The Impact of EX®
Results from a Pilot Smoking-Cessation Media Campaign

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Background: Mass media campaigns can be an effective strategy to increase quitting activity among smokers, particularly when aired in the context of other anti-tobacco efforts.

Design: A longitudinal study using data collected from smokers identified in a random-digit-dial survey of adults in Grand Rapids MI, prior to the campaign and approximately 6 months after the launch of the campaign.

Setting/participants: Adult smokers who were interviewed in the fall of 2006 and agreed to participate in a follow-up interview approximately 6 months later ($n=212$).

Intervention: A pilot mass media campaign, branded EX®, which used empathy to encourage smokers to "relearn" life without cigarettes, and focused on disassociating smoking from common activities that would otherwise function as smoking cues, such as driving or drinking coffee. The campaign averaged 100 targeted rating points per week on television.

Main outcome measures: Primary outcome measures were five campaign-related cognitions and confidence in quitting. Secondary outcome measures were quitting behaviors.

Results: This 2007 analysis suggests that the campaign generated a high level of awareness of EX, with 62% of the sample demonstrating confirmed awareness and 79% reporting aided awareness. Awareness of EX was associated with significant change in two of five campaign-related cognitions. Awareness was not associated with confidence in quitting or having made a quit attempt.

Conclusions: These findings demonstrate that a branded, empathetic media campaign that offers smokers practical advice on how to approach quitting can change cognitions related to successful cessation over a relatively short time period.
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Introduction

There is strong evidence that mass media campaigns can be used to prompt cessation activities and thereby reduce tobacco-use prevalence, particularly when combined with other tobacco control efforts.[1,2] Early research in this area focused on the Federal Communications Commission (FCC) Fairness Doctrine ruling that required broadcasters to show one anti-tobacco advertisement for every three tobacco advertisements they aired.[3,4] Over the course of this national campaign (1967–1970), significant declines were observed in adult tobacco consumption and adult smoking rates.[3,5,6] More recently, state, city, and national campaigns outside of the U.S. have been effectively used to increase smoking cessation among adults.[7–16] Despite these successes, the only national cessation campaigns to air in the U.S. in recent years are the Pfizer "My Time to Quit" campaign and the Philip Morris "Quit Assist" campaign. The Philip Morris campaign is of particular concern, as campaigns sponsored by the tobacco industry have been found to be ineffectual or counterproductive.[17,18]

In 2006, the American Legacy Foundation developed and pilot-tested a branded media campaign called EX®,

to determine whether it could effectively increase demand for consumer cessation services and change key cognitions associated with successful quitting. Grand Rapids MI was selected as the primary evaluation site. There were two phases to the EX campaign: Phase I promoted consumer cessation services and products; Phase II focused on changing cessation-related cognitions, confidence in quitting, and quitting behavior. This study describes the evaluation of Phase II of the EX campaign.

EX was developed as a brand based on evidence that branding can enhance the impact of a public health campaign.[19,20] Brands are used as a way to increase affiliation between consumers and a product, service, or set of ideas. In terms of connecting to smokers, the EX brand was created as a replacement mechanism for those who have developed strong loyalties toward specific tobacco brands.[1] The broad target audience for the EX campaign advertising focuses on smokers who are open to quitting but may not know how to successfully quit. By using market segmentation, the target audience and media delivery plan was further refined to specifically reach smokers aged 25–49 years, of low to moderate annual incomes, and of broad diversity across gender and race/ethnicity.[21]

The campaign message strategy was developed based on qualitative data from smokers at various stages in the quitting process, derived from a series of more than 30 focus groups across the country and a national survey of over 1500 smokers. Messages employ an empathetic, smoker-to-smoker voice that encourages smokers to "relearn" their life without cigarettes. Emphasis is placed on disassociating smoking from common daily activities that would otherwise function as smoking cues, such as driving or drinking coffee.

The aim of this study is to explore whether awareness of the EX campaign is associated with changes in campaign-specific cognitions, confidence in quitting, and quit behavior in a longitudinal sample of smokers. The CDC Best Practices for Tobacco Control notes that media campaign advertisements should reach 75% to 85% of the target audience quarterly, with an average of 1200 or more targeted ratings points (TRPs) quarterly during the introductory year of a campaign, followed by an average of 600 or more TRPs quarterly for maintenance, and that in such a case, one might expect to observe: (1) changes in awareness beginning at 6 months; (2) attitude change at 12–18 months; and (3) behavior changes at 18–24 months.[2,16] Given that the EX campaign approximated the CDC media delivery recommendations, the authors hypothesized that the EX awareness would be associated with campaign-related changes in cognitions and confidence in quitting after approximately 6 months.

Methods

The Media Campaign

The campaign aired at 1300 average quarterly TRPs (or 100 average weekly TRPs) on television during the campaign period, which began the second week in February and ran through the third week in June 2007. Gross Rating Points (GRPs) are the standard unit of measurement for media delivery and reflect both the reach and frequency of an advertisement. Reach describes the total percentage of the targeted population that is exposed to the advertisement; frequency describes the number of times individuals in the targeted population saw it, on average. Targeted Rating Points (TRPs) are GRPs that are delivered to, and measured within, a specific audience; in this case, adults aged 25–49 years.[2] Nielsen ratings were used to generate GRP data.[22]

During the study period, two other cessation media campaigns aired in Grand Rapids: the Phillip Morris campaign Quit Assist aired at 156 average quarterly TRPs (12 average weekly TRPs), and Pfizer's My Time to Quit aired at 208 average quarterly TRPs (16 average weekly TRPs). Both Quit Assist and My Time to Quit aired at the national level as well as in Grand Rapids and had been airing during the year prior to the launch of the EX campaign. Quit Assist advertisements showed individuals engaged in work or social activities and described the methods—including pharmacotherapy and social support—they used to quit smoking. The advertisements, branded Quit Assist, directed smokers to the Philip Morris USA website. My Time to Quit advertisements showed individuals from all walks of life talking about how their addiction to nicotine made it hard for them to quit. The advertisements, branded My Time to Quit, provided the campaign website and phone number, through which smokers could receive a quit smoking packet of materials.

Sample Selection

This study is based on longitudinal data collected from a sample of adult smokers in Grand Rapids MI. Grand Rapids was selected as the primary evaluation site based on several factors, including its modest level of state tobacco control funding and the lack of any state-sponsored anti-tobacco media messages on air during the study period. The baseline survey was conducted in the fall of 2006, prior to the launch of the EX campaign.

Respondents were selected using a two-stage sampling strategy. At baseline, telephone numbers were randomly selected from a list-assisted, stratified, random-digit-dial (RDD) sampling frame. Attempts were made to contact approximately 75,686 households to determine study eligibility at baseline. For each residential household contacted, one adult was randomly selected and screened for smoking status. Among the known 8917 eligible households, a sample of 4384 current, former, and never smokers agreed to participate in the baseline survey. To obtain the predetermined sample quotas of 600 current smokers and 400 never and former smokers, all smokers ($n = 596$)

and one in six nonsmokers (*n*=419) were selected to complete the baseline survey. Based on the American Association of Public Opinion Research (AAPOR) Response Rate 3, the overall baseline response rate, including the screener response rate, was 34.3%.[22] Of the 596 smokers identified at baseline, 448 consented to participate in the follow-up survey approximately 6 months after the campaign launch. The follow-up survey was completed by 212 smokers, resulting in a response rate of 62.1%.[23]

Respondents received a $10 incentive to complete each survey. An additional incentive of $20 was offered to convert refusals at follow-up. Interviews were conducted using computer-assisted telephone interviews (CATI). This study was approved by the Human Subjects Review Committees of Macro, International, the data collection contractor, and Copernicus Group IRB, the external review board used by Legacy.

Measures

The primary independent variable in this study is exposure to the EX campaign, as measured by confirmed awareness of individual EX advertisements. Confirmed awareness of EX advertisements was measured by asking respondents whether they had "recently seen an advertisement on television that . . .," followed by a brief description of the beginning of the advertisement. Respondents were then asked to describe the end of the advertisement. Those who were able to accurately describe the ending of one or more of the advertisements were classified as having confirmed awareness. Trained interviewers coded responses.

Aided awareness of the campaign was measured by describing an advertisement for respondents and then asking if they had seen it. Those who reported having seen the advertisement were not required to supply a description of the advertisement. Similar awareness items were used to assess aided awareness of Pfizer's My Time to Quit and Phillip Morris' Quit Assist.

Variables assessed at baseline were used to control for potential factors that may be associated with the outcomes. These variables included: age; gender; education; employment status; recent quit attempts (within 3 months prior to the baseline interview); nicotine dependence; motivation to quit; awareness of other cessation media messages; and a media use measure that included television, radio, and Internet. Nicotine dependence was measured using the Fagerstrom Test for Nicotine Dependence (FTND) item Time to First Cigarette (of the day).[24] Respondents' motivation to quit was assessed by asking them to rate how much they wanted to quit smoking on a 4-point scale (*not at all, a little, somewhat, a lot*). Race/ethnicity could not be included as a covariate due to lack of heterogeneity in the sample.

Outcome variables include cognitions about quitting smoking, confidence in quitting smoking, and quit attempts. The five items related to quitting include: whether the respondent (1) is thinking about quitting; (2) knows the steps needed to quit; (3) is thinking about which cigarettes during the day would be hardest to give up; (4) knows how to

change in order to quit; and (5) is prepared to make life changes in order to quit. These items were measured on a 4-point Likert scale ranging from *strongly agree* to *strongly disagree*, and were presented in random order to control for sequencing effects. To gauge confidence in quitting, respondents were asked: *If you decided to give up smoking altogether in the next 12 months, how likely do you think you would be to succeed?* Measures of quit behavior included having made one or more quit attempts of ≥1 day between baseline and follow-up interviews, and reporting a 30-day abstinence at the follow-up interview.

Data Analyses

All statistical analyses were performed using SAS, version 9.1. All data were weighted to account for the probability of selection and nonresponse, and to account for loss to follow-up. A poststratification adjustment was used to weight the sample distribution by race, age, and gender to the population distribution for the designated market area (DMA) in the Grand Rapids area.

Bivariate descriptive analyses were conducted to assess the strength of association between each independent variable and the outcomes. Multivariable modeling was conducted to assess the influence of EX awareness on cognitions, confidence in quitting and quit behavior, adjusting for other covariates. Change scores for the cognitive measures and for confidence in quitting were analyzed using a multivariate ordinary least squares regression model. Outcomes were measured as the differences in response scores between baseline and follow-up interviews for each respondent. A longitudinal ordinary least squares regression model was used to estimate differences in adjusted means for cognitive items and confidence in quitting at both baseline and follow-up. Quit attempts were analyzed using a multivariable logistic regression model with a dichotomous outcome of one or more attempts versus no attempts between baseline and follow-up interview. The goodness of fit of all models was assessed using residual plots and likelihood ratio tests.

Results

Demographic Characteristics

The longitudinal sample of 212 smokers was mostly white, non-Hispanic, and consisted of more women than men (Table 1). The average age was 47 years. Approximately 48% of the sample was aged 25–49 years, the primary age target for the media campaign. Over 50% were employed full-time or part-time, and 39% were not in the workforce. Close to half of the sample reported being married; 37% reported living with at least one other smoker. About two thirds of the sample reported at least 6 hours per day of media exposure, including television, radio, and Internet.

The baseline sample was composed solely of smokers, the majority of whom (80%) were daily smokers. Daily smokers

Table 1. Demographics and smoking behaviors of the sample (percentages, unweighted)

Characteristics	Smokers at baseline (n=212)	Smokers at follow-up (n=194)[a]
Gender		
Male	40.1	41.8
Female	59.9	58.3
Race		
White, non-Hispanic	80.5	79.7
Black, non-Hispanic	11.0	12.0
Hispanic	2.4	2.1
Other	6.2	6.3
Age (years)		
18–24	9.0	8.8
25–49	46.5	46.1
≥50	44.6	45.1
Education		
Less than high school/high school diploma/GED	41.5	42.3
Some college/technical or associate's degree	31.1	31.4
At least a college degree	27.4	26.3
Employment status		
Employed	52.9	51.6
Unemployed	8.2	7.9
Not in the workforce	38.9	40.5
Marital status		
Married/partner	50.0	48.5
Never married	19.8	21.1
Divorced/widowed/separated	30.2	30.4
Media exposure (TV, radio, and Internet)		
≤6 hours per day	63.5	62.2
>6 hours per day	36.5	37.8
Smokers in household		
Yes	37.3	40.7
Smoking status		
Current smoker	100.0	100.0
Daily smoker	80.2	80.9
Some days smoker	19.8	19.1
Current smoker with ≥1 quit attempt	28.8	35.1

Table 1. *(continued)*

Characteristics	Smokers at baseline (n=212)	Smokers at follow-up (n=194)[a]
Time to first cigarette		
≤30 minutes	56.1	53.1
>30 minutes	43.9	46.9
Motivation to quit		
Not at all/a little	36.4	33.0
Somewhat/a lot	63.6	67.0
Recent quit attempt		
Yes	31.0	38.5
Number of cigarettes/day for daily smokers (M)	18.2	18.0

[a]Eighteen smokers who reported smoking at baseline were not smoking at follow-up.
GED, graduate equivalency diploma

reported smoking, on average, 18.2 cigarettes per day. Over 50% of all respondents reported smoking the first cigarette of the day within 30 minutes of waking. About two thirds of all respondents were motivated to quit either *somewhat* or *a lot*, and about 30% had made a quit attempt within the past 3 months prior to baseline data collection.

At follow-up, 8.5% of respondents (n=18) reported having stopped smoking for at least 30 days. Among those still smoking, 81% were smoking daily; their average number of cigarettes per day did not decline. Approximately 44% had made a quit attempt between baseline and follow-up interviews.

Media Delivery and Awareness of EX Advertising

The EX campaign aired at 1300 average quarterly TRPs between February and June 2007. This number is higher than the CDC recommendation of 1200 or more average quarterly TRPs during the introductory year of a media campaign.[2] However, the EX campaign period was relatively short.

Aided awareness was 77% for EX, 43% for Quit Assist, and 38% for My Time to Quit (Table 2). At follow-up, the EX awareness level was higher among smokers who were motivated to quit than among smokers who were not motivated to quit (χ^2=45.33, $p<0.05$). There were no differences in awareness by motivation to quit or smoking status for Quit Assist or My Time to Quit.

Approximately 62% of respondents in the sample demonstrated confirmed awareness of EX. Those with confirmed awareness did not differ significantly from those who were unaware of EX in terms of demographic

Table 2. Aided awareness by smoking status and by motivation to quit at follow-up (weighted percentage [95% CI])

Campaign	Smokers (*n*=191)	Smokers motivated to quit (*n*=125)	Smokers not motivated to quit (*n*=63)	*p*-value[a]
EX	77.3 (66.6, 88.0)	84.5 (75.1, 93.9)	60.4 (36.8, 84.1)	0.02
Pfizer's My Time to Quit	38.1 (26.6, 49.5)	42.5 (28.1, 56.9)	13.6 (11.9, 45.0)	0.21
Phillip Morris' Quit Assist	43.4 (31.1, 55.7)	49.1 (34.3, 63.8)	30.9 (10.5, 51.2)	0.16

[a]*p*-value for association between motivation to quit and awareness

characteristics. Smokers with confirmed awareness were more likely to report greater motivation to quit smoking at the 6-month follow-up (χ^2=8.16, $p<0.01$). Given the homogeneity of the Quit Assist and My Time to Quit advertisements, confirmed awareness could not be collected for these campaigns.

Influence of EX confirmed awareness on campaign-related cognitions, confidence in quitting, and quit behavior. After controlling for baseline characteristics, confirmed awareness of EX was found to be positively and significantly associated with two measures, "Thinking about quitting," and "Thinking about which cigarettes during the day would be hardest to give up" ($p<0.01$; Table 3). Similar results were found in models

that substituted aided awareness for confirmed awareness (results not shown).

Adjusted means show movement in the direction of increased confidence in quitting; however, confirmed awareness of EX was not significantly associated with increased confidence in quitting (Table 3). Gender and educational attainment were associated with increased confidence in quitting ($p<0.05$). Confidence in quitting increased more for men than women, and for those with less than a high school diploma compared to other groups.

Confirmed awareness of EX was not significantly associated with having made one or more quit attempts between baseline and follow-up interviews or experiencing 30-day abstinence at follow-up, after adjusting for other covariates.

Table 3. Adjusted means from multivariate models, by EX® campaign awareness[a]

Measure	Confirmed awareness of EX	Adjusted M (95% CI) Baseline	Follow-up[b]	Attained significance level
Cognitions				
I have been thinking a lot about quitting smoking recently. (1=strongly agree)	No	2.39 (2.20, 2.58)	2.49 (2.30, 2.69)	*p*=0.003
	Yes	2.42 (2.28, 2.57)	2.16 (2.02, 2.31)	
I know the steps I will need to take in order to quit smoking. (1=strongly agree)	No	1.86 (1.73, 2.00)	1.81 (1.67, 1.95)	*p*=0.333
	Yes	2.01 (1.90, 2.11)	2.09 (1.98, 2.19)	
Lately, I have been thinking about which cigarettes during my day would be the hardest to give up if I were to quit. (1=strongly agree)	No	2.44 (2.24, 2.64)	2.61 (2.40, 2.81)	*p*=0.005
	Yes	2.70 (2.54, 2.85)	2.32 (2.16, 2.47)	
I know exactly what I will have to change to be able to stop smoking. (1=strongly agree)	No	1.91 (1.73, 2.09)	2.08 (1.89, 2.27)	*p*=0.299
	Yes	2.05 (1.91, 2.19)	1.98 (1.84, 2.12)	
I am not prepared to make changes in my life in order to quit smoking. (1=strongly disagree)	No	2.69 (2.49, 2.89)	2.50 (2.29, 2.71)	*p*=0.162
	Yes	2.40 (2.24, 2.55)	2.54 (2.38, 2.69)	
Confidence in quitting				
If you decided to give up smoking altogether in the next 12 months, how likely do you think you would be to succeed? (1=very likely)	No	2.19 (1.95, 2.43)	2.20 (1.95, 2.45)	*p*=0.142
	Yes	1.88 (1.69, 2.07)	1.68 (1.49, 1.87)	

[a]Covariates in the multivariate model include EX campaign awareness, age, gender, education, time to first cigarette of the day, motivation to quit, media exposure hours per day, aided awareness of the Quit Assist campaign, aided awareness of the My Time to Quit campaign, and ≥1 quit attempts prior to baseline interview.
[b]Denominator excludes 18 respondents who were not smoking at follow-up.

However, the OR for making a quit attempt among those with confirmed awareness of EX is 2.2 (p=0.17) as compared to those without awareness. This finding suggests that EX may be increasing the propensity for smokers to make a quit attempt. Motivation to quit at baseline and recent quit attempts prior to baseline were significantly associated with a greater likelihood of making a quit attempt between baseline and follow-up interviews (p<0.05).

Influence of aided awareness of other campaigns on cognitions, confidence in quitting, and quit behavior. Aided awareness of Pfizer's My Time to Quit was not found to be related to any significant changes in cessation-related outcomes over time. Aided awareness of the Phillip Morris Quit Assist campaign was found to be negatively associated with changes over time for three of the measured outcomes. First, aided awareness of Quit Assist was associated with a lower level of agreement in response to the item *I know the steps I will need to take in order to quit smoking* (p<0.05). Second, aided awareness of Quit Assist was associated with a decrease in smokers' confidence in quitting over the study period (p<0.01). Third, smokers with aided awareness of Quit Assist were less likely to make a quit attempt (OR=0.32, p=0.03).

Discussion

These findings demonstrate that the pilot EX campaign generated very strong awareness levels and some significant changes in cessation-related cognitions among smokers in Grand Rapids over a relatively short campaign period. Campaign awareness is a key factor, as insufficient campaign exposure is one of the most common reasons public health campaigns fail to produce change.[25] The number of targeted TRPs closely approximated the CDC recommendations for media delivery, and EX awareness levels were in keeping with CDC expectations given this media level.[2] Findings indicate that the vast majority of smokers in the Grand Rapids area—nearly 80%—were aware of EX advertising, and that awareness levels were even higher among the target audience. It is possible that the empathetic tone of the campaign resonated with smokers as a result of the increasing stigma associated with smoking, and that this contributed to high awareness levels.

The campaign significantly influenced two cognitions among smokers: "I have been thinking a lot about quitting smoking recently" and "Lately, I have been thinking about which cigarettes during my day would be the hardest to give up if I were to quit." Change in the first of these measures, thinking about quitting, suggests that EX advertising increased overall cognitions about quitting. In the transtheoretic Stages of Change model, it is posited that the process of quitting can be described as an individual's movement along

a continuum from not thinking about quitting to cessation to maintenance of a smokefree lifestyle.[26] Increasing the proportion of a subpopulation that is "thinking a lot about quitting smoking" is a positive shift in the right direction. The second measure, "I have been thinking about which cigarettes would be hardest to give up," is the single item most closely related to EX messages, which specifically advise smokers that if you can successfully give up one cigarette, you can give up the others. Observable change in this measure suggests that smokers understood and remembered the EX message. It is interesting to note that awareness of Pfizer's My Time to Quit was not found to be related to any significant changes in cessation-related outcomes, but that awareness of Phillip Morris' Quit Assist was negatively associated with changes over time for three of the measured outcomes.

Awareness of EX was not associated with confidence in quitting or with quit behavior. However, the direction and magnitude of the odds ratios in the multivariable models suggests that a relationship among awareness of EX, confidence in quitting, and quitting behavior may have been detected if a larger study sample had been available.

This study has several important limitations. First, this was not a nationally representative sample and cannot necessarily be generalized to a more diverse population outside of the Grand Rapids community. The Grand Rapids population has disproportionately fewer minorities than the nation as a whole,[27] and the small sample size limits the ability to detect campaign effects. Sample size also prohibits analysis of the campaign impact among subgroups, such as among smokers at varying levels of motivation to quit, or by race/ethnicity. However, EX pilot data from other media markets demonstrate that campaign messages resonated across racial and ethnic subgroups.[21]

In addition to limitations related to the sample, the Phase II period of the EX campaign was relatively brief. Studies on the impact of cessation media campaigns have noted increased cognitions about quitting and evidence of movement along the stages-of-change continuum at 2 weeks, and behavior change at 6 months, 1 year, or much longer time periods.[7–14] This is also reflected in the CDC Best Practices for Comprehensive Tobacco Control Programs, which indicates that behavior change may be observed at 18–24 months.[2] Lastly, the attrition of the sample over time may have resulted in biases among the smokers at follow-up, if attrition was associated with specific demographic or other characteristics. However, the current analyses indicated few differences between smokers in the completed sample and those lost to follow-up.

These findings demonstrate that a branded, empathetic media campaign that offers smokers practical advice about how to approach quitting smoking can change cognitions related to successful cessation over a relatively

short time period. A similar campaign of longer duration may be able to generate behavior change among the target audience. Based on these pilot results, the EX campaign has been launched nationally with the support of the National Alliance for Tobacco Cessation (NATC), a collaboration of public and private organizations. With a larger sample, we plan to explore the effects of EX messages on a broader scale, to better understand the relationships among different segments of smokers, changes in campaign-related cognitions, and quit behavior.

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