to anti-tobacco messages, news coverage of tobacco issues and pro-tobacco advertising differentially predict support for movie policies, we begin a deconstruction of determinants of public opinion in tobacco control. But in order for people to formulate opinions about a given problem and thus develop supportive or opposing views of proposed solutions to that problem, the issue first needs to achieve salience on the broad public agenda. The public agenda is defined as 'issues discussed by and personally relevant to the public'.¹⁹ Certainly, we would expect that among the other important items on the public agenda (eg, the economy), movie-specific tobacco policies would have little or no presence. In order to increase the likelihood that people move from simply agreeing with movie-specific policy measures to acting in support of those measures, tobacco control advocates may consider a movie-specific public education initiative which employs frames related to the protection of children, and continuance of funding for other tobacco prevention activities that have been part of the broad media landscape. Results from this study indicate that media campaigns and initiatives to prevent tobacco use and exposure to secondhand smoke have had value beyond the intended impact of single-message campaigns; anti-tobacco campaigns and efforts to increase the public dialogue about tobacco seem to have broader effects that shape people's perceptions of the social world related to norms about tobacco use, and specifically their ideas about the place of smoking in movies. This concept has been discussed by communication scholars as 'meta-message' effects.³⁴

Results from our study should be considered in light of a few limitations. First, our key predictor variables represent the construct of tobacco-specific media exposure. Responses to media exposure questions, like other self-reported data, are subject to recall bias, because we cannot be certain that a respondent has come in contact with a given message and the medium in which the message was placed. Second, because ASHES-2 is a cross-sectional survey, we cannot be certain of temporality. It is plausible that respondents held their views about movie-specific tobacco policies before they were or were not exposed to tobacco messages in the media. Third, there is a possibility that our models may slightly overestimate the role of media exposure on movie policy attitudes, because we do not have

available from ASHES-2 items that measure other typical determinants of policy preferences, such as political ideology and party identification. While ideology variables would not confound the observed associations, they may be stronger predictors of movie-policy support and thereby provide more meaningful insights. Last, the 27.8% response rate can be considered a limitation, though sponsors of the study conducted an experimental analysis to test for systematic differences between responders and non-responders by demographics, smoking status and other measures, and the analysis showed no evidence of differential response rates across groups.

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Table 1

Sample characteristics

American Smoking and Health Survey 2 (ASHES-2) (2003) (n=2849)	
	% Respondents
Mean age 42	–
Female gender	65
Smoking status	
Current smoker	22
Former smoker	21
Never smoker	57
Total household income in 2002	
<\$30000	45
>\$30000	55
Education	
Less than high school	16
High school graduate +	57
College degree or more	27
Race/ethnicity	
White	45
African-American	26
Other	28

Table 2

Prevalence estimates (weighted, unadjusted). US adult opinions of proposed policies to limit portrayals of smoking in movies. American Smoking and Health Survey 2 (ASHES-2) (2003)

	% Agree	% Disagree	% Neutral/no opinion
Anti-smoking PSAs should be required before movies which show smoking (n=2808)			
Total	55	28	15
Never smokers	57	27	15
Former smokers	55	28	16
Current smokers	47	36	17
Anti-smoking PSAs should be required before television movie trailers which show smoking (n=2796)			
Total	51	34	15
Never smokers	53	30	17
Former smokers	53	33	14
Current smokers	43	40	17
Producers and actors should not be allowed to accept money for including smoking in movies (n=2790)			
Total	69	13	18
Never smokers	69	12	19
Former smokers	72	10	18
Current smokers	59	18	23
Cigarette brand names and logos should not be allowed to appear in movies (n=2814)			
Total	64	20	16
Never smokers	67	16	17
Former smokers	66	19	15
Current smokers	53	30	17
As with violence and sex, movies with smoking should be rated 'R' (n=2788)			
Total	40	46	14
Never smokers	38	45	17
Former smokers	43	41	15
Current smokers	38	49	13

Cell counts may not add to 100% owing to refused or missing responses.

Sample size for each question varies owing to refused and missing responses.

PSAs, public service advertisements.

Table 3

Multivariable logistic regression models for odds of supporting policies to regulate smoking in movies, by exposure to tobacco-specific media messages. American Smoking and Health Survey (ASHES) 2 (2003)

Response in support of proposed policies to regulate smoking in movies										
	Anti-smoking PSAs <i>should</i> be required before movies which show smoking		Anti-smoking PSAs <i>should</i> be required before movie trailers (TV) which show smoking		Producers and actors <i>should not</i> be allowed to accept money for including smoking in movies		Cigarette brand names and logos <i>should not</i> be allowed to appear in movies		As with violence and sex, movies with smoking <i>should</i> be rated 'R'	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Exposure to news coverage of tobacco or anti-tobacco information ^{†,‡}										
News: dangers to kids	1.29**	(1.06 to 1.58)	1.23*	(1.01 to 1.50)	1.10	(0.87 to 1.36)	1.11	(0.90 to 1.37)	1.25*	(1.02 to 1.53)
Ads: dangers to kids	1.16	(0.95 to 1.44)	1.26*	(1.02 to 1.55)	1.30*	(1.08 to 1.63)	1.39**	(1.11 to 1.73)	1.30**	(1.05 to 1.61)
Ads: talking to kids	1.34***	(1.10 to 1.62)	1.22*	(1.01 to 1.48)	1.06	(0.86 to 1.31)	1.13	(0.92 to 1.38)	1.12	(0.92 to 1.37)
Exposure to pro-tobacco advertising ^{†,§}										
Ads for cigarettes in newspaper	0.94	(0.78 to 1.15)	1.06	(0.87 to 1.28)	1.18	(0.96 to 1.46)	1.35**	(1.10 to 1.66)	1.25*	(1.02 to 1.52)
Ads for cigarettes in magazine	0.90	(0.74 to 1.09)	0.89	(0.73 to 1.07)	0.96	(0.79 to 1.20)	0.71***	(0.58 to 0.87)	0.79*	(0.65 to 0.97)
Ads for cigarettes on internet	0.97	(0.74 to 1.29)	0.83	(0.63 to 1.08)	0.83	(0.63 to 1.11)	0.78	(0.59 to 1.03)	0.93	(0.70 to 1.23)

* p<0.05;

**
p<0.01:

p<0.0001.

ODRs and 95% CIs for fitted logistic regression models that describe respondent odds of supporting policies to regulate smoking portrayal in movies, by exposure to tobacco-specific media messages, controlling for smoking status, education, income, race/ethnicity, age, sex, knowledge of the negative effects of tobacco and state. All estimates are weighted.

^f Questions representing exposure to news coverage and anti-tobacco and pro-tobacco advertising were asked only of respondents who reported at least some media exposure in the past 30 days (eg, television, radio, newspaper, magazine or internet).

In past 30 days, saw news coverage or advertising about the dangers of kids being around cigarette smoke, or advertising about talking to kids about not smoking

§ In past 30 days, saw advertising or promotions for cigarettes or other tobacco products in: newspaper, magazine or on the internet.

PSAs, public service advertisements.

Table 4

Multivariable logistic regression models showing no effect modification by smoking status in the prediction of support for policies to regulate the portrayal of smoking in movies, by tobacco-specific media exposure. American Smoking and Health Survey (ASHES) 2 (2003)

	Response in support of proposed policies to regulate smoking in movies					
	Anti-smoking PSAs should be required before movies which show smoking		Anti-smoking PSAs should be required before movie trailers (TV) which show smoking		Producers and actors should not be allowed to accept money for including smoking in movies	
	OR (n=2287)	(95% CI)	OR (n=2288)	(95% CI)	OR (n=2279)	(95% CI)
Exposure to news coverage of tobacco or anti-tobacco information*smoking status						
News: dangers to kids*never	1.00	(0.61 to 1.62)	1.26	(0.77 to 2.05)	0.88	(0.53 to 1.46)
News: dangers to kids*former	0.87	(0.46 to 1.62)	0.99	(0.54 to 1.84)	0.68	(0.34 to 1.33)
Ads: dangers to kids*never	0.86	(0.52 to 1.43)	0.86	(0.51 to 1.43)	1.29	(0.76 to 2.19)
Ads: dangers to kids*former	0.52	(0.26 to 1.01)	0.60	(0.31 to 1.17)	1.24	(0.61 to 2.54)
Ads: talking to kids*never	0.86	(0.53 to 1.38)	0.94	(0.58 to 1.50)	0.85	(0.52 to 1.37)
Ads: talking to kids*former	1.32	(0.73 to 2.38)	1.12	(0.62 to 2.01)	0.67	(0.35 to 1.27)
Exposure to pro-tobacco advertising*smoking status						
Ads for cig in newspaper*never	0.60	(0.36 to 0.99)	0.78	(0.47 to 1.28)	1.31	(0.78 to 2.19)
Ads for cig in newspaper*former	0.75	(0.40 to 1.38)	1.01	(0.55 to 1.85)	1.36	(0.70 to 2.63)
Ads for cig in magazine*never	1.47	(0.90 to 2.41)	1.16	(0.71 to 1.90)	0.85	(0.51 to 1.37)
Ads for cig in magazine*former	1.74	(0.96 to 3.16)	1.02	(0.56 to 1.83)	0.68	(0.35 to 1.27)
Ads for cig on internet*never	1.54	(0.79 to 2.97)	1.41	(0.72 to 2.75)	0.58	(0.29 to 1.15)
Ads for cig on internet*former	1.24	(0.52 to 2.96)	1.81	(0.76 to 4.30)	0.54	(0.22 to 1.33)
Cigarette brand names and logos should not be allowed to appear in movies						
	OR (n=2292)	(95% CI)	OR (n=2276)	(95% CI)	OR (n=2276)	(95% CI)
As with violence and sex, movies with smoking should be rated 'R'	0.99	(0.98 to 1.01)	1.06	(0.64 to 1.75)	0.99	(0.98 to 1.01)
	1.21	(0.64 to 2.30)	0.67	(0.35 to 1.26)	1.21	(0.64 to 2.30)
	1.13	(0.67 to 1.91)	1.01	(0.59 to 1.71)	1.13	(0.67 to 1.91)
	0.66	(0.33 to 1.30)	1.15	(0.58 to 2.26)	0.66	(0.33 to 1.30)
	1.02	(0.62 to 1.66)	1.05	(0.64 to 1.72)	1.02	(0.62 to 1.66)
	1.52	(0.83 to 2.78)	0.91	(0.54 to 1.51)	1.52	(0.83 to 2.78)
	0.99	(0.59 to 1.65)	0.90	(0.54 to 1.51)	0.99	(0.59 to 1.65)
	1.33	(0.70 to 2.52)	1.03	(0.55 to 1.91)	1.33	(0.70 to 2.52)
	1.10	(0.66 to 1.82)	1.70	(0.92 to 2.84)	1.10	(0.66 to 1.82)
	1.02	(0.55 to 1.88)	1.78	(0.97 to 3.28)	1.02	(0.55 to 1.88)
	1.11	(0.57 to 2.17)	1.36	(0.68 to 2.71)	1.11	(0.57 to 2.17)
	1.08	(0.44 to 2.61)	1.28	(0.53 to 3.11)	1.08	(0.44 to 2.61)

ORs and 95% CIs for fitted logistic regression models which include interaction terms for tobacco-specific media exposure variables and smoking status (never and former smokers compared to current smokers). All models control for the main effects of each smoking status and media exposure variable, education, income, race/ethnicity, age, sex, knowledge of the negative effects of tobacco and state. All estimates are weighted.