The influence of risk perception on behavior: a study of adolescents and anti-tobacco campaigns

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The influence of risk perception on behavior: 
A study of adolescents and anti-tobacco campaigns

by

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This is to certify that the master's thesis of

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has met the thesis requirements of Iowa State University

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ABSTRACT

The objective of this study was to measure how adolescents' perceptions of personal risk and exposure to anti-tobacco campaign messages affect their decision to make a health-related change in behavior. Adolescent smoking behavior was evaluated according to key factors of the Health Belief Model (HBM).

A questionnaire was administered to 103 participants to assess perceived levels of threat, perceived benefits and barriers, exposure to campaign cues to action, and exhibition of campaign recommended behaviors.

Linear regression was used to assess the relationships among the HBM constructs. The findings indicated that perceived susceptibility, perceived severity, perceived barriers and benefits, and exposure to campaign cues were significant predictors of exhibiting campaign recommended behaviors. Knowledge about factors that influence adoption of anti-tobacco behaviors allows for modifications to anti-tobacco campaign and improved effectiveness.
CHAPTER I. INTRODUCTION

Adolescents are being exposed to anti-tobacco messages that attempt to discourage the use of tobacco products and to warn youth about the dangers of smoking. This study will analyze how perceived risk influences behavior as a result of exposure to anti-tobacco messages in order to predict the effectiveness of risk communication campaigns.

Anti-tobacco campaigns have become ubiquitous in our society. The Master Settlement Agreement (MSA) was signed by 46 states, Puerto Rico, the U.S. Virgin Islands, American Samoa, the Northern Mariana Islands, Guam, the District of Columbia, the Brown & Williamson Tobacco Corporation, Lorillard Tobacco Company, Philip Morris Incorporated, R.J. Reynolds Tobacco Company, Commonwealth Tobacco, and Liggett & Myers, on November 23, 1998, to compensate for the health care expenses resulting from increased tobacco use. The agreement also provided the funding for anti-tobacco organizations to educate the public about the dangers of tobacco use through informational campaigns.

The majority of informational campaigns target the youth demographic segment of the general population in an attempt to educate young people about the dangers of tobacco and encourage smoking cessation. Many campaigns attempt to relay their message through public service advertisements consisting of graphic images and messages. This study seeks to explore the relationship between perceived personal risk, exposure to anti-tobacco campaigns, and adoption of the recommended behavior explicit in anti-tobacco campaign messaging.
In conceptual terms, perceived personal risk can be defined as “an individual’s assessment of his or her vulnerability to the potential negative consequences” of smoking (Gerrard, 2000, p. 81). It could be surmised that some members of the population may perceive themselves to be vulnerable to tobacco addiction, tobacco-related deaths and health risks, including heart disease and any of the following cancers: lung, throat, mouth, vocal cords, esophagus, bladder, kidney, pancreas, cervix, and stomach, as well as leukemia as a result of tobacco use and exposure to secondhand smoke. Most campaigns seek to incur a change in knowledge, attitudes, and smoking-related behaviors such as smoking reduction, smoking cessation and local or statewide activity in anti-tobacco movements.

**Just Eliminate Lies Campaign**

Just Eliminate Lies (JEL) is a statewide anti-tobacco program administered by the Iowa Department of Public Health’s Division of Tobacco Use Prevention and Control and funded by the state of Iowa from the Tobacco Settlement Fund resulting from of the 1998 Master Settlement Agreement with the tobacco industry. It is one component of the state’s comprehensive program to reduce tobacco use. The JEL campaign is developed and led by a network of Iowa teenagers to promote smoking cessation and prevention among adolescents.

Just Eliminate Lies is based on advocacy activities at both the state and local levels and a media campaign to combat the advertising of the tobacco industry. Its mission is “[To] give Iowa teens the true, unfiltered facts about Big Tobacco’s lies, fight back against the tobacco industry’s constant attempts to [make] addicts [out of] us, change people’s attitudes toward tobacco use, help Iowa kids quit, or better yet, never start using tobacco and protect everybody from secondhand smoke” (www.jeliowa.org). The campaign strategy employs
strong language and startling visual images in various media and marketing forms: websites, television and radio public service announcements or PSAs, billboards, mall kiosks, and organized youth rallies.

**Purpose of the Study**

This study examined how teenagers understand and identify with the risk potential of smoking and how this affects their choices and smoking habits. To what extent does this estimation of self-vulnerability to the potential negative consequences of smoking affect decisions concerning tobacco use? This study attempted to define the role perceived personal risks plays in eliciting the desired behavior espoused in an informational health campaign.

In order to evaluate the relationship between perceived personal risk and behavior, this study analyzed adolescent and teenage awareness of the messages disseminated through the anti-tobacco campaign, Just Eliminate Lies, their perceived vulnerability to the risks inherent in tobacco use, and how this perceived vulnerability affects their habits and behavior according to the Health Belief Model (HBM). The HBM was implemented to systematically explain and predict health behaviors by focusing on the attitudes and beliefs of individuals. The key variables of the model are: perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and cues to action. A study was conducted and consisted of a series of questions distributed to a convenience sample of Iowa high school students in questionnaire form.

In a study conducted by Romer and Jamieson (2001), it was found that perceptions of both personal and objective risks are related to plans to quit smoking. Therefore, anti-
smoking messages should include evidence about risk, particularly to the individual smoker. According to this study, the higher the level of perceived risk, the more likely one is to alter smoking habits.

This study attempted to measure the relationship between exposure to the campaign and perceived personal risk and resulting individual actions. This evidence can be used in order to predict behavior and responses to an informational health campaign. It will also be valuable in the context of campaign planning and advertising promotion as it illuminates what type of messages have the greatest affect on individual behavior to achieve the desired effect.
CHAPTER II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

In this study, the multivariate framework of the Health Belief Model was used to evaluate how anti-tobacco campaigns affect the level of perceived personal risk associated with smoking that ultimately influences the performance of recommended anti-tobacco behavior.

The Evolution of the Health Belief Model

The Health Belief Model was preceded by Kurt Lewin's field theory that proposes "that human behavior is the function of both the person and the environment: expressed in symbolic terms, $B = f (P, E)$" (Deaux & Wrightsman, 1988, p. 9). Therefore, one's behavior is related to both personal characteristics and social situations in which one finds oneself.

The Health Belief Model was originated by a group of social psychologists working for the United States Public Health Service in the 1950s when the health service was primarily oriented toward the prevention of diseases and not toward their treatment. Medical care, which was largely considered appropriate public health work, was not the main focus at that time. Public health concern for problems connected with patient symptoms and their compliance with medical regimens was minimal. As such, there was a widespread failure of individuals to engage in preventative health measures. The Health Belief Model was developed to address the failure of a free tuberculosis (TB) health-screening program to inform the public of ways to prevent the spread of the disease.

The TB screening program provided adults with free TB screening x-rays from mobile units conveniently located in various neighborhoods. When few adults came out for
the free services, program organizers began investigating why more adults did not avail themselves of the services. Hochbaum (1958), however, began to study what motivated the few who subjected themselves to free screenings. He quickly learned that an individual’s perceived risk of contracting the disease and the benefits of action were crucial factors that would motivate them to adopt the recommended health practices. Hochbaum’s study found that participation in the screening was closely associated with two interacting variables: perceived susceptibility to the disease and the perceived benefits of following the proposed preventative measures (1958).

Rosenstock (1974) identified three original components required to encourage people to perform preventative health actions as: (1) a belief that one was personally susceptible to an illness or disease, (2) a belief that contracting the illness or disease would have at least moderately severe consequences on a person’s life, and (3) a belief that engaging in preventative health action would be beneficial in reducing the susceptibility of contracting the illness or in reducing the severity of illness, providing the preventative action would not entail overcoming important psychological barriers.

It is conceivable that an individual can view a given action as effective, but may be discouraged by barriers to action such as fear, inconvenience, or expense (Rosenstock, 1974). Such psychological tensions are resolved as follows: (1) if readiness to act is high and the barriers are low, behavior is likely to occur, (2) if readiness to act is low and negative barriers are high, behavior is not likely to occur, and (3) the tension is more difficult to resolve when readiness is high and the barriers are high as well. The third situation either leads to the individual removing him or herself psychologically from the situation or an increase in
anxiety to such a level that objective decision-making is no longer possible (Rosenstock, 1974).

“Cues” were also necessary to move the individual from a “readiness to act” state to an actual change in behavior. The “cues to action” construct was later added to the model (Rosenstock, 1974). Cues are either internal (such as physical symptoms of a health condition) or external (such as mediated health promotion or advice from others). The intensity of the cues varies with the degree of susceptibility to and seriousness of the disease or illness (Rosenstock, 1974).

Lastly, demographic, social, psychological, and structural variables, such as social class and reference groups, were included in the model. These factors condition an individual’s perceptions and perceived benefits of engaging in preventative health behaviors and can indirectly influence health-related decisions (Rosenstock, 1974).

The basic Health Belief Model is thus made up of five components: (1) the individual’s perceived susceptibility or vulnerability to a particular condition, (2) the individual’s perception of the severity of the consequences of contracting the illness or leaving it untreated, (3) the potential benefits of reducing actual or perceived susceptibility weighed against barriers or costs of the recommended action, (4) internal and external cues that trigger the appropriate preventative health action, and (5) modifying demographic, social psychological, and structural variables. As Rosenstock (1966) summarized, “The combined levels of susceptibility and severity provided the energy or force to act and the perception of benefits (less barriers) provided a preferred path of action.”
Today, the Health Belief Model is a widely used conceptual framework for motivating people to take and maintain positive health actions and behaviors. Since the 1950s, it has been used in a variety of applications, including the inducement of short-term and long-term behaviors, and is based on a series of steps required for an individual to make health decisions. According to the HBM framework, an individual will take a health-related action if that person (1) feels that a negative health condition can be avoided, (2) has a positive expectation that by taking a recommended action, he or she will avoid a negative health condition, and (3) believes that he or she can successfully take a recommended health action (Strecher & Rosenstock, 1997).

**Self-Efficacy**

In 1977, Bandura introduced the concept of self-efficacy or efficacy expectation (as distinct from outcome expectation) to explain why people would adopt or reject a recommended practice or behavior. Self-efficacy has been added to the Health Belief Model to increase its explanatory power (Rosenstock, Strecher, Becker, 1988). Outcome expectation is defined as “a person’s estimate that a given behavior will lead to certain outcomes and is similar to the concept of perceived benefits in the HBM model” (Bandura, 1977). Self-efficacy is defined as “the conviction that one can successfully execute the behavior required to produce the outcome” (Bandura, 1977). Lack of efficacy is considered to be a perceived barrier to taking recommended health action (Rosenstock et al., 1988).

The original HBM did not incorporate self-efficacy due to the fact that it focused on circumscribed, usually one-time preventative actions, such as the TB vaccination. At that time, recommended actions were generally simple behaviors for most people to perform.
Therefore, the target audience would have had sufficient self-efficacy (Strecher & Rosenstock, 1997) to perform these simple tasks. The need to incorporate self-efficacy became apparent when the model was applied to long-term lifestyle changes, such as eating, drinking, exercising, smoking, and sexual practices. Changes in these habits require great confidence in oneself to perform recommended actions (Rosenstock, Strecher, & Becker, 1988).

Therefore, the new Health Belief Model (Figure 2.1) posits that for a behavior change to take place, people must feel threatened by their current behavioral patterns and believe that change of a specific kind will be beneficial and will result in a valued outcome at an acceptable cost. The literature suggests that perceived threat has two dimensions: perceived susceptibility and perceived severity of illness resulting from current health practices. Strecher and Rosenstock (1997) define perceived susceptibility as “an individual’s subjective perception of his or her risk of contracting a health condition” and perceived severity as the “feelings concerning the seriousness of contracting an illness or of leaving it untreated.” Perceived threat is measured by the combination of perceived susceptibility and perceived severity (Strecher & Rosenstock, 1997).
Fig. 2.1: The Health Belief Model

- **Individual Perception**
  - Perceived susceptibility/severity of disease

- **Modifying Factors**
  - Age, sex, ethnicity
  - Personality
  - Socioeconomic
  - Knowledge

- **Likelihood of Action**
  - Perceived benefits minus perceived barriers to behavior change

- **Cues to action**
  - Education
  - Symptoms, illness
  - Media information

Source: Strecher & Rosenstock, 1997.

**Theoretical Components of the HBM**

**Individual perceptions**

Perceived susceptibility measures “an individual’s subjective perception of his or her risk of contracting a health condition” (Strecher & Rosenstock, 1997). Perceived severity addresses “feelings concerning the seriousness of contracting an illness or of leaving it untreated” (Strecher & Rosenstock, 1997). Individual perception of severity takes medical and clinical consequences (such as death, disability, and pain), and possible social consequences (such as the effects of the condition on work, family life, and social relationships) into account. Perceived threat or risk appraisal is measured by the combination of perceived susceptibility and perceived severity of an illness when contracted (Strecher & Rosenstock, 1997).
Modifying factors

These variables are theorized in the HBM to shape either individual perceptions of risk or perceptions of benefits or barriers for taking action (behavior change). These modifying factors include individual and social characteristics, such as demographic characteristics, personality traits (e.g., sensation seeking), socioeconomic status (e.g., education, income) and knowledge of the actual risk (prevalence, causes and consequences). Another modifying factor is the cues for actions which are internal or external stimuli that may drive behavior change. These occur in the form of symptoms or illness, efforts to educate individuals about the risk, and information received through mass media and interpersonal channels.

Likelihood of action

If perceived benefits are greater than perceived barriers, there is a strong likelihood of behavior change (or action). The perceived benefits and/or barriers for taking recommended action include personal and social benefits and barriers.

The Health Belief Model and Cigarette Smoking

In the past, the HBM has not been widely used in smoking research, possibly due to consistent findings that the majority of cigarette smokers already perceive a general health threat from smoking (Strecher & Rosenstock, 1997). In a 1992 survey conducted of over 2,000 adult smokers, ex-smokers and people who have never smoked (Brownson, Jackson-Thompson, Wilkerson, Davis, Owens & Fisher, 1992), 83 percent of smokers believed that smoking was harmful to their health. This percentage was only slightly lower than the 91 percent of people who have never smoked and 92 percent of ex-smokers who believed that
smoking was harmful. The findings of this survey therefore rendered a perceived health threat, a central construct of the Health Belief Model, irrelevant.

The perceived benefits of not smoking are not confined to health-related consequences and can include positive reinforcement from family and friends, saving money from not purchasing cigarettes, and greater control of one’s life (Rosenstock, 1997). Barriers to quitting smoking can include fear of stress or anxiety from smoking cessation, fear of weight gain, pressure from other smokers to relapse, and a general fear of relapse (Strecher, DeVellis, Becker, & Rosenstock, 1994). In a literature review of all HBM studies published from 1974 to 1984, Janz and Becker (1984) identified perceived barriers, such as lack of self-efficacy, to be the most influential variable predicting and explaining health-related behaviors.

According to the American Cancer Society (2002), the HBM says that people will be more likely to stop smoking if they:

- Believe that they could contract a smoking-related disease and this worries them,
- Believe that they can make an honest attempt at quitting smoking,
- Believe that the benefits of quitting outweigh the benefits of continuing to smoke, and
- Know of someone who has had health problems as a result of smoking.

**Campaign Background**

Just Eliminate Lies (JEL) is an Iowa-based anti-tobacco campaign launched as a result of the 1998 Master Settlement Agreement. According to the settlement, the state of Iowa received $1.9 billion over 25 years to fund the Division of Tobacco Use Prevention and Control. Part of this funding was to support JEL’s basic goal to reduce youth smoking rates
by educating young people (1) about the dangers of tobacco use, and (2) the tobacco industry’s motives.

JEL is an organization led by young people, the purpose of which is to influence young people to stay away from tobacco. Over 4,500 youth aged 13-24 from across the state are directly involved in the JEL campaign (Tobacco Use Prevention and Control Division, 2005). The demographic similarity of source and audience is expected to foster empathy, identification and involvement. The anti-tobacco advertising and promotional materials take the form of websites, television and radio public service announcements or PSAs, billboards, mall kiosks, and youth rallies using language, visual images, and the media. Campaign images can be found in Appendix G.

JEL messages feature the tobacco industry, commonly referred to as “Big Tobacco,” as the enemy by presenting previously withheld information about the health hazards of smoking and the manipulative techniques used to target the young. Shocking visuals, messages, and statistics are used to communicate to the audience the danger of tobacco use, which campaign messages claim has been deliberately concealed by Big Tobacco. Billboards and mall kiosks, for example, proclaim in bold type:

- Like a Scary Movie. Only True. See what we couldn’t show: JELiowa.org.
- Stomach-Turning. Mind Opening. See what we couldn’t show: JELiowa.org.
- Dear Big Tobacco: It’ll take more than a sheet to cover this up, featuring a sheet-covered body in a morgue.
- I Will Quit Tomorrow... next to a picture of a tombstone.
Statements from Big Tobacco executives and unearthed corporate documents are also a central theme in the campaign. These are often highlighted by excerpts from reports, such as:

- “The ability to attract new smokers and develop them into a young adult franchise is key to brand development.” — Philip Morris report.
- “Very few customers are aware of the effects of nicotine, i.e., its addictive nature and that nicotine is a poison.” — Brown & Williamson memo.
- “The studies reported on youngsters; motivation for starting, their brand preferences, etc., as well as starting behavior of children as young 5 years old…” — Brown & Williamson memo.

Apparently the efforts in Iowa have been quite successful. In a progress report of the Iowa Tobacco Use Prevention and Control Program (2003) and the Iowa Youth Tobacco Survey (2002) statistics support the fact that adolescent smoking has been reduced and the desire to quit has increased since launching the campaign in 1999.

- Approximately 31% of middle school students reported a reduction in tobacco use from 2000 to 2002 (Iowa Tobacco Use and Control Program [ITUCP], 2002).
- Approximately 72% of Iowa’s middle school students who use tobacco would like to quit smoking, up from 46% in 2000 (ITUCP, 2003).
- Approximately 65% of Iowa’s middle school students who use tobacco have attempted to quit within the past 12 months, up from 55% in 2000 (ITUCP, 2003).

**Anti-Tobacco Campaigns**

In a study performed by Chew, Palmer and Kim (1995), it was found that, in general, people use mediated sources such as television, radio, newspapers, books and magazines, more frequently than interpersonal sources of information, such as doctors, nurses, dietitians, home economists for information for nutritional knowledge. Research has demonstrated that mass media have been successful in achieving knowledge gain and awareness about health
issues, but have been less successful in changing established attitudes and behavior (Rogers & Storey, 1987). Preventative campaigns, such as anti-tobacco campaigns, have also been found to be less effective due to the fact that the benefits they extol are not immediate (Rogers & Storey, 1987).

Smoking advertisements rely on seven characteristics for success: industry manipulation, second-hand smoke advertisements, addiction, cessation, youth access, short-term and long-term consequences, and romantic rejection (Goldman & Glantz, 1998). The JEL campaign's central focus is industry manipulation, which can take two forms: (1) how tobacco companies portray smokers to be attractive and glamorous, and (2) how they attempt to persuade people to overlook the dangers of smoking (Beaudoin, 2002). Portraying the tobacco industry as being manipulative has been the more effective prevention approach (Goldman & Glantz, 1998). Adolescents often smoke cigarettes as a symbol of rebellion and, therefore, dislike the idea of being controlled by the tobacco industry.

Ads about second-hand smoking and its detrimental effects on others have been effective with the youth audience by raising a sense of injustice (Goldman & Glantz, 1998). Second-hand smoke advertisements communicate to smokers and non-smokers the detrimental health effects second-hand smoke has on others, such as friends, family, children and pets. Goldman and Glanz (1998) found these ads to raise a sense of injustice in adolescents and are effective in raising awareness about how damaging environmental tobacco smoke (ETS) can be on non-smokers, as well as smokers. The JEL campaign also uses this form of advertising in its campaign to raise awareness among the youth demographic.
Addiction advertisements emphasize the addictive potential of nicotine in cigarettes, which the tobacco industry uses to hook smokers (Beaudoin, 2002). Depicting the power of addiction in campaigns has also been effective in stimulating the need among adolescents to have control of their decisions and actions (Goldman & Glantz, 1998). It is related to the idea that adolescents do not want to be controlled, similar to industry manipulation, and is therefore an effective approach in anti-smoking campaigns. Cessation ads accept that a viewer already smokes and attempts to encourage a change in behavior, using objectives such as personal health benefits or the damaging effects smoking has on others, as well as the potential barriers involved in smoking cessation and ways to overcome these barriers, encouraging a sense of personal ability to quit smoking. Until the 1970s, cessation ads were the main focus in antismoking campaigns, but although they were effective at getting the message across to adults, cessation ads had little impact on adolescent attitudes and behavior (Goldman & Glantz, 1998).

The American Heart Association changed its focus from cessation to prevention in the 1970s in order to better target the youth demographic (Beaudoin, 2002). It is important to target the youth in antismoking campaigns for two main reasons: (1) the most effective defense against smoking is prevention in the first place, and (2) most smokers become addicted to tobacco as teenagers (U.S. Department of Health and Human Services, 1994). Because many smokers take up the habit during their youth, preventing youth smoking is the government-recommended “solution” (USDHSS, 1994).

Youth access to cigarettes is another theme of antismoking advertisements. These advertisements focus on making it more difficult for young people to obtain cigarettes,
usually through coin-operated dispensers. These ads were found to concern some teenagers and anger some adults (Goldman & Glantz, 1998).

Portraying the short-term consequences of tobacco use, such as yellowed fingers and teeth, foul-smelling clothing and breath, and other health and cosmetic effects, have been successful with the youth demographic (Goldman & Glantz, 1998). On the other hand, advertisements focusing on the long-term effects of smoking, such as lung cancer, emphysema, and even death, have little effect on adolescents because (1) young people already know about the potential health hazards of smoking, and (2) they live in the present and feel invulnerable (Goldman & Glantz, 1998).

Ads linking smoking to romantic rejection by portraying smoking as an unattractive and undesirable habit (Beaudoin, 2002) have been found to have little effect. Youth considered smoking status in a negative manner only in terms of an unappealing smoker, and not in terms of a person who otherwise would be desirable (Friedman, 1996).

Appeals are another social construct used to evaluate antismoking campaigns. DeJong and Atkin (1995) found a prevalence of emotional appeals in a number of health campaigns, and other studies support the use of image and lifestyle appeals instead of cognitive appeals (USDHSS, 1994) to promote better health. Positive appeals emphasize the positive benefits of not smoking, such as better health, freedom from addiction, and cost savings. Humor, slice-of-life, and lifestyle advertising is used to depict nonsmoking as the norm (Lavack, 2002). Humor has been found to be especially effective in communicating antismoking messages (Blum, 1990). Shadel, Niaura and Abrams found that antismoking
advertising may be more effective at limiting adolescent smoking if the images displayed have a more positive valence (Shadel, Niaura, & Abrams, 2002).

The effectiveness of fear appeals in controlling smoking habits is still unclear. It has been found that fear appeals have been ineffective due to the fact that young people view death and disease as long-term concerns and are therefore low in salience (Irwin & Millstein, 1986). Such long-term threats may be ineffective in a young audience because they already know the potential health hazards of smoking, and they feel invulnerable (Goldman & Glantz, 1998) to such long-term harmful effects. In other studies, fear appeals have been found to be highly persuasive (Witte, 1992).

Indeed there is a dearth of literature on the Health Belief Model as it is applied on how adolescents can be moved to change their smoking habits after continuous exposure to an antismoking campaign such as JEL. This study assesses adolescents’ reaction to the JEL campaign in an effort to provide empirical support to the Health Belief Model.

**Interpersonal Communications**

Peer groups have also been found to be a significant predictor of adolescent tobacco use. Students with a peer group in which at least half the member smoke are more likely to smoke (Alexander, et al., 2001). Interpersonal health communication, or social influence, has been found to be a significant determinant of cessation attempts. Mass media anti-tobacco campaigns are most effective when coupled with interpersonal health communication (Korhonen, et al., 1998).
Critique of the Health Belief Model

There has been inconsistent measurement of the Health Belief Model concepts and a lack of consistency in the use and testing of the model. Many studies have failed to establish validity and reliability of measures in model testing (Rosenstock, Strecher & Becker, 1994). For example, there is confusion about the relationships between and among the model’s four major concepts: perceived susceptibility, perceived seriousness, perceived beliefs and perceived barriers. Researchers have been more successful when using models that measure direct as well as conditional effects and variables on behavior (Rosenstocke, Strecher & Becker, 1994).

Identifying and measuring “cues to action” has also been problematic. Cues can be diverse in nature, may occur in a fleeting manner, and an individual may or may not consciously remember events that trigger action. In retrospective studies, the nature and importance of cues is more difficult to evaluate because research participants are questioned about behaviors performed in the past. For these and other reasons, the variable “cues” has not been included in many studies based on the Health Belief Model (Harrison, 1992).

In spite of the criticisms, the Health Belief Model has been used successfully for over thirty years to understand health behaviors in a variety of circumstances. Thus, it will be used in this study to predict behavioral change among adolescents as a result of exposure and attention to a specific anti-tobacco campaign.

Hypotheses

Considering the theoretical framework and the findings of relevant research stated above, this study hypothesizes that:
H1: When perceived susceptibility is higher and exposure to campaign messages is higher, teenagers will be more likely to exhibit campaign-recommended behaviors, after controlling for gender, age, education level, socioeconomic status, and race.

H2: When perceived severity is higher and exposure to campaign messages is higher, teenagers will be more likely to exhibit campaign-recommended behaviors, after controlling for gender, age, grade in school, socioeconomic status, and race.

H3: When the perceived benefits outweigh the perceived barriers and exposure to campaign message is higher, then teens are more likely to exhibit campaign-recommended behaviors, after controlling for gender, age, grade in school, socioeconomic status, and race.

The goal of this study was to evaluate and measure the effectiveness of anti-tobacco campaign on adolescents. Therefore, the cues to action construct of the Health Belief Model has been modified to reflect this goal, rather then test it independent of other HBM elements.
CHAPTER III. METHODOLOGY

Using the Health Belief Model (HBM; Rosenstock, 1974; Janz & Becker, 1984) as the theoretical basis, this study investigated the effectiveness of the Just Eliminate Lies (JEL) campaign, a youth-focused, Iowa-based, anti-tobacco campaign, on adolescent risk perceptions and changes in smoking behavior. In order to execute the study, a questionnaire was developed according to the HBM construct regarding the JEL campaign.

Pretesting

The questionnaire was created based on previously conducted studies of the Health Belief Model (Strecher, DeVellis, Becker, & Rosenstock, 1994; Strecher & Rosenstock, 1997; Brownson, Jackson-Thompson, Wilkerson, Davis, Owens & Fisher, 1992; Rosenstock, 1997) and consisted of five parts with a total of 40 multiple choice questions. The five parts measured (1) perceived threat of acquiring illness related to smoking, (2) the perceived benefits of and perceived barriers to smoking cessation, (3) performance of campaign-recommended behaviors, (4) JEL cues to action, and (5) demographic information. The pretest was also helpful in determining the amount of time necessary for the students to complete the questionnaire.

On Wednesday, October 27, 2004, a pretest of the survey was distributed by Mrs. Kari Wagner to 29 eleventh and twelfth grade students at Lake Mills High School in Lake Mills, Iowa. The respondents were asked to indicate if the questions were properly worded and made sense to them and the instructor monitored the time and found it took approximately 20 minutes to complete the questionnaire. As a result of student feedback,
several questions were refined and clarified to better fit the target audience of middle school and high school students.

After the pretest, the following changes were made to the questionnaire:

- Question 1 in Part I was changed from a fill in the blank question that stated: “In your opinion, smoking is _________ for a person’s health,” to a simple statement: “Smoking is bad for my health.” The Likert scale was changed from Very Risky, Somewhat Risky, Only a Little Risky, Not at All Risky, or Don’t Know to Strongly Agree, Agree, Neither Agree or Disagree, Disagree, or Strongly Disagree.
- The answer option, “I am already involved with JEL,” was added to Question 2 in Part III.
- In Part III, the answer option “Don’t Smoke,” was added to questions 4, 5, 6, and 7.
- Question 9, “How many people do you know that are members of the JEL campaign?”, in Part IV was added.
- Question 10, “How frequently are you in contact with a member of the JEL campaign?” in Part IV was added.

The Sample

The universe consisted of 246 students attending Lake Mills High School in Lake Mills, Iowa. Lake Mills is a typical rural town located in north central Iowa with a population of 2,140 (Census, 2000). As of the 2000 Census, 38.92% of Iowa citizens lived in rural areas. Demographic information for Lake Mills, rural Iowa and the State of Iowa can be found in Table 3.1

Signed consent forms were collected from 56% of the student body. Of the students that submitted signed consent forms, 75% of the students completed and returned the questionnaire. Assuming a 95% confidence level base on 103 respondents, the sample had a 7.4% confidence interval.

| Table 3.1 Race/Ethnicity data for rural Iowa and Lake Mills, Iowa |
|------------------------|-----------------|-----------------|-----------------|-----------------|
|                         | Hispanic        | African American| Asian           | American Indian/Alaska native |
| Rural Iowa              | 1.25%           | 0.28%           | 0.31%           | 0.24%           |
| Lake Mills              | 1.64%           | 0.05%           | 0.00%           | 0.14%           | 98.36%          |
Research Design

Legally, an individual under the age of eighteen cannot give consent on his or her behalf. Letters were distributed to the participants, the parent or guardian of underage students, and the high school principal informing them of the objectives of the study and why their participation was being requested. A written acknowledgment of informed consent from the student or the parent or guardian of underage students was required in order for the student to participate in the study.

Data gathering was conducted through administration of a questionnaire to a convenience sample at Lake Mills High School. The questionnaire was distributed to students on Friday, October 7, 2005 in four sequential 30-minute sessions, beginning with twelfth graders at 9:00 AM and concluding with ninth graders at 10:30 AM. Students were informed of the option to skip any question they did not wish to answer and were reminded about the importance of answering all questions honestly in order to obtain valid results.

The respondents were assured that any information they provided would not be used for any reason outside of the purposes of this study. The signed consent forms will be stored in a locked cabinet for five years. At that time, all documents containing personal information will be destroyed.

Operationalizations

The questionnaire was created based on previously conducted studies of the Health Belief Model (Brownson, Jackson-Thompson, Wilkerson, Davis, Owens & Fisher, 1992; Rosenstock, 1997; Strecher, DeVellis, Becker, & Rosenstock, 1994; Strecher & Rosenstock, 1997) and can be found in Appendix E. Complete coding can be found in Appendix F.
Perceived Susceptibility and Perceived Severity

Perceived susceptibility was operationalized in Part I of the questionnaire with statements regarding the perceived likelihood of getting cancer from tobacco use, the perceived likelihood of having problems breathing due to tobacco use and the likelihood of suffering from a smoking-related condition due to second-hand smoke exposure, using a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree) as the response scale. With these questions, a summed index was created in order to measure an individual’s level of perceived susceptibility. Cronbach’s alpha was .79 for this three-item index. The summed mean score for adolescent perceptions of susceptibility was 12.49 (SD = 2.26) with a total score range of 3 - 15, see Table 3.2.

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.2 It is likely I will get cancer if I use tobacco.</td>
<td>4.12</td>
<td>.98</td>
<td>102</td>
</tr>
<tr>
<td>I.3 It is likely I will have problems breathing if I use tobacco.</td>
<td>4.24</td>
<td>.86</td>
<td>103</td>
</tr>
<tr>
<td>I.5 I could suffer from a smoking-related condition if I am exposed to second-hand smoke.</td>
<td>4.15</td>
<td>.84</td>
<td>103</td>
</tr>
</tbody>
</table>

Perceived severity was also measured with questions in Part I of the questionnaire and was assessed with statements regarding consequences resulting from smoking and exposure to second-hand smoke, as well as the potential harm to their physical appearance as a result of tobacco-use. Answers to these questions were measured according to a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree) as the response scale. From these questions, a summed index was created in order to measure an individual’s level of perceived severity. Cronbach’s alpha was .84 for this three-item index. The summed
mean score for adolescent perceptions of severity was 12.97 (SD = 2.39) with a total score range of 3 - 15, see Table 3.3.

<table>
<thead>
<tr>
<th>Table 3.3 Mean of perceived severity index variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.1 Smoking is bad for my health</td>
<td>4.61</td>
<td>.81</td>
<td>103</td>
</tr>
<tr>
<td>I.4 Second-hand smoke is harmful to my health</td>
<td>4.39</td>
<td>.89</td>
<td>103</td>
</tr>
<tr>
<td>I.6 Tobacco-use can be harmful to my physical appearance</td>
<td>3.97</td>
<td>1.03</td>
<td>103</td>
</tr>
</tbody>
</table>

Cues to Action

Rosenstock (1974) defined cues to action to be internal or external stimuli that move an individual from a “readiness to act” state into actual behavior. The JEL campaign uses mass media to disseminate cues to action in the form of television and radio public service announcements (PSAs), billboards, mall kiosks, press releases, brochures, and a campaign website. JEL also hosts youth rallies as part of its campaign strategy.

Exposure to the JEL campaign was evaluated in Part IV. The first question asked if they had seen a Just Eliminate Lies (JEL) advertisement, using the following response scale: yes, no, or don’t know. Two questions, one concerning how many JEL advertisements they recalled seeing in the past month and the second inquired about the number of people they know that are members of the JEL campaign, used the following response scale: 0-2, 3-5, 6-8 or 9+. The remaining questions were in regard to:

- how often they read information about tobacco risks from JEL
- how often they hear information about tobacco risks on the radio from JEL
- how often they see information about tobacco risks on television from JEL
- how often they see information about tobacco risks on the Internet from JEL
- how often they see information about tobacco risks in malls from JEL
- how often they get information about the risks involved in smoking from JEL-sponsored activities
- how often they are in contact with a member of the JEL campaign
Answers were measured using a five-point Likert scale ranging from 1 (frequently) to 5 (never) as the response scale. From these questions, a summed index was created in order to measure an individual exposure to the JEL campaign. Cronbach’s alpha was .78 for this ten-item index. The summed mean score for cues to action was 29.44 (SD = 6.40) with a total score range of 10 - 40, see Table 3.4.

| IV.1 Have you ever seen a Just Eliminate Lies (JEL) advertisement? (Yes = 3; Don’t Know = 2; No = 3) | 1.36 | .68 | 103 |
| IV.2 How many JEL advertisements do you recall seeing in the past month? (0-2 = 1; 3-5 = 2; 6-8 = 3; 9+ = 4) | 1.73 | .91 | 102 |
| IV.3 How often do you read information about tobacco risks from brochures, newspapers, magazines or other printed forms of materials released by JEL? | 3.16 | 1.38 | 102 |
| IV.4 How often do you hear information about tobacco risks on the radio released by JEL? | 2.97 | 1.35 | 103 |
| IV.5 How often do you see information about tobacco risk on television released by JEL? | 2.81 | 1.36 | 103 |
| IV.6 How often do you see information about tobacco risk on the Internet released by JEL? | 3.96 | 1.24 | 102 |
| IV.7 How often do you see information for about tobacco risk in the mall released by JEL? | 4.09 | 1.16 | 102 |
| IV.8 How often do you get information about the risks involved in smoking from JEL-sponsored activities? | 3.96 | 1.20 | 103 |
| IV.9 How many people do you know that are members of the JEL campaign? (0-2 = 1; 3-5 = 2; 6-8 = 3; 9+ = 4) | 1.11 | .46 | 102 |
| IV.10 How frequently are you in contact with a member of the JEL campaign? | 4.47 | .97 | 101 |

Exceptions to nominal-scale coding denoted in parentheses

### Campaign Recommended Behaviors

For the purpose of this study, campaign recommended behaviors were defined by JEL’s campaign content. Such behaviors include smoking cessation, reduction in smoking, joining the JEL campaign, calling Quitline Iowa, encouraging others to quit smoking,
seeking information about how to stop smoking, and boycotting a tobacco company’s products.

Campaign-recommended behaviors were operationalized in Part III of the questionnaire with several questions, as well as three slight variations in the response scales. A question regarding their intent to join JEL used the response scale of yes, no, or I am already involved with JEL. Respondents were asked if they have:

- participated in the JEL campaign
- intent to join joining the JEL campaign
- smoked cigarettes
- tried to quit smoking
- sought information about smoking cessation for themselves or others
- encouraged others to quit smoking
- sought assistance for smoking cessation
- shared smoking cessation information with others
- boycotted a tobacco company’s products.

The answers to these questions were measured according to a nominal of 1 (yes) or 2 as the response scale. A different response scale of yes, no, or Don’t smoke was used to measure questions inquiring about if they have cut down on smoking, do they plan to quit, have they tried to quit and have they successfully quit smoking. The answers were coded according to whether they reflect behaviors recommended by the JEL campaign. These answers were summed and used to create a behavioral index. Cronbach’s alpha was .70 for this eleven-item index. The summed mean score for adolescent exhibition of campaign recommended behaviors was 24.32 (SD = 2.21) with a total score range of 11 - 29, see Table 3.5.
Table 3.5 Means and standard deviations of campaign recommended behaviors index variables

<table>
<thead>
<tr>
<th>III.1 Are you now involved with the Just Eliminate Lies Campaign?</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>III.2 Do you intend to join JEL?</td>
<td>1.89</td>
<td>.37</td>
<td>101</td>
</tr>
<tr>
<td>III.3 Do you smoke? (R)</td>
<td>1.93</td>
<td>.40</td>
<td>103</td>
</tr>
<tr>
<td>III.4 If you currently smoke, have you cut down on smoking? (Don’t smoke = 3; Yes = 2; No = 1)</td>
<td>2.83</td>
<td>.53</td>
<td>103</td>
</tr>
<tr>
<td>III.5 Do you plan to quit? (Don’t smoke = 3; Yes = 2; No = 1)</td>
<td>2.86</td>
<td>.42</td>
<td>103</td>
</tr>
<tr>
<td>III.6 Have you ever tried to quit? (Don’t smoke = 3; Yes = 2; No = 1)</td>
<td>2.87</td>
<td>.36</td>
<td>103</td>
</tr>
<tr>
<td>III.7 Have you successfully quit smoking? (Don’t smoke = 3; Yes = 2; No = 1)</td>
<td>2.81</td>
<td>.49</td>
<td>103</td>
</tr>
<tr>
<td>III.8 Have you influenced someone to quit smoking?</td>
<td>1.51</td>
<td>.52</td>
<td>102</td>
</tr>
<tr>
<td>III.9 Have you looked for information to help you or others quit smoking?</td>
<td>1.82</td>
<td>.44</td>
<td>103</td>
</tr>
<tr>
<td>III.10 Have you sought the assistance of a counselor or Quitline Iowa to help you or others to stop smoking?</td>
<td>2.00</td>
<td>.14</td>
<td>103</td>
</tr>
<tr>
<td>III.11 Have you boycotted a tobacco company’s products (outside of a tobacco company)? For example, Phillip Morris owns Kraft.</td>
<td>1.97</td>
<td>.22</td>
<td>102</td>
</tr>
</tbody>
</table>

(R) indicates reversed scoring

Exceptions to nominal-scale coding denoted in parentheses

Ratio of Perceived Benefits to Perceived Barriers

Perceived benefits are the benefits individuals believe they will receive if they follow the recommended behaviors. Perceived benefits of smoking cessation include positive reinforcement from family and friends, setting a good example for children, cost savings from not buying cigarettes, greater control over one’s life, improved health, greater energy and vitality, and reduced wrinkling and aging of skin (Fiore et al., 2000; Strecher & Rosenstock, 1997).

Perceived benefits were operationalized in Part II of the questionnaire with questions regarding the control over oneself allowed by not smoking, whether deciding to smoking is a healthy choice, other’s preference in terms of using tobacco and the cost of smoking. These
items were measured according to a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree) as the response scale. From these questions, an attitudinal index was created by summing the students’ responses to questions regarding perceived benefits in order to evaluate an individual’s level of perceived benefits. Cronbach’s alpha was .78 for this four-item index. The summed mean score for adolescent perceptions of benefits was 17.73 (SD = 2.94) with a total score range of 4 - 20, see Table 3.6.

| II.1 Not smoking gives me more control over my life. | 4.05 | 1.17 | 103 |
| II.2 Not smoking is a healthy choice. | 4.59 | .81 | 103 |
| II.3 My friends and family would prefer if I didn’t smoke cigarettes. | 4.65 | .80 | 103 |
| II.4 Smoking is expensive. | 4.44 | .95 | 103 |

Rosenstock (1974) defines perceived barriers as the negative aspects of the recommended action which “arouse conflicting motives of avoidance.” These barriers may be that the recommended behaviors are perceived as being expensive, inconvenient, unpleasant, painful, or upsetting. Typical barriers might include fear of stress or anxiety when refraining from cigarettes, withdrawal symptoms, fear of failure, fear of weight gain, lack of support, depression, and enjoyment of smoking (Fiore et al., 2000).

Perceived barriers were operationalized questions in Part II of the questionnaire regarding smoking enjoyment, cravings and withdrawal, weight gain and the difficulty of quitting smoking using a five-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree) as the response scale. From these questions, a summed index was created in order to measure an individual’s level of perceived benefits.
Cronbach’s alpha for the raw four item index was .19, which failed to meet the acceptable reliability coefficient of .70 (Nunnaly, 1978). The questions pertaining to smoking enjoyment and the difficulty of quitting smoking, question five and eight, respectively, in Part II of the questionnaire, were dropped from the index. After these variables were removed, Cronbach’s alpha for the adjusted two-item index was 0.69, which still failed to meet the acceptable standard reliability coefficient.

Despite the low Cronbach’s alpha for the original four-item index, the study will include all four variables based on the face validity of the questions. A ratio index was created by dividing the perceived benefits index by the perceived barriers index. The summed mean score for adolescent perception of barriers was 10.91 (SD = 2.35) with a total score range of 4 - 20, see Table 3.7.

| Table 3.7 Means and standard deviations of perceived barriers index variables |
|----------------------------------|-----------------|-----------------|---|
| II.5 I enjoy smoking. (R) | 1.67 | 1.17 | 101 |
| II.6 Quitting smoking can cause cravings and withdrawal symptoms. | 3.96 | 1.00 | 103 |
| II.7 Quitting smoking can cause weight gain. | 3.47 | 1.11 | 103 |
| II.8 Quitting smoking is easy to do. (R) | 1.83 | 1.06 | 102 |

(R) indicates reversed scoring

Demographics

Demographics of gender, age, education, socioeconomic status, and race were operationalized in Part 5 of the questionnaire with questions one through five. Gender was operationalized with question one and response choices of male, female, and no comment were provided. The age of the respondents was operationalized with question two and the respondents were provided with four ranges in age: 14 – 15, 16 – 17, and 18+. The
education level of the respondents was operationalized with response choices of 9th, 10th, 11th, and 12th. Socioeconomic status was operationalized with question four; respondents were provided with a response scale of low income level to highest income level, as well as the option of “Don’t Know.” Race was operationalized with question five and respondents were provided the responses options of: African American, Caucasian, Hispanic, Asian American, other, and no comment.

Fifty-two percent of the respondents were male, 36% were female, and 12% had “no comment.” Thirty-seven percent of the respondents were 14 to 15 years of age, 47% of the respondents were 16 to 17 years of age, and 16% were 18 years of age or older. Thirty-one percent of the respondents were freshman in high school, 22% of the respondents were sophomores in high school, 16% of the respondents were juniors in high school and 30% of the respondents were seniors in high school. Complete demographic frequencies can be found in Table 3.8.
Table 3.8 Respondents' demographic characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52%</td>
</tr>
<tr>
<td>Female</td>
<td>36%</td>
</tr>
<tr>
<td>No Comment</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>14 - 15</td>
<td>37%</td>
</tr>
<tr>
<td>16 - 17</td>
<td>47%</td>
</tr>
<tr>
<td>18+</td>
<td>16%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
<tr>
<td>Education (grade)</td>
<td></td>
</tr>
<tr>
<td>9th</td>
<td>31%</td>
</tr>
<tr>
<td>10th</td>
<td>22%</td>
</tr>
<tr>
<td>11th</td>
<td>16%</td>
</tr>
<tr>
<td>12th</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1%</td>
</tr>
<tr>
<td>Low-Middle</td>
<td>3%</td>
</tr>
<tr>
<td>Middle</td>
<td>26%</td>
</tr>
<tr>
<td>Middle-High</td>
<td>19%</td>
</tr>
<tr>
<td>High</td>
<td>4%</td>
</tr>
<tr>
<td>Highest</td>
<td>7%</td>
</tr>
<tr>
<td>Don't Know</td>
<td>38%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>9%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>76%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1%</td>
</tr>
<tr>
<td>Asian American</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>3%</td>
</tr>
<tr>
<td>No Comment</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>
CHAPTER IV. RESULTS

The purpose of this study was to examine the relationship between the Just Eliminate Lies (JEL) campaign related to the Health Belief Model (HBM) constructs and adolescent exhibition of campaign recommended behaviors.

Results

H1: When perceived susceptibility is higher and exposure to campaign messages is higher, teenagers will be more likely to exhibit campaign-recommended behaviors, after controlling for gender, age, education level, socioeconomic status, and race.

Campaign recommended behaviors were regressed on several demographic variables, the campaign cues index and the perceived susceptibility index. The results are shown in Table 4.1 below. Analyses were conducted via the SPSS linear regression algorithm using the stepwise method.

Statistical findings indicated that 18% (F = 1.74, p < .05) of the variance in exhibiting campaign recommended behavior is explained by this multivariate model. The demographic control variables were not significant predictors of exhibiting campaign recommended behaviors and explained only 5% (F = .60, p > .05) of the variance in the dependent variable.

As predicted, there is a direct relationship between exposure to campaign cues to action and exhibiting campaign recommended behaviors. The results of the regression test showed that exposure to campaign cues to action (β = .26, p < .05) and perceived susceptibility (β = .36, p < .05) were significant predictors of exhibiting campaign recommended behaviors. The campaign cues to action explained 4% of the variance in the
dependent variable ($F = .06, p > .05$), whereas perceived susceptibility explained 10% of the variance in the dependent variable ($F = .86, p < .05$). H1 was supported by these findings.

Table 4.1 Standardized beta coefficients from regression of campaign recommended behaviors on demographic, cues to action, and susceptibility variables

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>Ages</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-.20</td>
<td></td>
</tr>
<tr>
<td>Household Income</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Change in $R^2$</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td><strong>Cues to Action Index</strong></td>
<td></td>
<td>.26*</td>
</tr>
<tr>
<td>Change in $R^2$</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td><strong>Susceptibility Index</strong></td>
<td></td>
<td>.36**</td>
</tr>
<tr>
<td>Change in $R^2$</td>
<td>10%**</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>18%**</td>
<td></td>
</tr>
</tbody>
</table>

Dependent Variable: Behavior Index

*p < .05. **p < .01

H2: When perceived severity is higher and exposure to campaign messages is higher, teenagers will be more likely to exhibit campaign-recommended behaviors, after controlling for gender, age, grade in school, socioeconomic status, and race.

Campaign recommended behaviors were regressed on several demographic variables, the campaign cues index and the perceived severity index. The results are shown in Table 4.2 below.

Statistical findings indicated that 18% ($F = 1.68, p < .05$) of the variance in exhibiting campaign recommended behavior is explained by this model. The demographic control variables were not significant predictors of exhibiting campaign recommended behaviors and explained 5% ($F = .60, p > .05$) of the variance in the dependent variable.

The results of the regression test showed that exposure to campaign cues ($\beta = .26, p < .05$) and perceived severity ($\beta = .37, p < .05$) were significant predictors of exhibiting
campaign recommended behaviors. Cues to action explained 4% of the variance in the dependent variable ($F = .86, p > .05$), whereas perceived severity explained 9% ($F = 1.68, p < .05$) of the variance in the dependent variable. H2 was supported by these findings.

| Table 4.2 Standardized beta coefficients from regression of campaign recommended behaviors on demographic, cues to action, and severity variables |
|---|---|
| R² | B |
| Gender | .14 |
| Ages | .01 |
| Education | -.20 |
| Household Income | -.05 |
| Race | -.04 |
| Change in R² | 5% |
| **Cues to Action Index** | |
| Change in R² | 4% |
| **Severity Index** | |
| Change in R² | 9%* |
| Total R² | 18% |

Dependent Variable: Behavior Index

*p < .05. **p < .01

H3: When the perceived benefits outweigh the perceived barriers and exposure to campaign message is higher, then teens are more likely to exhibit campaign-recommended behaviors, after controlling for gender, age, grade in school, socioeconomic status, and race.

Campaign recommended behaviors were regressed on several demographic variables, the campaign cues index and the perceived benefits to perceived barriers index. The results are shown in Table 4.3 below.

Statistical findings indicated that 32% ($F = 3.49, p < .05$) of the variance in exhibiting campaign recommended behavior is explained by this model. The demographic control variables were not significant predictors of exhibiting campaign recommended behaviors and explained only 6% ($F = .60, p > .05$) of the variance in the dependent variable. There is no
evidence of a significant relationship between exposure to campaign cues to (β = .08, p > .05) and exhibiting campaign recommended behaviors; the cues to action index explained only 4% (F= 86, p > .05) of the variance in the dependent variable. The results of the regression test showed that perceived benefits to perceived barriers (β = .55, p < .05) were significant predictors of exhibiting campaign recommended behaviors. The perceived benefits to perceived barriers ratio index explained 23% (F= 3.49, p < .05) of the variance in the dependent variable. Therefore, H3 was partially supported.

<table>
<thead>
<tr>
<th>Table 4.3</th>
<th>Standardized beta coefficients from regression of campaign recommended behaviors on demographic, cues to action, and benefit to barrier variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>R²</td>
<td>β</td>
</tr>
<tr>
<td>Gender</td>
<td>.09</td>
</tr>
<tr>
<td>Ages</td>
<td>.10</td>
</tr>
<tr>
<td>Education</td>
<td>-.23</td>
</tr>
<tr>
<td>Household Income</td>
<td>-.07</td>
</tr>
<tr>
<td>Race</td>
<td>-.08</td>
</tr>
<tr>
<td>Change in R²</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Cues to Action Index</strong></td>
<td></td>
</tr>
<tr>
<td>Change in R²</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Benefits to Barriers Index</strong></td>
<td></td>
</tr>
<tr>
<td>Change in R²</td>
<td>23%**</td>
</tr>
<tr>
<td>Total R²</td>
<td>32%**</td>
</tr>
</tbody>
</table>

Dependent Variable: Behavior Index
*p < .05.  **p < .01
CHAPTER V. DISCUSSION AND CONCLUSIONS

The intent of the study was to assess the effectiveness of anti-tobacco campaigns, as well as predict behavior and responses to informational health campaigns. The study was guided by the constructs of the Health Belief Model (HBM) in order to evaluate the influence of adolescent perception of personal threat and benefits and barriers with the resulting individual actions as a result of exposure to the Just Eliminate Lies (JEL) campaign.

According to the HBM (Strecher & Rosenstock, 1997), perceived threat is made up of two components: perceived susceptibility and perceived severity. As the perceived threat of disease or illness increases, the likelihood of taking preventative action also increases. Hypothesis 1 predicted that an increased level of perceived susceptibility will lead to campaign recommended behavior; hypothesis 2 predicted that an increased level of perceived severity will lead to campaign recommended behavior. In agreement with previous research, the results found a significant relationship between perceived susceptibility and exhibition of campaign recommend behaviors. A significant relationship was also found between perceived severity and adolescent exhibition of campaign recommended behaviors. These findings were consistent with Siegel and Biener (2000), whose findings indicate that adolescents who are told they have or are at risk for a smoking-related disease or illness are more likely to avoid tobacco.

The JEL campaign primary messaging is communicated in the form of the threat and consequences of smoking. Research indicates, and these findings support, that communicating the threats of using tobacco products is effective in persuasive health messages (e.g., Hale & Dillard, 1995; Witte, 1995). Several studies have demonstrated the
effectiveness of threat to image and self-image (Chassin, Presson, Sherman, Corty, & Olschavsky, 1981; McCarthy & Gritz, 1984; Sussman et al., 1987; USDHHS, 1994), while other studies have found the threat of immediate physiological change to be effective (Davidson & Rosen, 1972; Evans et al., 1979).

Past studies of the Health Belief Model concerning smoking have resulted in consistent findings that the majority of cigarette smokers already perceive a general health threat from smoking (Strecher & Rosenstock, 1997), therefore negating one of the primary constructs of the HBM. Contrary to previous studies, the findings of this study significantly indicate that as perceived threat increases, the more likely an adolescent is to engage in not smoking and antismoking practices. This may be a result of the sample consisting of adolescents only, rather than respondents of all ages.

The HBM postulates that if perceived benefits are greater than perceived barriers, there is a strong likelihood of behavior change, which was measured by hypothesis 3, which was found to have the most predictive power. The study found a significant relationship between perceived benefits and perceived barriers, and the exhibition of campaign recommended behaviors. Such a finding suggests that as perceived benefits outweigh perceived barriers, adolescents are more likely to exhibit campaign recommended behaviors. This finding is in agreement with several studies that have found the perceived benefits and perceived barriers ratio to be the most influential construct of the Health Belief Model (Janz & Becker, 1984; Kronenfeld, 1988; Kronenfeld & Glik, 1991; Rosenstock, 1966, 1974). These findings also suggest that that positive messages may be more effective than fear appeals, which is consistent with research conducted on the effectiveness of positive appeals and humorous messaging (Blum, 1990; Lavack, 2002; Shadel, Niaura & Abrams, 2002).
All three hypotheses predicted that exposure to campaign cues to action would predict the exhibition of campaign recommended behaviors. The findings for hypotheses one and two indicated a significant relationship between campaign cues to action and exhibiting campaign recommended behaviors. As for hypothesis three, there was not a significant relationship between campaign cues to action and campaign recommended behaviors. Exposure to large-scale state-level antismoking campaigns, such as JEL, is effective in encouraging anti-tobacco behaviors. Such effectiveness has also been found by the Centers for Disease Control and Prevention, which evaluated state anti-tobacco campaigns and found that youth exposed to the highest number of ads per month have the lowest youth smoking rates in the nation (CDC, 2005).

This study found no significant relationships among the demographic control variables of age, race, socioeconomic status, education, and gender with adolescent behavior. Conversely, a previous study by French (1976) on the Health Belief Model found that demographic characteristics, especially age, of the population played a very important role in responding to cues of action. This contradiction in findings could be a result of a respondent sample with very little variability, as participants were primarily Caucasian white high school students at Lake Mills High School, ages 14 – 18. In addition to homogeneous demographic variables, participants may share many values and beliefs as a results of growing up together in a small, rural town.

Limitations

A limitation of the study was the fact that the exposure measure used campaign recall, not actual exposure to the campaign. As a result of the participants self-reporting their exposure to the JEL campaign, it was not possible to distinguish whether exposed and
unexposed youth differed in terms of actual exposure or if the youths differed only in terms of their attentiveness to the campaign.

Another limitation of the study pertained to sampling. Due to a lack of access to a random sample of Iowa high school students due to complex channels of consent when studying minors, the study was conducted with a convenience sample of self-selected students at Lake Mills High School in Iowa. Therefore, the findings of the study were not representative of the population of high school students in Iowa and it was impossible to generalize the results to a wider population. Future studies must be composed of a random sample in order to achieve generalizable conclusions.

Most importantly, cause and effect cannot be inferred, as the variables are not under the control of the researcher and causation can only be inferred when an independent variable has been directly manipulated. Thus, it cannot be said that the JEL campaign causes the exhibition of recommended behaviors and so conclusions are limited.

**Suggestions for Future Research**

When evaluating the cues to action according to the Health Belief Model, it is important for future studies to measure cues to action carefully. Such uses are more difficult to evaluate because questions pertain to past behaviors. Although many studies based on the Health Belief Model do not include cues to action, the study’s findings indicate a significant relationship between cues to action and exhibiting campaign recommended behaviors. This suggests that cues to action are too important to disregard. In order to test the effectiveness of the JEL campaign, the cues to action that were evaluated were limited to only include cues from the JEL campaign. In the future, studies must include a more varied assessment of cues to action as effective cues are not limited to a single campaign, but are very diverse in nature.
Measures should include internal and external stimuli in order to get a more accurate understanding of such cues.

Self-efficacy, one's confidence in the ability to successfully perform an action, such as quit smoking, was added to the Health Belief Model in 1988 (Rosenstock et al., 1998) in order to better fit the challenges of changing habitual unhealthy behaviors. This study evaluated self-efficacy as part of the larger barrier index rather than as an independent factor. Future studies should elaborate on the self-efficacy variable in order to better understand the effectiveness of this construct on adolescent smoking cessation.

There are a multitude of studies that have been conducted on antismoking campaigns and content in an attempt to determine the most effective methods to promote prevention and encourage cessation. Most of the literature focuses on adult smokers rather than underage smokers. Although underage smokers are more difficult to study due to the illegality of smoking underage, as well as the obstacle of obtaining parental or guardian permission to study minors, it would be beneficial for future research to concentrate on the youth demographic. The education of individuals about smoking at an early age is important because the best defense against smoking is prevention and most smokers become addicted to tobacco as teenagers (USDHHS, 1994).

Previous studies have found the theory of the Health Belief Model to be ineffective when applied to smokers and smoking, but the findings of this study prove otherwise with results that support the primary constructs of the HBM in the context of an anti-tobacco campaign. The findings of this study could be further supported by research that employs an experimental design and more accurate sampling methods. Such research could more accurately measure the effectiveness of antismoking campaigns on adolescent behavior.
Although this study did not directly address interpersonal communication, such interaction has been shown to be an important catalyst of community programs (Korhonen, Uutela, Korhonen & Puska, 1998). Further research should be done to evaluate the impact of peer groups, family, authoritative figures, inspirational figures and anti-tobacco counselors.

**Policy Suggestions**

Research has supported the fact that antismoking campaigns are effective in promoting anti-tobacco attitudes and actions, but adolescents are not exposed to media campaigns alone. This study did not assess intervening factors, such as community support and cigarette tax, which are also proven smoking deterrents. “Although there is previous evidence that media only interventions can affect individuals smoking behaviour, greater effects have often been observed when community activities accompany the campaign” (McVey D, Stapleton J, 2000). The JEL campaign encourages youth involvement with the campaign by inviting them to join JEL and “help us bring down Big Tobacco” (http://www.jeliowa.org/involved_join.asp, 2005), but there is not a community support portion in JEL campaign. Li et al., (2003) recommended that interventions should incorporate a mass media campaign that, in addition to increasing awareness of health risks and emphasizing the benefits of not smoking, the campaign should lend support for local ordinances restricting smoking in public places, further reinforcing pressure to refrain from smoking and supplement school-based and community programs (Li, Unger, Schuster, Rohrbach, Howard-Pitney & Norma, 2003).

State tax has consistently had a strong and negative effect on cigarette consumption (Hu, Sung, & Keeler, 1995). Iowa’s excise tax of 36 cents per pack of cigarettes ranks 42nd out of the 50 states (Campaign for Tobacco Free Kids). As of March 27, 2006, Iowa’s Governor,
Tom Vilsack, is pushing hard to increase state cigarette tax. This recent push is in response to Governor Vilsack’s recent loss of a friend and former chief of staff, Dr. Stephen Gleason. Dr. Gleason struggled with addiction to prescription drugs throughout his life, and Governor Vilsack proposed an increase in cigarette taxes in the “hopes of preventing others from beginning a life of addiction” (Higgins, 2006).

The findings of this study indeed indicate the effectiveness of anti-tobacco campaign on adolescent anti-tobacco behavior, as well as provide evidence for effective message content. This information should be useful in the coordination of future anti-tobacco campaigns. State legislators may also find these results particularly useful when budgeting spending on anti-tobacco campaigns targeted at Iowa youth.
APPENDIX A: LETTER SOLICITING PARTICIPATION FROM THE SCHOOL PRINCIPAL

Dear School Principal:

In a country where at least 1.3 million adolescents smoke, youth smoking is a serious problem. The Just Eliminated Lies (JEL) campaign is a statewide, youth-focused anti-tobacco group in Iowa funded by the Master Settlement Agreement with tobacco companies. The goal of the JEL campaign is to reduce youth smoking rates.

This letter is to seek your permission to solicit the opinion of your students regarding the messages of this anti-tobacco campaign. The JEL campaign communicates with its audience in the form of television and radio public service announcements (PSAs), billboards, mall kiosks, press releases, brochures, a campaign website, as well as sponsored youth rallies.

I would like to conduct a survey of Iowa high school students in order to evaluate the effectiveness of this campaign. Your students’ participation is, of course, voluntary. However, I would need their honest responses if the results are to be truly representative of Iowans their age. The survey should take approximately fifteen minutes to complete.

I would like to assure you that the research policy at Iowa State University strictly demands that responses provided through research must be treated with complete confidentiality. Any information provided by the respondents will not be released for any reason outside of the purpose of this study.

I have enclosed a copy of the letter requesting the parents or guardians’ permission to allow their child to participate in the study, as well as the informed consent form that will be distributed to the students.

Please accept my sincere thanks in advance for your assistance with this study. If you have any questions, please feel free to write, call 952-484-4209, or e-mail me at hellandj@iastate.edu. If I am not available, please leave a message and I will return your call as soon as possible.

Sincerely,

Joy Helland

Enclosure: Letter to parents, Informed consent forms
APPENDIX B: LETTER SOLICITING PARTICIPATION FROM THE PARENT/GUARDIAN

Dear Parent/Guardian:

In a country where at least 1.3 million adolescents smoke, youth smoking is a serious problem. The Just Eliminated Lies (JEL) campaign is a statewide, youth-focused anti-tobacco group in Iowa funded by the Master Settlement Agreement with tobacco companies. The goal of the JEL campaign is to reduce youth smoking rates.

This letter is to seek your permission to solicit the opinion of your son or daughter regarding the messages of this anti-tobacco campaign. The JEL campaign communicates with its audience in the form of television and radio public service announcements (PSAs), billboards, mall kiosks, press releases, brochures, a campaign website, as well as sponsored youth rallies.

I would like to conduct a survey of Iowa high school students in order to evaluate the effectiveness of this campaign. Your child’s participation is, of course, voluntary. However, I would need their honest responses if the results are to be truly representative of Iowans their age. The survey should take approximately fifteen minutes to complete.

I would like to assure you that the research policy at Iowa State University strictly demands that responses provided through research must be treated with complete confidentiality. Any information provided by the respondents will not be released for any reason outside of the purpose of this study.

I have enclosed the informed consent form for your scrutiny. Please review it with your child. If you would like to participate in this study, please sign the form, and return it to me in the self-addressed, postage-paid envelop provided.

Please accept my sincere thanks in advance for your assistant with this study. Feel free to contact me with any questions you may have concerning the study at 952-484-4209 or hellandj@iastate.edu. For further information about the study contact Kim Smith at 515-294-0482 or ksmith@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the Human Subjects Research Office, austingr@iastate.edu and the mailing address is Iowa State University, 1138 Pearson Hall, Ames, IA 50011-2207, (515) 294-4566; austingr@iastate.edu or the Research Compliance Officer, Office of Research Compliance, 1138 Pearson Hall, Ames, IA 50011-2207, (515) 294-3115; damenr@iastate.edu.

Sincerely,

Joy Helland
APPENDIX C: INFORMED CONSENT FORM FOR PARENT/GUARDIAN

Dear Parent/Guardian of Participant:

As part of my work toward a master’s degree at the Iowa State University, I am conducting a study to evaluate the impact of the Just Eliminate Lies campaign (JEL). As a high school student in Iowa, his/her opinions will be useful in assessing the influence of this campaign to teenagers.

This is a research study, and participation in this study requires written consent from the parent or guardian if the student is under the age of eighteen. The student may skip any question he/she does not wish to answer, or any question that makes them feel uncomfortable. I do request honest answers for the results to be valid. There are no foreseeable risks from participating in this study. This survey contains questions related to exposure to the JEL campaign, smoking habits, and perceptions of the effects of tobacco use. The questionnaire consists of 40 multiple choice questions and will take 15-20 minutes.

It is hoped that the information gained in this study will be used to create more effective anti-tobacco campaigns. There are no direct benefits or compensation, and his/her participation in this study is completely voluntary. There is no penalty or loss of benefits if he/she does not participate in this study, and he/she may refuse to participate at any time.

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, the Institutional Review Board (a committee that reviews and approves human subject research studies of Iowa State University) may inspect and/or copy records for quality assurance and data analysis. These records may contain private information.

The written consent forms will be stored in a locked cabinet for five years, after which they will then be destroyed. If the results are published, all identities will remain confidential.

Please feel free to contact me with any questions you may have concerning the study at 952-484-4209 or hellandj@iastate.edu. For further information about the study contact Kim Smith at 515-294-0482 or ksmith@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the Human Subjects Research Office, austi@iastate.edu and the mailing address is Iowa State University, 1138 Pearson Hall, Ames, IA 50011-2207, (515) 294-4566; austi@iastate.edu or the Research Compliance Officer, Office of Research Compliance, 1138 Pearson Hall, Ames, IA 50011-2207, (515) 294-3115; dament@iastate.edu.

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that
your questions have been satisfactorily answered. You will receive a copy of the signed and
dated written informed consent prior to your participation in the study.

_________________________  __________________________
Name of Parent/Guardian or Legally  (Date)
Authorized Representative (printed)

_________________________  __________________________
(Signature of Parent/Guardian or (Date)
Legally Authorized Representative)
APPENDIX D: INFORMED CONSENT FORM FOR STUDENT

Dear Participant:

As part of my work toward a master’s degree at the Iowa State University, I am conducting a study to evaluate the impact of the Just Eliminate Lies campaign (JEL). As a high school student in Iowa, your opinions will be useful in assessing the influence of this campaign to you and other teenagers.

This is a research study, and participation requires written consent from your parent or guardian if you are under the age of eighteen. You may skip any question you do not wish to answer, or any questions that makes you feel uncomfortable. I do request honest answers for the results to be valid. There are no foreseeable risks from participating in this study. This survey contains questions related to exposure to the JEL campaign, smoking habits, and perceptions of the effects of tobacco use. The questionnaire consists of 40 multiple choice questions and will take 15-20 minutes.

It is hoped that the information gained in this study will be used to create more effective anti-tobacco campaigns. There are no direct benefits or compensation, and your participation in this study is completely voluntary. There is no penalty or loss of benefits if you do not participate in this study, and you may refuse to participate at any time.

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, the Institutional Review Board (a committee that reviews and approves human subject research studies of Iowa State University) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

Your written consent form will be stored in a locked cabinet for five years, after which they will then be destroyed. If the results are published, your identity will remain confidential.

Please feel free to contact me with any questions you may have concerning the study at 952-484-4209 or hellandj@iastate.edu. For further information about the study contact Kim Smith at 515-294-0482 or kimsmit @iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the Human Subjects Research Office, autsingr @iastate.edu and the mailing address is Iowa State University, 1138 Pearson Hall, Ames, IA 50011-2207, (515) 294-4566; autsingr @iastate.edu or the Office of Research Compliance Officer, Office of Research Compliance, 1138 Pearson Hall, Ames, IA 50011-2207, (515) 294-3115; dament @iastate.edu.

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that
your questions have been satisfactorily answered. You will receive a copy of the signed and
dated written informed consent prior to your participation in the study.

Subject’s Name (printed) ____________________________________________

__________________________________________  _______________________
(Subject’s Signature)                                      (Date)
APPENDIX E: QUESTIONNAIRE

This questionnaire will be used to evaluate the impact of the Just Eliminate Lies campaign (JEL). Please answer the following questions honestly. The answers you will give will be kept private; no one will know what you write. Answer the questions based on what you know. **Do not write your name on this survey.**

PART I

1. Smoking is bad for my health.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

2. It is likely I will get cancer if I use tobacco.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

3. It is likely I will have problems breathing if I use tobacco.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

4. Second-hand smoke is harmful to my health.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

5. I could suffer from a smoking-related condition if I am exposed to second-hand smoke.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree
6. Tobacco-use can be harmful to my physical appearance.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

PART II
1. Not smoking gives me more control over my life.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

2. Not smoking is a healthy choice.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

3. My friends and family would prefer if I didn’t smoke cigarettes.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

4. Smoking is expensive.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree
5. I enjoy smoking.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

6. Quitting smoking can cause cravings and withdrawal symptoms.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

7. Quitting smoking can cause weight gain.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

8. Quitting smoking is easy to do.
   ___ Strongly Agree
   ___ Agree
   ___ Neither Agree nor Disagree
   ___ Disagree
   ___ Strongly Disagree

PART III
1. Are you now involved with the Just Eliminate Lies Campaign?
   ___ Yes
   ___ No

2. Do you intend to join JEL?
   ___ Yes
   ___ No
   ___ I am already involved with JEL

3. Do you smoke?
   ___ Yes
   ___ No
4. If you currently smoke, have you cut down on smoking?
   ___ Yes
   ___ No
   ___ Don’t Smoke

5. Do you plan to quit?
   ___ Yes
   ___ No
   ___ Don’t Smoke

6. Have you ever tried to quit?
   ___ Yes
   ___ No
   ___ Don’t Smoke

7. Have you successfully quit smoking?
   ___ Yes
   ___ No
   ___ Don’t Smoke

8. Have you influenced someone to quit smoking?
   ___ Yes
   ___ No

9. Have you looked for information to help you or others quit smoking?
   ___ Yes
   ___ No

10. Have you sought the assistance of a counselor or Quitline Iowa to help you or others to
    stop smoking?
    ___ Yes
    ___ No

11. Have you boycotted a tobacco company’s products (outside of a tobacco company)? For
    example, Phillip Morris owns Kraft.
    ___ Yes
    ___ No
**PART IV**

1. Have you ever seen a Just Eliminate Lies (JEL) advertisement?
   - [ ] Yes
   - [ ] No
   - [ ] Don’t Know

2. How many JEL advertisements do you recall seeing in the past month?
   - [ ] 0-2
   - [ ] 3-5
   - [ ] 6-8
   - [ ] 9+

3. How often do you read information about tobacco risks from brochures, newspapers, magazines or other printed forms of materials released by JEL?
   - [ ] Frequently
   - [ ] Occasionally
   - [ ] Rarely
   - [ ] Very Rarely
   - [ ] Never

4. How often do you hear information about tobacco risks on the radio released by JEL?
   - [ ] Frequently
   - [ ] Occasionally
   - [ ] Rarely
   - [ ] Very Rarely
   - [ ] Never

5. How often do you see information about tobacco risk on television released by JEL?
   - [ ] Frequently
   - [ ] Occasionally
   - [ ] Rarely
   - [ ] Very Rarely
   - [ ] Never

6. How often do you see information about tobacco risk on the Internet released by JEL?
   - [ ] Frequently
   - [ ] Occasionally
   - [ ] Rarely
   - [ ] Very Rarely
   - [ ] Never
7. How often do you see information for about tobacco risk in the mall released by JEL?
   ___ Frequently
   ___ Occasionally
   ___ Rarely
   ___ Very Rarely
   ___ Never

8. How often do you get information about the risks involved in smoking from JEL-sponsored activities?
   ___ Frequently
   ___ Occasionally
   ___ Rarely
   ___ Very Rarely
   ___ Never

9. How many people do you know that are members of the JEL campaign?
   ___ 0 - 2
   ___ 3 - 5
   ___ 6 - 8
   ___ 9+

10. How frequently are you in contact with a member of the JEL campaign?
    ___ Frequently
    ___ Occasionally
    ___ Rarely
    ___ Very Rarely
    ___ Never

PART V
1. What is your gender?
   ___ Female
   ___ Male
   ___ No Comment

2. How old are you?
   ___ 12 - 13
   ___ 14 - 15
   ___ 16 - 17
   ___ 18+
3. What grade are you in?
   ___ 6th Grade
   ___ 7th Grade
   ___ 8th Grade
   ___ 9th Grade
   ___ 10th Grade
   ___ 11th Grade
   ___ 12th Grade

4. What is your estimated average household income?
   ___ Low
   ___ Low-Middle
   ___ Middle
   ___ Middle-High
   ___ High
   ___ Highest
   ___ Don’t Know

5. To what racial group do you belong?
   ___ African American
   ___ Caucasian
   ___ Hispanic
   ___ Asian American
   ___ Native American
   ___ Other (please specify) _________________________
   ___ No Comment

Thank you for you time. Feel free to add any questions or comments you may have.
## APPENDIX F: CODING

### PART I

1. **RISK**
   - 5 – Strongly Agree
   - 4 – Agree
   - 3 – Neither Agree or Disagree
   - 2 – Disagree
   - 1 – Strongly Disagree

2. **CANCER**
   - 5 – Strongly Agree
   - 4 – Agree
   - 3 – Neither Agree or Disagree
   - 2 – Disagree
   - 1 – Strongly Disagree

3. **ALIMENTS**
   - 5 – Strongly Agree
   - 4 – Agree
   - 3 – Neither Agree or Disagree
   - 2 – Disagree
   - 1 – Strongly Disagree

4. **NDHAND**
   - 5 – Strongly Agree
   - 4 – Agree
   - 3 – Neither Agree or Disagree
   - 2 – Disagree
   - 1 – Strongly Disagree

5. **CONDITION**
   - 5 – Strongly Agree
   - 4 – Agree
   - 3 – Neither Agree or Disagree
   - 2 – Disagree
   - 1 – Strongly Disagree

6. **APPEAR**
   - 5 – Strongly Agree
   - 4 – Agree
   - 3 – Neither Agree or Disagree
   - 2 – Disagree
   - 1 – Strongly Disagree
<table>
<thead>
<tr>
<th>PART II</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CONTROL</td>
<td>5 – Strongly Agree</td>
<td>4 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>2 – Disagree</td>
<td>1 – Strongly Disagree</td>
</tr>
<tr>
<td>2. HEALTHY</td>
<td>5 – Strongly Agree</td>
<td>4 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>2 – Disagree</td>
<td>1 – Strongly Disagree</td>
</tr>
<tr>
<td>3. FAMILY</td>
<td>5 – Strongly Agree</td>
<td>4 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>2 – Disagree</td>
<td>1 – Strongly Disagree</td>
</tr>
<tr>
<td>4. EXPENSE</td>
<td>5 – Strongly Agree</td>
<td>4 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>2 – Disagree</td>
<td>1 – Strongly Disagree</td>
</tr>
<tr>
<td>5. ENJOY</td>
<td>1 – Strongly Agree</td>
<td>2 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>4 – Disagree</td>
<td>5 – Strongly Disagree</td>
</tr>
<tr>
<td>6. CRAVE</td>
<td>5 – Strongly Agree</td>
<td>4 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>2 – Disagree</td>
<td>1 – Strongly Disagree</td>
</tr>
<tr>
<td>7. WEIGHT</td>
<td>5 – Strongly Agree</td>
<td>4 – Agree</td>
<td>3 – Neither Agree or Disagree</td>
<td>2 – Disagree</td>
<td>1 – Strongly Disagree</td>
</tr>
</tbody>
</table>
8. EASY

1 – Strongly Agree
2 – Agree
3 – Neither Agree or Disagree
4 – Disagree
5 – Strongly Disagree

PART III
1. INVOLVED
2 – Yes
1 – No

2. JOIN
2 – Yes
1 – No
2 – I am already involved with JEL

3. SMOKE
1 – Yes
2 – No

4. CUTDOWN
2 – Yes
1 – No
3 – Don’t Smoke

5. PLAN
2 – Yes
1 – No
3 – Don’t Smoke

6. TRYQUIT
2 – Yes
1 – No
3 – Don’t Smoke

7. QUIT
2 – Yes
1 – No
3 – Don’t Smoke

8. INFLUEQUIT
2 – Yes
1 – No

9. INFOQUIT
2 – Yes
1 – No

10. ASSISTANCE
2 – Yes
1 – No

11. BOYCOTT
2 – Yes
1 – No
PART IV
1. JELAD
   3 – Yes
   2 – Don’t Know
   1 – No

2. ADRECALL
   4 – 9+
   3 – 6-8
   2 – 3-5
   1 – 0-2

3. JELPRINT
   5 – Frequently
   4 - Occasionally
   3 - Rarely
   2 – Very Rarely
   1 – Never

4. JELRADIO
   5 – Frequently
   4 - Occasionally
   3 - Rarely
   2 – Very Rarely
   1 – Never

5. JELTV
   5 – Frequently
   4 - Occasionally
   3 - Rarely
   2 – Very Rarely
   1 – Never

6. JELNET
   5 – Frequently
   4 - Occasionally
   3 - Rarely
   2 – Very Rarely
   1 – Never

7. JELMALL
   5 – Frequently
   4 - Occasionally
   3 - Rarely
   2 – Very Rarely
   1 – Never

8. JELINFO
   5 – Frequently
   4 - Occasionally
   3 - Rarely
   2 – Very Rarely
   1 – Never
9. KNOWPEOP
   4 - 9+
   3 - 6-8
   2 - 3-5
   1 - 0-2

10. CONTACT
    5 - Frequently
    4 - Occasionally
    3 - Rarely
    2 - Very Rarely
    1 - Never

PART V
1. AGE
   4 - 18+
   3 - 16-17
   2 - 14-15
   1 - 12-13

2. GRADE
   7 - 12\textsuperscript{th} Grade
   6 - 11\textsuperscript{th} Grade
   5 - 10\textsuperscript{th} Grade
   4 - 9\textsuperscript{th} Grade
   3 - 8\textsuperscript{th} Grade
   2 - 7\textsuperscript{th} Grade
   1 - 6\textsuperscript{th} Grade

3. INCOME
   1 - Low
   2 - Low-Middle
   3 - Middle
   4 - Middle-High
   5 - High
   6 - Highest
   7 - Don’t Know

4. RACE
   1 - African American
   2 - Caucasian
   3 - Hispanic
   4 - Asian American
   5 - Native American
   6 - Other
   7 - No Comment
APPENDIX G: JUST ELIMINATE LIES CAMPAIGN IMAGES

ahh, cyanide.
One of many toxins in secondhand smoke.

Smoking, table for one.
MANIPULATION

"Apples connote goodness and freshness and we see many possibilities for our youth-oriented cigarette with this flavor."

-Tobacco Company Report-

KILLING 1200 AMERICANS A DAY IS A CRIME.

JELIOWA.ORG
Think how you'll thound with half a thongue.

Chew can cause oral cancer.
REFERENCES


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