

Sustaining ‘truth’: changes in youth tobacco attitudes and smoking intentions after 3 years of a national antismoking campaign

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Abstract

This study examines how the American Legacy Foundation’s ‘truth®’ campaign and Philip Morris’s ‘Think. Don’t Smoke’ (TDS) campaign have influenced youth’s tobacco-related attitudes, beliefs and intentions during the first 3 years of the truth campaign. We use data from eight nationally representative cross-sectional telephone surveys of 35 074 12- to 17-year olds to estimate cross-sectional time series logistic regressions that assess the association between recall of truth and TDS and attitudes, beliefs, and intentions toward smoking. An alternative measure of exposure to TDS was also used. Findings indicate that exposure to truth advertisements (ads) was associated with steady positive changes in attitudes, beliefs and intentions to smoke, whereas exposure to Philip Morris ads was associated with more favorable beliefs and attitudes toward the tobacco industry. Our findings suggest that well-executed antismoking campaigns can positively and consistently change youth’s beliefs and attitudes, whereas a tobacco industry-sponsored campaign can have a counterproductive influence.

Introduction

A recent study found that exposure to state-sponsored antismoking campaigns airing from 1999 to 2000 throughout the United States was associated with lower perceived rates of peer smoking, greater perceived harm of smoking, decreased intentions to smoke and decreased odds of smoking [1]. This study adds to the body of research demonstrating that state and national antismoking campaigns are effective in changing youth’s tobacco-related beliefs, attitudes, intentions and use [2–12]. What is less clear from this research is whether antismoking campaigns can sustain their effectiveness over time. Prior studies have examined media campaign effects on tobacco-related cognitions over relatively short time frames, typically ≤ 1 year [2, 4, 5]. The current study examines the effects of the national ‘truth®’ campaign on youth attitudes, beliefs and intentions regarding tobacco over an extended period of 3 years.

The truth antismoking campaign, launched in February 2000, has exposed youth to provocative television commercials about the effects of tobacco and tobacco industry marketing tactics. Studies have shown the campaign to be associated with changes in tobacco-related beliefs and attitudes [13–15] and decreases in youth smoking [3]. The first study to evaluate the campaign found that campaign-targeted beliefs and attitudes had shifted significantly 10 months after the campaign began, and these changes were associated with recall of the truth advertisements (ads) [2]. This study also found that recall of Philip Morris’s ‘Think. Don’t Smoke’ (TDS) ads, which feature ‘just say no’ style messages, was associated with greater intentions to

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smoke and more favorable attitudes toward the tobacco industry. These findings are consistent with a recent controlled experiment showing that tobacco industry-sponsored antismoking ads provoked more favorable attitudes toward tobacco [16]. In addition, a school-based study of US youth found that exposure to tobacco company youth smoking prevention advertising had no effect on youth smoking outcomes, whereas exposure to Philip Morris's 'Talk. They'll Listen' parent-focused youth smoking prevention campaign was associated with lower perceived harm of smoking, stronger approval of smoking, and stronger intentions to smoke [16, 17].

This study reexamines trends in tobacco-related attitudes, beliefs and intentions and the truth campaign's influence on these constructs 3 years into the campaign. We also reassess the relationship between exposure to the TDS campaign and youth's tobacco-related cognitions and intentions over an extended period of time.

Methods

This study used the Legacy Media Tracking Survey (LMTS), which contains eight waves of nationally representative data, collected from winter 2000 to fall 2003. The combined waves include 35 074 12- to 17-year olds. LMTS oversamples Hispanic, African American and Asian youth. The eight waves had overall response rates of 52.5, 52.3, 60.4, 46.7, 51.7, 53.1, 42.5 and 30.1%, respectively [18]. Unweighted sample characteristics were virtually identical across all waves.

This study focuses on the same nine tobacco-related belief and attitude items that were reported on in the June 2002 study [2]. Each item indicates how strongly youth agree or disagree with a given statement on a five-point scale from strongly agree to strongly disagree. To illustrate overall trends in beliefs and attitudes, we summed the items to create an antismoking beliefs index. Factor analysis indicated one underlying factor across these items with a Cronbach's alpha of 0.7. Each item was coded with values ranging from -2 (strongly disagree)

to 2 (strongly agree), with 'no opinion' coded as the midpoint value of zero. This yielded an index that ranged from -18 to 18. A measure of smoking intentions was analyzed based on the LMTS question 'Do you think you will smoke a cigarette at any time during the next year?' with responses of definitely not, probably not, definitely yes or probably yes. This item was measured only for never smokers.

Campaign recall was measured by asking youth to demonstrate their awareness of specific truth and TDS ads that aired nationally before the LMTS administration [2]. We asked youth whether they had 'recently seen an anti-smoking or anti-tobacco ad on TV that ...' followed by a brief description of each ad. Respondents who indicated basic recognition were then asked to describe additional details about the ad. Individuals who accurately described the ad were considered to have 'confirmed awareness' [2]. We then constructed two indicator variables for confirmed awareness of truth and TDS, equaling one if the youth demonstrated confirmed awareness of at least one ad and zero otherwise. The LMTS includes questions on confirmed awareness of specific ads for each campaign that aired within ~6 weeks of the interview date or was currently airing during the interview period. Because TDS went off air after the fifth LMTS, confirmed awareness of TDS was, by definition, equal to zero in LMTS waves 6-8.

To capture differences in attitudes and beliefs between pre- and post-TDS campaign periods, we created an alternative indicator of exposure to TDS that equals 1 for youth surveyed in waves 1-5 and zero for youth surveyed in waves 6-8. We also created an alternative measure of exposure to truth based on available market-level gross ratings points (GRPs) data that measured the market-level dose of the truth campaign. Using these measures, we tested the hypothesis that campaign exposure is positively associated with antitobacco beliefs, attitudes and intentions to not smoke. We also created a term for the interaction between confirmed awareness of truth and TDS to test whether youth who recall both TDS and truth have different outcome responses than youth who recall only one campaign.

Statistical analyses

We begin with descriptive analyses of the trends in the belief/attitude index and campaign awareness over time. For each measure, a weighted average was computed across youth in each wave and plotted over time. All analyses adjusted for sampling design and weights using Stata's survey commands.

Nine separate logistic regressions were estimated to test whether recall of truth and TDS was associated with odds of agreeing or disagreeing with each of the nine belief/attitude items and intentions to not smoke. All outcome variables were dichotomized (0/1), so that 1 represents an antitobacco belief. Respondents who answered 'no opinion' to a specific belief/attitude item were coded as '0' in the dichotomized outcome variables. We included control variables for age, gender, race/ethnicity, weekly spending money, religiousness, hours of television watched per day, household smoking restrictions, whether the youth lives with a smoker and lives in a two-parent household, state cigarette taxes and per capita tobacco control program funding. To control for independent secular trends in the outcomes, we included a time trend variable measuring the number of months elapsed since the truth campaign launched. The trend accounts for the possibility that outcomes changed over time independently of the influence of the truth and TDS campaigns.

We estimated a second set of logistic regression models replacing the truth and TDS confirmed awareness variables with alternative variables that do not rely on self-reports of campaign recall. Following the methods described in Farrelly *et al.* [3], we assigned cumulative market-level truth GRP values to youth based on the survey year, quarter and media market in which participants resided. We also included a quadratic term for GRPs (GRPs squared) to account for diminishing campaign effects at higher levels of exposure [3]. Exposure to TDS was measured with an indicator for whether the TDS campaign was on or off the air. The TDS campaign aired nationally from 1998 to 2002. The advantage of this specification is that it relies on

varying exposure to TDS over time and accounts for the possibility that we did not capture all TDS ads airing nationally and regionally.

Results

Figure 1 summarizes trends in campaign awareness and the belief and attitude index. For most LMETS waves, truth campaign awareness was steady ~70%, with notable declines in spring 2001 and fall 2003. Awareness of TDS ranged from 63 to 75% before going off the air. From the first LMETS to the last, there was a statistically significant trend in the belief and attitude index ($P < 0.01$). Trend analyses of the index indicate that antismoking beliefs and attitudes increased by 50% from baseline to spring 2003, before declining by fall 2003, when awareness of truth declined.

Table 1 presents results from the logistic regressions for each of the outcomes under two model specifications. Model 1 shows results for the association between confirmed recall of truth and TDS and each outcome variable. Model 2 uses the alternative measures of exposure to each campaign. Results from Model 1 indicate a statistically significant association between confirmed recall of truth and agreement with eight of the nine belief and attitude items, with odds ratios (ORs) ranging from 1.2 to 1.6, indicating that recall of truth is associated with a 20 to 60% greater odds of agreeing with campaign-targeted beliefs and attitudes. In a separate model, we also estimated, via ordinary least squares, the attitude index as a function of confirmed recall of truth and TDS and found that recall of truth was significantly associated with higher levels of antitobacco attitudes (data not shown). Recall of truth was also associated with greater odds of ruling out smoking in the future (OR = 1.9, $P < 0.01$).

Confirmed recall of TDS was negatively associated with two beliefs and one attitude item that focused on cigarette companies. The only positive association between an antitobacco attitude and recall of TDS was for the statement 'not smoking

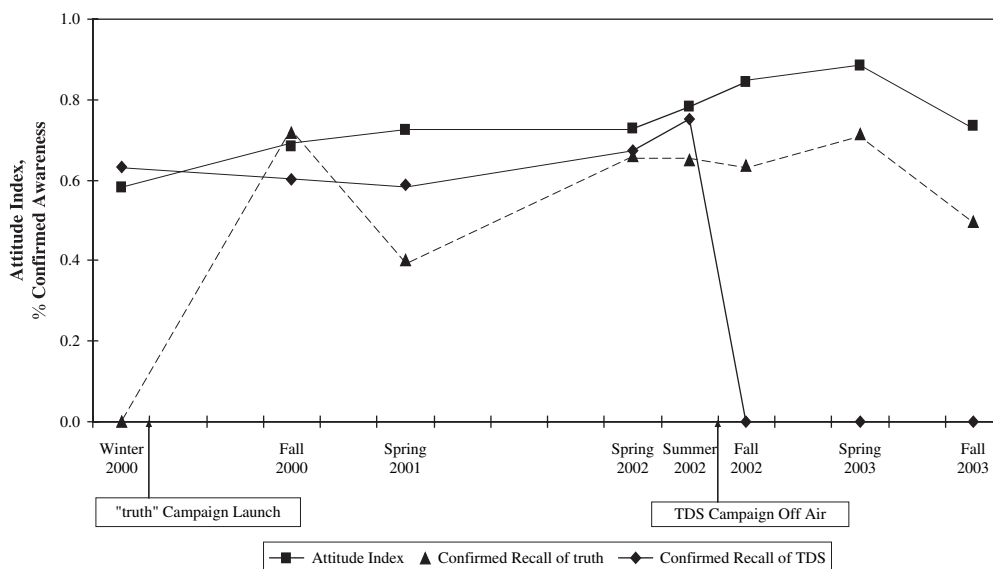


Fig. 1. Trends in antitobacco attitudes and beliefs and youth recall of the truth and TDS campaigns. Attitude index is divided by 4 so that it is on a comparable scale to the other variables in the figure.

is a way to express independence' (OR = 1.2, $P < 0.01$). Recall of TDS was not associated with the overall attitude index, estimated in a separate model (data not shown). There was also a marginally statistically significant negative relationship between recall of TDS and intentions to not smoke (OR = 0.6, $P < 0.06$).

Results from Model 2 indicate that truth GRPs were significantly associated with agreement with five of the nine belief and attitude items ($P < 0.05$ or better) and marginally significantly associated with three other items ($P < 0.10$ or better); truth GRPs were also significantly associated with greater odds of ruling out smoking in the future (OR = 2.6, $P < 0.03$). This analysis further indicates a statistically significant negative relationship between four beliefs and attitudes and exposure to TDS, and the magnitude of the ORs is larger. All four of these outcomes focus on beliefs toward cigarette companies. While the magnitude of the OR between exposure to TDS and intentions to not smoke is similar to the previous model specification,

it was not statistically significant (OR = 0.6, $P = 0.18$).

Discussion

The first study examining the effectiveness of the truth campaign indicated that, 10 months into the campaign, 75% of youth recalled at least one truth commercial, and campaign recall was associated with increased antitobacco attitudes and beliefs [2]. More recently, media market-level delivery of campaign commercials was shown to be associated with decreased odds of smoking among youth 2 years after truth launched [3]. The current study shows that antitobacco beliefs and attitudes increased steadily during the first 3 years of the truth campaign, and campaign recall is associated with greater odds of agreeing with eight out of nine campaign-related belief and attitude items. This reflects a stronger relationship between recall of truth and beliefs and attitudes than in the earlier

Table I. ORs from logistic regression models of the association between exposure to the truth and TDS campaigns and tobacco-related beliefs, attitudes and intentions among 12- to 17-year olds, 1999–2003 [95% confidence interval] (*P* value)

Outcome	Model 1		Model 2		
	Confirmed recall of truth	Confirmed recall of TDS	truth GRPs	truth GRPs squared	Indicator of TDS being on air
Cigarette companies try to get young people to start smoking	1.43 [1.24, 1.65] (<0.01)	1.07 [0.90, 1.27] (0.45)	1.93 [1.35, 2.79] (<0.01)	0.75 [0.66, 0.86] (<0.01)	0.99 [0.74, 1.34] (0.97)
Cigarette companies lie	1.59 [1.38, 1.82] (<0.01)	0.84 [0.70, 0.98] (0.05)	1.63 [1.14, 2.33] (<0.01)	0.83 [0.73, 0.95] (<0.01)	0.57 [0.44, 0.75] (<0.01)
Cigarette companies deny that cigarettes cause disease	1.20 [1.08, 1.33] (<0.01)	0.83 [0.73, 0.94] (<0.01)	1.33 [1.00, 1.76] (0.05)	0.92 [0.82, 1.02] (0.12)	0.62 [0.50, 0.76] (<0.01)
Cigarette companies deny that cigarettes are addictive	1.23 [1.11, 1.38] (<0.01)	0.92 [0.80, 1.05] (0.22)	1.32 [0.98, 1.76] (0.07)	0.94 [0.84, 1.04] (0.26)	0.64 [0.51, 0.79] (<0.01)
I would like to see cigarette companies go out of business	1.06 [0.93, 1.21] (0.38)	0.79 [0.67, 0.93] (<0.01)	1.77 [1.23, 2.53] (<0.01)	0.81 [0.71, 0.92] (<0.01)	0.67 [0.51, 0.88] (<0.01)
I want to be involved in efforts to get rid of smoking	1.17 [1.03, 1.33] (0.02)	1.09 [0.93, 1.28] (0.28)	1.35 [0.95, 1.92] (0.09)	0.87 [0.76, 0.99] (0.04)	0.92 [0.71, 1.20] (0.55)
Taking a stand against smoking is important to me	1.26 [1.10, 1.44] (<0.01)	1.11 [0.93, 1.32] (0.24)	1.05 [0.74, 1.50] (0.79)	0.95 [0.83, 1.09] (0.46)	0.83 [0.63, 1.09] (0.17)
Not smoking is a way to express independence	1.26 [1.13, 1.41] (<0.01)	1.21 [1.06, 1.38] (<0.01)	1.48 [1.11, 1.97] (<0.01)	0.84 [0.75, 0.93] (<0.01)	0.93 [0.75, 1.15] (0.49)
Smoking makes people your age look cool or fit in ^a	1.31 [1.09, 1.58] (<0.01)	1.03 [0.81, 1.31] (0.78)	1.51 [0.96, 2.35] (0.07)	0.78 [0.66, 0.92] (<0.01)	0.77 [0.53, 1.13] (0.19)
Definitely will not or probably will not smoke a cigarette at any time during the next year? ^b	1.88 [1.31, 2.72] (<0.01)	0.62 [0.38, 1.01] (0.06)	2.59 [1.10, 6.06] (0.03)	0.76 [0.57, 1.02] (0.07)	0.61 [0.29, 1.27] (0.19)

^aDisagreed or strongly disagreed.^bModel restricted to never smokers aged 12–17 years.

study, which showed a significant association with five out of nine items after 10 months of the campaign [2]. However, tests for coefficient differences showed the magnitude of the current associations is generally smaller than previously found, now ranging from 1.2 to 1.6 compared with 1.3 to 2.6, possibly reflecting a decrease in the salience of the campaign and/or measures reaching ceiling effects. Recall of truth is also significantly associated with greater intentions to not smoke. The magnitude of this relationship (OR = 1.9) is similar to previous findings (OR = 1.7).

The current research also confirms the earlier study's finding that TDS is associated with more favorable beliefs and attitudes toward cigarette companies. After TDS went off air, the antitobacco beliefs and attitudes index continued to increase, and this correlation is confirmed by models indicating that recall of TDS is associated with lower odds of agreeing with four statements about cigarette companies. However, we found no significant interaction between recall of truth and TDS, suggesting that TDS did not directly dilute the influence of the truth campaign.

These findings are consistent with a recent controlled experiment that demonstrated that tobacco industry-sponsored antismoking ads provoked more favorable attitudes toward tobacco companies [16]. Another study, among US youth, found that tobacco industry-sponsored youth smoking prevention advertising had little effect on smoking outcomes among youth and that youth exposure to tobacco industry parent-targeted advertising was associated with lower perceived harm of smoking, stronger approval of smoking and stronger intentions to smoke in the future [16, 17]. Together, these findings suggest that industry-sponsored campaigns are ineffective and possibly counterproductive.

Our analyses may be limited by the cross-sectional design, opening the possibility that those who recall campaign messages may be different from those who do not. Youth with stronger (weaker) antitobacco attitudes may be more (less) attentive to the truth campaign, leading to overstated associations. The contrary may also be true, leading to understated associations. However, ancillary analyses suggest that selective attention may

not threaten study validity. First, trends in campaign recall are nearly identical for smokers and non-smokers, suggesting that recall is not influenced by smoking status. Furthermore, descriptive trends for beliefs and attitudes changed in a manner that is consistent with patterns of exposure to truth over time. Our findings were also consistent in a separate specification that did not rely on self-reported measures of recall, suggesting that potential selective attention bias arising from self-reports does not affect the main findings.

Declining response rates over time are also a potential concern. Although declining response rates are well documented for telephone data collection, we do not believe this biases our results. With the exception of the last two waves of LMST, each survey achieved near or above 50% response rates. Furthermore, the unweighted sample characteristics are virtually identical across all survey waves, suggesting that the sample has not changed over time. Lastly, our main analytic findings are unchanged when our models are estimated using only the first six waves of data, excluding the last two waves with lower response rates.

In summary, our results suggest that truth campaign messages continued to resonate with youth well after its launch and shape their beliefs and attitudes about tobacco and the tobacco industry and their intentions to not smoke in the future. Moreover, our findings suggest that well-designed campaigns can have sustained effects over a number of years beyond the initial effects of a campaign's early media penetration. This study also reinforces recent findings that suggest tobacco industry-sponsored smoking prevention advertising is not effective in preventing youth smoking and may, in fact, have detrimental effects on youth attitudes toward tobacco use.

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Conflict of interest statement

None declared.

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