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ORIGINAL ARTICLE

Support for tobacco control interventions: do country of origin and socioeconomic status make a difference?

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Abstract
Objective To examine the attitudes to various tobacco control regulations among smokers from four different countries and explore differences by country and socioeconomic status.
Methods Questions relating to tobacco regulation were asked of adult smokers from the 2007–2008 International Tobacco Control Four Country Survey (ITC4). Measures included attitudes to tobacco industry and product regulation, and measures of socioeconomic status and economic disadvantage.
Results Overall smokers supported greater regulation of the tobacco industry with least supportive US smokers and most supportive Australian smokers. Reporting smoking-related deprivation and a lower income was independently associated with increased support for regulation of the tobacco industry (both $p \leq 0.01$).
Conclusions Policy-makers interested in doing more to control tobacco should be reassured that, for the most part, they have the support of smokers, with greatest support in countries with the strongest regulations. Smokers economically disadvantaged by smoking were more supportive of government policies to regulate the tobacco industry suggesting that reactance against regulation is not likely to differentially contribute to lower cessation rates in this group.

Keywords Smoking · Tobacco · Tobacco regulation · Socioeconomic factors · Smoker's attitudes

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Introduction

Tobacco use is the leading cause of preventable death globally (World Health Organization 2009). In countries that have implemented most of the range of population-based tobacco policies recommended by the Framework Convention on Tobacco Control (FCTC), substantial decreases in smoking rates have occurred (World Health Organization 2008). These policies focus on increased taxation, eliminating as far as possible the promotion of tobacco products, widespread public education through

mass media and strong health warnings on packs, and widespread restrictions on smoking in enclosed spaces. Recently, there has been a renewed interest in regulating cigarette features: in several jurisdictions, including some US states, Canada and Australia, cigarettes now need to meet reduced ignition propensity standards, and several jurisdictions have banned candy and fruit flavoured cigarettes. The US Food and Drug Administration (FDA) now has the authority to regulate cigarette design, increasing the likelihood that there will be an increase in tobacco control activity in this area.

Despite the success countries have had in reducing the overall prevalence of smoking, these reductions have not been distributed evenly across all sub-groups within the community, at least for the developed countries where this has been most studied. The prevalence of smoking is higher among those with lower levels of education, lower income levels and in working class occupations (Graham et al. 2006; Jarvis and Wardle 2006; White et al. 2008). This disparity in smoking rates is a major contributor to the social gradient in premature mortality rates (White et al. 2008) and the widening of the health gap between the most and the least disadvantaged people in the community (Siahpush et al. 2006a).

The reasons for the socioeconomic (SES) differential vary by country, with uptake a larger cause in Australia, where the decline in smoking is similar across SES categories, although the proportional decline is greater among the more advantaged as they started with a much lower prevalence (White et al. 2003). By contrast, in the UK, lower rates of cessation contribute more (Jarvis and Wardle 2006; Layte and Whelan 2009). The disparity by SES status is not getting smaller anywhere we know of, and in some cases, it is getting significantly worse (Jarvis and Wardle 2006). A number of factors may contribute to this. Smokers from low SES groups tend to have higher nicotine dependence which makes quitting more difficult (Hiscock et al. 2012; Siahpush et al. 2006b), although some recent Australian data suggest that SES is not related to quit success (Partos et al. 2012). The stress associated with socio-economic hardship has also been found to be important in explaining the SES differences in smoking rates (Layte and Whelan 2009). There are also suggestions that they have lower levels of support to quit from friends and relatives, and in some cases health providers (Hiscock et al. 2012) and that the choice to continue to smoke may reflect a perception among disadvantaged populations of poorer life chances (Lawlor et al. 2003). This may relate to differential social denormalisation across social groups. Two studies found that smokers from higher SES groups perceived greater social 'denormalisation' (Hammond et al. 2006) and smoking-related stigma (Stuber et al. 2008), with denormalisation related to greater intentions to quit (Hammond et al. 2006). By contrast, one qualitative study found that lower SES smokers felt their rights were being removed and that they were becoming more isolated and stigmatised (Frohlich et al. 2010). Higher SES smokers on the other hand responded more positively and adapted to changes created by the regulations (Frohlich et al. 2010).

The success of tobacco control policies has been found to be positively associated with smoker support for them (Schumann et al. 2006). While non-smokers are generally more supportive of tobacco control policies, studies have also found considerable support amongst smokers, although this is dependant on the particular policy in question and the respondent's country of residence (Ashley et al. 2000; Borland et al. 2006; Cooper et al. 2010; Gardner and West 2010; Hyland et al. 2009; Schumann et al. 2006; Young et al. 2007). If lower SES smokers hold negative attitudes to tobacco control policies, it may reduce the effectiveness of these policies among this group. Few large studies that have investigated support for a comprehensive list of tobacco control policies amongst smokers from different SES groups. If we are to better understand the reasons why current tobacco control measure are less successful in reducing smoking rates in more disadvantaged smokers, it is important to know how they view current policies.

Finally, a major argument of the tobacco industry against regulation is that it reduces the freedom of smokers to make their own choices (Cohen et al. 2000). While freedom to use an addictive product is a vexed issue, strong opposition from smokers to greater tobacco regulation would be likely to inhibit at least some law makers from taking such actions, and hence the importance of determining smokers' reactions to regulation.

The objectives of this study were to report on levels of beliefs about and interrelationships between smokers attitudes to regulation of the tobacco industry and tobacco products, and to explore beliefs as a function of country of origin and SES.

Method

Sample

Participants came from wave 7 of the International Tobacco Control (ITC4) Four Country Survey, conducted from September 2007 to February 2008. Surveys were conducted using computer-assisted telephone interviews. The current adult (18 years of age or older) smokers (defined as having smoked at least 100 cigarettes in their lifetime and currently smoking at least once per month) were included in the analysis. There were a total of 5,887 respondents from Canada ($n = 1{,}510$), the US ($n = 1{,}518$), the UK (UK)

($n = 1{,}487$) and Australia ($n = 1{,}372$). Details of the ITC4 methodology can be found in Thompson et al. (2006).

The study was approved by the research ethics boards or committees in each of the four countries: Cancer Council Victoria (Australia), the University of Waterloo (Canada), the University of Strathclyde (UK), Roswell Park Cancer Institute (US) and University of Illinois, Chicago (US).

Measures

Attitudes to regulation

We asked 12 questions relating to aspects of tobacco industry regulation and tobacco product regulation (wording can be found in Table 3). They were conceptually grouped into six categories: views on restrictions on industry promotion (4 items), views on greater government regulation (3 items), support for suing the industry for health costs (1 item), views on changing characteristics of the product (3 items), and banning smoking completely (1 item). All but two were measured on 5-point scales (1 = strongly oppose to 5 = strongly support) with the remaining two (both related to promotion) on 3-point scales (1 = not at all, 2 = somewhat, 3 = a lot). These two items were highly correlated ($r = 0.69$), so they combined into a 5-point composite, giving 11 items in total. A factor analysis yielded two factors which accounted for 46 % of the variance. Seven items, loaded onto an 'Attitudes to regulating the tobacco industry' factor ($\alpha = 0.78$), and four on to an 'Attitudes to regulating tobacco products' factor ($\alpha = 0.61$) (Table 1). These clusters of item were simply summed and then divided by the number of items to provide scores for the two scales which could range from 1 to 5. These scales were used to assess relationships between smoker characteristics and attitudes to regulations.

Measures of SES and deprivation

Social disadvantage is a multi-dimensional construct. As no single well-established measure of this construct exists, multiple indicators of the construct were used, covering both conventional SES indicators, in this case income and education, and indices of economic deprivation. Annual household income consisted of seven levels where the same cut-points were used for the US, Canada and Australia as they are broadly equivalent, but for the UK, a different cut-point was used, reported in parentheses: under $10,000 (under £6,500), $10,000–$29,999 (£6,500–£15,000), $30,000–$44,999 (£15,001–£30,000), $45,000–$59,999 (£30,001–£40,000), $60,000–$74,999 (£40,001–£50,000), $75,999–$99,999 (£50,001–£65,000), and $100,000 (£65,001) and over. The income variable had an 8.5 % non-response rate. This was included as a separate level. In order to model income as a continuous variable, a dummy variable to indicate those who had provided income and those who had not was also created (Cohen et al. 2010). Level of education was broadly categorised to be equivalent across the four countries and consisted of six levels: some high school or lower, completed high school or equivalent, technical or training college, trade school or equivalent, some university (no degree), completed a university degree and post-graduate degree. Level of education was modelled as a continuous variable.

We used two indicators of economic deprivation: (1) a measure of financial stress (FS), 'In the last month because of a shortage of money were you unable to pay any important bills on time such as electricity, telephone or rent bills?'. This is a composite measure derived from a more extensive conventional measure (Siahpush et al. 2003) and (2) a measure of smoking-related deprivation (SRD), 'did you in the last 6 months spend money on cigarettes that resulted in not having enough for household essentials' (NB: this is a different measure to the measure of smoking-induced deprivation used in earlier ITC surveys (Siahpush et al. 2007), but one that more clearly relates to actual deprivation, and is more strongly related to expenditure on cigarettes than FS; Siahpush et al. 2012). Unfortunately the question regarding FS was not asked of the replenishment sub-sample, so there is a smaller sample size for it. These two measures of deprivation were only weakly correlated ($r = 0.28$), so were not combined.

Other measures

Age, gender, country and nicotine dependence were potential confounders and were included as covariates in the analysis. Nicotine dependence was measured using the Heaviness of Smoking Index (HSI). HSI scores range from 0 to 6 and are calculated by summing the points for time to first cigarette after waking and number of cigarettes smoked per day. Time to first cigarette is scored: <5 min = 3 points; 6–30 min = 2 points; 31–60 min = 1 point; and >60 min = 0. Respondents were asked: "On average, how many cigarettes do you smoke each day, including both factory-made and roll-your own cigarettes?" Cigarettes per day are scored: 1–10 = 0 points; 11–20 = 1 point; 21–30 = 2 points; and >31 = 3 points. Higher HSI scores indicate more dependence on nicotine (Siahpush et al. 2007).

Data analysis

Percentages reported in Table 3 for country-specific estimates were weighted for age and gender. Associations between our measures and attitudes to tobacco regulation

Table 1 Factor loadings of items used to form the tobacco regulation attitudes scales and their corresponding reliability scores [International Tobacco Control Four Country Survey (Canada, US, UK, Australia); wave 7, 2007–2008]

Variable	Question	Factor loading
Attitudes to industry regulation (seven item scale)	"Do you support complete bans on tobacco advertisements inside shops and stores?" and "Do you support complete bans displays of cigarettes in shops and stores?"[a]	0.78
Cronbach's $\alpha = 0.78$	"Tobacco products should be more tightly regulated"	0.77
	"Tobacco companies should not be allowed to promote cigarettes at all"	0.77
	"The government should do more to tackle harm done by smoking"	0.66
	"Tobacco companies should be required to sell cigarettes in plain packages"	0.56
	"Would you support or oppose a law that restricted the number of places where cigarettes could be purchased"	0.51
	"Would you support or oppose the government suing tobacco companies to recover health costs caused by tobacco use"	0.49
Attitudes to cigarette regulation (4 item scale) Cronbach's $\alpha = 0.61$	Would you support or oppose a law that…	
	"banned cigarettes but make other forms of nicotine available?"	0.89
	"reduced the amount of nicotine in cigarettes to make cigarettes less addictive?"	0.70
	"banned tobacco products completely?"	0.59
	"banned additives and flavourings that make cigarettes less harsh?"	0.41

[a] These two questions were scored on a 3 point support scale: 1 = not at all; 2 = somewhat; 3 = a lot

were tested using unweighted linear regression for each regulation scale separately. Univariate regression analyses were initially performed on each of the measures. Then, a multivariate model was conducted to determine their independent effects. This was done in a stepwise fashion where all SES and deprivation measures were entered first into the model and then, the potential confounders were included next to determine if the effects of the social disadvantage measures were attenuated.

The measure 'because of a shortage of money were you unable to pay important bills on time?' had a large number (20.4 %) of missing responses, so univariate analyses were performed but it was not included in the final multivariate model after checking that it added no unique predictive power.

By-country interaction effects with each measure were tested with no significant interactions identified. The effect of time of entry into the study was also tested and found to be not significant. To adjust for multiple comparisons, and because of the large sample size, results were considered statistical significant at $p \leq 0.01$. All analyses were conducted using Stata/SE 11.0 for Windows (StataCorp 2009).

Results

Table 2 provides the characteristics for the respondents from each country. Across all four countries only a small percentage of respondents indicated that they had spent money on cigarettes instead of essential household items. Australia had the highest number (7.5 %) and the UK the least (5.0 %). In the US and Australia, 11.5 and 11.2 % of respondents reported having been unable to pay important bills on time, with the UK least likely (6.1 %).

Overall, a majority of smokers in all countries supported some forms of increased control of the tobacco industry and their products (Table 3). Highest support overall was for preventing industry promotion of their products (67–86 % across countries) and lowest for plain packaging (24–37 %). Support for product regulation was also mixed with very strong support for reducing the level of nicotine in cigarettes to make them less addictive (71–81 %), but low levels of support for banning tobacco products completely (20–35 %). Across all attitudes, US smokers were less supportive of increased regulations, with smokers from Australia generally most supportive, followed by smokers from Canada, with UK smokers clearly between Canadians and Americans.

Influences of SES/deprivation on attitudes

Table 4 shows unadjusted and adjusted results for the association between the predictor variables and attitudes to regulating the tobacco industry. In the unadjusted analyses, smokers who had suffered deprivation on either of our measures were more supportive of increased tobacco industry regulation ($p \leq 0.001$). There were no significant associations found between education or income and support for tobacco industry regulation in unadjusted analyses ($p > 0.01$).

Table 2 Sample characteristics of respondents from each country in the International Tobacco Control Four Country Survey (Canada, US, UK, Australia; wave 7, 2007–2008)

Variable	Canada % (n = 1,510)	US % (n = 1,518)	UK % (n = 1,487)	Australia % (n = 1,372)
Gender				
Female	53.4	54.7	55.6	55.8
Age (years)				
18–24	4.4	3.5	5.1	5.7
25–39	23.6	15.4	22.8	28.5
40–54	43.4	42.4	38.5	44.2
55+	28.5	38.7	33.6	21.6
Education				
Some high school or lower	14.5	9.9	28.4	33.8
Completed high school	30.9	33.9	29.6	27.7
Tech college, trade school or equivalent	26.8	20.8	22.3	18.7
Some university (no degree)	8.6	15.3	4.5	4.6
University degree	14.9	15.0	10.8	11.0
Post graduate degree	4.3	5.1	4.5	4.3
Income				
Under $10,000 (under £6,500)	5.1	9.2	9.0	5.0
$10,000–$29,999 (£6,500–£15,000)	19.6	26.4	22.3	20.3
$30,000–$44,999 (£15,001–£30,000)	18.2	15.8	30.9	15.3
$45,000–$59,999 (£30,001–£40,000)	16.3	14.1	11.9	13.9
$60,000–$74,999 (£40,001–£50,000)	10.2	9.9	7.3	11.4
$75,000–$99,999 (£50,001–£65,000)	10.7	9.0	4.2	10.4
$100,000 and over (£65,001 and over)	10.2	7.8	4.4	17.4
No answer	9.8	7.8	10.0	6.4
Spent money on cigarettes instead of household essentials. Smoking-related deprivation (SRD) Yes	6.1	6.5	5.0	7.5
Unable to pay bills on time[a] Financial stress (FS) Yes	8.8	11.5	6.1	11.2

Percentages reported above are based on unweighted data

[a] Large number of missing values (n = 1,203) as question not asked of replenishment sub-sample

After adjusting for covariates, the significant associations changed somewhat. Having suffered SRD and reporting a lower income were both associated with increased support for regulations (both $p \leq 0.01$). There was no independent effect for FS, but it is not included in this table as the analysis including it was on a smaller sample.

In both unadjusted and adjusted analyses having a higher level of nicotine dependence and being from the US (markedly) or UK was associated with being less supportive of tobacco industry regulations. Smokers aged 25–39 tended to be most supportive, with those over 55 least supportive.

Table 4 also shows the unadjusted and adjusted results for the association between the predictor variables and attitudes to regulating tobacco products. In unadjusted analyses, smokers with a higher level of education were found to be less supportive of tobacco product regulations ($p \leq 0.01$). There were no significant associations between income and the two measures of deprivation in the unadjusted analyses.

In the adjusted analysis, there were no significant associations between support for tobacco product regulation and education, income or SRD ($p > 0.01$). In both, the adjusted and unadjusted analyses smokers from the US (more so than the others), UK and Canada were significantly less supportive of these possible regulations than Australian smokers ($p \leq 0.001$) as were those with a higher level of nicotine dependence ($p \leq 0.001$) and males ($p \leq 0.01$). Support was greatest among those aged 25–39. Again, there was no effect for FS, when it was added in supplementary analyses.

Discussion

The results show mixed levels of support for tobacco control policies overall, with no clear preference for

Table 3 Percentage of smokers from wave 7 (2007–2008) of the International Tobacco Control Four Country Survey (Canada, US, UK, Australia) who support increased control over the tobacco industry and tobacco products

$n = 5,887$	Canada	US	UK	Australia
% Agree tobacco products should be more tightly regulated[a]	53.7	48.2	60.3	60.1
% Support complete bans on tobacco advertisements inside shops and stores[b]	73.5	51.4	65.9	77.6
% Support complete bans on displays of cigarettes in shops and stores[b]	73.8	46.7	50.6	69.6
% Agree tobacco companies should not be allowed to promote cigarettes at all	80.5	67.4	84.6	85.7
% Agree the government should do more to tackle harm done by smoking[a]	56.1	46.6	50.5	60.2
% Agree tobacco companies should be required to sell cigarettes in plain packages[a]	37.7	24.4	27.6	35.6
% Support a law that restricted the number of places where cigarettes could be purchased[a]	47.9	33.5	43.2	49.3
% Support the government suing tobacco companies to recover health costs caused by tobacco use[a]	45.6	36.0	40.2	46.3
Mean attitude to industry regulation scale (95 % CI)[c]	3.24 (3.20–3.27)	2.84 (2.80–2.88)	3.08 (3.04–3.12)	3.29 (3.25–3.34)
% Support for a law that banned cigarettes but made other forms of nicotine available[a]	35.6	29.5	41.4	41.4
% Support for a law that reduced the amount of nicotine in cigarettes to make cigarettes less addictive[a]	74.7	71.0	80.6	80.3
% Support for a law that banned tobacco products completely[a]	28.7	20.1	26.2	35.0
% Support for a law that banned additives and flavourings that make cigarettes less harsh[a]	55.5	42.5	49.5	61.8
Mean attitude to cigarette product regulation (95 % CI)[c]	3.03 (2.99–3.07)	2.81 (2.77–2.85)	3.01 (2.97–3.05)	3.19 (3.14–3.23)

Percentages reported for country-specific comparisons of scale items were weighted by age and gender for each country to provide representative population estimates

[a] Percent who support or strongly support; agree or strongly agree

[b] Percent who support a lot or support somewhat

[c] Score range 1–5 with higher scores indicating greater support for regulation

industry regulation over product regulation. Among industry regulation policies, smokers were most supportive of restrictions on tobacco promotion and supported more government action, but were overall less keen on standardised (or plain) packaging. Among the product regulation policies, smokers support restricting nicotine, but not prohibiting cigarettes. There were, however, differences in the pattern of responses by SES. While lower SES, more disadvantaged smokers were more supportive of industry regulation, there were no clear differences for product regulation. Across both forms of regulation, smokers from the US and more dependent smokers (higher HSI) were less supportive and smokers aged 25–39 tended to be most supportive. There were no significant gender effects. Australian smokers were most supportive of product regulation, and Canadians were also most supportive of industry regulation.

We found higher levels of support for tobacco industry regulation among smokers who were economically disadvantaged. There was no by-country interaction, demonstrating that the effect was common to all countries. This is an important finding as it counters the suggestion that the poor rates of cessation seen among disadvantaged smokers is due to having negative attitudes toward tobacco control policies. It has been shown that those of lower SES have lower levels of self-efficacy regarding quitting (Siahpush et al. 2006b) so it may be that these smokers acknowledge the difficulty of quitting and are therefore supportive of government actions that may assist them, although this would not seem to extend to changing the products. It is notable that it was income and the measure of SRD (smoking related deprivation) that were the strongest predictors of attitudes to industry regulation. SRD is also more strongly related to cigarette expenditure than FS (Siahpush et al. 2012). This is consistent with smokers feeling economically trapped by their addiction and being prepared to support laws to reduce the capacity of tobacco companies to exploit that dependence. The relationship that

Table 4 Unadjusted and adjusted associations of socioeconomic status and other measures with smoker support for regulation of the tobacco industry and products [International Tobacco Control Four Country Survey (Canada, US, UK, Australia); wave 7, 2007–2008]

SES/deprivation measures	Attitudes to regulating the tobacco industry		Attitudes to regulating tobacco products	
	Unadjusted, *B* (95 % CI)	Adjusted $R^2 = 0.07$, *B* (95 % CI)	Unadjusted, *B* (95 % CI)	Adjusted $R^2 = 0.04$, *B* (95 % CI)
Income	0.001 (−0.01, 0.01)	−0.02** (−0.03, −0.01)	0.01 (−0.001, 0.02)	0.0001 (−0.01, 0.01)
Income not provided vs provided	−0.09 (−0.17, 0.004)	−0.002 (−0.09, 0.09)	−0.10 (−0.19, −0.01)	−0.04 (−0.14, 0.06)
Education	−0.01 (−0.03, −0.0001)	−0.01 (−0.02, 0.01)	−0.02** (−0.04, −0.01)	−0.01 (−0.03, 0.001)
Smoking-related deprivation (SRD)	0.22*** (0.14, 0.30)	0.21*** (0.13, 0.30)	0.06 (− 0.02, 0.15)	0.06 (−0.03, 0.14)
Financial stress (FS) ($n = 4{,}675$)	0.14*** (0.06, 0.22)	–	0.08 (0.004, 0.16)	–
Other measures				
Country				
Canada	−0.05 (−0.11, 0.01)	−0.03 (−0.09, 0.03)	−0.14*** (−0.20, −0.09)	−0.12*** (−0.18, −0.06)
US	−0.47*** (−0.53, −0.41)	−0.44*** (−0.50, −0.38)	−0.41*** (−0.47, −0.35)	−0.38*** (−0.44, −0.32)
UK	−0.21*** (−0.27, −0.15)	−0.21*** (−0.27, −0.15)	−0.17*** (−0.23, −0.12)	−0.16*** (−0.22, −0.10)
Australia	0	0	0	0
Gender				
Male	−0.03 (−0.07, 0.02)	−0.02 (−0.06, 0.02)	−0.05** (−0.09, −0.01)	−0.05** (−0.10, −0.01)
Female	0	0	0	0
Age (years)				
18−24	0.17*** (0.07, 0.27)	0.07 (−0.03, 0.17)	−0.01 (−0.11, 0.10)	−0.08 (−0.19, 0.02)
25−39	0.23*** (0.18, 0.29)	0.15*** (0.09, 0.21)	0.20*** (0.14, 0.26)	0.13*** (0.07, 0.19)
40−54	0.12*** (0.07, 0.17)	0.09*** (0.04, 0.14)	0.10*** (0.05, 0.15)	0.07** (0.02, 0.12)
55+	0	0	0	0
Heaviness of Smoking Index	−0.06*** (−0.07, −0.04)	−0.06*** (−0.07, −0.05)	−0.04*** (−0.05, −0.02)	−0.04*** (−0.05, −0.02)

** $p \leq 0.01$

*** $p \leq 0.001$

was stronger for SRD than for the more general measure of financial stress suggests that their support is particularly forthcoming when they blame cigarettes for some of the difficulties they are experiencing, rather than being due to the financial difficulties more directly.

Our results differ from those of Frohlich et al. (2010) who found that lower SES smokers had negative feelings toward tobacco control policies. Possible reasons for the difference are that the Frohlich study was a small qualitative study with a convenience sample which did not control for the heaviness of smoking of the participants. Lower SES groups tend to be heavier smokers (Siahpush et al. 2006b) and as we found in this study, heaviness of smoking is associated with negative attitudes to tobacco control policies. Further, as our study is of broadly representative samples across four countries, our results are far more generalisable.

The large variation in support for similar policies found in this study raised the issue of the stability and coherence of smokers' views. This is, perhaps, most apparent in the strong support for removing nicotine from cigarettes, but much lower support for banning cigarettes even if alternative forms of nicotine were available. It is apparent that many smokers do not understand that nicotine is central to smoking, and that removing the nicotine would be essentially prohibition by stealth. We think that the findings are best interpreted as smokers being generally supportive of regulation, but from a base that is largely ill-informed about the likely impacts of those rules. If regulations were imposed that did cause smokers sufficient inconvenience or discomfort, support might dissipate rapidly. However, the generally strong support for smoke-free policies which do involve some degree of inconvenience (Borland and Davey 2004) suggests that smokers reasonably expect that smoking should be made more socially marginal, and are prepared to bear some inconvenience.

We also found marked differences in response to the various ways of reducing tobacco promotion. Plain packaging is a means of reducing the major tobacco promotion method available to the industry, and support for it was low, while support for the generic proposition of banning all forms of promotion was high. Smokers associate themselves with the image portrayed by their particular brand of cigarette (Wakefield et al. 2002), so reducing the brand image will reduce some of the secondary gain they get from smoking. The greater opposition (only around 30 % actively supported it) to plain packaging may be because the smokers have come to own these benefits and no longer view the pack as promotion, but as part of what they are buying. It will be interesting to see if attitudes change once this policy is implemented as will happen in Australia in late 2012.

It is notable that support for tobacco regulation was strongest in Australia and Canada, two countries that have led efforts to regulate tobacco products. This extends earlier findings (Hyland et al. 2009; Young et al. 2007) for regulation of the industry and shows a persisting deficit in the US, but more of a gap in the UK than among the measures used in the earlier work (Young et al. 2007). The evidence suggests that far from being tired of increased regulation of tobacco products, on the whole, smokers may indeed become more supportive once they see that it may help them in some small way to control their addiction. It is plausible that the similar pattern found for product regulation is due to generalisation from industry regulation. By contrast, support was consistently lowest in the US where, at least at the time of the survey, the least had been done to regulate tobacco at a federal level. However, US citizens have a reputation for being more anti-government regulation than citizens of other countries, so a consistent antipathy to regulation of any kind in the US could also be a possible explanation for the findings. It will be interesting to see if attitudes of US smokers change once they start to experience the regulation of tobacco products that the FDA is now mandated to introduce.

Major strengths of this study are the use of large, broadly representative samples of smokers from four countries and the inclusion of several indicators of SES, which both increase likely generalizability. One limitation is the cross-sectional design, and particularly a lack of data on the stability of the measures, and whether any variability in the measures over time is related to SES. Another limitation is the use of telephone survey data which may be subject to declarative bias, especially with respect to self-declared household income which we used as a measure of SES. This may have affected overall levels of agreement, but we think it unlikely to have affected the pattern of responses. Our questions related to economic deprivation are also subject to possible response bias, but the most likely source of this would be to reduce effect sizes as some more disadvantaged smokers may have been too embarrassed to report it. The fact that we found an effect for one set of attitudes strongly suggests that this measure has some validity. We also acknowledge that variables we have not included in our modelling may be related to attitudes to regulation, but we have no clear hypotheses as to what or how other variables could lead to differences in the core effects we report. It was beyond the scope of this paper to explore the range of possible factors affecting these attitudes. Finally, we should point out that this study was of four culturally similar countries that have all taken tobacco control reasonably seriously, so the findings should not be generalised to other countries, particularly those that are either culturally different and/or well behind in educating their public about the harms of smoking.

Conclusions

Our findings that smokers who were economically disadvantaged, particularly those who had suffered 'smoking-related deprivation' were more supportive of government policies to regulate the tobacco industry, suggests that opposition to regulation is not a plausible explanation for lower cessation rates sometimes found in disadvantaged groups. Lowering smoking rates in these populations will require more than regulation of the industry and tobacco products, although this may help. Targeted interventions, such as subsidised pharmacotherapies, are likely to be necessary to reduce the gap in smoking rates as a function of disadvantage. Policy makers interested in doing more to control the epidemic of tobacco-caused disease should be reassured that for the most part, they have the support of smokers, and in some cases greater support among those with the greatest need. Even though we found by-country differences, support among smokers for many regulatory actions is high, which should reassure policy makers to take further necessary actions.

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Conflict of interest None.

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