6-2012

Mass Media Campaigns to Reduce Smoking Among Youth and Young Adults: Documenting Potential Campaign Targets and Reviewing the Evidence From Previous Campaigns

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CECCR Working Paper Series

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June 2012

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Suggested Citation:
Brennan, E., Momjian, A., Jeong, M., Naugle, D., Parvanta, S., & Hornik, R. C. (2012). *Mass media campaigns to reduce smoking among youth and young adults: Documenting potential campaign targets and reviewing the evidence from previous campaigns* (CECCR Working Paper Series). Philadelphia, PA: Penn's Center of Excellence in Cancer Communication Research, Annenberg School for Communication, University of Pennsylvania.

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1) General Introduction

Anti-smoking mass media campaigns play an important role in efforts to reduce the prevalence of smoking among youth (12 – 17 year olds) and young adults (18 – 25 year olds) (hereafter collectively referred to as *young people*). In the recently published Surgeon General's Report on *Preventing Tobacco Use Among Youth and Young Adults*, the reviewers determined that there was sufficient evidence to conclude that mass media campaigns can prevent the initiation of tobacco use and reduce its prevalence among young people (U.S. Department of Health and Human Services, 2012).

There are at least four broad approaches that can be taken when developing a mass media campaign to reduce the prevalence of smoking among young people. First, a campaign may try to directly influence individual-level predictors of smoking behavior, such as knowledge about the ingredients in tobacco products or the negative health effects of tobacco use, or tobacco-related beliefs (e.g., impact of smoking on sport participation), self-efficacy (e.g., refusal efficacy), or perceived social norms (e.g., approval of smoking among peers). Alternatively, a campaign may try to indirectly influence an individual's behavior by targeting others within the individual's social environment. For instance, given the demonstrated association between exposure to direct peer pressure to smoke and an increased risk for smoking initiation (Australian Government Department of Health and Ageing, 2005; U.S. Department of Health and Human Services, 2012), one possible objective for a mass media campaign may be to discourage young people from pressuring their friends to try smoking. If successful, such a campaign would reduce the likelihood that an individual was exposed to direct peer pressure to smoke, thereby reducing their risk for smoking initiation. **In Table 1 (Page 4), we have identified 22 individual-level and social-level factors that we believe have the potential to be targeted in a tobacco control communication campaign that is directly targeted at young people.** Table 1 lists these factors, the level of evidence linking the factor to smoking behavior among young people, and the extent to which this factor has been targeted and influenced by previous mass media campaigns. These individually focused, youth-directed factors (and campaigns that address them) are the predominant approaches that have been taken in efforts to reduce tobacco use among young people. However, there are two other approaches which have some history and the potential to form the basis for a mass media campaign. While these two alternative approaches (changing environments and reducing adult smoking behavior) are described in the following paragraphs, they are not the main focus of the detailed tables provided later in this document, given our assumption that an FDA-sponsored smoking prevention campaign is likely to adopt an approach of directly targeting the smoking behavior of young people.

A third approach for mass media campaigns is to work to create environments that are less conducive to smoking. For example, there is evidence that young people are at an increased risk for smoking when smoking is tolerated at their school, when they live or go to school in areas with a greater density of tobacco retailers, and when they are exposed to point-of-sale tobacco displays (U.S. Department of Health and Human Services, 2012). Conversely, smoking bans in the home, clean indoor air laws in public places, and increases in the price of tobacco all serve as protective factors against smoking among young people (U.S. Department of Health and Human Services, 2012). In efforts to address these environmental influences, mass media campaigns can be used to explicitly encourage legislators and regulatory bodies to take action, or they can used in a more

subtle manner to increase the prominence and perceived importance of the issue among both policy makers and the public (McCombs & Shaw, 1972). In our review of the literature that has evaluated anti-smoking mass media campaigns, we did not come across any campaigns that had explicitly adopted this strategy. However, one example of this approach is provided by a campaign that is currently being run by Tobacco Free NYS – "What's in Store for Our Kids". This campaign is using print and radio advertisements to educate New Yorkers about the prevalence and impact of point-of-sale marketing of tobacco products on smoking initiation among young people, and to raise awareness among tobacco retailers of the role that they play in smoking initiation (http://tobaccofreenys.org/Whats-In-Store-For-Kids-Campaign.html).

The fourth broad approach that can be taken in efforts to reduce smoking behavior among young people is to implement policies and mass media campaigns that are directed at changing adult smoking behavior. Reviewers for the Surgeon General's Report stated that there was strong and consistent evidence from controlled exposure and population-wide studies that anti-smoking campaigns that are designed for adults can also decrease the prevalence of smoking among young people (U.S. Department of Health and Human Services, 2012). For instance, studies from Massachusetts (Siegel & Biener, 2000) and Australia (White et al., 2003) have provided evidence consistent with there being effects of adult-targeted campaigns on young people. Supportive findings were also obtained in the evaluation of Australia's graphic health warnings on cigarette packs, and the mass media campaign that accompanied their implementation (White et al., 2008). On the other hand, it must be noted that the evidence is less supportive of campaigns that aim to reduce youth smoking by encouraging parents to talk to their children about smoking. In their evaluation of Philip Morris' "Talk to your kids. They'll listen" campaign, Wakefield and colleagues (2006) found that adolescents who had been exposed to higher levels of this adult-targeted advertising had a greater likelihood of having smoked in the past 30 days and stronger intentions to smoke in the future (Wakefield et al., 2006). However, one notable difference between the "Talk to your kids…" campaign and the campaigns evaluated by Siegel and Biener (2000) and White and colleagues (2003; 2008) (besides the fact that "Talk to your kids…" was developed by the tobacco industry), is that even though "Talk to your kids…" addressed an adult audience (parents), it overtly aimed to reduce smoking among young people. Therefore, it is possible that young people reacted negatively to this campaign when they perceived that they were being told that they should not smoke *only because* they were young, and that they were therefore being treated differently from adults (Wakefield et al., 2006). By comparison, the adult-directed campaigns evaluated by Siegel and Biener (2000) and White and colleagues (2003; 2008) may have been less likely to elicit these negative reactions, given that they were so clearly directed at encouraging adult smokers to quit. Rather, there are three main reasons why these adult-targeted campaigns may have had such a positive effect on young people (White et al., 2003). First, by making smoking seem like a less desirable adult behavior, the campaign may have reduced the motivation of young people to use tobacco as a signifier of maturity and independence. Second, by effectively reducing the number of parents and other adults who were smoking, the campaign may have also reduced young people's exposure to, and the perceived prevalence of, smoking among adults. Finally, given that young people identify with adults and want to be treated as though they were adults, they may have been particularly likely to pay attention to messages that were clearly directed at an adult audience (White et al., 2003).

2) Potential targets for a mass media campaign to reduce smoking among youth and young adults

Table 1 lists 22 potential targets for a mass media campaign to reduce smoking among young people. In developing this list, we began by creating a longer list of factors that are associated with smoking among young people (ages 12 – 25), by reading the recently published Surgeon General's Report on *Preventing Tobacco Use Among Youth and Young Adults* (U.S. Department of Health and Human Services, 2012) and three other recent reviews of the literature regarding predictors of youth smoking (Australian Government Department of Health and Ageing, 2005; Freedman et al., 2012; Goldade et al., 2012). Several other factors were identified during our review of the literature on the effectiveness of tobacco control communication campaigns among young people, and through our own brainstorming of the type of campaign messages the FDA may be interesting in using. Through this process, we generated more than 80 factors. Of these, we identified 22 (the "shortlist") as being amenable to a tobacco control communication campaign that focuses on young people as the direct target audience.

In Table 1, we have summarized the level of evidence linking each of these shortlisted factors with smoking among young people (Column 2). Following the criteria outlined in the Surgeon General's Report (U.S. Department of Health and Human Services, 2012), we determined that there is insufficient evidence to infer a causal relationship between any of the factors in this list and smoking among young people, but that evidence for many of the factors is suggestive of a causal relationship. Factors for which at least two studies have reported consistent results are labeled with a 'yes'. Factors for which only one study has indicated a link with smoking among young people are labeled as having 'limited' evidence, those for which there is contradictory evidence are labeled 'mixed,' and those for which no evidence was found in the literature are labeled with 'none' (e.g., factors generated through our own brainstorming, or that were targeted in a previous campaign despite a lack of evidence linking it to smoking among young people).

We have also summarized the extent to which each of these factors has been targeted by previous mass media campaigns, and the extent to which these campaigns had an impact on campaign-targeted beliefs and/or smoking-related intentions and behaviors (Columns 3, 4 and 5; see introduction to Table 3 for further information about the literature search we conducted to identify campaign evaluation studies, and for details of each of the studies cited in Table 1). It is important to note that many of the studies documented in this table evaluated multiple campaigns, or campaigns that were comprised of more than one message. We used all available information about the theme/s of the campaign/s or messages, and about the outcome measures used, to determine the most appropriate factor/s against which to list each study. However, in many instances, studies are listed against more than one factor. In such cases, the findings recorded against the factor may not *necessarily* be attributable to the component of the campaign that targeted that particular factor, but rather may be attributable to another campaign component or to the combined effect of all campaign components.

Table 1 – Potential targets for a mass media campaign to reduce smoking among youth and young adults

1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Evidence of an Association with Smoking by Youth and Young Adults	3. Previous Campaigns	4. Campaign Impact on Relevant Beliefs	5. Campaign Impact on Intentions/Behaviors
Factors sourced from (see reference list for details): *[1]U.S. Surgeon General's Report (2012)* *[2]Australian Government Department of Health and Ageing (2005)* *[3]Freedman et al. (2012)* *[4]Goldade et al. (2012)*	**Level of Evidence** **Yes** – Two or more studies reporting consistent results **Limited** – Only one study **Mixed** – Contradictory evidence **None** – No evidence identified in literature reviewed **No** – Evidence is suggestive of no causal relationship **Direction of Association** **-Protective vs. Risk factor**	*Studies listed below evaluated mass media campaigns that targeted each factor; these studies did not assess the level of evidence linking the factor to youth smoking behavior*	⊕ = desired impact**;** ⊖ = undesired impact; ○ = no impact; = not measured (One circle per study)	⊕ = desired impact**;** ⊖ = undesired impact; ○ = no impact; = not measured (One circle per study)
KNOWLEDGE AND BELIEFS				
Knowledge of or belief in the health consequences of smoking[1,2,3]	-Yes -Protective factor	Nixon et al (2008)		⊕ ⊖
		Hanewinkel et al (2010)		○ ʃ
		Terry-McElrath et al (2007)	⊕	⊕
		Harakeh et al (2010)		⊕
		Syu et al (2010)	○	○
		Edwards et al. (2004)		○

→ Campaign-targeted beliefs were significantly associated with intentions/behaviors

ʃ Campaign consisted of a single theme

× Campaign theme/s not specified in detail; outcome beliefs examined as factors

+ Minority (of beliefs or of intentions/behaviors) were impacted in undesired direction

▪ Same outcome measure; only examined results by grade level (not total sample) and found the outcome measure going in different directions

~ Desired effect on intentions with some combination of messages about disapproval among peers, attractiveness of people who smoke and prevalence of smoking among peers. The desired effect went away when a message about approval of smoking among peers was added to the existing messages

◊ Intentions measured: telling others not to smoke, of listening to people who tell them about the benefits of being abstinent from tobacco, and of supporting those who quit (as opposed to individual smoking initiation/quitting)

1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Evidence of an Association with Smoking by Youth and Young Adults	3. Previous Campaigns	4. Campaign Impact on Relevant Beliefs	5. Campaign Impact on Intentions/Behaviors
		Emery et al (2005)		
		Hafstad et al (1997)		
		Pechman et al (2003)		
		Pechman & Reibling (2006)		
		Smith & Stutts (2006)		
		White et al (2008)		
		Worden et al (1996)		
		Tobacco. Reality. Unfiltered. (TRU) Kandra (2007)		
		California 1990-1991 Tobacco Education Media Campaign Popham et al (1994)		
		Massachusetts Antismoking Media Campaign Siegel & Biener (2000)		

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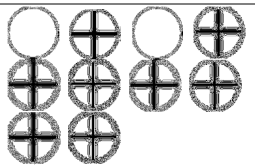
		2006 NY City DOHMH campaign; 2006 NY state DOH campaign Ellis et al (2007)		
		National Truth Campaign Thrasher et al (2004) Johnston et al (2005) Davis et al (2007)		
		National Truth Campaign Duke et al (2009)		
		National Truth Campaign Richardson et al (2010) Paek et al (2011) Farrelly et al (2002) Farrelly et al (2005) Hersey et al (2005a) Hersey et al (2005b) Farrelly et al (2009b) Farrelly et al (2009a) Davis et al (2009) Cowell et al (2009)		
Knowledge of or belief that youth are just as susceptible to the health consequences of smoking as adults	-None -Protective factor			
Knowledge of or belief in the addictive nature of smoking[2]	-Limited -Protective factor	Emery et al (2005)		

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1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Evidence of an Association with Smoking by Youth and Young Adults	3. Previous Campaigns	4. Campaign Impact on Relevant Beliefs	5. Campaign Impact on Intentions/Behaviors
		HELP – for a life without tobacco campaign Hassan et al (2009)		⊕
Knowledge of ingredients in tobacco products	-None -Protective factor			
Knowledge of or belief that smoking can endanger others	-None -Protective factor	Terry-McElrath et al (2007)		⊕
		HELP – for a life without tobacco campaign Hassan et al (2009)		⊕
		Massachusetts Antismoking Media Campaign Siegel & Biener (2000)	○	⊕
		2006 NY state DOH campaign Ellis et al (2007)		⊕
		Pechman et al (2003)	⊕	⊕
		Pechman & Reibling (2006)		⊕
Knowledge of or belief in the negative effects of smoking on cosmetics (e.g. bad breath, teeth, skin, etc.)	-None -Protective factor	Harakeh et al (2010)		⊕
		Hafstad et al (1997)		⊕

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		Pechman et al (2003)	○	○
		Pechman & Reibling (2006)		⊕
		Smith & Stutts (2006)		⊕
		Worden et al (1996)		⊕
		The Two-State Tobacco Project (TSTP) Murray et al (1994)		○
		Massachusetts Antismoking Media Campaign Siegel & Biener (2000)	○	⊕
		Flynn et al (2009)		⊕
Knowledge of or belief in the impact of smoking on sports	-None -Protective factor	Massachusetts Antismoking Media Campaign Siegel & Biener (2000)	○	⊕
Knowledge of or belief in the mood benefits of smoking[1,2]	-Yes (among current smokers) -Risk factor	Texas Tobacco Prevention Pilot Initiative Meshack et al (2004)	⊕	⊕

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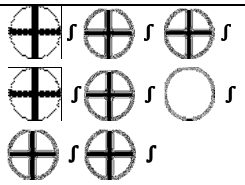
Belief that NOT smoking is an assertion of independence AND	-None -Protective factor	Tobacco Industry Youth-Targeted Campaigns Paek et al (2011) Farrelly et al (2002) Farrelly et al (2009a) Davis et al (2009) Wakefield et al (2006)		
Belief that smoking is an assertion of independence[4]	-Limited -Risk factor	Tobacco Industry Youth-Targeted Campaigns Davis et al (2007) Johnston et al (2005)		
Knowledge or belief that smoking is expensive	-None -Protective factor			
Knowledge or belief that there are better ways to spend money than on tobacco products	-None -Protective factor			
Anti-industry attitudes (e.g., knowledge of or beliefs in tobacco industry manipulative practices; desire to take a stand against the industry)	-None -Protective factor	Florida Truth Campaign Niederdeppe et al (2008) Niederdeppe et al (2007) Niederdeppe et al (2005) Bauer et al (2000) Dietz et al (2010) Sly et al (2001a) Sly et al (2001b) Sly et al (2002)		

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		Florida Truth Campaign Niederdeppe et al (2004)	⊕ ∫ →	⊕ ∫
		Terry-McElrath et al (2007)		⊕
		Syu et al (2010)	○	○
		Pechman et al (2003)		○
		Pechman & Reibling (2006)	○ →	⊕
		Minnesota Youth Tobacco-Use Prevention Program Sly et al (2005)	⊕ ∫	⊕ ∫
		California 1990-1991 Tobacco Education Media Campaign Popham et al (1994)		○ ↓
		Massachusetts Antismoking Media Campaign Siegel & Biener (2000)	○	⊕
		Truth[sm] Campaign Evans et al (2004)	⊕ →	⊕
		National Truth Campaign Richardson et al (2010)	⊕ →	○

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		National Truth Campaign Hersey et al (2005a)	⊕ →	⊕
		National Truth Campaign Hersey et al (2005b)	○ →	⊕
		National Truth Campaign Davis et al (2007) Johnston et al (2005)		
		National Truth Campaign Duke et al (2009)		
		National Truth Campaign Paek et al (2011) Farrelly et al (2002) Farrelly et al (2005) Farrelly et al (2009b) Farrelly et al (2009a) Davis et al (2009) Cowell et al (2009) Thrasher et al (2004)	⊕ ⊕ ⊕ ⊕ ⊕	⊕ ○ ⊕ ⊕ ⊕ ⊕ ⊕
SELF-EFFICACY				
Firm commitment not to smoke[1,2]	-Yes -Protective factor	Changing Social Norms: A Mass Media Campaign for Youth Ages 12-18 Schmidt et al (2009)		○ ◊ʃ

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Self-efficacy to refuse smoking (i.e. refusal efficacy)[1,2]	-Yes -Protective factor	Talk to your kids about smoking, they'll listen Paek et al (2011) Wakefield et al (2006)		⊕⊖
		Talk to your kids about smoking, they'll listen Johnston et al (2005)		
		Flynn et al (2010)	○	○
		Flynn et al (2009)		⊕
		Flynn et al (1992) Flynn et al (1994) Flynn et al (1997)		⊕⊕⊕
		Pechman et al (2003)	○	⊕
PERCEIVED SOCIAL NORMS				
Perceived (or actual) disapproval of smoking among peers[1,2,3] AND Perceived (or actual) approval of	-Yes -Protective factor -Limited	Pechman & Wang (2010) Pechman & Wang (2010)	⊕⊕ →	⊕ ~
		The Two-State Tobacco Project (TSTP) Murray et al (1994)		○

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smoking among peers[2]	-Risk factor	California 1990-1991 Tobacco Education Media Campaign Popham et al (1994)		○↓
		Flynn et al (2010)	○	○
		Flynn et al (2009)	⊕	⊕
Perceived disapproval of smoking among parents, or perception that parents have a negative attitude towards smoking[1,2] AND Perceived approval of smoking among parents, or perception that parents have a positive attitude towards smoking[2]	-Yes (especially for youth as compared to young adults) -Protective factor -Limited -Risk factor	Talk to your kids about smoking, they'll listen Paek et al (2011) Wakefield et al (2006)		⊕⊖
		Talk to your kids about smoking, they'll listen Johnston et al (2005)		
Perceptions of high smoking prevalence among peers[1]	-Yes -Risk factor	Pechman & Wang (2010) Pechman & Wang (2010)	○○	⊕~
		Flynn et al (2010)	○	○
		Flynn et al (1992) Flynn et al (1994) Flynn et al (1997)	⊕	⊕⊕⊕

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[◊] Intentions measured: telling others not to smoke, of listening to people who tell them about the benefits of being abstinent from tobacco, and of supporting those who quit (as opposed to individual smoking initiation/quitting)

1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Evidence of an Association with Smoking by Youth and Young Adults	3. Previous Campaigns	4. Campaign Impact on Relevant Beliefs	5. Campaign Impact on Intentions/Behaviors
Perception that smoking leads to social popularity[1]	-Yes -Risk factor	Tobacco Industry Youth-Targeted Campaigns Paek et al (2011) Farrelly et al (2002) Farrelly et al (2009a) Davis et al (2009) Wakefield et al (2006)	○○○○	⊕⊖○⊖⊖
		Tobacco Industry Youth-Targeted Campaigns Davis et al (2007) Johnston et al (2005)		
		Truth[sm] Campaign Evans et al (2004)	⊕→	⊕
		California 1990-1991 Tobacco Education Media Campaign Popham et al (1994)		○↓
		Massachusetts Antismoking Media Campaign Siegel & Biener (2000)	○	⊕
		Worden et al (1996)		⊕
		Pechman et al (2006)		⊕

→ Campaign-targeted beliefs were significantly associated with intentions/behaviors

[1] Campaign consisted of a single theme

[×] Campaign theme/s not specified in detail; outcome beliefs examined as factors

[↓] Minority (of beliefs or of intentions/behaviors) were impacted in undesired direction

[▪] Same outcome measure; only examined results by grade level (not total sample) and found the outcome measure going in different directions

~ Desired effect on intentions with some combination of messages about disapproval among peers, attractiveness of people who smoke and prevalence of smoking among peers. The desired effect went away when a message about approval of smoking among peers was added to the existing messages

[◊] Intentions measured: telling others not to smoke, of listening to people who tell them about the benefits of being abstinent from tobacco, and of supporting those who quit (as opposed to individual smoking initiation/quitting)

1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Evidence of an Association with Smoking by Youth and Young Adults	3. Previous Campaigns	4. Campaign Impact on Relevant Beliefs	5. Campaign Impact on Intentions/Behaviors
		Flynn et al (2009)		⊕
Perception that attractive people smoke	-None -Risk factor	Pechman & Wang (2010) Pechman & Wang (2010)	⊖○	⊕ ~
SOCIAL INFLUENCES				
Direct peer pressure to smoke[1,2]	-Yes -Risk factor			
Having received cigarette offers from friends[1,2]	-Limited -Risk factor			
Exposure to smoking by older sibling[1,2,3,4]	-Yes (for youth) -Mixed (for young adults) -Risk factor			

→ Campaign-targeted beliefs were significantly associated with intentions/behaviors

ʃ Campaign consisted of a single theme

× Campaign theme/s not specified in detail; outcome beliefs examined as factors

+ Minority (of beliefs or of intentions/behaviors) were impacted in undesired direction

▪ Same outcome measure; only examined results by grade level (not total sample) and found the outcome measure going in different directions

~ Desired effect on intentions with some combination of messages about disapproval among peers, attractiveness of people who smoke and prevalence of smoking among peers. The desired effect went away when a message about approval of smoking among peers was added to the existing messages

◊ Intentions measured: telling others not to smoke, of listening to people who tell them about the benefits of being abstinent from tobacco, and of supporting those who quit (as opposed to individual smoking initiation/quitting)

3) Supplementary Material

3.1) Non-shortlisted targets: Summary of previous campaign activity and effectiveness

In our review of the campaign literature, we identified a number of mass media campaigns that had targeted factors associated with smoking among young people that *were not* included in our shortlist of potential campaign targets, either because they were not specific enough to be targeted in a campaign (e.g., positive smoking-related expectancies; negative smoking-related expectancies; positive beliefs about quitting smoking) or because we did not believe that they were actually amenable to being changed by a youth-targeted campaign (e.g., perceptions of smoking prevalence at school [dependent on personal experience]; perceptions of close friends' smoking behavior [dependent on personal experience]; authority disapproval for smoking). These factors are listed in Table 2. We have summarized the extent to which each of these factors has been targeted by previous mass media campaigns, and the extent to which these campaigns had an impact on campaign-targeted beliefs and/or smoking-related intentions and behaviors (Columns 2, 3 and 4; see introduction to Table 2 for information about the limitations of this approach, and introduction to Table 3 for further information about the literature search used to identify campaign evaluation studies).

Table 2 – Non-shortlisted targets: Summary of previous campaign activity and effectiveness

1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Previous Campaigns	3. Campaign Impact on Relevant Beliefs	4. Campaign Impact on Intentions/Behaviors
	Studies listed below evaluated mass media campaigns that targeted each factor; these studies did not assess the level of evidence linking the factor to youth smoking behavior	⊕ = desired impact**;** ⊖ = undesired impact; ○ = no impact; = not measured (One circle per study)	⊕ = desired impact**;** ⊖ = undesired impact; ○ = no impact; = not measured (One circle per study)
Positive smoking-related expectancies [risk factor]	Flynn et al (2010)	○	○
	Flynn et al (1992) Flynn et al (1994) Flynn et al (1997)	⊕	⊕⊕⊕
	Worden et al (1996)	⊕	⊕
	Bauman et al (1991)	⊖	○

1. Factors That Potentially Influence Smoking by Youth and Young Adults	2. Previous Campaigns	3. Campaign Impact on Relevant Beliefs	4. Campaign Impact on Intentions/Behaviors
Negative smoking-related expectancies [protective factor]	Texas Tobacco Prevention Pilot Initiative Meshack et al (2004)	○	⊕
	Flynn et al (2010)	○	○
	Flynn et al (2009)	⊕	⊕
	Flynn et al (1992) Flynn et al (1994) Flynn et al (1997)	⊕	⊕⊕⊕
	Worden et al (1996)		⊕
	Bauman et al (1991)	⊖	○
	Pechman et al (2003)		⊕
Positive beliefs about quitting smoking [protective factor]	Solomon et al (2009)		⊕ʃ
	The EX Campaign Richardson et al (2011)	○ʃ	○ʃ
	Flynn et al (2009)		⊕
Perceptions of high smoking prevalence in school environment [risk factor]	Emery et al (2005)	○×	⊕×
	Massachusetts Antismoking Media Campaign Siegel & Biener (2000)	⊕	⊕
Perceptions of close friends' smoking behavior [risk factor]	Emery et al (2005)	⊕×	⊕×
Authority disapproval (other than parents) [protective factor]	Hafstad et al (1997)		⊕
	HELP – for a life without tobacco campaign Hassan et al (2009)		⊕

ʃCampaign consisted of a single theme

×Campaign theme not specified in detail; outcome beliefs examined as factors

3.2) Studies evaluating the effectiveness of mass media campaigns among youth and young adults

In Table 3, we have described and summarized the findings from 56 studies that evaluated the effectiveness of mass media tobacco control interventions among young people. Studies included in Table 3 were sourced in two ways. First, we acquired all of the original studies that were reviewed in the Surgeon General's Report on *Preventing Tobacco Use Among Youth and Young Adults* (U.S. Department of Health and Human Services, 2012). This report reviewed studies included in the three most recent comprehensive reviews of the effects of mass media campaigns on youth (Angus et al., 2008; National Cancer Institute, 2008; Richardson et al., 2007), as well as a number of additional studies published between May 2007 and June 2008. Next, we conducted a literature search for additional campaign evaluation studies published between June 2008 and April 2012. We searched five databases (PubMed, PsycInfo, embase, Scopus, and Web of Science) using the search string that was employed for the National Cancer Institute's Monograph *The Role of the Media in Promoting and Reducing Tobacco Use* (2008). Titles and abstracts of all of the studies identified through these two processes were first assessed by one researcher to ensure that they were potentially relevant to the current review. Potentially relevant studies were then evaluated by two researchers to ensure that they met the inclusion criteria specified below. This process resulted in 56 studies being identified as eligible for inclusion in Table 3. In addition, 13 studies that only compared the effectiveness of different message strategies (but did not report overall effects for any particular message) were retained for inclusion in Table 4 (see Page 56).

Inclusion Criteria

The current review aimed to document the extent to which previous campaigns have targeted, and have been shown to influence, specific factors that are known to be associated with smoking among young people. As such, a number of inclusion criteria were developed to ensure that the studies included in this review provided us with information about the popularity and promise of particular factors as targets of smoking prevention mass media campaigns, and that these studies also met a reasonable standard of methodological quality.

- Study must measure the effectiveness of a tobacco control mass media intervention among young people aged 12 – 25
    - *Included*: studies that evaluate the effectiveness of *adult-targeted campaigns*, so long as they evaluate the effectiveness of the campaign among 12 – 25 year olds
    - *Included*: studies that include respondents older than 25, so long as the majority of the sample is younger than 25 *or* results are presented separately for those in younger and older age groups
    - *Excluded*: studies that evaluate a campaign among a general audience (e.g., 16+ or 18+) but do not present results separately for those in younger (e.g., 18 – 25 or 18 – 29) and older age groups

- Study must measure the effectiveness of a mass media intervention that employed mass media channels such as television, radio, print and/or outdoor advertising where exposure is incidental or involuntary
    - *Excluded*: studies that evaluate the effectiveness of an intervention that largely required participants to "opt-in" (e.g., online media campaigns; participatory radio campaigns)

- Study must present sufficient information about the campaign messages that were used to allow the target theme/factor of the campaign to be identified
    - *Included*: studies that evaluate the effectiveness of multiple campaign messages or of *all* anti-tobacco advertising over a specific time period. In such cases, all available information about the campaign messages (and target themes) and the outcome measures is considered to decide which factor/s most accurately represents the objectives of the campaigns

- Study must have collected data at more than one time point (e.g., pre/post or multiple post-exposure measurements), use measures of naturally-occurring variation in exposure over time, or have included a control group (e.g., controlled/forced exposure studies)

- Study must present quantitative data relating exposure to mass media messages to a measured outcome that is indicative of campaign impact (other than recall)
    - Effects of exposure can be measured using objective measures of exposure (e.g., variation in GRPs), self-reported measures of exposure (e.g., recall), or through a comparison between exposed and unexposed groups (e.g., in controlled field studies and forced exposure [experimental] studies)
    - *Excluded*: studies that only measure exposure or recall
    - *Excluded*: studies that present descriptive data of changes in a population's beliefs/behaviors over the period that a campaign was airing, without relating the changes in outcomes to differences or changes over time in exposure
    - *Excluded*: experimental studies that have a control group but *do not* compare outcomes in the intervention group to those in the control group
    - *Excluded*: studies that only report the findings from focus groups or other qualitative assessments of messages

Additional Criteria for Inclusion in Table 3

- Study must report the overall effects of exposure to a campaign, or to specific campaign messages (i.e., compared to those who weren't exposed). Studies that *only* compare the effectiveness of different messages or different message characteristics are included in Table 4

Table 3 – Studies evaluating the effectiveness of mass media campaigns among youth and young adults

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
Bauer et al., 2000	Florida Truth Campaign Duration: long (1999-2000) Intensity: 590 million "impressions" (the number of times a person is reached by 1 or more messages) in the first year Target audience: youth Location: Florida Medium: television PSAs Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	Design: cross-sectional (3 waves: pre-intervention survey and two follow-up surveys at 1 and 2 years) Sample: 22540, 20978, and 23745 students attending 255, 242, and 243 Florida public middle and high schools in 1998, 1999, and 2000, respectively.	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target theme: industry manipulation	Exposure measure: yes Confirmed recall of 92% among youth aged 12 to 17 in 1999	Outcome measures: change in cigarette use status, cigarette use intentions, cigarette use behaviors	Effects: Change in cigarette use status: From the first to third survey, cigarette use declined*; the percent who were never cigarette users increased*; prevalence of frequent cigarette use decreased* Changes in cigarette use intentions and behaviors: over time, the percent defined as committed nonsmokers increased*; among experimenters, percent who stated would not smoke again increased*; no change over time in current cigarette smokers
Bauman et al., 1991	Only RADIO campaign Duration: short (Nov 1985, Jan 1986, April 1986) Intensity: not specified Target audience: youth (ages 12-17) Location: 10 media markets (campaign aired in: Lakeland, Florida; Macon, Georgia; Control groups in Chattanooga, TN; Columbia, SC; Jackson, MI; Savannah, GA) Medium: radio Other components: two other campaign components also broadcast	Design: cross-sectional and longitudinal (2 waves: pre-campaign survey April-October 1985; post-campaign survey April-October 1987) with a quasi-experimental design (control vs. treatment) Sample: longitudinal: 2102 at pretest (age 12-14); 1637 at post-test (across all 10 media markets) cross-sectional: 1216 (14-16 year olds & their mothers	Theory based: yes (not specified) Target theme: expected consequences of smoking featured in campaigns (bad breath, difficulty concentrating, loss of friends, trouble with adults, loss of appetite, increased fun, and increased relaxation)	Exposure measure: yes Estimated with Arbitron or Nielsen data; 81% of the intended audience reached an average of 4.5 times each week of the three four-week periods was broadcast	Outcome measures: smoking experimentation, regular smoking, recent smoking, smoking intensity, intervening variables (smoking subjective expected utility, nonsmoking subjective expected utility, total subjective expected utility, friend approval of smoking, friend encouragement of not smoking, smoking intention)	Effects: *Comparing post-test to pre-test:* Friend encouragement of not smoking, smoking intention, smoking experimentation, regular smoking, recent smoking, and smoking intensity, became more favorable towards smoking*; no time by treatment interactions Smoking subjective expected utility became more favorable towards smoking*; time by treatment interactions for non-experimenters and total sample* Nonsmoking subjective expected utility became more favorable towards smoking*; time by treatment interactions

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	during this period: radio and television campaigns inviting youth to enter the "I Won't Smoke Sweepstakes" in order to encourage them to talk to their friends about not smoking and to enter the sweepstakes					for experimenters only* Total subjective expected utility became more favorable towards smoking*; for non-experimenters and for total sample, expected utility increased less in treatment than control over time* Friend approval of smoking became more favorable towards smoking*; for non-experimenters and for the total same, treatment caused less of an increase in friend approval of smoking relative to control over time*
Cowell et al., 2009	National Truth Campaign Duration: long ("Truth" began in 2000) Intensity: not specified Target audience: youth (ages 12-17) Location: USA Medium: television PSAs Other components: at the same time, the 'Think. Don't Smoke' Campaign was running	Design: cross-sectional 7-waves (Legacy Media Tracking Survey) from Dec 1999-July 2003 Sample: nationally representative sample of 31,758 youth aged 12-17 Legacy Media Tracking Survey	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: negative health effects, industry manipulation	Exposure measure: yes Prompted recall Wave I: 0% (pre-launch) Wave II: 75% Wave III: 38% Wave IV: omitted Wave V: 66% Wave VI: 66% Wave VII: 66% Wave VIII: 74%	Outcome measures: tobacco-related beliefs, tobacco-related attitudes, Smoking intention	Effects: Tobacco-related beliefs: across all races, exposure to the "Truth" campaign was associated with anti-industry beliefs* (for all 3 belief statements); no significant differences between whites and African Americans; no differences between Hispanic and Asian youth but compared with white and African American youth, they did not have as unfavorable beliefs towards tobacco companies (sig. difference for Hispanic* but not for Asian youth) Tobacco-related attitudes: across all races, exposure to the "truth" campaign was associated with anti-industry attitudes* (for all 3 attitude statements); no significant differences between whites and African-Americans; no significant differences between Hispanics and Asians; both Hispanic and Asian youth had more unfavorable attitudes towards

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						tobacco companies than whites and African Americans (not significant) Smoking intention: across all races, those who had never smoked had greater odds of not intending to smoke in the next year*; never-smoking African Americans likely to not intend to smoke*; Hispanic and white youth also likely to not intend to smoke (p=.06); among ever smokers, "truth" was associated with increased odds of not intending to smoke*; none of the racial groups individually were significant
Davis et al., 2009	National Truth Campaign and Philip Morris' "Think. Don't Smoke." Campaign Duration: long ("Truth" campaign began in 2000 and is still running; TDS: 1998-2002) Intensity: not specified Target audience: youth (ages 12-17) Location: 5 U.S. states Medium: television PSAs Other components: not specified	Design: longitudinal (3 waves between 2000 and 2002); at baseline, separated youth by those who were at high-risk of smoking versus those at low-risk Sample: 16,327 students in grades 6-12 in a total of 83 schools (10 school districts) who completed all 3 survey waves	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: Truth: industry manipulation, negative health effects TDS: belief that smoking doesn't lead to social popularity, belief that NOT smoking is an assertion of independence	Exposure measure: yes GRPs; prompted recall Prompted "Truth" recall: 14.8% low recall 54.4% medium recall 30.8% high recall Prompted TDS recall: 36% low recall 57.4% medium recall 6.6% high recall No further GRP information	Outcome measures: tobacco-related attitudes and beliefs (*beliefs about youths who smoke having more friends, belief that not smoking is a way to express independence, belief that smoking makes peers feel good about themselves, belief that cigarette companies try to get youths to start smoking, disapprove of peers smoking cigarettes, beliefs about people harming themselves from smoking, beliefs about people dying from smoking*), Intentions to smoke, Smoking initiation	Effects: Tobacco-related attitudes and beliefs: *Beliefs about youth who smoke having more friends*: Both baseline high-risk and low-risk youth with high truth recall (as well as low-risk with medium truth recall) were more likely to disagree that youth who smoke have more friends relative to those who have low truth recall*; no effect for medium truth recall for high-risk youth; no effect for TDS recall *Belief that not smoking is a way to express independence:* Among high-risk youth, those with medium TDS recall were more likely to agree that not smoking is a way to express independence than those with low TDS recall*; no effect for other high-risk youth (truth recall or high TDS recall); for low-risk youth, those with high truth recall and those with

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						high TDS recall were more likely to agree that not smoking expresses independence than those with low recall*; no effect for those with medium recall for low-risk youth *Belief that smoking makes peers feel good about themselves:* No effect among high or low-risk youth or with different amounts of recall *Beliefs that cigarette companies try to get youths to start smoking*: Among high-risk youth, those with high truth recall were more likely to agree that cigarette companies try to get youths to smoke than those with low recall* (no difference for medium recall or TDS recall); among low-risk youth, those with medium truth recall and high truth recall were more likely to agree than those with low truth recall*; no difference for TDS recall *Disapprove of peers smoking cigarettes*: No effect among high-risk youth regardless of differing TDS or truth exposure; for low-risk youth, medium and high truth recall were more likely to agree that their peers shouldn't smoke cigarettes than low exposure*; low-risk youth with medium and high TDS recall were more likely to agree their peers shouldn't smoke than low TDS recall* *Beliefs about people harming themselves from smoking:* among both high-risk youth

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						and low-risk youth, both medium and high truth recall were more likely to agree that smoking causes a risk of harming oneself as opposed to low truth recall*; no high-risk or low-risk TDS effects *Beliefs about people dying from smoking*: among high-risk, those with medium and high truth recall were more likely to agree 1/3 18 year old smokers will eventually die because of smoking than those with low truth recall*; no high-risk TDS recall effect; among low-risk, those with medium truth, high-truth, medium TDS and high-TDS recall all were more likely to agree 1/3 18 year old smokers will eventually die because of their smoking as opposed to those with low recall (in truth or TDS)* Intentions to smoke: dose-response relationship between higher "truth" recall and intentions to smoke soon (less likely to smoke soon)*; recall of TDS associated with increased intentions to smoke soon but not a dose-response relationship* Smoking initiation: recall of "truth" campaign associated with lower initiation to smoking for those with high recall of truth campaign compared to low recall*; recall of TDS campaign not associated
Davis et al., 2007	National Truth Campaign and Phillip Morris' "Think. Don't Smoke." Campaign Duration: long ("Truth"	Design: cross-sectional (Legacy Media Tracking Surveys on exposure to "truth" and 'Think. Don't Smoke' campaigns); 8 waves conducted via	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: Truth: industry	Exposure measure: yes Prompted ad recall, semi-prompted campaign recall, prompted campaign recall, GRPs ("Truth" campaign	Outcome measures: *perceived* smoking prevalence; smoking prevalence	Effects: *Perceived* smoking prevalence: declined nationally from early 2000 to late 2003*; each of the four exposure measures to "truth"

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	began in 2000 and is still running; TDS: 1998-2002) Intensity: GRPs varied considerably across 210 markets; no specifics in paper Target audience: youth (ages 12-17) Location: across the U.S. Medium: television PSAs Other components: not specified	telephone between winter 1999 and fall 2003 Sample: nationally representative telephone sample 35,074 12-17 year olds; oversampled telephone exchanges in areas with high proportions of households with Hispanics, African-Americans and Asians to increase their representation	manipulation, negative health effects TDS: belief that smoking doesn't lead to social popularity, belief that NOT smoking is an assertion of independence	only; varied considerably across the 210 media markets in the U.S.) No specifics of the number who correctly confirmed exposure for any of the measures		associated with lower perceived smoking prevalence*; no association between exposure to 'Think. Don't Smoke.' and perceived prevalence Smoking prevalence: declined from early 2000 to late 2003* (article doesn't break down prevalence further by campaign exposure)
Dietz et al., 2010	Florida Truth Campaign Duration: long (1998-2001) Intensity: not specified Target audience: youth (ages 12-17) Location: Florida Medium: television PSAs Other components: in-school education, school-based youth organization and community organizations in addition to media campaign	Design: cross-sectional (6 waves from 1998 – 2001 during campaign and 2 post-campaign waves in 2004 and 2006); telephone surveys Sample: random sample of 1800 youths aged 12-17	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target theme: industry manipulation	Exposure measure: yes Semi-prompted campaign recall: 96% in 1999 Prompted ad recall (at least 1 "Truth" ad): 93% in 1999, 64.2% in 2004, 10.5% in 2006	Outcome measures: smoking prevalence	Effects: Smoking prevalence: declined from baseline to campaign termination in 2001*; continued to decline from 2001 after the campaign ended until 2004* (declined for ≥16*; slight increase for ≤15); smoking rates increased from 2004-2006 (only significant increase for those 16 and older*)
Duke et al., 2009	National Truth Campaign Duration: short (April-September 2007) Intensity: not specified Target audience: youth (ages 12-17) Location: USA Medium: television PSAs	Design: longitudinal (2 waves: baseline (Feb-April 2007) and follow-up (July-Sept 2007)) with a quasi-experimental design (8 media markets receiving supplemental advertising and 8 comparison markets solely receiving less than the national average of "Truth" messages); half were random-digit dials, half were called if household was likely to have a teenager	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: industry manipulation, negative health effects	Exposure measure: yes GRPs (missing Appendix A with more info about GRP levels)	Outcome measures: confirmed (prompted) awareness of "truth" campaign, receptivity to campaign ads	Effects: Confirmed awareness of Truth campaign: youth in treatment markets were three times more likely to be aware of "Truth" advertising than youth in comparison markets* Receptivity to ads: youth in treatment markets more receptive than those in comparison markets*; those who saw the ads more

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Other components: not specified Sample: 2618 youths aged 12-17 (selected if received less than the national average of GRPs and were located in low-population-density areas); rural households oversampled to ensure sufficient representation					frequently reported higher levels of mean receptivity; youth in treatment markets were more likely to be receptive to the ads than youth in comparison markets because of their more frequent exposure
Edwards et al., 2004	Duration: short (July 2002) Target audience: young women (ages 12-17) Location: New South Wales, Australia Medium: television PSAs	Design: controlled exposure study with a quasi-experimental design (treatment – 30 second anti-smoking PSA; control – nothing) Sample: 2038 women aged 12-17	Theory based: yes (theory of reasoned action, elaboration likelihood model) Target theme: negative health consequences	Exposure measure: yes Semi-prompted recall 58.4% in intervention group could recall seeing the ad (recall greatest among those who saw movies depicting moderate to heavy on-screen smoking) 83% of both intervention and control could recall seeing smoking in the movie	Outcome measures: attitude to smoking in the movies, intention to be smoking in 12 months	Effects: Attitude to smoking in the movies: overall, more likely to indicate smoking was not okay if saw anti-smoking ad prior to movie (compared to control)*; among non-smokers, more in intervention than control thought smoking was not okay*; among smokers, there was no significant difference although the intervention showed a higher level of disapproval Intention to be smoking in 12 months: no overall significant effect of intervention on intention to smoke; among smokers, higher percent in intervention (compared to control) said would be less likely to smoke in 12 months* (smokers only constituted 9% of sample); no difference among nonsmokers
Ellis et al., 2007	2006 New York City Department of Health and Mental Hygiene (DOHMH) media campaign; 2006 NY State Department of Health media campaign Duration: NYC campaign (moderate (January-October 2006 although campaign only broadcast 23 of the 40 weeks)); NY	Design: cross-sectional (5 waves: annually from 2002-2006) Sample: random digit dial sample of 10,000 adult New York residents (break down results by age groups)	Theory-based: no Target theme: NYC: negative health effects (graphic imagery) NY state: second-hand smoke (effects on children), negative health effects (graphic imagery)	Exposure measure: yes GRPs NYC: 100-600 GRPs per week for a total of approx. 6500 GRPs in January-October 2006 NY state: 4,400 GRPs in January-December 2006 In 2006, NYC residents	Outcome measures: smoking prevalence	Effects: Smoking prevalence: 18-24 year olds had a significant decrease in smoking prevalence from 2002 to 2006*; percentage change from 2005-2006 for 18-24 year olds not significant (by age group, only broke down results to 2002, 2005 and 2006)

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	state campaign (moderate (January-December 2006)) Intensity: NYC: approx. 3300 GRPs/quarter; NY state: approx.. 1100 GRPs/quarter; Total: approx.. 2750 GRPs/quarter Target audience: young adults and adults Location: New York City Medium: television Other components: NYC TV campaign only part of a five-point tobacco control program implemented in NYC beginning in 2002 (increased taxation, establishment of smoke-free workplace; media component only began in 2006); in 2006, the NYC campaign aired simultaneously with a large New York state anti-tobacco media campaign (that included NYC – analysis examines impact of combination)			thus exposed to total of almost 11,000 GRPs		
Emery et al., 2005	State tobacco control programs Duration: moderate (1999-2000) Intensity: varied by designated market area Target audience: all populations Location: 75 largest designated market areas in the US	Design: cross-sectional (2 waves: pre-/post-intervention surveys) Sample: 65891 students (25800 8th graders, 20164 10th graders, 19927 12th graders) Monitoring the Future	Theory based: not specified Target theme: not specified	Exposure measure: yes TRPs for state anti-tobacco campaigns (specifics not reported)	Outcome measures: recall, perceived rates of friends' smoking, belief that >70% of students smoke in school, perceived risk of addiction, perceived harm of smoking, intentions not to smoke in the future, odds of being a smoker, number of cigarettes smoked	Effects: *Mean exposure to at least one anti-tobacco PSA in the past 4 months was associated with :* Higher ad recall* Lower perceived rates of friends' smoking* No significant effects on the belief that >70% of students smoke in school Greater perceived risk of

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Medium: television PSAs Other components: Pharmaceutical anti-tobacco ads, tobacco industry parent-targeted campaigns; tobacco-industry youth-targeted campaigns, National Truth Campaign					addiction* Greater perceived harm of smoking* Stronger intentions not to smoke in the future Lower odds of being a smoker* Being less likely to have smoked in the past 30 days* No significant effect on number of cigarettes smoked per day among smokers
Evans et al., 2004	National Truth Campaign Duration: long (1999-2001) Intensity: not specified Target audience: youth (ages 12-17) Location: USA Medium: television PSAs Other components: not specified	Design: cross-sectional (3 waves: 1999, 2000, 2001) Sample: nationally representative sample of 20,058 respondents ages 12-24 Legacy Media Tracking Survey	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: positive images of NOT smoking, industry manipulation	Exposure measure: no (as independent variable only) Confirmed recall combined with measure of ad appeal	Outcome measures: smoking status Mediators: social imagery and perceived tobacco independence	Effects: Smoking status: only affected through the association with the mediators (social imagery and perceived tobacco independence); mediators had negative association with smoking status* Social imagery: exposure to campaign increased positive social imagery about not smoking* Perceived tobacco independence: exposure to campaign increased sense of independence from tobacco use (and tobacco industry)*
Farrelly et al., 2009a	National Truth Campaign and Phillip Morris' "Think. Don't Smoke" Campaign (TDS) Duration: long (3 years); Truth campaign began in 2000; Think. Don't Smoke campaign began 1998) Intensity: not specified Target audience: youth (ages 12-17) Location: USA	Design: cross-sectional (eight waves of telephone data from 2000-2003) Sample: nationally representative sample of 35,074 12-17 year olds; oversampled Hispanic, African American and Asian youth Legacy Media Tracking Survey	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: Truth: negative health effects, industry manipulation TDS: belief that smoking doesn't lead to social popularity, belief that NOT smoking is an assertion of independence	Exposure measure: yes Prompted recall Alternative measure of exposure based on GRPs (# not specified) Awareness of truth: ~70% for most waves Awareness of TDS: 63-75% before going off the air	Outcome measures: anti-industry attitudes and beliefs, belief that not smoking is a way to express independence, belief that smoking makes peers look cool or fit in, intentions towards smoking	Effects: Anti-industry Attitudes and Beliefs: Confirmed recall of truth campaign (and truth GRPs) associated with greater agreement with anti-industry attitudes* and associated with greater agreement with anti-industry beliefs* (all 7 attitudes and beliefs); recall of TDS associated with less agreement with 4 of the 7 anti-industry attitudes and beliefs*

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Medium: television PSAs Other components: not specified					Belief that not smoking is a way to express independence: confirmed recall of truth (and GRPs of truth) associated with greater agreement with the belief*; confirmed recall of TDS associated with greater agreement with the belief* Belief that smoking makes peers look cool or fit in: confirmed recall of truth (as well as truth GRPs – though p=.07 for GRP measure) associated with greater agreement with this belief*; neither TDS recall nor indicator of it being on the air is associated with this belief Intentions to smoke: Negative relationship with recall of TDS (p<.06); Positive relationship with truth GRPs* and with recall of truth campaign*
Farrelly et al., 2005	National Truth Campaign Duration: long (2000-2002) Intensity: 483 to 2546 GRPs per quarter depending on the media market Target audience: youth (ages 12-17) Location: USA Medium: television PSAs Other components: not specified	Design: cross-sectional (6 waves: 3 Pre-/3 Post-intervention surveys (1997-2002)) Sample: national sample of approximately 50000 students in grades 8, 10, and 12 surveyed each Spring from 1997 through 2002 Monitoring the Future Survey	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: industry manipulation, negative health effects	Exposure measure: yes GRPs (ranging from 647 to 22389 in the 210 media markets) The lowest exposure group received an average of 3867 GRPs over the 2-year period; whereas the highest exposure group received an average of 20367 GRPs	Outcome measures: youth smoking prevalence	Effects: Youth smoking prevalence: large decline in youth smoking prevalence from 1997-2002: post-truth campaign declines in smoking (2000-2002) were significantly greater than pre-truth declines (1997-1999)*; dose-response relationship between "truth" campaign exposure and current youth smoking prevalence*
Farrelly et al., 2002	National Truth Campaign (began in 2000) and the Philip Morris "Think. Don't Smoke" campaign (began in 1998)	Design: cross-sectional (2 waves: pre-/post-intervention surveys: December 1999 and September 2000 (10 months	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme:	Exposure measure: yes Unprompted recall (22% for "Truth" and 3% for "Think. Don't Smoke")	Outcome measures: anti-industry attitudes, belief that not smoking is a way to express independence, belief	Effects: Anti-industry Attitudes: Exposure and recall of truth increased anti-industry attitudes for 4 of the 7

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Duration: moderate (10 months of National Truth Campaign) Intensity: not specified Target audience: youth (ages 12-17) Location: USA Medium: television PSAs and print, promotional items, street marketing, website Other components: not specified	later) Sample: telephone surveys of 3439 12-17 year olds at baseline and 6233 at follow-up Legacy Media Tracking Surveys	Truth: industry manipulation, negative health effects TDS: belief that smoking causes social popularity, belief that NOT smoking is an assertion of independence	Prompted recall Confirmed recall (75% for "Truth" and 66% for "Think. Don't Smoke.")	that smoking cigarettes makes people look cool or fit in, smoking intentions	attitudes*; no effect on the other 3; Exposure and recall of TDS had no effect on 5 of the 7 anti-industry attitudes (positively affected 2*) Belief that not smoking is a way to express independence: Exposure and recall of truth associated with an increase in this belief*; Exposure and recall of TDS associated with an increase in this belief* Belief that smoking cigarettes makes people look cool or fit in: Exposure and recall of truth associated with a decrease in this belief*; No effect from exposure or recall on TDS Smoking Intentions: Exposure and recall of truth had no effect on intentions; Exposure and recall of TDS increased future intentions to smoke*
Farrelly et al., 2009b	National Truth Campaign Duration: long (2000-2004) Intensity: varied based on location in US: 193-2008 GRPs per quarter Target audience: youth (ages 12-17) Location: USA Medium: television PSAs Other components: not specified	Design: longitudinal (eight waves: 1997-2004) Sample: nationally representative cohort of 8904 adolescents ages 12-17 (in 210 media markets)	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: negative health effects, industry manipulation	Exposure measure: yes Cumulative GRPs from over 4 years States color-coded based on cumulative level: 3,096-8,904 8,905-14,712 14,713-20,520 20,521-26,328 26,329-32,137	Outcome measures: smoking initiation	Effects: Smoking initiation: exposure to truth campaign associated with decreased risk of initiation*
Flynn et al., 2009	Duration: long (1986-1989) Intensity: weekly GRPs converted into approx.	Design: longitudinal cohort followed over four years with quasi-experimental design: mass media + school intervention (experimental)	Theory-based: yes (social cognitive theory, social influence model) Target theme: cosmetic	Exposure measure: yes GRPs January-May and August-	Outcome measures: smoking behavior, alcohol and smokeless tobacco use, perceived adult tobacco use, stress	Effects: Smoking Behavior: No baseline differences; in 1989, more students in the comparison cohort as

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	4560/quarter for TV + radio); radio-only campaign from June-July had approx. 1720 GRPs for those two months Target audience: youth (ages 12-17) Location: four media markets across the U.S. (Vermont, elsewhere in the northeast in the U.S., and two markets in a western U.S. state) Medium: radio and television Other components: School intervention was used in addition to and compared with media intervention	v only school component (comparison); new media messages introduced annually in order to refresh campaign; students surveyed at baseline before intervention (in 1985) then follow-up surveys each spring from 1986-1989, then additional set of surveys in 1991 Sample: 5458 students beginning in grades 4-6, matured to grades 8-10; included those in independent media markets with a population between 50,000 and 400,000	effects, peer disapproval, positive quitting beliefs, negative smoking expectancies, belief that not smoking leads to social popularity, refusal self-efficacy	September had weekly GRPs for TV and radio combined at 380 (3-4 exposures/week) June-July, radio-only campaigns ~215 GRPs/week	Mediators: attitude toward smoking, advantages of smoking, disadvantages of smoking, smoking norm, perceived smoking by peers	opposed to the experimental reported smoking in the past week*; this trend was seen in the follow-up two years later (comparison reported smoking more)* Alcohol and Smokeless Tobacco Use: No intervention impact Perceived Adult Tobacco Use: No intervention impact Stress: No intervention impact Attitude Toward Smoking: At the end of the study, more negative attitudes among those in the experimental compared with control* Advantages of Smoking: At the end of the study, decrease in beliefs in the advantages of smoking among those in the experimental compared with control* Disadvantages of Smoking: At the end of the study, increase in beliefs about disadvantages of smoking among those in the experimental compared with control* Smoking Norm: At the end of the study, experimental group more anti-tobacco than control* Perceived Smoking by Peers: At the end of the study, experimental group more anti-tobacco than control*
Flynn et al., 2010	Duration: long (2002-2005) Intensity: GRPs/quarter	Design: cross-sectional (2 waves: Pre-/post-intervention surveys in 2001 and 2005) with a quasi-	Theory based: yes (theory of reasoned action) Target theme: social norms	Exposure measure: yes GRPs	Outcome measures: smoking behavior (past 30 days, past 7 days); smoking intentions (30	Effects: Smoking Behavior: Declined post-intervention (both conditions)

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	approx. 4500; June-July radio campaigns delivered approx. 215 GRPs Target Audience: four simultaneous age specific media campaigns for young people, grade 4-12 Location: medium-sized metropolitan areas identified in four states (Florida, South Carolina, Texas and Wisconsin) Medium: television PSAs and radio Other components: not specified	experimental design (four matched pairs (one school in each location did and did not receive the intervention) Sample: youth in grades 7-12 (19,966 participants in 2001; 23,246 in 2005); districts serving lower-income and lower-education populations	(decreasing perceptions of smoking prevalence among youth, increasing perceptions of smoking disapproval); refusal efficacy (increasing confidence in ability to refuse cigarettes), decreasing positive outcome expectancies, increasing negative outcome expectancies	TV: 380 GRPS/week Radio: 215 GRPs in June-July	days, next year, 5 years) Psychosocial mediators: perceived prevalence of smoking (in community; in U.S.), peer smoking norms, confidence in refusing cigarettes, negative outcome expectations from smoking, positive outcome expectations, awareness of media *Refer to paper for more results on subgroup populations	Smoking Intentions: Declined post-intervention (both conditions); only significant for intention to smoke in next 5 years (as a result of time surveyed, not condition)* Perceived smoking prevalence: Declined post-intervention (both conditions)* Peer smoking norms: Declined post-intervention (both conditions)* Confidence in refusing cigarettes: increased over time in both conditions Negative outcome: Decreased at follow-up in comparison but not intervention group (slight increase) Positive outcome: increased at follow-up survey in both conditions, unfavorable change* Awareness of media: Only significant finding was greater awareness of messages on TV in those who received the intervention when asked post-intervention*; rates of awareness fluctuated both ways for other media but not sig.
Flynn et al., 1992	Duration: long (1985-1989) Intensity: *see exposure* Target audience: youth (5^{th} – 10^{th} grade)	Design: longitudinal (5 waves: surveyed at baseline and annually for 4 years) with a quasi-experimental design (2 treatment communities (media intervention + school intervention) and 2	Theory based: yes (theory of reasoned action, social cognitive theory, social learning theory) Target theme: advantages of smoking, disadvantages of smoking, cigarette refusal	Exposure measure: yes From the first to the fourth year, annual paid broadcast TV exposures in each market were reduced from 248 to 98; annual MTV and other cable TV	Outcome measures: smoking behavior, smokeless tobacco behavior, alcohol use Mediating variables: smoking norms scale, perceived peer smoking	Effects: Smoking behavior: in the final two years, those in the treatment group reported decreased smoking compared with comparison group* Smokeless tobacco behavior:

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Location: Vermont/South-central New York and Montana Medium: 17 radio spots and 36 television spots (over 4 years, averaging 15 TV and 8 radio per year) Other components: school-based intervention	comparison communities (school intervention only)) Sample: 5458 4th, 5th, and 6th grade students surveyed at baseline and annually for 4 years (47% of cohort present for all surveys)	skills, perceived peer smoking	channel exposures were reduced from 450 to about 250; and annual paid radio exposures increased from 248 to about 450. Obtained 50% further exposure from public service matching in all media. Recall (49.1%-80.4%)	scale, attitude toward smoking scale, advantages of smoking scale, disadvantages of smoking index	no difference except for fourth year when comparison group reported more use* Alcohol use: no differences until the fifth year, when the comparison group reported more use* Smoking norms scale: no difference at baseline; significant difference in year 2 which persisted through year 5 with media and school group exhibiting more negative smoking norms than the school group* Perceived peer smoking scale: no difference at baseline; significant difference in year 2 which persisted through year 5 with media and school group believing prevalence of peer smoking to be lower than the school group's beliefs* Attitude toward smoking scale: no difference at baseline; significant difference in year 2 which persisted through year 5 with media and school group exhibiting more negative attitudes toward smoking than the school group* Advantages of smoking scale: no difference at baseline; significant difference in year 3 which persisted through year 5 with media and school group believing in fewer advantages of smoking than the school group* Disadvantages of smoking index: no difference at baseline; significant

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						difference in year 2 which persisted through year 5 with media and school group believing in more disadvantages of smoking than the school group*
Flynn et al., 1997	Duration: long (4 years) Intensity: in each community receiving the media interventions an average of 540 television and 350 radio broadcasts of these spots were purchased per year for 4 years in media programs popular with targeted groups Target audience: youth (5th – 10th grade) Location: Vermont/South-central New York and Montana Medium: 17 radio spots and 36 television spots (over 4 years, averaging 15 TV and 8 radio per year) Other components: school-based intervention	Design: longitudinal (seven waves: baseline and six follow-ups) with a quasi-experimental design (2 treatment communities (media intervention + school intervention) and 2 comparison communities (school intervention only)) Sample: 2860 4-6th graders at baseline (1985), 8-10th graders at fifth follow-up (1989), 10-12th graders at sixth follow-up (1991)	Theory based: yes (theory of reasoned action, social cognitive theory, social learning theory) Target theme: advantages of smoking, disadvantages of smoking, cigarette refusal skills, perceived peer smoking	Exposure measure: no (independent variable is presence in treatment or comparison group)	Outcome measures: smoking prevalence (cigarettes smoked in past week)	Effects: Smoking prevalence: two years after completion of intervention, smoking prevalence within the higher risk sample was significantly lower for those receiving media-school interventions than for those receiving school interventions only*; effects on the lower risk sample were similar in magnitude but marginally significant.
Flynn et al., 1994	Duration: long (1985-1989) Intensity: *see exposure* Target audience: youth (5th – 10th grade) Location: Vermont/South-central New York and Montana Medium: 17 radio spots and 36 television spots (over 4 years, averaging 15 TV and 8 radio per year)	Design: longitudinal (two waves: baseline and follow-up two years after completion of 4 year campaign) with a quasi-experimental design (2 treatment communities (media intervention + school intervention) and 2 comparison communities (school intervention only)) Sample: 5458 students in 4th, 5th, and 6th grade at baseline and 4670 of the same students, in 10th, 11th and	Theory based: yes (theory of reasoned action, social cognitive theory, social learning theory) Target theme: advantages of smoking, disadvantages of smoking, cigarette refusal skills, perceived peer smoking	Exposure measure: yes From the first to the fourth year, annual paid broadcast TV exposures in each market were reduced from 248 to 98; annual MTV and other cable TV channel exposures were reduced from 450 to about 250; and annual paid radio exposures increased from 248 to about 450. Obtained 50% further exposure from public service matching in all media.	Outcome measures: weekly smoking	Effects: Weekly smoking: for the full-exposure sample (participated in all 6 surveys N=2086), students in media + school intervention had lower risk for weekly smoking than those in the school only intervention 2 years after completion of the interventions* at both the individual and community level; For the complete-follow-up sample (all who participated in final follow-up N=4670), only the individual level analyses

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Other components: school-based intervention	12th grade at follow-up (38%, 2086 students, participated in all 6 rounds of surveys)		Recall (49.1%-80.4%)		showed significant effects, not the community level analyses
Hafstad, et al. 1997	Duration: long (1992-1995); 3 campaign bursts, each about 4 weeks long Intensity: during each campaign burst a new set of TV and Movie spots shown 167 times over 4 weeks; each of 3 newspaper ads appeared once in each of 5 newspapers; posters mailed to all schools Target audience: youth (ages 14-18); 2 of 3 campaigns targeted girls specifically Location: Buskerud county, Norway Medium: 3 television and 3 cinema spots, 9 newspaper advertisements, 3 posters Other components: not specified	Design: longitudinal (baseline (1992), three follow-up surveys after three short media campaigns (1992, 1993, 1994), and an end-line (1995)) with quasi-experimental design (baseline and end-line conducted in both an intervention and a comparison county) Sample: followed a cohort between the ages of 14-15 to 17-18 Baseline: 4898 (intervention) and 5439 (comparison) Endline: 2796 (intervention) and 3438 (comparison)	Theory based: yes (cognitive dissonance and social influence) Target theme: authority disapproval of smoking, negative health effects, negative cosmetic effects	Exposure measure: yes Recall 59.3% of boys and 55.5% of girls	Outcome measures: odds of being a smoker	Effects: Odds of being a smoker: the odds that a nonsmoker became a smoker was lower in the intervention group*; the odds of smoking at end-line among baseline smokers was significantly lower for girls in the intervention county, but not for boys*
Hanewinkel et al., 2010	Duration: short (Nov 2008) Target Audience: all populations Location: Kiel, Germany Medium: televised PSA	Design: forced exposure study with a quasi-experimental design: treatment (anti-smoking ad shown before each movie in the cinema) and control conditions (no anti-smoking ad was shown) Sample: convenience sample (movie theater) of 4,005 people between the ages of 10 and 90 (28.7% between ages of 10 and 17)	Theory based: yes (social learning theory) Target theme: long-term health consequences of smoking	Exposure measure: forced exposure	Outcome measures: awareness of smoking in movie, approval of smoking in movie, general attitude towards smoking (is very good/is very bad), intention to smoke in the future	Effects: (All results reported here examine those aged 10-17 in intervention group versus those aged 10-17 in control) Awareness of Smoking in Movie: The intervention group had greater awareness of smoking in the movie than the control (66% vs 52.2%, doesn't state significance) Approval of Smoking in Movie: Lower (but non-significant) levels of approval for those in the intervention

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						General Attitude Towards Smoking: No difference between those in intervention versus control Intention to Smoke in the Future: No difference between those in intervention versus control
Harakeh et al., 2010	Duration: short Target audience: all populations Location: Nijmegen, Netherlands Medium: television PSAs	Design: forced exposure study (random assignment: 2 (no smoking vs. smoking portrayal in movie) X 3 (2 prosocial ads, 2 anti-smoking ads or one of each) design) Sample: 84 daily smokers (college and university students)	Theory based: yes (social learning theory) Target theme: negative health and cosmetic consequences of smoking	Exposure measure: forced exposure	Outcome measures: two measures of smoking intensity: the total number of cigarettes smoked and smoking continuation (≥1 cigarette)	Effects: Smoking intensity: movie condition did not affect the number of cigarettes smoked or smoking continuation, but those in the antismoking advertisement condition smoked fewer cigarettes* and were less likely to smoke two or more cigarettes* than those in the pro-social ads condition (the control)
Hassan et al., 2009	HELP – for a life without tobacco campaign Duration: long (2005-2008, extended for two more years at time of publication) Intensity: not specified Target audience: youth and young adults (ages 15-35) Location: 27 European Union Member States Medium: television PSAs Other components: internet advertising, website, internet games, email coaching cessation program, viral marketing campaign	Design: cross-sectional (4 waves) (random digit dialing) Sample: Campaign aimed at adolescents and young adults, typically those aged 15-35 (broken down by age groups: 15-18, 19-35, 36+); total 26, 127 respondents of whom 9,450 remember at least one ad (averaging around 10% in the 15-18 age group – this age group has lowest percentage)	Theory based: yes (demarketing strategies – discouraging customers) Target theme: "absurdity of smoking": prevention, cessation, dangers of passive smoking/second-hand smoking	Exposure measure: yes (not specified) Overall awareness increased year after year, with 60% of those <25 years aware of at least one advertisement by March 2007	Outcome measures: ad likability, message comprehension, thinking about smoking, intention to quit Note: Not all outcome measures reported – see original paper for more detailed results (broken down by smoking status, age, and other components of campaign)	Effects: Ad likability: increases with awareness of more ads* and decreases with age* Message comprehension: increases with awareness of ads* and lowest for those in the 19-35 age group* Thinking about smoking: increases with awareness of more ads* lowest in 19-35 age group* Intention to quit: increases with awareness of more ads* lowest among 19-35 (highest 15-18)*
Hersey et al., 2005a	National Truth Campaign Duration: long (2000 – 2001: 18 months)	Design: cross-sectional (3 waves: pre-/post-post-intervention surveys (winter 1999, fall 2000, spring	Theory based: yes (theory of reasoned action, social inoculation theory)	Exposure measure: yes Confirmed recall	Outcome measures: smoking status	Effects: Smoking status: truth campaign exposure and higher GRPs were associated

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Intensity: not specified Target audience: youth (ages 12-17) Location: USA Medium: television PSAs Other components: not specified	2001) (data aggregated) Sample: 16,000 12-17 year olds contacted through a national random digit dial telephone survey Legacy Media Tracking Surveys LMTS-I : 3439 adolescents (2000) LMTS-II : 6233 adolescents (2000) LMTS-III : 6792 adolescents (2001)	Target theme: industry manipulation; negative health effects	GRPs (not specified)		with less favorable industry beliefs which were strongly associated with negative industry attitudes, which was associated with smoking status both directly and indirectly (through receptivity and independence)*
Hersey et al., 2005b	State tobacco control programs Duration: long (2000 – 2001: 18 months) Intensity: not specified Target audience: youth (ages 12-17) Location: established campaign states: California, Florida, Massachusetts; newer campaign states: Indiana, Minnesota, Mississippi, New Jersey; other states Medium: television PSAs Other components: not specified	Design: cross-sectional (5 waves of LMTS data from 1999 to 2002) Sample: 12-17 year olds: baseline (1999): 3424; LMTS-II & III (2000-2001): 12967; LMTS IV & VII (2002): 10855 Legacy Media Tracking Surveys	Theory based: yes (models of behavior change and media priming models) Target theme: industry manipulation, negative health effects	Exposure measure: yes By State (categorized into three groups based on message, expenditure and length of media campaign: (1) established campaign states; (2) newer campaign states; (3) other states) GRPs (not specified)	Outcome measures: smoking behavior, perception of tobacco industry, perception of smoking (social and health effects, not separated out)	Effects: Smoking behavior: established and newer campaign states had significantly greater declines in current smoking from 1999 to 2002 than other states* Perception of tobacco industry: over time, beliefs of campaign and non-campaign states did not change differently; negative perception of tobacco industry showed an increasingly stronger relationship with smoking status in campaign states than non-campaign states* Perception of smoking: no change over time or between campaign and non-campaign states
Johnston et al., 2005	National Truth Campaign; Phillip Morris' youth-targeted "Think. Don't Smoke." Campaign and parent-targeted "Talk to Your Kids about Smoking. They'll Listen"; Lorillard's youth-targeted "Tobacco is Whacko if	Design: cross-sectional (5 waves: annual data collection from 1997-2001) Sample: nationally representative separate and non-overlapping school samples of 8th, 10th and 12th graders (N=29724, 24639,	Theory based: yes (social learning; social influence, cognitive-behavioral models) Target theme: "Truth": industry manipulation, negative health effects	Exposure measure: yes Semi-prompted recall Television/radio: 1997: 32.1% of 12th graders; 41.5% of 8th graders 2001:62.3% of 8th graders;	Outcome measures: judged impact of anti-smoking advertisements (as one aspect of cognitive engagement and decision making) and perceived exaggeration of such ads (to indicate	Effects: Judged impact of anti-smoking advertisements: increases in self-reported exposure to campaign materials were associated with increases in the self-reported likelihood that anti-smoking advertising

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	You're a Teen" Duration: long (multiple state-led campaigns between 1997 and 2001) Intensity: varied Target audience: mixed Location: USA Medium: television PSAs/radio and print (magazines) Other components: Arizona, California and Massachusetts had ongoing media campaigns throughout the study; Florida/Maine/Oregon/ Mississippi began their own campaigns in 1999 or 2000	and 12138 students respectively) Monitoring the Future	Tobacco industry youth-targeted campaigns: belief that smoking doesn't cause social popularity, belief that NOT smoking is an assertion of independence Phillip Morris' parent-targeted campaign: parental disapproval of smoking, self-efficacy to refuse smoking	62.5% of10th graders; 64.2% of 12th graders Print: 1997: 28.1% of 8th graders; 22.2% of 10th graders; 16.9% of 12th graders 2001: 41.1% of 8th graders; 37.8% of 10th graders; 32.6% of 12th graders	possible negative reactions to ad campaigns)	diminished the probability of individual smoking behavior* Perceived exaggeration of such ads: increases in self-reported exposure to campaign materials were associated with increases in the perceived level to which anti-smoking advertising exaggerates the risks associated with smoking*
Kandra, 2007	Tobacco. Reality. Unfiltered. (TRU) Duration: moderate (TRU ran from April-October 2004; 7 months) Intensity: not specified Target audience: youth (ages 11-17) Location: North Carolina Medium: television PSAs Other components: TRU is a key component of a North Carolina statewide initiative for teen tobacco prevention and cessation (don't go into details on the rest)	Design: longitudinal (3 waves: baseline, follow-up (8 months later) right after the end of the campaign and final survey 22 months after baseline) Sample: random digit dial sample of 502 North Carolina youth (ages 11-17); must speak English; excluded youth that were 18 or older by the final survey (22 months later)	Theory based: yes (stages of initiation of tobacco use) Target theme: negative health effects	Exposure measure: yes Confirmed recall 45% of youth had confirmed recall of at least one of the four ads at the 8 month follow-up (minority youth were 79% more likely to have confirmed recall than non-minority)	Outcome measures: smoking initiation/behavior	Effects: Smoking initiation/behavior: awareness of the campaign (or lack thereof) did not affect cigarette use (status as a smoker or non-smoker did not alter); gender had no overall impact; younger (11-14) vs. older (15-17) youth had no overall effect; no overall differences among race
Meshack et al., 2004	Texas Tobacco Prevention Pilot Initiative	Design: cross-sectional (2 waves: pre-/post-intervention surveys) with a	Theory based: no Target theme: smoking is	Exposure measure: yes Prompted recall	Outcome measures: 1- 30-day tobacco use	Effects: *Compared to control (no program/no media):*

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Duration: short (spring – fall 2000) Intensity: differed by intervention site Target audience: mixed Location: East Texas and Houston, Texas Medium: television, radio, print, billboards Other components: law enforcement, enhanced school programs	quasi-experimental design (3x3 design: 3 media program levels: none, low, intensive; 3 program levels: none, enhanced school, comprehensive; one comparison community) Sample: 3618 6th grade students from 11 schools at baseline and 3374 at follow-up; areas with greatest ethnic diversity assigned to comprehensive treatment condition	not relaxing, smoking is stupid, smoking smells and tastes horrible, smoking is addictive	Levels not specified	2- current tobacco use 3- past 30-day cigarette use 4- current cigarette smoking 5- susceptibility to tobacco use 6- susceptibility to smoking 7- mood control benefits of smoking 8 – social benefits of smoking 9 – Anti-tobacco attitudes 10 – Self-efficacy	No program/low media: positive effect on outcome 7*; 8* No program/intensive media: negative effects on outcomes 1*, 3*, and positive effects on outcome 7*; 8* Enhanced school/no media: negative effects on outcomes 1*, 2, 3*, 5*, 6; Enhanced school/low media: negative effects on outcomes 1*, 2, 3*, 4, 5*, 6; positive effect on outcome 8* Enhanced school/ intensive media: negative effects on outcomes 1*, 3*, 5*, 6; Comprehensive/low media: negative effects on outcomes 1*, 3*, 5*; Comprehensive/intensive media: negative effects on outcomes 1*, 2*, 3*, 4*, 5*, 6*, and positive effects on outcome 7*; 8* Anti-tobacco attitudes: No effect Self-efficacy: No effect
Murray et al., 1994	The Two-State Tobacco Project (TSTP) Duration: long (1986-1990) Intensity: not specified Target audience: youth (ages 12-17) Location: Minnesota (treatment); Wisconsin (comparison) Medium: television, radio, billboards, newspapers Other components: taxes, school-based	Design: cross-sectional (5 waves of annual surveys of 9th graders between 1986 and 1990) with a quasi-experimental design (treatment state (Minnesota) and comparison state (Wisconsin)) Sample: approximately 3600 9th graders surveyed each year in each state between 1986 and 1990	Theory based: yes (social influence) Target theme: negative social consequences of tobacco use, social norms – undercut beliefs that encouraged smoking and support beliefs that discouraged smoking	Exposure measure: yes Arbitron data – 95% of adolescent population at risk for smoking saw or heard at least one campaign ad in 1989 and 1990 and, on average, they were seen or heard about 50 times per person per year.	Outcome measures: self-reported exposure (semi-prompted recall), cigarette smoking prevalence, smoking-related beliefs (health consequences to others, passive smoking hazards, personalized health risk)	Effects: Self-reported Exposure: Reported exposure increased over time and at the end of the five years was greater in the treatment compared to control* (in respect to TV, radio, newspapers and magazines, and posters but not billboards) Cigarette Smoking Prevalence: Non-significant decline in treatment group compared to control Smoking-Related Beliefs: Health Consequences to Others: Non-significant increase in beliefs of health

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	programming, local community grants					risks over time; no difference between treatment and control Passive Smoking Hazards: Non-significant increase over time in belief that is more harmful; no difference between treatment and control Personalized Health Risk: Increase over time for nonsmokers who believed is a little less harmful over time; no difference between treatment and control
Niederdeppe, 2005	Florida Truth Campaign Duration: moderate (recalled exposure over past 12 months) Intensity: not specified Target audience: youth (ages 12-17) Location: Florida, USA Medium: television PSAs Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	Design: cross-sectional (8 waves: April 1998-May 2001) Sample: random sample of list covering 50% of the Florida youth population: 3,409 12 – 15 year olds and 4,171 16 – 18 year olds Florida Anti-tobacco Media Evaluation Surveys (FAME)	Theory based: yes (limited capacity model, activation model of information exposure) Target theme: anti-industry attitudes	Exposure Measure: yes Confirmed recall of a "truth" message	Outcome Measures: message processing	Effects: Message processing: among older teens (16-18 year olds), positive association with the presence of unrelated cuts, intense images, and second-half punch (combined in an index) on increased odds of message processing*
Niederdeppe et al., 2004	Florida Truth Campaign Duration: long (April 1998 – May 2000) Intensity: not specified Target Audience: youth (ages 12-17) Location: Florida, USA (excluding AZ, MA, MI, CA, OR)	Design: cross-sectional (two waves: fall 2000 and spring 2001) with a quasi-experimental design (comparison between Florida and states without established comprehensive tobacco control programs) Sample: 1097 Florida teens aged 12-17 and 6381 teens from other states aged 12-17	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target theme: industry manipulation	Exposure measure: no (as independent variable only) Unaided recall: 44.8% in Florida; 20.1% nationally Aided recall: 87.6% in Florida; 66.6% nationally	Outcome measures: current smoking, lifetime smoking, smoking intentions, awareness of the "truth" campaign, beliefs about tobacco industry; beliefs about the social effects of smoking, beliefs about the physical effects of smoking	Effects: Current Smoking: Florida teens were less likely than their counterparts in other states to have smoked in the past 30 days* Lifetime Smoking: Florida teens were less likely than their counterparts in other states to have ever tried smoking*

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Medium: television PSAs Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	Legacy Media Tracking Survey				Smoking Intentions: Florida teens were less likely than their counterparts to be open to smoking in the future* Awareness of the "truth" campaign: Florida teens were more likely than counterparts in other states to be aware of the truth campaign (unaided and aided)* Beliefs about Tobacco Industry: Florida teens were more likely than their counterparts in other states to agree with the four statements about the manipulative practices of the tobacco industry (significant difference for each of the beliefs)* Among Florida teens, 2 out of 4 of the anti-industry beliefs were associated with decreased smoking in the past 30 days* Beliefs about the Social Effects of Smoking: No significant differences between Florida teens and their counterparts on any of the beliefs Beliefs about the Physical Effects of Smoking: No significant differences between Florida teens and their counterparts on any of the beliefs
Niederdeppe et al., 2008	Florida Truth Campaign Duration: long (April 1998 – May 2000) Intensity: not specified Target audience: youth (ages 12-17)	Design: cross-sectional (5 waves) Sample: 5 waves of data collected between April 1998 and May 2000 with approximately 1800 respondents each; never smokers age 12-18; samples	Theory based: no Target theme: industry manipulation	Exposure measure: no (as dependent variable only; independent variable = survey wave (time))	Outcome measures: recall, anti-industry beliefs, intentions not to smoke	Effects: Recall: Increased sharply during $70.5M budget,* followed by gradual reductions during $38.7M budget* Anti-industry Beliefs: Increased sharply during

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Florida, USA Medium: television PSAs Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	drawn from a commercial vendor list covering approximately 50% of the Florida teen population				period of $70.5M budget,* non-significant increase during $38.7M budget Intentions Not to Smoke: Increased during $70.5M budget,* non-significant increase during $38.7M budget
Niederdeppe et al., 2007	Florida Truth Campaign Duration: long (1998-2002) Intensity: not specified Target audience: youth Location: Florida, USA Medium: newspaper articles Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	Design: cross-sectional (5 annual waves between 1999 and 2002. Includes a measure of cumulative newspaper coverage by year and county) Sample: two-stage cluster sample of Florida middle school students (grades 6-8) and high school students (grades 9-12) Florida Youth Tobacco Survey (FYTS)	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target theme: industry manipulation	Exposure measure: yes (in the form of a measure of cumulative newspaper coverage by year and county on Florida Tobacco Control Program (FTCP) and, separately, on Students Working Against Tobacco (SWAT))	Outcome measures: current smoking behavior	Effects: Current smoking behavior (applies to both middle schoolers and high schoolers): smoking rates lower in 2002 than 1998 among all groups*; rate of decline was larger in higher coverage counties than in low- and medium-coverage counties; differences between the low and high exposure groups not significant in 1998 but highly significant in 2002*
Nixon et al., 2008	Duration: short Target audience: youth (ages 9-16) Location: Northeastern USA Medium: television PSAs	Design: forced exposure study with an experimental design (random assignment to 1 of 3 treatment conditions (levels of exposure); baseline and repeated measures after each exposure to PSA; no control group) Sample: 598 5th and 8th grade public school children (ages 9-16)	Theory based: yes (frequency of exposure and PSA effectiveness: Cacioppo & Petty, 1979) Target theme: negative health effects	Exposure measure: forced exposure: random assignment to 1 of 3 levels of exposure to PSA: once, monthly for 2 months, or weekly for 8 weeks	Outcome measures: intention to smoke	Effects: Intention to smoke: after viewing the PSA only once, 5th graders demonstrated initial decrease in intention to smoke* (decreased only between Time 1 and Time 2); 8th graders increased intention to smoke across time*
Paek et al, 2011	Multiple campaigns Duration: long (National Truth Campaign (1999-2002); Think. Don't Smoke Campaign (1998);	Design: longitudinal (2 waves, spring and fall 2003); lagged analysis Sample: 654 sixth through eighth graders	Theory based: yes (influence of perceived influence model) Target theme: Truth Campaign: industry	Exposure measure: yes Semi-prompted recall Level of recall not specified	Outcome measures: favorable attitudes toward smokers, smoking susceptibility Mediator: perceived	Effects: Favorable attitudes towards smokers: negative association between exposure and favorable attitudes at Time 1 mediated through perceived

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Talk to your kids about smoking, they'll listen (1999)); Lorillard campaign (1999) Intensity: not specified Target audience: mixed Location: Wisconsin, USA Medium: television, radio, internet, magazines, billboards Other components: not specified		manipulation, negative health effects Tobacco-industry prevention campaigns: perception that smoking causes social popularity, belief that not smoking is an assertion of independence Talk to your kids about smoking, they'll listen campaign: parental disapproval of smoking, self-efficacy to refuse anti-tobacco campaigns		media influence on peers	media influence on peers at Time 1*; effect of perceived media influence at Time 1 on attitudes at Time 2 mediated through perceived media influence at Time 2* Smoking susceptibility: negative association between exposure and favorable attitudes at Time 1 mediated through perceived media influence on peers at Time 1*; effect of perceived media influence at Time 1 on attitudes at Time 2 mediated through perceived media influence at Time 2*
Pechman & Reibling, 2006	Duration: short Target audience: mixed Location: California, USA Medium: television PSAs	Design: forced exposure with random assignment to 1 of 9 message type conditions (disease and suffering; dying parent; environmental tobacco smoke; selling disease and death; counter-industry activism; marketing tactics; acceptance of nonsmokers; cosmetic effects; control [non-tobacco related PSAs]) Sample: 1,725 14 – 15 year olds (19% reported symptoms associated with conduct disorder, 81% did not have conduct disorder)	Theory based: no Target theme: *See Design*	Exposure measure: yes Semi-prompted recall (93%); recalled frequency of exposure (mean = 3.4 spots)	Outcome measures: intention to smoke, anti industry motivation, emotional response, perceived effectiveness, perceived message sensation value	Effects: Intention to smoke: compared to those in control condition, exposure to disease and suffering messages reduced intention to smoke (only among those without a conduct disorder*); no effect of other ad types Anti-industry motivation: disease and suffering messages produced greater anti-industry motivation than control condition* (both overall* and among those without a conduct disorder* but not among those with a conduct disorder) Emotional response (disgust): disease and suffering messages produced more disgust than all other messages (only among those without a conduct disorder)* Perceived effectiveness: disease and suffering messages had higher ratings than all other messages* Perceived message sensation

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						value: dying parent had higher ratings than all other messages* Mediation analysis: disgust was predictive of anti-industry motivation, and anti-industry motivation as predictive of intention;* higher perceived effectiveness reduced intentions to smoke;* perceived message sensation value had no effect on intention to smoke
Pechmann & Wang, 2010	STUDY ONE: Duration: short Target audience: not specified Location: USA Medium: television program	Design: forced exposure study with an experimental design; random assignment to 1 of 3 entertainment-education treatment conditions [1) attractiveness, prevalence and disapproval messages about smokers; 2) attractiveness and prevalence messages about smokers; 3) control (no smoking content)] Sample: 1,046 9th graders	Theory based: yes (social norms) Target theme: social norms	Exposure measure: forced exposure	Outcome measures: disapproval thoughts, disapproval belief, attractiveness belief, prevalence belief	Effects: Disapproval thoughts: condition 1 generated more disapproval thoughts than either conditions 2* or 3*; condition 2 generated more disapproval thoughts than condition 3* Disapproval beliefs: condition 1 enhanced disapproval beliefs relative to condition 2* and relative to condition 3*; conditions 2 and 3 did not differ Attractiveness belief: condition 2 increased attractiveness beliefs relative to condition 1* and relative to condition 3*; conditions 1 and 3 did not differ Prevalence beliefs: No effect of message version
	STUDY TWO: Duration: short Target audience: not specified	Design: controlled exposure study (random assignment to 1 of 3 entertainment-education treatment conditions (1). Attractiveness, prevalence and disapproval messages	Theory based: yes (social norms) Target theme: social norms	Exposure measure: controlled exposure:	Outcome measures: disapproval thoughts, disapproval belief, attractiveness belief, prevalence belief, intent to smoke	Effects: Disapproval thoughts: condition 1 generated more disapproval thoughts than condition 3*; condition 2 generated more disapproval thoughts than condition 3*

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Location: USA Medium: television program	about smokers; 2). Attractiveness, prevalence and approval and disapproval messages about smokers; 3). Control (no smoking content)) Sample: 1,804 9th graders				and condition 1* Disapproval beliefs: condition 1 enhanced beliefs relative to condition 3* and condition 2*; condition 2 did not differ from condition 3 Attractiveness beliefs: no effect of message version Prevalence beliefs: no effect of message version Intent to smoke: nonsmokers produced low intentions so there was a floor effect; among smokers, condition 1 lowered intentions compared to condition 2*; no difference between condition 2 and 3 Among smokers, the disapproval message from condition 1 increased the disapproval belief and the increased disapproval belief lowered intent to smoke
Pechman et al., 2003	Duration: short Target audience: not specified Location: USA Medium: television PSAs	Design: forced exposure study with random assignment to 1 of 9 message theme conditions (disease and suffering; dying parent; environmental tobacco smoke; selling disease and death; counter-industry activism; marketing tactics; acceptance of nonsmokers; cosmetic effects; control [non-tobacco related PSAs]) Sample: 1,667 students in 7th (47%) and 10th (53%) grade; 4% were regular smokers	Theory based: yes (protection motivation theory) Target theme: *See Design*	Exposure Measure: forced exposure	Outcome Measures: intention not to smoke, health risk severity, health risk vulnerability, social disapproval severity, social disapproval vulnerability, self-efficacy to refuse cigarettes, self-efficacy to resist tobacco marketing, costs of not smoking, benefits of smoking	Effects: *In comparison to the control condition:* Intention not to smoke: greater among those exposed to endangers others*, smokers' negative life circumstances*, and refusal skills role model* messages Health risk severity: greater among those exposed to disease and death*, endangers others*, selling disease and death*, and mixed* messages Health risk vulnerability: no effects Social disapproval severity: greater among those exposed

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						to endangers others*, smokers' negative life circumstances*, and refusal skills role model* messages Social disapproval vulnerability: greater among those exposed to marketing tactics* messages Self-efficacy to refuse cigarettes: no effects Self-efficacy to resist tobacco marketing: no effects Costs of not smoking: no effects Benefits of smoking: no effects
Popham et al., 1994	California Tobacco Education Media Campaign (1990-1991) Duration: moderate (April 1990- June 1991) Intensity: not specified Target audience: school-age youths as well as adults smokers Location: California Medium: television, radio, outdoor advertisements, and newspapers Other components: not specified	Design: cross-sectional (4 waves: baseline prior to campaign's start and three after) Sample: sampled from geographically and ethnically representative California public school districts: 29,264 total students in grades 4-12: 4,145 in wave 1; 6,562 in wave 2; 7,846 in wave 3; and 10,711 in wave 4 (also looked at 6,785 adult smokers their data is not reported here)	Theory based: no Target theme: negative health effects, negative interpersonal consequences, society's increasing disapproval of smoking, industry manipulation (for profits)	Exposure measure: yes Semi-prompted recall and prompted recall Semi-prompted recall: Wave 1: 0% Wave 2: 35.3% Wave 3: 49.1% Wave 4: 47.3% Prompted recall: Wave 1: 0% Wave 2: 32.1% Wave 3: 37.8% Wave 4: 40.2% Both semi-prompted and prompted recall increased significantly from wave 1 to wave 4*	Outcome measures: smoking prevalence, smokers' intention to quit, nonsmokers' intention to start, attitudes towards smoking (negative health effects, impact of smoking on one's social relations, other people's acceptance of one's smoking behavior, anti-industry attitude)	Effects: Smoking prevalence: decreased from wave 1 to wave 4*; no difference in exposed v unexposed group Smokers' intention to quit: Increased from wave 1 to wave 4; intention to quit increased in the exposed group (neither result here is sig.) Nonsmokers' intention to start: decreased from wave 1 to wave 4*; intentions to start greater in the exposed than unexposed group* (undesired direction) Attitudes towards smoking: negative attitudes increased from wave 1 to wave 4* (indicating campaign's effectiveness); those in the exposed group had stronger health-enhancing attitudes than those in the unexposed*
Richardson et al., 2011	The EX Campaign	Design: longitudinal (two-waves 6 months apart)	Theory based: yes (health belief model, theory of	Exposure measure: yes	Outcome measures: quit attempts	Effects: Quit attempts: among 18-24

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Duration: moderate – six months (2008) Intensity: not specified Target audience: adult smokers (ages 25-49) Location: USA (national) Medium: television PSAs Other components: not specified	Sample: 3,571 current smokers ages 18-49 drawn via random digit dial from eight U.S. Designated Market Areas	reasoned action, social learning theory) Target theme: smoking cessation	Confirmed recall 46.5% of total sample	Mediator: cessation-related cognitions	year olds, there was a positive but not significant effect of EX awareness on quit attempts Cessation-related cognitions: among 18-24 year olds, there was a positive but not significant effect of EX awareness on cognitions
Richardson et al., 2010	National Truth Campaign Duration: long (1999-2002) Intensity: not specified Target audience: youth (ages 12-17) Location: USA Medium: television PSAs Other components: not specified	Design: cross-sectional (eight waves of nationally representative telephone surveys administered from 2000 to 2004) Sample: 19,701 young adults (ages 18-24)	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: industry manipulation; negative health effects	Exposure measure: yes Prompted recall Varied between 42% and 68% after campaign launch (0% at baseline)	Outcome measures: anti-industry attitudes and beliefs, belief that not smoking is a way to express independence, belief that smoking cigarettes makes people look cool or fit in, intention to quit (among smokers), intention not to smoke (among non-smokers and former smokers)	Effects: Anti-industry attitudes and beliefs: Awareness of campaign associated with an increase in 4 of the 7 attitudes* Belief that not smoking is a way to express independence: Awareness of campaign associated with an increase in the belief* Belief that smoking cigarettes makes people look cool or fit in: No effect from awareness of campaign Intention to quit: No significant effect of awareness on intention to quit Among smokers, 6/7 of the anti-industry attitudes and beliefs were associated with the intention to quit* as was the belief that not smoking is a way to express independence* Intention not to smoke: Positive association between awareness and attention not to smoke but not significant (ceiling effect?)

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						Among nonsmokers, intention not to smoke was associated with 3/7 anti-industry attitudes and beliefs* and the belief that smoking cigarettes makes people look cool or fit in*
Schmidt et al., 2009	Changing Social Norms: A Mass Media Campaign for Youth Ages 12 to 18 Years Duration: short (January – April 2006 - 12 weeks; evaluation only assessed first 6 weeks) Intensity: not specified Target audience: youth (ages 12-18 divided into two groups: junior high and senior high) and particularly youth who had experimented with tobacco products (1 to 100 cigarettes smoked) Location: Calgary, Canada Medium: television, radio, posters, print ads, promotional items, interactive community website, media launch event Other components: not specified	Design: longitudinal (pre-/post- evaluation) Sample: 149 students (ages 12-18); primary target: youth who had experimented with tobacco products (1 to 100 cigarettes smoked)	Theory based: yes (social norms) Target theme: de-normalize tobacco use among youth, empower youth to stay tobacco product free, increase awareness of the dangers of tobacco use	Exposure measure: yes Prompted recall Recall of campaign slogan (60%) and of advertisement (52%)	Outcome measures: likelihood of telling other experimenters not to smoke, of supporting smokers to quit tobacco use, of listening to people who tell them about the benefits of being abstinent from tobacco	Effects: Likelihood of telling other experimenters not to smoke: no difference based on high versus low exposure Likelihood of supporting smokers to quit tobacco use: no difference based on high versus low exposure Likelihood of listening to people who tell them about the benefits of being abstinent from tobacco: no difference based on high versus low exposure
Siegel & Biener, 2000	Massachusetts Antismoking Media Campaign Duration: long (began in October 1993) Intensity: not specified Target audience: youth (aspects of media campaign aimed at youth	Design: longitudinal (2 waves: baseline and follow-up four years later) Sample: cohort, ages 12-15 at time of initiation 592 not established smokers (non-susceptible and susceptible nonsmokers as well as experimenters) at baseline, re-contacted 4 years later	Theory based: no Target theme: second-hand smoke, cosmetic effects, industry manipulation, negative health consequences, social consequences; social norms	Exposure measure: yes Semi-prompted and confirmed recall Baseline exposure: 71.3% (TV), 32.9% (radio), 57.3% (billboards)	Outcome measures: progression to established smoking; mediating variables addressed by statewide media campaign (perception of health effects of low-tar and low-nicotine cigarettes, second-hand smoke health effects, perception of cigarettes	Effects: Progression to established smoking: those who reported exposure to antismoking TV ads at baseline were less likely to progress to established smoking (only for 12-13 year-olds, not 14-15 year-olds)* (not significant for other media)

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	almost entirely restricted to TV, radio & outdoor ads) Location: Massachusetts Medium: television, radio, newspapers, and outdoor ads (Billboards) Other components: media component part of an antismoking intervention agreed upon in 1992, as well as increasing cigarette excise tax (which went into effect in Jan 1993)				as poisonous, cosmetic effects of cigarettes, perception of tobacco industry as manipulative, preference in who nonsmokers prefer to date, effects of smoking on sports, perception of high school smoking prevalence)	Baseline exposure to TV, radio or outdoor ads was not associated with differences in perception of health effects of low-tar and low-nicotine cigarettes, second-hand smoke health effects, perception of cigarettes as poisonous, cosmetic effects of cigarettes, perception of tobacco industry as manipulative, preference in who nonsmokers prefer to date (smokers or nonsmokers, or perception of effects of smoking on sports Perception of high school smoking prevalence: Those who were exposed at baseline to TV ads were more likely to have accurate perceptions of smoking prevalence in their high school at follow-up (for 12-13 year-olds only; only for TV)*
Sly et al., 2005	Minnesota Youth Tobacco-Use Prevention Program Duration: long (2000-2003) Intensity: 1st year media buy equaled approximately $1.1M; following two years approximately $1.8M Target Audience: youth (ages 12-17) Location: Minnesota Medium: television PSAs, radio and website Other components: the program also included a 'youth summit' with youth	Design: cross-sectional (4 waves from 2002-2003: 2 while the program was operational, one while dismantling it, and another 6 months later) Sample: state-wide representative telephone survey of youth ages 12-17 (sample sizes varied over the four surveys from 1,079 – 1,150)	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target theme: industry manipulation	Exposure measure: yes Semi-prompted recall (overall organization, website) Prompted recall (TV) Organization: Survey 1: 29.2% Survey 2: 28.7% Survey 3: 24.8% Survey 4: 25.8% Website: Survey 1: 3.7% Survey 2: 7.2% Survey 3: 4.4% Survey 4: 1.5% TV: Survey 1: 49.3% Survey 2: 47.8% Survey 3: 45.2%	Outcome measures: susceptibility to tobacco use (wear gear with tobacco company logo; would smoke cigarette if offered), anti-tobacco attitudes and beliefs, intentions to smoke	Effects: Susceptibility to tobacco use (wear tobacco logo): began increasing between surveys 2 and 3; significant increase from survey 2 to survey 4* Would smoke If offered: only increased from survey 3 to survey 4* Anti-tobacco attitudes and beliefs: declined with the dismantling of the organization and its components* Intentions to smoke: increased from survey 3 to survey 4*

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	representation from all areas of the state and a 'document tour,' with exhibits of tobacco industry documents driven around in a tractor trailer. A youth 'headquarters' was established and over the 3 years there were concerts and other school and community promotions.			Survey 4: 34.2% (additional reporting for any campaign component and brand awareness)		
Sly et al., 2001a	Florida Truth Campaign Duration: moderate (only examined the campaign during its first year, began in 1998) Intensity: 1600 GRPs/quarter Target audience: youth (ages 12-17) Location: Florida, compared with other states excluding (AZ, CA, MA & OR) Medium: television PSAs in addition to limited radio, billboard and display ads Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	Design: cross-sectional telephone surveys (four waves: baseline before campaign launch, second survey six weeks into campaign, third survey 6 months in, fourth survey after the first year); treatment group in Florida compared with control elsewhere in the U.S. not exposed to any type of anti-tobacco media campaign (control had baseline and 12 month follow-up) Sample: representative sample of 12-17 year olds; 1,800 in Florida; 1,000 in the national control group Florida Anti-tobacco Media Evaluation Survey (FAME)	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target Theme: industry manipulation	Exposure measure: yes GRPs; confirmed recall of TV ads; confirmed recall of campaign; confirmed recall of *all types* of ads GRPs: throughout the first year, ads averaged about 1600 GRPs per quarter 70% confirmed campaign recall at 12 months 93% confirmed recall of at least one ad at 12 months 96% confirmed recall of all types of ads at 12 months	Outcome measures: anti-tobacco attitudes and beliefs (*Anti-industry attitudes & beliefs, Belief that smoking has nothing to do with being cool, Belief that most youth do not like to be around smokers*, *Belief anti-tobacco ads are influential on youth, Belief that most youth do not believe the bad things they hear about tobacco*) Smoking Behaviors	Effects: Anti-tobacco attitudes and beliefs: *Anti-industry attitudes & beliefs:* no baseline differences between Florida and national population; by year's end, anti-industry attitudes and beliefs increased relative to the national population (significant for 5/6 of the statements)*; for three (out of six) of the anti-industry attitudes and beliefs, the national data showed significant change at year's end toward pro-tobacco attitudes and beliefs* *Belief that smoking has nothing to do with being cool:* National sample agreed more at baseline than Florida youth*; Both had significant increases over the year and were significantly different from each other (with Florida agreeing more after one year)* *Belief most youth do not like to be around smokers:* Same at baseline; after one year, national sample decreased so that Florida agreed significantly more than national sample*

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						Belief anti-tobacco ads are influential on youth: No significant difference at baseline; Florida increased so that agreed with belief more than national sample at year's end* *Belief that most youth do not believe the bad things they hear about tobacco:* No change at baseline; both national and Florida increased after year's end*; Florida disagreed significantly more at year's end than national sample* *Belief that anti-tobacco people are no more honest than pro-tobacco:* Significant difference at baseline with national sample disagreeing more than Florida*; no significant difference between the two after a year Smoking behavior: for treatment group, "ever tried a cigarette" and susceptibility declined over the year* though their decline in current cigarette use was not significant; in control group, cigarette use increased (as opposed to the decrease in Florida)* but no change in "ever tried a cigarette" or susceptibility; percent changes from 1998 to 1999 for "ever tried a cigarette," current cigarette use and susceptibility were significantly different with Florida being more against tobacco*
Sly et al., 2001b	Florida Truth Campaign Duration: moderate (began in 1998, only interested in first 10 months of	Design: longitudinal (2 waves: April, June, Sept 1998 and Feb, 1999) Sample: representative	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy)	Exposure measure: yes GRPs averaged 1606/quarter over the year, with the first two quarters	Outcome measures: smoking initiation	Effects: Smoking initiation: rates were higher among those scoring low on the ad effectiveness index as

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	campaign) Intensity: GRPs averaged 1606/quarter over the year Target audience: youth (ages 12-17) Location: Florida Medium: television PSAs Other components: Phillip Morris' 'Think. Don't Smoke.' campaign ran before and during interviewing; in-school education, school-based youth organization and community organizations in addition to the media campaign	sample of 1,820 12-17 year-old nonsmokers who had been interviewed one of the first three surveys in 1998 and were re-interviewed in the last survey in 1999 Florida Anti-tobacco Media Evaluation Survey (FAME)	Target theme: industry manipulation	being higher (1900 GRPs) Semi-prompted recall: don't report percentages, participants coded on how much they could recall about the ads (coded from 0-2)		opposed to those scoring high (those who recalled more about the ads); those who scored low and those who scored high on the ad effectiveness index were more likely to remain nonsmokers than those not affected by the ad campaign (not significant)
Sly et al., 2002	Florida Truth Campaign Duration: long (22 months, campaign began in 1998) Intensity: not specified Target audience: youth (ages 12-17) Location: Florida Medium: television PSAs Other components: in-school education, school-based youth organization and community organizations in addition to the media campaign	Design: cross-sectional (2 waves: 1999 and 2000 FFS – telephone survey conducted after 22 months of the Florida "Truth" campaign) Sample: representative sample of 1,805 12-20 year old non-smokers (contains respondents from 1999 and 2000 surveys previously categorized as non-smokers) Florida Anti-tobacco Media Evaluation Survey (FAME)	Theory based: yes (health belief model, theory of reasoned action, public relations, media advocacy) Target theme: industry manipulation	Exposure measure: yes Semi-prompted recall Confirmed recall: 0 ads: 16.1% 1-3 ads: 46.2% 4+ ads: 37.7% (11 total ads)	Outcome measures: smoking uptake (anti-tobacco attitudes used as an independent variable)	Effects: Smoking uptake: the more ads nonsmokers were exposed to, the less likely they were to have taken up smoking (established or past-30 days)*; the higher the level of anti-tobacco attitudes, the less likely they were to have taken up smoking*; the more they were influenced by the campaign's theme, the less likely they were to have taken up smoking*
Smith & Stutts, 2006	Duration: short (5 months) Intensity: not specified Target audience: youth (ages 12-17) (designed for study)	Design: longitudinal (2 waves) with experimental design (short-term and long-term anti-smoking fear appeals groups and a control (no ad)) Sample: 235 high school	Theory based: yes (fear appeals) Target theme: negative health effects, negative cosmetic effects	Exposure measure: forced exposure Each ad shown 3 times (total of 9 exposures for each experimental group) weekly for the semester	Outcome measures: change in smoking behavior; change in self-classification (smoker vs. non-smoker)	Effects: Change in smoking behavior: no change in the control group; decline in smoking (from baseline to follow-up) for both experimental groups*; decrease in smoking behavior for both short-term

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Location: five schools in a medium-sized metropolitan area in the southwest U.S. Medium: television PSAs, print, internet (was one of the variables manipulated for each participant) Other components: not specified	students		Prompted recall – manipulation check Short-term fear appeal: 68%, 78%, 71% (depending on batch of ads) Long-term fear appeal: 47%, 64%, 60%		and long-term appeals were significantly different from control*; short-term appeals more effective than long-term for males*; long-term appeals more effective than short-term for females* Change in self-classification: results for control group suggest that, in the absence of antismoking messages, adolescents are likely to start smoking, especially male adolescents; overall, greater increase in non-smokers at follow-up in the long-term fear appeal group than short-term group; for males, percentage of nonsmokers rose in short-term but declined in long-term group; for females, decline in nonsmokers in the short-term group but increase in the long-term group
Solomon et al., 2009	Duration: long (3 years, beginning in January 2002) Intensity: 360 GRPs overall Target audience: youth smokers Location: South Carolina, Florida, Texas, Wisconsin Medium: 10 television and 15 radio PSAs per year Other components: simultaneous smoking prevention media campaign	Design: longitudinal, controlled field trial (four matched pairs of media markets in four states were randomized to receive or not receive a 3-year television/radio campaign; baseline and 3 waves of annual surveys; intent to treat strategy; repeated measures analysis of covariance) Sample: 16,934 students in grades 7-10 from public middle and high schools with high concentrations of students from lower income households were surveyed. Of those, 2,030 smokers were enrolled in the study	Theory based: yes (social cognitive theory) Target theme: smoking cessation (increase confidence in ability to resist smoking in high-risk situations, decrease expectations that bad things happen if youth stop smoking completely, increase expectations that good things happen if youth stop smoking completely, have more realistic perceptions of prevalence of adolescent smoking and quitting, increase perceptions of peer approval for stopping smoking)	Exposure measure: yes Prompted recall of at least one ad 68% (first year), 62% (second year), 58% (third year) 380 GRPs overall (average of 3-4 exposures per week over 9 months each year)	Outcome measures: proportion of adolescents smoking in the past month outcome expectancies: self-efficacy to resist smoking, quitting expectations, perceived smoking prevalence, perceived quitting prevalence, perception of peer approval, intention to smoke	Effects: Proportion of adolescent smoking in the past month: lower in the experimental condition than in the comparison condition when adjusted for baseline smoking status* Self-efficacy to resist smoking: both groups rated it as high at each time point Quitting expectations: only significant difference between groups was experimental endorsing higher positive physical outcomes across all follow-ups* Perceived smoking prevalence: No difference in groups; perceived prevalence did not change throughout

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						study Perceived quitting prevalence: overall slight increase by third follow-up Perception of peer approval: no differences between conditions; both conditions increased over time* Intention to smoke: both conditions reported increased intentions over the 3 years*
Syu et al., 2010	Duration: long (18 months) Intensity: control received approximately 1 ad exposure per day; treatment received approximately 10 ad exposures per day Target audience: African American youth (ages 12-17) Location: Baltimore, USA Medium: radio, television, billboards, internet, signs on sides of buses, at subway stops, in subway cars, on abandoned buildings Other components: not specified	Design: cross-sectional (2 waves: pre-/post-intervention surveys); controlled field trial (treatment and control cities (control did receive ad exposure, just less)) Sample: random sample of African American youth aged 10-19 from treatment (Baltimore) and control (Philadelphia) cities	Theory based: yes (theory of reasoned action and inoculation theory) Target theme: negative health consequences of cigarillos, industry manipulation	Exposure measure: yes 75% of teenagers had heard or seen advertisement	Outcome measures: self-reported exposure, number of cigarillos per day, positive attitudes toward cigarillos, awareness of health risk, awareness of industry targeting, relative risk ratio for cigarillo use	Effects: Self-reported exposure: no difference in reported exposure between treatment and control groups Number of cigarillos per day: decline over time in total sample*; decline observed in both treatment and control groups Positive attitudes towards cigarillos: decline over time in total sample*; decline observed in both treatment and control groups Awareness of health risk: increase over time in total sample*; increase observed in both treatment and control groups Awareness of industry Targeting: Increase over time in total sample*; increase observed in both treatment and control groups Relative risk ratio for cigarillo use: Greater decrease in treatment than control group*
Terry-McElrath et al., 2007	State tobacco control programs	Design: cross-sectional (5 annual waves from 1999 to	Theory based: yes (targeting based on gender and	Exposure measure: yes	Outcome measures: recall, perceived	Effects: Recall: Higher TRPs

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Duration: long (1999-2003) Intensity: not specified Target audience: young people (ages 12-24) Location: USA Medium: television PSAs Other components: not specified	2003); cross-sectional data from 1995-1996 included as a pre-campaign control Sample: nationally representative sample of 122,340 8th, 10th and 12th grade students; particular attention paid to race/ethnicity and gender Monitoring the Future Study	race/ethnicity) Target theme: health consequences, second-hand smoke, industry manipulation, quitting, prevention	State ad exposure: mean of 1.7 (number of times 100% of the 12-17 year olds in each designated market area saw ad from a sponsor over the four months preceding each specific school's date of survey participation)	smoking prevalence among friends, five-year smoking intentions, perceived harm of smoking, perceived risk of addiction, current smoking	associated with higher recall* Perceived smoking prevalence among friends: higher TRPs associated with lower perceived smoking prevalence among friends* Five year smoking intentions: higher TRPs associated with higher intentions not to smoke in the next five years* Perceived harm of smoking: higher TRPs associated with greater perceived harm in smoking 1+ packs per day* Perceived risk of addiction: higher TRPs associated with greater perceived risk of addiction* Current smoking: higher TRPs associated with decreased odds of current smoking*
Thrasher et al., 2004	National Truth Campaign Duration: short (6 weeks-5 months; began in 2000) Intensity: not specified Target audience: youth (ages 12-17) Location: tobacco-producing states (TPS: GA, NC, SC, TN, VA, KY), non-tobacco-producing U.S. states and CA/FL/MA (grouped together because had already initiated well-funded anti-industry campaigns well before 'truth' launch) Medium: television PSAs	Design: cross-sectional (6 waves of the LMTS from Dec 1999- Jan 2003; looked at those in TPS, Non-TPS, and CA/FL/MA Sample: nationally representative sample of 28,307 adolescents aged 12-17 Legacy Media Tracking Survey	Theory based: yes (theory of reasoned action, social inoculation theory) Target theme: negative health effects, industry manipulation	Exposure measure: yes Confirmed recall of at least one ad was significantly lower in TPS than CA/FL/MA group	Outcome measures: anti-industry beliefs/attitudes; reactions to anti-industry ads (those with confirmed awareness were asked whether ad was convincing, grabbed their attention and whether it gave them good reasons not to smoke)	Effects: Anti-industry attitudes/beliefs: those in TPS and non-TPS (with low levels of tobacco control funding) were not significantly different both before and after the launch of "truth"; after start of campaign, TPS and low-funded non-TPS had significantly weaker anti-industry attitudes and beliefs than both the high funded non-TPS group and the CA/FL/MA group* Reactions to anti-industry ads: did not differ among those in TPS and non-TPS groups; campaign had same effect in all states except CA/FL/MA

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Other components: CA/FL/MA had already initiated well-funded anti-industry campaigns well before 'truth' launch					
Wakefield et al., 2006	Tobacco industry sponsored youth-targeted (Philip Morris' "Think. Don't Smoke" and Lorillard's "Tobacco is Whacko if You're a Teen") and parent-targeted ("Talk. They'll Listen") campaigns; all anti-tobacco advertising Duration: short (4-month depreciated exposure) Intensity: tobacco industry youth-targeted mean 4-month depreciated exposures = 4.77; tobacco industry parent-targeted mean 4-month depreciated exposures = 1.13; anti-tobacco mean 4-month depreciated exposures = 6.88 Target audience: mixed Location: USA Medium: television PSAs Other components: not specified	Design: cross-sectional (4 waves: 1999-2002) merged with advertising exposure data (TRPs) based on the media market in which individual lived and the month/year in which they completed the survey Sample: nationally representative school-based sample of 103,172 students in Grades 8, 10 and 12 Monitoring the Future	Theory based: no Target theme: tobacco industry youth-targeted campaigns: beliefs that smoking causes social popularity and belief that NOT smoking is an assertion of independence tobacco industry parent-targeted campaigns: parental disapproval of smoking, self-efficacy to refuse smoking; anti-tobacco advertising (no further information provided)	Exposure Measure: yes 4-month depreciated sums of TRPs (linear variable)	Outcome Measures: smoking in past 30 days, consumption among current smokers, intentions to be smoking in 5 years' time, perceive great harm in smoking, perception that smoking is not a dirty habit, perception that being a smoker does not reflect poor judgment, perceived exaggeration of smoking harm, perceived enjoyment of life by smokers, preference for dating nonsmokers, approval of smoking, recall of anti-tobacco advertising	Effects: Smoking in past 30 days: positive association with greater exposure to parent-targeted messages (especially for $10^{th}/12^{th}$ graders)*; no effects of youth-targeted campaigns; negative association with greater exposure to anti-tobacco messages* Consumption among current smokers: no effects Intentions to be smoking in 5 years' time: positive association with greater exposure to youth-targeted and parent-targeted messages*; negative association with greater exposure to anti-tobacco messages* Perceive great harm in smoking: negative association with greater exposure to parent-targeted messages (especially for $10^{th}/12^{th}$ graders)*; positive association with greater exposure to anti-tobacco messages* Perception that smoking is not a dirty habit: no effects Perception that being a smoker does not reflect poor judgment: no effects Perceived exaggeration of smoking harm: positive association with greater exposure to parent-targeted

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						message (only for 8th graders*) Perceived enjoyment of life by smokers: no effects Preference for dating nonsmokers: no effects Approval of smoking: positive association with greater exposure to parent-targeted message (only for 10th/12th graders*) Recall of anti-tobacco advertising: negative association with greater exposure to parent-targeted message*; positive association with greater exposure to anti-tobacco messages*
White et al., 2008	Duration: short (new cigarette packs introduced in March 2006; advertising campaign conducted May-August 2006) Intensity: not specified Target audience: adult smokers Location: greater metropolitan Melbourne, Australia Medium: television PSAs, cigarette packs Other components: not specified	Design: cross-sectional (two waves: pre-/post-intervention school-based surveys (conducted in the year prior and six months after)) Sample: random sample of Australian students in grades 8-12 (2,432 students in 2005, 2,050 in 2006)	Theory based: yes (theory of reasoned action, health belief model) Target theme: negative health effects	Exposure measure: yes Prompted recall At follow-up, 88% reported seeing the new health warnings on cigarette packs At follow-up, 65% reported seeing mouth cancer warning TV ad and 65% reported seeing peripheral vascular disease TV ad	Outcome measures: perceptions of health consequences of smoking, awareness and processing of warning labels, perceptions of cigarette packs	Effects: Perceptions of health consequences of smoking: percentage of students agreeing with the two messages targeted in the TV ads increased between baseline and follow-up*; students who saw the warning advertisements were more likely to agree with the negative health effects stated in them*; however, students at follow-up who had not seen the ads were still more likely to agree with them than students did at baseline* Awareness and processing of warning labels: increased significantly between baseline and follow-up* Perceptions of cigarette packs: seeing cigarette packs was more common among students with some involvement in smoking at

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
						baseline* and follow-up*; in both surveys, more likely to see packs if had a parent that smoked* or a friend who smoked*; smoking involvement was associated with seeing the new warning labels*; positive image of pack decreased and negative increased after the introduction of the GWLs*
Worden et al., 1996	Duration: long (4 years, began in 1985) Intensity: not specified Target audience: youth, particularly girls (ages 12-17) Location: Montana and the northeastern U.S. Medium: television and radio; 190 broadcast TV, 350 cable TV, 350 radio exposures every year Other components: the media intervention ran with and an in contrast to a school smoking prevention program.	Design: longitudinal (6 waves: baseline in the 4th-6th grades and annually for 4 years (intervention didn't start until grades 5-7); additional survey conducted 2 years after intervention ended) with quasi-experimental design (two communities received media intervention + school program while other 2 communities just received school intervention) Sample: 2,540 adolescents (focuses on the 1,266 girls – interested in adolescent girls at an increased risk for smoking)	Theory based: yes (theory of reasoned action) Target theme: not smoking associated with popularity/having friends, negative outcomes associated with smoking, positive outcomes associated with refusing to smoke (and other ways to spend your time), negative health effects, negative cosmetic effects	Exposure measure: yes Measured exposure by measuring exposure to radio and television channels and programs on which ads aired. Radio: 57% of higher-risk girls; 40% of lower-risk girls; 40% of higher-risk boys, 30% of lower-risk boys MTV: 32% of higher-risk girls, 17% of lower-risk girls; 35% of higher-risk boys, 23% of lower-risk boys	Outcome measures: smoking behavior, beliefs in advantage of smoking, positive attitudes towards smoking, perceived peer smoking, intentions to smoke	Effects: Beliefs in advantages of smoking: scores increased less among girls in the media intervention group than school program group* Positive attitudes towards smoking: smaller increase among girls in the media intervention group* Perceived peer smoking: smaller increase among girls in the media intervention group* Intentions to smoke: smaller increase among girls in the media intervention group* Smoking behavior: weekly smoking increased less over time among girls in the media group compared to the school based group*; 2 year follow-up indicated that girls in the media group smoked less than the school intervention group*; similar patterns of smoking behavior for boys but not significant

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

3.3) Studies comparing the effectiveness of different message strategies among youth and young adults

Studies included in Table 4 are those compare the effectiveness of different messages (e.g., "illness" ads versus "normative" ads") or different message characteristics (e.g., high versus low message sensation value), *without also* assessing the overall impact of exposure to a particular message. Each of these studies also met the general inclusion criteria outlined in the introduction to Table 3.

Table 4 – Studies comparing the effectiveness of different message strategies among youth and young adults

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
Biener et al., 2004	Massachusetts Anti-Smoking Media Campaign Duration: long (campaign launched in Oct 1993, follow-up surveys conducted in Nov 1997 – Feb 1998) Intensity: unclear; 9,226 total GRPs for 8 ads Target audience: mixed Location: Massachusetts, US Medium: televised PSAs Other components: media component part of an antismoking intervention agreed upon in 1992, as well as increasing cigarette excise tax (which went into effect in Jan 1993)	Design: longitudinal: (data from Massachusetts Tobacco Survey of Youth; 5-year follow-up) combined with anti-tobacco advertising exposure data (GRPs) for 8 ads Sample: 618 youth (12-15 years old at baseline)	Theory based: no Target theme: "illness ads": illness and suffering due to smoking (negative health consequences & industry manipulation) "normative ads": teenagers should not smoke (social norms) "humorous ads": humorous attempt to discourage smoking	Exposure measure: yes Semi-prompted recall (68% for illness messages; 42% for normative messages; 69% for humorous messages)	Outcome measures: recall, perceived effectiveness	Effects: Recall: greater for illness and humorous messages than for normative messages*; positive association with GRPs* Perceived effectiveness: greater for illness messages than for normative or humorous messages*; negative association with GRPs*
Goetz, 2011 (Dissertation)	Duration: short Target audience: all populations Location: a Midwestern university, USA	Design: forced exposure with experimental design: randomized to 2 conditions: fear only and fear + disgust; physiological measures; measured before intervention and two weeks later	Theory based: yes (negative emotion theory, among others) Target theme: fear-only or fear + disgust ads: (graphic) negative health consequences	Exposure measure: forced exposure	Outcome measures: ad recall, engagement, readiness to quit, quitting behavior	Effects: No differences between ad conditions on ad recall, engagement, readiness to quit, quitting behavior. Ad recall: within each ad condition (fear-only vs. fear

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Medium: televised PSAs Sample: 61 college students (18-25 years old), smokers					+ disgust*), the more disgusting an ad was rated, the higher the recall
Helme et al., 2007	Duration: short (experiment spread over 8 weeks) Target audience: youth Location: public schools across the Colorado Front Range Medium: televised PSAs shown on a laptop	Design: forced exposure with experimental design: 2 (sensation seeking levels: high vs. low) x 2 (treatment condition: High Sensation Value (HSV) PSAs vs. Low Sensation Value (LSV) PSAs); repeated measures (3 sessions = 18 total PSAs per participant); pre-/post-test Sample: 1272 students from 6th-9th grade (12-14 years old)	Theory based: yes (activation model of information exposure) Target theme: no specific theme mentioned	Exposure measure: no exposure measure mentioned	Outcome measures: intention to smoke, attitude toward smoking, perceived risk for self, perceived message effectiveness, self-efficacy, perceived risk for others	Effects: No significant differences in effects on attitudes toward smoking, intentions to smoke, or perceived risk for self and for others across HSV & LSV messages Self-efficacy: HSV messages were more effective than LSV messages in promoting self-efficacy to resist smoking* Perceived message effectiveness: there was a greater perceived effectiveness of both HSV and LSV PSAs at post-test, compared to baseline*, but no significant difference between the perceived effectiveness of the two message types
Henriksen et al., 2002	Duration: short (data collected over 6 months) Target audience: mixed Location: a university in California, US Medium: televised PSAs	Design: forced exposure with experimental design: random assignment to 1 of 3 message type conditions (Philip Morris youth smoking prevention messages; Philip Morris charitable works messages; Control messages); with pre-/post-test Sample: 218 undergraduates (18 to 25 years old)	Theory based: no Target theme: Philip Morris youth smoking prevention messages: "We Card"; "Talk to your kids about smoking, they'll listen", and "Think. Don't Smoke" Philip Morris charitable works messages: "Working to make a difference, the people of Philip Morris" (domestic violence, food bank, shelter for homeless teens, and meals on wheels)	Exposure Measure: controlled exposure	Outcome Measures: perceived effectiveness	Effects: Perceived effectiveness: ads about youth smoking prevention were rated as less favorable than ads about charitable works*; messages were perceived to be more effective among those who were unaware that Philip Morris is a tobacco company, compared to those who were aware*
Henriksen et al., 2006	Duration: short Target audience: youth Location: a public high school in California, US	Design: forced exposure with experimental design; random assignment to 1 of 4 message source conditions ("truth" anti-tobacco messages; Philip Morris	Theory based: yes (theory of psychological reactance) Target theme: "truth" messages: industry manipulation, negative	Exposure Measure: forced exposure	Outcome Measures: intention to smoke; perceived effectiveness, curiosity about tobacco use, tobacco industry sympathy	Effects: Intention to smoke: no significant differences across message types Perceived effectiveness:

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Medium: televised PSAs	youth smoking prevention messages; Lorillard youth smoking prevention messages; control [drunk driving] messages); with pre-/post-test Sample: 832 students from 9th-10th grade (14-17 years old)	health consequences Philip Morris' "Think. Don't Smoke" messages: social norms (you don't have to smoke to be cool) Lorillard's "Tobacco is whacko if you're a teen" messages: self-efficacy (refusal skills), negative short-term effects (smoking is gross & costly)			"truth" messages were perceived to be more effective than Philip Morris and Lorillard messages* Curiosity about tobacco use: no significant differences across message types Tobacco industry sympathy: exposure to Philip Morris and Lorillard ads led to greater sympathy toward tobacco companies, compared to exposure to "truth" messages and control messages*
Hong et al., 2008	Acadiana Coalition of Teens Against Tobacco (ACTT) Duration: long (3 years) Intensity: not specified Target Audience: youth Location: public high schools in South Central Louisiana Medium: posters and PSAs (read over the school's public address system) Other components: media campaign was the only one which had the potential to reach all students but there were also other intervention components, such as interactive educational activities	Design: longitudinal: (surveyed once a year for 3 years) Sample: Year 1: 1823 10th graders Year 2: 1552 11th graders Year 3: 1390 12th graders	Theory based: yes (social cognitive theory) Target theme: negative health consequences, industry manipulation, social norms, peer relationships Campaign themes by year Year 1: "Don't be a sucker!" Year 2: "Say No to Big Tobacco" Year 3: "The Future is Yours"	Exposure measure: yes Prompted awareness Year 1: Posters: 81.5% PSAs: 51.3% Year theme: 81.6% Year 2: Posters: 83% PSAs: 68.2% Year theme: 82.3% Year 3: Posters: 82.6% PSAs: 65.7% Year theme: 80.8%	Outcome measures: recalled exposure, recognition of campaign theme, judged impact of ads (on preventing smoking initiation/encouraging smoking cessation), affective reaction to ads	Effects: Judged impact of ads: the effect of posters on reported prevention of smoking in Year 2 (industry manipulation) were significantly higher than for Years 1 and 3* Affective reaction: higher for the stock media than the custom low-budget and custom high-budget posters*
Kim, 2006	Duration: short Target audience: youth Location: a high school in	Design: forced exposure with experimental design: randomly assigned to 2 (goal priming: promotion vs. prevention) x 2	Theory based: yes (regulatory focus theory) Target theme: promotion-framed	Exposure Measure: forced exposure	Outcome Measures: intention to smoke, perceived message persuasiveness, perceived message	Effects: Intention to smoke: compared to those in control condition, intentions were lower among those in

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	southern South Korea Medium: print ads	(message frame: promotion-framed vs. prevention-framed) conditions or a control condition Sample: 142 male high school students, non-smokers	messages: attaining improved health & cosmetics prevention-framed messages: the avoidance of negative health & cosmetic consequences		believability, perceived health risks of smoking, perceived social risks of smoking, perceived pharmacological benefits of smoking, perceived psychological benefits of smoking	matching goal prime and message frame conditions compared to those in non-matching conditions* and control condition* Message persuasiveness: messages in matching goal prime and message frame conditions (promotion/promotion or prevention/prevention) perceived to be more effective than messages in non-matching conditions* Pharmacological benefits of smoking: perceived benefits were lower among those in matching goal prime and message frame conditions compared to those in non-matching conditions (only prevention/ prevention*) and control condition* Psychological benefits of smoking: perceived benefits were lower among those in matching goal prime and message frame conditions (promotion/promotion or prevention/prevention) compared to those in non-matching conditions* and control condition* No significant effects on message believability, perceived health risks and perceived social risks
Murphy-Hoefer et al., 2008	Duration: short Target Audience: young adults (ages 18-24) Location: one southern and one northern public arts & sciences college, USA	Design: forced exposure with quasi-experimental design (non-equivalent control group); randomized to 3 (social norms, negative health consequences, industry manipulation) X 4 (humor and/or sarcasm (positive), drama and/or	Theory based: yes (theory of reasoned action, health belief model) Target theme: social norms, negative health consequences, industry manipulation	Exposure measure: forced exposure	Outcome measures: perceived effectiveness (persuasiveness), intention to quit smoking (only looked at smokers who reported no intention to quit at pretest)	Effects: Perceived effectiveness (Persuasiveness): health consequences and drama ads rated significantly more effective* Intention to quit smoking (only looked at smokers who

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Medium: televised PSAs	testimonial (negative); with pre-/post-test Sample: 1,011 college students (18-24 year old), smokers & non-smokers				reported no intention to quit at pretest): health consequences associated with greater intention to quit than social norms and industry manipulation categories
Murphy-Hoefer et al., 2010	Duration: short Target audience: young adults (ages 18-24) Location: one southern and one northern public arts & sciences college, USA Medium: televised PSAs	Design: forced exposure with experimental design; randomized to 3 (social norms, negative health consequences, industry manipulation) X 4 (humor and/or sarcasm (positive), drama and/or testimonial (negative); with pre-/post-test Sample: 1,020 college students (18-24 years old), smokers & non-smokers	Theory based: no Target theme: social norms, negative health consequences, industry manipulation	Exposure measure: forced exposure	Outcome measures: social norms knowledge, attitudes and beliefs; negative health consequences knowledge, attitudes and beliefs; industry manipulation knowledge, attitudes and beliefs	Effects: Social norms knowledge, attitudes and beliefs: All three message types caused increase in social norms knowledge, attitudes and beliefs, but not significantly Negative health consequences knowledge, attitudes and beliefs: increase was significantly greater among those who saw the health consequences or tobacco industry manipulation ads than those who saw the social norms ads (which caused decrease)* Industry manipulation knowledge, attitudes and beliefs: health consequences and tobacco industry manipulation ads caused increases whereas social norms ads caused decrease in industry manipulation knowledge, attitudes and beliefs Overall, health consequences ads caused the most significant increases in all of the knowledge, attitudes, and beliefs combined*, compared to the industry manipulation ads* and social norms ads (not significant)
Rhodes et al., 2008	Duration: short Target audience: all populations	Design: forced exposure with a repeated measures design: (4 PSAs + post-tests)	Theory based: yes (dual process models of persuasion) Target theme: social	Exposure measure: forced exposure	Outcome measures: perceptions of PSAs, ad processing, desire to quit smoking, attitude accessibility, norm	Effects: Perceptions of PSAs: NORM and IATT ads were seen as significantly more biased than ETS-R and ETS-D

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Location: a university in Southeast USA Medium: televised PSAs	Sample: 166 undergraduate smokers & non-smokers	disapproval of smoking (NORM), regulation of smoking to reduce environmental tobacco smoke exposure (ETS-R), the dangers of environmental tobacco smoke (ETS-D), and tobacco industry attack (IATT)		accessibility	ads*; ETS-D ads were seen as significantly more persuasive than the other three ads*, while the IATT ad was seen as marginally more persuasive than the ETS-R and NORM ads
Sutfin et al., 2008	Duration: short Target audience: youth Location: rural high schools in Central Virginia Medium: televised PSAs	Design: forced exposure with experimental design: randomized to one of four conditions (3 anti-tobacco ad conditions and one control condition) Sample: 488 high school students, smokers & non-smokers	Theory based: yes (reactance theory, cognitive dissonance theory) Target Theme: endangering others (EO) (or second-hand smoke), negative life circumstances (NLC), industry manipulation (IM)	Exposure measure: forced exposure	Outcome measures: intention to smoke, cognitive responses to ad, emotional responses to ad, attitude toward ad, comprehension of anti-tobacco ad theme, social desirability	Effects: Intent to smoke: those who saw NLC ads had significantly lower intentions to smoke than those who viewed the IM ads*; smokers who saw the IM ads tended to have higher intentions to smoke than those who saw the NLC ads Cognitive responses: those who saw IM ads had significantly less positive cognitive responses than those who saw EO ads* Emotional responses: those who saw NLC ads had significantly stronger positive emotional responses than those who saw the other two ads*; those who saw EO ads had significantly stronger negative emotional responses than those who saw the NLC ad* Attitude toward ad: no differences in attitudes based on ad theme Comprehension of ad: those who saw NLC ads were more likely to identify the correct theme of the ads than those who saw the other two ads
Vogeltanz-Holm et al., 2009	The Plain Truth Campaign	Design: cross-sectional: post-test survey only	Theory based: yes (social cognitive and social inoculation theories,	Exposure measure: yes TRPS – assuming equal	Outcome measures: confirmed recall; perceived effectiveness	Effects: Confirmed recall: youth had highest amount of recall for

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

Authors	Campaign Details	Study Design & Sample	Message Description	Media Exposure	Outcome Measures	Effects
	Duration: short (13 weeks, Sept-Dec 2003) Intensity: each of 5 television ads aired 2043 times, accumulating 12,690 TRPs; each of 5 radio ads aired 74 times on eight radio stations for an average weekly frequency of 57.4 broadcasts. Target audience: youth (12-17 year olds) Location: U.S. Northern Plains state Medium: television and radio counter-marketing ads	Sample: 391 adolescents (12-17 years old), white or American Indian	conditioning theory) Target theme: negative health consequences, social consequences, industry manipulation	exposure potentials, the average targeted viewer was exposed to each ad 25.4 times during the campaign Confirmed recall: (54.7% of at least one television ad and 45.8% of at least on radio ad)	(PE) of ad (including talking to friends about ad)	the Artery TV ad (graphic negative health consequences)*; recall rates for each TV ad was significantly different*; youth had highest amount of recall for the ABC radio ad (negative health consequences)* Perceived effectiveness: youth's PE ratings for the Artery TV ad (graphic negative health consequences) were significantly higher than for the other TV ads*; youth's PE ratings for the Joe DoBoer radio ad (negative health consequences) were highest for both girls* and boys
Zhao & Pechmann, 2007	Duration: short Target audience: youth Location: two public high schools in USA Medium: televised PSAs	Design: forced exposure with experimental design: randomized to 2 (viewers' regulatory focus: promotion vs. prevention) x 2 (message's regulatory focus: promotion vs. prevention) x 2 (message frame: positive vs. negative) or control condition Sample: 342 9th-graders, non-smokers	Theory based: yes (regulatory focus theory) Target theme: social consequences of smoking	Exposure measure: forced exposure	Outcome measures: intention not to smoke; perceived diagnosticity (or usefulness) of ad; message accessibility; perceived ad effectiveness; attitude toward ad	Effects: Intention not to smoke: Promotion-focused adolescents who watched the promotion-focused positively framed advertisement had significantly stronger intention not to smoke than those in other conditions* Prevention-focused adolescents who watched the prevention-focused negatively framed advertisement had significantly stronger intention not to smoke than others* No significant differences on ad effectiveness or attitude toward ad

*Results are significant at p<.05

Duration of campaign: short = < 6 months; medium = 6 to 17 months; long = 18+ months

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