A SMOKING IDENTITY: INVESTIGATING SMOKER IDENTITY AND PSYCHOLOGICAL REACTANCE AS VARIABLES ON THE RELATIONSHIP BETWEEN ANTISMOKING PSA AND ATTITUDE CHANGE

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DEDICATION

I would like to dedicate this thesis to my mother, Anna Hernandez, who is a source of unconditional love and support. Her encouragement has allowed me to achieve this accomplishment. I would also like to dedicate this to my late father, Roy Hernandez, who passed away 18 years ago. I still vividly remember him telling me, “you can do anything you want,” his voice and those words are what helps me carry on in even the most difficult circumstances.
ABSTRACT OF THE THESIS

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Antismoking PSAs are a common tool used to educate and persuade individuals about the dangers of smoking. These antismoking PSAs have had much success but most is attributed to prevention of smoking initiation rather than increased cessation rates. Recent research has begun to highlight the role that identification as a smoker plays in processing antismoking messages. This thesis examines the relationship between smoker identity, psychological reactance, antismoking PSA and attitude change. In order to test the hypotheses, an online experiment was released which measured pretest attitudes about smoking, smoker identity and randomly assigned participants to either a control group or an experimental group who viewed an antismoking PSA. Psychological reactance was measured following the PSA as well as posttest attitudes about smoking. One hypothesis was fully supported and one was partially supported. Reactance was discovered in response to the PSA as well as an increase in attitudes in favor of smoking and perceived weight management benefits. Interpretation of results, limitations, and directions for future research are discussed.
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CHAPTER 1

INTRODUCTION

Ever since it was discovered to have harmful effects on one’s health, cigarette smoking has become the focus of countless health communication campaigns (Davis, Farrelly, Messeri, & Duke, 2009). The types of campaigns and campaign messages have varied tremendously over the years ranging from fear based, education campaigns to social norm based appeals. The evolution of the antismoking message has been an organic process responding and adapting to changing research and discoveries of what works and what doesn’t to produce attitude change regarding smoking and subsequent change in smoking behavior.

Since the antismoking crusade was initiated in the 1960s, the prevalence of smoking has decreased dramatically. The American Lung Association (2009) reported that the adult smoking population decreased by 50% between 1965 and 2009. The percentage of individuals who initiate smoking in the United States has decreased by 63% only in the past fifteen years (Johnston, O’Malley, Bachman, & Schulenberg, 2012). This is a drastic reduction; however, 20% of the adult population still smokes in the United States (Morbidity and Mortality Weekly Reports, 2012). This is troubling because cigarettes and their negative health consequences remain the number one cause of preventable death and account for over half a million fatalities each year in the United States alone (Emery et al., 2012).

Antismoking messages distributed via mass media are commonly used to increase awareness of the dangers of smoking and reduce smoking prevalence. The statistics, however, reveal that this impact is primarily due to the prevention of initiation rather than increased cessation efforts (Seigle & Beiner, 2000; Wakefield, Flay, Nichter, & Giovino, 2003). It has also been demonstrated that certain types of antismoking messages may have unintended consequences on the targeted population. Schneider, Gadingera, and Fischer (2012) reported that fear appeals have not only failed to increase cessation efforts of smokers but may in fact have actually increased attitudes in favor of smoking. Social norms campaigns have also been reported to cause stigmatization of smokers which can actually
increase their rate of smoking thus reinforcing their smoking behavior (Stuber, Galea, & Link, 2008). This boomerang effect has been observed and further investigated by researchers and has led them to the concept of identity.

Researchers specializing in behavior and identity (e.g., Falomir & Invernizzi, 1999; Freeman, Hennessey, & Marzulla, 2001) have begun to explore the concept of a smoker identity and the role that it may play in smoking behavior. Results have indicated that attitude change due to antismoking messages is far less likely to occur in individuals who have already initiated smoking and have suggested this may be due to the formulation of a smoker identity (Falomir & Invernizzi, 1999). Paul, Walsh, Paras, and Tzelepis (2007) have reported that smokers counter argue, trivialize, or underestimate credibility when faced with an antismoking message. The defensiveness experienced by smokers has been reported to be a form of psychological reactance (Paul et al., 2007). Psychological reactance is a process where an individual, having experienced a threat to his or her freedom (e.g., from an antismoking message), attempts to restore his or her autonomy (e.g., by doing the opposite of what the message recommends). These results are startlingly similar to predictions proposed by Social Identity Theory (SIT; Tajfel & Turner, 1986). Social identity theory predicts that individuals with a strong group identity and commitment respond in specific ways when faced with a threat at the individual and the group level such as overestimating group support, exhibiting prototypical group behavior, or devaluing out-group members. Because the act of smoking is one that is engaged in repetitively it has been reported to produce a corresponding social identity as a smoker (Conner & Armetage, 1998). This creation of a social identity as a smoker locates an individual into a social group which subsequently influences their behavior. It is likely that smoker identity influences reactance to antismoking messages which causes an antismoking message to produce little to no attitude change.

Because previous antismoking messages distributed via mass media have continually been successful at reducing initiation rates while only minimally increasing cessation rates, it is important that the concept of a smoker identity and psychological reactance be further investigated in order to gain a better understanding of how the resistant smoking population can be better addressed. This thesis aims to investigate smoker identity as a moderator on the relationship between antismoking messages and attitudes change and psychological reactance.
as a mediating variable on the relationship between antismoking messages and attitude change.
CHAPTER 2

LITERATURE REVIEW

CIGARETTES AND HEALTH

Tobacco is used recreationally and is one of the easiest drugs to acquire in the United States (Tobacco Free California, 2011). Tobacco’s large availability and its addictive properties have allowed it to saturate American culture and become one of the most difficult substances to quit (Tobacco Free California, 2011). Cigarettes are now the most common way that tobacco is consumed in the United States of America (Centers for Disease Control and Prevention, 2011a).

The first time tobacco was linked to ill health effects was when Muller (1939) published a study titled “Tobacco Misuse and Lung Carcinoma”. Muller performed a comparison study between light smokers and heavy smokers; Muller’s research reported that heavy smokers experienced a greater occurrence of lung carcinoma than did light smokers. Several studies soon followed that began to strengthen the link between lung cancer and tobacco use. Wynder and Graham (1985) conducted a retrospective study that compared over 600 hospital patients. Wynder and Graham concluded that patients who smoked heavily were more likely to suffer from lung cancer. Shortly after, Doll and Hill (1951) published a study which reported that cigarette smoking reduced individuals life spans by up to ten years; also reported was that over 50% of individuals who smoked had been diagnosed with lung cancer or other smoking related diseases.

Prompted by mounting evidence the U.S. Surgeon General issued a report in 1957 that confirmed a link between excessive cigarette smoking and lung carcinoma. Ten years later the U.S. surgeon general published an in depth report which concluded that cigarettes did in fact play a direct role in lung cancer diagnoses (United States Public Health Service, 1967). Since the Surgeon General’s report on smoking and lung cancer, smoking has been linked to an increased risk for several other diseases and disorders such as emphysema, cardiovascular disease, chronic obstructive pulmonary disorder, and different variations of cancer (Centers for Disease Control and Prevention, 2011b).
The significant threat that cigarette smoking poses to the American population makes it necessary to conduct research to find effective ways to reach individuals and not only prevent initiation, but also reach the estimated 45.3 million individuals who already smoke in the United States and encourage cessation (Centers for Disease Control and Prevention, 2011a).

**CAMPAIGN SUCCESSES AND SHORTCOMINGS**

Since the discovery of the link between cigarette smoking and disease, reducing the smoking population has become a chief concern of health professionals in the United States. A common approach used to reduce the smoking population is antismoking messages delivered via mass media (Wakefield et al., 2003). Mediated antismoking messages vary both in design as well as the populations they seek to target. Common themes found in antismoking messages are fear appeals, social norm appeals, and education campaigns delivered via mass media.

**Fear Appeals**

Fear appeals make up roughly a third of antismoking messages (Cohen, Shumate, & Gold, 2007). This approach arouses a sense of fear by presenting a drastic consequence caused by smoking such as images of individuals on death bed, pictures of blackened lungs or testimonials of people who have been drastically affected by a smoking related illness. The fear aroused is thought to decrease attitudes in favor of smoking thereby preventing smoking initiation or prompting an individual to change his or her smoking behavior such as making efforts to cease smoking (Thompson, Barnett, & Pearce, 2009).

The Extended Parallel Process model (Witte, 1994) identifies four factors that influence the effectiveness of a fear appeal. These four factors include self-efficacy which is the perception an individual has that he or she is capable of performing necessary actions to reduce risk, response efficacy which is the perception an individual has that performing a particular action will reduce risk of threat, susceptibility which is the perception that the proposed threat can actually happen to him or her, and the severity of the threat. Fear appeals work when individuals perceive themselves to have high self-efficacy and engage in danger control by performing requested actions that reduce risk. Fear appeals do not work when
individuals engage in fear control which occurs when self-efficacy is low; instead of engaging in requested behaviors an individual will engage in maladaptive behaviors such as message avoidance to reduce the threat (i.e., they believe they cannot quit smoking, therefore they avoid antismoking messages). Because nicotine is highly addictive and most smokers doubt their own ability to quit cigarettes these types of appeals often fail with people who already smoke (Shadel & Mermelstein, 1996).

Much research has been done to assess the effectiveness of these fear invoking antismoking messages. Hastings and McFayden (2002) and Lantz et al. (2000) all report that fear inducing antismoking messages appear to be effective at reducing the prevalence of smoking. However, this success may in fact be due to increasing attitudes against smoking in people who have never smoked therefore increasing prevention rather than increasing attitudes against smoking in people causing them to attempt smoking cessation (Seigle & Beiner, 2000).

Schneider et al. (2012) continued investigation of fear appeals studying graphic pictorial warnings in cigarette packages. Schneider and colleagues reported that participants who purchased cigarettes with these warnings were not more likely to quit than those who purchased cigarettes without the pictorial warnings. Additionally, participants who purchased cigarettes with the warnings claimed they ignored them and also had increased attitudes in favor of smoking. Grandpre, Alvaro, Burgoon, Miller, and Hall (2003) and Henriksen, Dauphinee, Wang, and Fortmann (2006) reported similar results stating that adolescents who viewed antismoking messages with a strong fear appeal and a freedom limiting message experienced increased attitudes in favor of smoking. Snyder et al. (2004) also reported that campaigns targeting the elimination of a behavior such as smoking had a significantly smaller impact than campaigns aiming to prevent smoking initiation stating that smokers and non-smokers process fear appeals differently and different types of messaging must be created to effectively reach the resistant smoking population.

Fear appeals have in fact played an important role in reducing the smoking population but that reduction is due to decreased adolescent initiation of smoking rather than increased cessation efforts. It is important to note that it has been reported that up to 20% - 30% of adolescents between the ages of 9-18 years old, which is the audience fear based antismoking ads are claimed to have the most success with, still initiate smoking (Pletcher & Schwartz,
Combined with the fact that adults who are regular smokers experience increased attitudes in favor of smoking, it is clear that fear appeals are useful with a portion of the U.S. population but virtually ineffective with others.

**Education Campaigns**

Antismoking campaigns grounded in education are most often found in schools and target the adolescent population. These types of campaigns usually seek to prevent smoking initiation. Prevention campaigns seeking to educate individuals about the harms of tobacco began to appear in the 1980s and continued on into the early 1990s (Backinger, Fagan, Matthews, & Grana, 2003). These education campaigns focus on giving the audience information about the harms of cigarette smoking and offer strategies to avoid peer pressure usually accompanied by some type of media (i.e., posters or videos) (Backinger et al., 2003). These campaigns differ from fear appeals because they do not seek to invoke the emotion of fear. Although most education campaigns seek to prevent, are found in schools and target adolescents there are still several that target the adult population and seek to encourage cessation efforts.

Hafstad, Aaro, and Landmark (1996) investigated a school based campaign that used skills training and education of the harms of tobacco and reported that adolescents who participated in the campaign were more likely to hold attitudes less favorable toward smoking, but they also reported that this increase in attitudes against cigarettes was not experienced in adolescents who had already begun to smoke. Additionally, the adolescents who smoked were reported to experience negative affective reactions toward the campaign materials. Vartiainen, Paavola, McAlister, and Puska (1998) conducted research on a school based campaign that had been administered 15 years prior. Vartiainen and colleagues reported that the campaigns did have a significant positive effect on the adolescents who participated in the program at the four year mark and eight year mark with the results losing significance at the 15 year mark. Similar results were found by Luepker, Johnson, Murray, and Pechacek (1983) and Park, Dent, Abramsohn, Dietsch, and McCarthy (2010). Additionally, Park and colleagues reported that students who had greater exposure to antismoking messages were more likely to smoke cigarettes. These results are important because it indicates that
education campaigns typically have short term effects and that messages associated with these campaigns may actually increase attitudes in favor of smoking.

Researchers have also reported that education campaigns aiming to increase cessation in the adult population have fallen short of their desired goals. Fortmann, Taylor, Flora, and Jatulis (1993) investigated the effectiveness of a community wide antismoking education campaign. Fortmann and colleagues reported that the campaign efforts were successful at increasing cessation efforts, but the increase was limited to light and moderate smokers. Individuals who reported to be heavy smokers did not experience more quit attempts. Corbett, Thompson, White, and Taylor (1990) evaluated the Community Intervention Trial for Smoking Cessation and also found that the campaign’s efforts did pay off with light and moderate smokers, but no improvement was made with heavy smokers.

The previously mentioned research provides evidence that education campaigns have fallen short. These campaigns have experienced some success in achieving prevention, but this success sharply declines within a few years after program ends. Additionally, the research highlights a significant difference in the quit attempts between light to moderate smokers and heavy smokers. This indicates that heavy smokers have a resistance to these types of smoking cessation programs.

Social and Stigmatization Campaigns

Social norm campaigns began to be seen in the 1990s when education only campaigns were falling short (Dorfman & Wollack, 1993). This type of campaign functions by creating or changing a perceived norm to a healthier one or one that more accurately depicts reality (Perkins & Berowitz, 1986). An exemplar of an antismoking message crafted using the social norm approach could be, “most of teenagers don’t smoke,” this type of message seeks to change people’s perceptions of the norm to something more realistic and healthy. An example of a social campaign could be, “smokers look old,” or, “Smokers smell bad,” these messages aim to attribute undesirable social consequences to those who smoke. The attribution of these undesirable consequences to the smoker would in theory prevent people from beginning to smoke or prompt them to make an attempt to quit smoking.

A social norm campaign based in Montana was investigated by Linkenbach and Perkins (2003). This campaign sought to broaden the awareness of the factual norm that 70%
of Montana teenagers are smoke free. Linkenbach and Perkins reported that the campaign had a positive effect on attitudes of teenagers who had never smoked but it had no significant impact on teenagers who already initiated smoking. Similar results have also been found in other studies (see Bayer & Stuber, 2006; Hoek, Newcombe, & Walker, 2011; Martino-McAllister & Wessel, 2005) that investigated different social norm campaigns created and administered in the United States. Also reported by researchers was a stigmatization of people who smoked. Stigmatization occurs when an individual or group deviates from social norms and the group or person is marginalized from others who adhere to prescribed social standards (Glantz, 2005). Thus, antismoking advertisements grounded in the social norms approach have been reported to have unintended consequences on heavy or “hardcore” smokers.

Stuber et al. (2008) conducted research to investigate stigmatization experienced by smokers. Stuber and colleagues found that smokers experience stigmatization frequently due to antismoking campaigns that portray smoking as a voluntary behavior and second hand smoke as an activity that harms children and pregnant women. Stuber and colleagues also state that this stigmatization is potentially harmful to individuals who are regular smokers or who do not feel they have the capability of quitting. Cho and Salomon (2007) reported similar findings stating that stigmatization may actually cause people to smoke more due to social stress. Louka, Maguire, Evans, and Worrell (2006) report that when faced with antismoking messages using the social norm approach, heavy smokers, feel ineffective and make more excuses for their behavior and are actually less likely to quit. Bayer (2008) reports that the stigmatization of cigarettes has now made the behavior of smoking a deviant one which may make use more desirable to certain populations such as youth and may make quitting even more difficult for smokers. Falomir and Mugny (1999) provided evidence confirming this boomerang effect when they reported that smokers defend their behavior when presented with antismoking messages portraying smoking as a deviant or unacceptable behavior.

The findings of researchers have begun to illustrate that social norm campaigns are indeed effective at reducing the smoking population; however, this reduction is primarily due to prevention of smoking initiation rather than prompting cessation. Additionally, researchers have reported that these social norm campaigns have unintended consequences such as
stigmatization which can cause the behavior to be more desirable and defended against by current smokers. Similar to fear based and education campaigns these social norm influencing antismoking advertisements fall short and leave a population virtually untouched who continue to engage in a behavior that is harmful to their health.

**SMOKERS THINK DIFFERENTLY**

The literature illustrates that a population of smokers who are resistant to traditional strategies used in antismoking messages has emerged. It is thought that individuals who have already initiated the behavior of smoking process antismoking messages differently than individuals who have never smoked (Seigle & Beiner, 2000). The lack of attitude change in smokers in response to antismoking messages has begun to be investigated more thoroughly.

The addictive nature of nicotine has been found to interfere with the effectiveness of fear based antismoking messages (Shadel & Mermelstein, 1996); individuals who are addicted to nicotine perceive their self-efficacy to be low surrounding the topic of smoking cessation. According to Witte (1994), without high self-efficacy individuals engage in avoidance to reduce fear rather than engage in the requested healthy behaviors to decrease a threat. Social campaigns have also been proven to fail with current smokers. Cho and Salomon (2007) state that social campaigns encourage stigmatization of smokers and cause smokers to smoke more cigarettes due to social stress; this occurrence is most likely due to low self-efficacy surrounding smoking cessation (Stuber et al., 2008). Another consequence of stigmatization is that smoking has now become a deviant behavior which makes it more desirable to certain populations (Bayer, 2008).

Education campaigns also have failed to produce significant change in attitudes toward cigarettes or increased cessation rates in current smokers. Fortmann and colleagues (1993) report that education campaigns have been unsuccessful at prompting cessation efforts in heavy smokers and Hafstad and colleagues (1996) report that education campaigns produce negative affective reactions in adolescents who already smoke making attitude change less likely. Vartiainen et al. (1998) also reported that most education campaigns produce attitude change that is not sustainable over the long term and consist of a message design that may inadvertently increase attitudes in favor of smoking.
Also noted by researchers is that most antismoking messages make a large request of smokers: to quit. In addition to physiological dependence, smokers may in fact be reacting to a threat to their freedom. Several researchers such as Harris, Mayle, Mabbot, and Napper (2007), Leshner, Bolls, and Thomas (2009), and Willemsen’s (2005) report that smokers experience a form of reactance which causes them to process messages differently than nonsmokers.

Whether it was a fear campaign, social norm campaign, or education campaign the results were the same. Each campaign strategy was unable to produce any significant change in the attitudes of individuals who already smoked cigarettes. Researchers have now begun to investigate the smoking populations’ apparent immunity to antismoking campaigns.

**Reactance to Antismoking Messages**

The construct of psychological reactance can assist in understanding the lack of attitude change in current smokers in response to antismoking PSAs. Researchers have established that antismoking messages are processed differently by smokers and nonsmokers (Wakefield et al., 2003). Harris et al. (2007) and Leshner et al. (2009), have reported that a form of reactance may be occurring in smokers who view antismoking messages which causes messages to be ineffective and likely cause a change in attitudes in the opposite direction. This difference in attitude change has been reported to be caused by the possession of a smoker identity (Falomir & Invernizzi, 1999). When regular smokers encounter an antismoking message it is perceived as a threat thus inducing reactance. This reactance in response to antismoking messages is not seen in individuals who do not smoke (Falomir & Invernizzi, 1999) thus making it a distinct characteristic of the smoking population suggesting that the way smokers process antismoking messages is different than those who do not smoke.

Psychological reactance theory (Brehm, 1966) states that human beings have a natural desire to feel autonomous and in control of their decisions, thus when encountered with a situation or message that is freedom limiting (i.e., a message that restricts options thus eliminating a person’s choices) the individual will experience psychological reactance. Rains and Turner (2007) define reactance as the negative relevant cognitions and anger in response to an individual perceiving that his or her freedom of choice is limited. This reactance causes
an individual to defend against and reject a persuasive message. According to Brehm (1966), the reactance experienced can cause an individual to have increased liking for the activity or choice that was threatened by the message and also prompt action in the individual to restore his or her autonomy.

Research has documented the occurrence of reactance in response to antismoking messages in the smoking population. Emery, Gilpin, Ake, Farkas, and Pierce (2000) conducted research to investigate antismoking messages effectiveness on individuals who varied in the amount of cigarettes smoked. Emery and colleagues reported that individuals who identified as “hardcore” smokers (defined as individuals who had smoked at least 100 cigarettes) experienced significantly less change in attitude in response to an antismoking messages as well as defensively reacting to the antismoking message. This defensiveness and lack of attitude change was reported to be linked to the amount an individual smoked, such that light smokers were more persuadable than heavy smokers and experienced less defensiveness in response to an antismoking message. It is likely that the strength of smoker identity influenced the level of reactance because the issue of smoking is highly relevant to them which causes the antismoking message to be perceived as threatening. Freeman et al. (2001) also reported similar findings that individuals who identified as smokers were more likely to experience defensiveness and argue against antismoking messages and experience little to no change in attitude.

Falomir and Invernizzi (1999) reported that smokers who viewed antismoking messages with a freedom limiting message experienced a decrease in intentions to quit smoking. Raines and Turner (2007) states that a freedom limiting message makes a request that takes a great amount of effort and time from a viewer and also fails to offer any other choices e.g “do not drink”. The message “do not drink” is defined as freedom limiting because it poses abstinence as the only solution rather than proposing other options such as “drink responsibly”. These types of freedom limiting messages have been shown to induce reactance in individuals (Dillard & Shen, 2005). It is very likely that the participants in the study by Falomir and Invernizzi (1999) experienced reactance because the message limited their choices to only one, that of “quit smoking”. Participants in the study counter argued messages and rated them as less credible when the message was restrictive.
The previously reviewed studies indicate that psychological reactance is occurring but have not indicated to what extent it occurs or how exactly it may influence an antismoking message’s effectiveness on attitude change. Researchers have begun to investigate the concept of identity in order to understand why psychological reactance may be occurring.

**IDENTITY**

It has been proven time and again that nicotine found in cigarettes makes smoking a very addictive behavior. The negative influence that the addictive nature of cigarettes has on the relationship between antismoking messages and attitude change cannot be ignored; however, there are other variables that need to be addressed. An important variable is the concept of identity. Conner and Armetage (1998) state that repeated behaviors individuals engage in result in the creation of a corresponding social identity because the individuals define themselves by what actions they engage in. The repetitive act of smoking makes it very likely that smokers develop a social identity as a smoker.

The concept of identity and behavior has been garnering attention for years, although only recently as it relates to smoking, that is why it will be beneficial to look at research performed on identity and other behaviors. Charng, Piliavin, and Callero (1998) also report that repetitive behaviors are often incorporated into an individual’s self-image thus creating a corresponding social identity (e.g. “I smoke therefore I identify as part of the smoking group”). This behavior and identity relationship has also been documented by Risel, Sheeran, and Hukkelberg (2010) who conducted a meta-analysis on forty studies concerning identity and behavior and reported that identity is a consistent predictor of intention and behavior stating that a person’s perception of self will influence the behaviors they engage in; individuals engage in behaviors that help to reinforce their identity. Sparks and Guthrie (1998) reported identification as a health conscious eater was a reliable predictor of healthy eating behaviors. Sparks and Shepard (1992) reported that possessing a green consumerist identity was a significant factor in predicting the consumption of organic produce. Theodorakis (1994) reported that identifying as an active person predicted the amount of physical activity people engaged in. Charng et al. (1998) also reported that individuals who donate blood begin to build an identity as a blood donor with each donation; their increased identity as a blood donor then predicted their behavior to donate more blood. Haggera,
Anderson, Kyriakaki, and Darking (2006) also found evidence that supported a link between identity and behavior stating that social identity and self-identity were very reliable predictors of binge drinking behavior and dieting in college students. Individuals who identified with groups that valued social activities and aesthetic appearances were more likely to engage in behaviors that were prototypical of the group such as dieting and drinking. This identity and behavior relationship is a very promising area of research. Investigating the role identity plays in predicting behavior is important because it may help to reach populations such as heavy and moderate smokers who have been proven to be resistant to fear appeals, social norm and education campaigns. The act of smoking is more than a behavior to smokers it is part of their identity.

Being a smoker involves the repetitive act of smoking a cigarette and as Conner and Armetage (1998) point out when an individual engages in a repetitive act it results in the creation of a corresponding social identity. A Social identity as defined by Tajfel and Turner (1986) is the portion of a person’s self-concept that he or she acquires by having a perceived membership in a particular social group. This membership in the social group of smokers influences subsequent behavior. Echebarría, Fernandez, and Gonzalez (1994) reported that smokers have a strong feeling of group belonging. This level of commitment to the smoking group or strength of smoker identity will determine the type of behavior that smokers exhibit when faced with a threat (e.g. antismoking message). Falomir and Invernizzi (1999) report that smokers not only wish to maintain their social identity as a smoker, but also have the desire for this identity to be positive. Thus smokers have been reported to engage in strategies that resemble reactance. The strategies smokers enact include over-valuing the pleasure involved in smoking, undervaluing the nonsmoking group, trivializing antismoking messages and overestimating group support for smoking. Reviewing social identity theory (Tajfel & Turner, 1986) can assist in understanding how the formation of an identity as a smoker can produce reactance when a threat is perceived.

**SOCIAL IDENTITY THEORY**

Social identity theory [SIT] (Tajfel & Turner, 1986) states that categorization is inherent to the human mind because it allows for human beings to cope with the infinite amount of stimuli encountered every day. These categorizations are established by engaging
in social comparisons which allow individuals to compare themselves to others using the self as a reference point (Tajfel, 1978). When an individual first becomes part of a group he or she will begin to exhibit behaviors that coincide with the group norms; as the individual continually exhibits these behaviors they begin to form an identity as being part of the particular group and their level of commitment begins to increase (Ellemers, Spears, & Doosje, 2002). Level of commitment as defined by Tajfel and Turner (1986) is the strength of an individual’s attachment and involvement with the group and dictates their mobility to other social groups. Since the resulting identity was created using the self as a reference point, SIT states that individuals desire to maintain a positive social standing (Hogg & Abrams, 1988). SIT posits that when the level of commitment to the group is strong members are less likely to leave group so when a threat is perceived members of the group will engage in several strategies to cope. These strategies may include over estimating group cohesiveness, self-stereotyping, increasing group loyalty, overestimating intergroup differences, being more competitive and derogating out-group members (Ellemers et al., 2002).

Therefore, according to social identity theory it would be natural for individuals who smoke to begin to participate in comparisons that would differentiate them from those who do not smoke. These processes have been reported as occurring in the smoking population. Gibbons, Gerrard, Lando and McGove (2000) reported that smokers engaged in comparisons between themselves, other smokers and nonsmokers; these comparisons allowed for the creation of identities of heavy smoker, light smoker and nonsmoker. These groups are exemplars of the way individuals categorize and distinguish themselves in a specific social group.

Vangeli, Stapleton, and West (2010) investigated smoker identity further and reported that individuals who attempted to quit smoking and were successful had a decrease in their identity as a smoker. As length of abstinence increased the individual was less likely to hold an identity as a smoker. This decrease in identification as a smoker exemplifies a transformation from a smoker identity to a nonsmoker identity. Individuals began to deviate from the norms of the smoking group and began to enact behaviors of the nonsmoking group (i.e. not smoking). It is likely that their change in identity allowed them to have less commitment to the smoking group and move into a nonsmoking social group. This
movement into the nonsmoking group likely increased their chances of quitting because they
did not experience group pressure to engage in prototypical behaviors that go hand in hand
with membership in the smoking group. Vangeli and West (2012) also reported that
individuals who had been long time smokers and finally quit experienced a change in
identity, such that they began to identify less with traits of a smoker and more as part of the
nonsmoking group.

Van den Putte, Yzer, Willemsen, and De Bruijn, (2009) also reported that possession
of a smoker identity predicted fewer quit attempts and relapse of smoking behavior. This
exemplifies what individuals with a high group commitment to the smoking group and low
mobility between groups experience. Their strong identification with the smoking group
interferes with their ability to quit because, as SIT predicts, high group commitment causes
individuals to exhibit prototypical behavior and in the smoking group typical behavior is
smoking cigarettes.

Falomir and Invernizzi (1999) also reported results consistent with SIT such that
individuals who possessed a strong smoker identity responded defensively to antismoking
messages by either discrediting the source of the message or trivializing the message’s
proposed consequences of smoking. Additionally, individuals who smoked overestimated
both the amount of support for smoking and the size of the smoking population. As indicated
by SIT these individuals had a strong identification with the smoking group, thus decreasing
their mobility and increasing group commitment. These two conditions caused them to
engage in SIT's predicted coping strategies.

These behaviors have not only been reported in smokers they have also been reported
concerning other behaviors such as exercise and eating habits. Terry and Hogg (1996)
reported that strength of group identification predicted behavioral intentions to eat healthy
and exercise regularly. Sun-protective behaviors have also been predicted by group
identification (Terry & Hogg, 1996). Additionally, group identification was found to be a
moderator on the relationship between group norms and binge drinking behavior. These
studies provide sufficient evidence that there is indeed a relationship between identity and
behavior and have begun to highlight that strength of identity is a factor in antismoking
message effectiveness and smoker responses.
These research studies’ findings are consistent with predictions of social identity theory. Individuals who maintained a smoker identity continued to act out prototypical smoker behavior such as smoking cigarettes whereas individuals who did not maintain a smoker identity or who experienced a decrease in smoker identity were more successful at cessation attempts. Smokers with high group commitment engaged in strategies to manage threats from antismoking messages.

The act of smoking itself in combination with the repetitiveness of the behavior causes smokers to create a corresponding social identity as a smoker; using social identity theory as lens, the behaviors and attitudes of smokers in response to viewing an antismoking message can be better understood. Social identity theory provides predictions as to how individuals with a strong identification with a group will behave. The results presented above are consistent with predictions of SIT. Individuals with a strong identification and high commitment with the smoking group feel threatened when presented with an antismoking message. This threat combined with the natural motivation individuals have to maintain a positive social identity prompts a form of Reactance. This psychological reactance causes defensive evaluation, trivialization, rejection of antismoking messages and increased liking for the activity of smoking.

**Current Study**

Many antismoking messages have been produced over the years and have been documented as successful in decreasing the smoking population, however, this decrease is mostly attributed to prevention of initiation rather than cessation (Hafstad et al., 1996; Snyder et al., 2004; Wakefield et al., 2003). People who are regular smokers do not react in the same way to antismoking messages as nonsmokers. The activity of smoking is highly relevant to them and has resulted in the creation of a social identity as a smoker. This identity as a smoker and membership in the social group of smokers causes messages to be perceived as a threat. Tajfel and Turner (1986) state that individuals have a desire to maintain a positive social standing; this makes it very likely that when smokers encounter an antismoking message they experience reactance and engage in coping strategies such as trivialization of messages, devaluing the nonsmoking group, overvaluing the benefits of smoking or smoking more cigarettes as a way to repair his or her threatened identity and freedom of choice. The
current study will investigate the relationship between exposure to antismoking messages, reactance, smoker identity and attitude change. It is thought that reactance occurs when an individual perceives a threat. So, it is likely that individuals who have a strong smoker identity will perceive an antismoking message as threatening and experience reactance whereas an individual with a weak smoker identity will perceive the message as less of a threat or not threatening at all and experience little to no reactance. Therefore it is possible that smoker identity will act as a moderating variable on this relationship. Individuals who experience reactance will be less likely to have a change in attitude and likely hold attitudes in favor of smoking. Individuals who experience little or no reactance will likely experience a change in attitudes against smoking. Therefore this study proposes the following hypotheses derived from the predictions of Social Identity Theory and psychological reactance theory.

**HYPOTHESES**

- H1: Exposure to an anti-smoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pre-test attitudes.
- H2: Reactance will be negatively associated with the strength of post-test attitudes against smoking, controlling for pre-test attitudes.
- H3: Exposure to an anti-smoking PSA will have an indirect effect on strength of post-test attitudes against smoking via reactance (see Figure 1).
- H4: Smoker identity will moderate the reactance produced by anti-smoking PSA (see Figure 2).

![Figure 1. Reactance as a mediator.](image-url)
Figure 2. Smoker identity as a moderator.
CHAPTER 3

METHODS

The hypotheses for this study were investigated via an online randomized experiment utilizing a convenience sample of undergraduate students. The survey measured several characteristics of participants including smoking behavior, attitudes about the consequences of smoking, and smoker identity. Additionally, the research study utilized two public service announcements one was used as the experimental stimulus and the other was used as the control stimulus.

SURVEY PROCEDURE

In the spring semester of 2013, an online experiment was made available and taken by 621 undergraduate students. The survey was hosted online on with the Qualtrics’ research website and consisted of 141 items taking approximately one hour to complete. Once they accessed the URL hosting the experiment, participants were presented with the informed consent and made aware of the study topic and any risks associated with participation. If participants declined to participate they were diverted to the end of the study and did not receive any credit for participation. If they agreed to participate they were advanced to demographic questions followed by questions concerning smoking behavior. If participants identified as never smoking a cigarette they were eliminated from the study and received credit for participation. If participants identified as having smoked in their lifetime they remained in the study and proceeded to the questionnaires measuring smoker identity and their attitudes about smoking consequences. After the smoker identity items and the items about the consequences of smoking were completed the participants were made aware that the remainder of the experiment required audio and video capabilities on their CPU. Participants then watched an innocuous video with audio and then presented with questions to verify A/V capability. Participants were then randomly assigned to either a control group or experimental group. The experimental group watched an antismoking message and the control group watched a no texting and driving PSA. Participants then performed a thought
listing activity and rated each thought as negative, neutral or positive. The final step of the survey presented participants with questions measuring their attitudes about smoking.

**Sampling Procedure**

This research study’s participants were recruited from eligible courses in the School of Communication at a large southwestern university. The link to the experiment was posted on the SDSU Communication Research website where students are able to access and view current studies. Additionally, instructors in the school of communication were asked to announce that a study was available on the research website. As compensation for their participation in the survey students received one hour of credit to be used to obtain extra credit in a course of their choosing.

The target sample size for this study was 500 and the survey was closed after 488 complete responses were recorded. Data collection was stopped before reaching the target n because of time constraints. A total of 623 people entered the survey and after reviewing the Statement of Informed Consent (see Appendix A) 621 agreed to participate. Only smokers were included in the final analysis. Participants were considered non-smokers if they had not smoked in the past six months or they indicated that they had not smoked in their lifetime (by either answering no to TRYCG, indicated not having smoked in the past six months on LSTCG or indicating they had not smoked in their lifetime LFSMK). After filtering out participants based on ever trying cigarettes and not having smoked in the past six months there were an additional 54 participants eliminated due to incorrect responses in the audio/video check and a question to assess if they were paying attention in experiment. The final sample size was 128 (see Figure 3).

**Participant Characteristics**

Participants were asked demographic questions which included age, sex, sexual orientation, relationship status, ethnicity, semesters of college completed, parents’ education background, and whether he or she grew up in a household where someone smoked or currently live in a household where someone smokes. This information was of interest due to the effects such characteristics have been shown to have on smoking behavior.
Figure 3. Flow of participants.
Age
The mean age of participants was 21.26 and standard deviation was 3.54. Most participants were between the ages of 18-21 making up 70.2% of the sample. Of the 128 respondents only four did not indicate their age.

Sex
Out of the 128 participants included in the analysis 64.8% were female (N=83) and 35.2% were male (N=45).

Sexual Orientation
Most people in this sample identified as heterosexual (N=116) accounting for 90.6% of the sample. Four people identified as homosexual and three identified as bisexual. Out of the 128 participants only five declined to state sexual orientation.

Relationship Status
Out of the 128 participants 123 stated they were single accounting for 96.1% of the sample, 3 indicated they were married and 2 declined to state their relationship status.

Ethnicity
Out of the 128 participants 14.1% identified as being Hispanic or Latino (n=18). Most of the participants identified as white accounting for 70.3% of the sample (N=90). People identifying as Asian made up the second largest portion of participants accounting for 14.8% of the sample (n=19), 3.1% identified as Black or African American (n=), 1.6% identified as Native Hawaiian or other Pacific Islander (n=2), and .8% identified as American Indian or Alaska Native (N=1).

MEASURES
The measures used in this study were all established measures. Each measure will be explained in the following subsections and copies of the actual measures are provided in Appendix B.
**Smoking Behavior**

Participants were assessed on their smoking behavior using a modified version of the Centers for Disease Control and Prevention’s (2009) Youth Tobacco Survey questionnaire. This measure is used nationwide to determine adolescents’ tobacco related beliefs, attitudes and smoking behavior. Only questions on behavior in relation to cigarettes were used in this study. Participants were asked to indicate how many cigarettes they have smoked with options ranging from no more than one puff to more than 100 cigarettes. Participants also were asked to indicate when they had last smoked a cigarette with options ranging from within 24 hours to 1 to 5 years ago. Of the 128 participants 33.6% indicated they had smoked at least 100 cigarettes in their lifetime, 13.3% of participants reported smoking in between 1 to 5 packs in lifetime and the remaining 53.1% indicated having never smoked more than a whole pack of cigarettes in their lifetime.

**Smoking in Household**

Participants were asked whether they had grown up in a household where someone smoked and whether they currently live in a home where someone smokes cigarettes. Of the 128 participants 42 reported growing up in a household where someone smoked and 38 of the participants indicated they currently lived with someone who smoked.

**Smoker Identity**

The Smoker identity Scale (SI; Tracy, Lombardo, & Bentley, 2012) was utilized to measure the strength of participants’ identity as a smoker. The SI scale contains eight items. A principal component analysis was performed and all eight items loaded onto a single factor at .6 or above as indicated by Tracy et al. (2012). A reliability analysis was also performed on the scale and revealed sufficient reliability for all 8 items to be used as a unidimensional scale (Cronbach’s $\alpha = .77$). The items were summed to create a composite score to measure smoker identity; a high score indicates strong smoker identity and a low score indicates a weak smoker identity.

**Smoking Attitudes**

The Smoking Consequences Questionnaire short form (Myers, McCarthy, Macpherson, & Brown, 2003) was utilized as a pretest and posttest to assess participants’
attitudes and knowledge regarding consequences of cigarette smoking. The scale consists of 21 items that load onto four factors which address negative consequences of smoking, negative reinforcement of smoking, positive reinforcement of smoking and attitudes about the appetite and weight effects of smoking. A principal component analysis was conducted using varimax rotation on the smoking consequences questionnaire. As predicted all items loaded onto the four appropriate factors indicated by previous research with eigenvalues over 1 producing a satisfactory Kaiser-Meyer-Olkin coefficient (KMO=.88), thus all items were retained for analysis.

Reactance

In order to assess reactance experienced by participants the Reactance Restoration Scale (RRS; Quick & Stephenson, 2007) was utilized. The RRS is designed to measure the level of reactance an individual experiences. Reactance is defined as having negative cognitions in response to a stimulus as well as negative affective reactions. The RRS this consists of two measures cognitive and emotional reactance. To measure cognitive reactance participants were asked to write down, in the space provided in the questionnaire, any thought he or she had in response to the antismoking message. After listing the thoughts participants moved on to the next page of the questionnaire and were presented with what they had written and asked to rate each thought as negative, positive or neutral. In order to calculate a cognitive reactance score only thoughts relevant to smoking rated as negative were counted. Each relevant negative cognition counted as 1 and were summed to create a composite score. The emotional reactance measure consisted of four items which rated participants’ level of irritation, anger, annoyance, and aggravation on a 7 point Likert type scale with 1 indicating none of the feeling and 7 indicating a great deal of the feeling. In order to assess validity of the emotional reactance items they were subjected to a reliability analysis. The reliability analysis revealed that all items with an alpha coefficient of at least .71 thus all items were retained and summated to produce one composite score.

This cognitive reactance score ($M = 4.08$, $SD = 5.14$) was then combined with the emotional reactance score ($M = 2.97$, $SD = 1.72$) to represent the final measure of reactance. These final score coincides with the conceptual and operational definition of reactance by
Rains and Turner (2007) who state that reactance consists of relative negative cognitions and anger.

**Control Variables**

The variables controlled in the analysis include condition (i.e., whether participants received the control or experimental stimulus), age, sex, growing up in a household where someone smoked, currently living in a home where someone smokes, and whether the participant identified as African American. Sex was selected as control variable because males have been shown to have a higher prevalence of smoking than do females (Centers for Disease Control and Prevention, 2012). Whether a participant was African American was used as control because African Americans are reported to have high smoking rates (Centers for Disease Control and Prevention, 2012). Growing up in a household with someone who smokes has been shown to be related to the initiation of smoking in adolescents (Chassin & Prost, 2002). A current smoker living with another smoker has been shown to reinforce attitudes of both individuals in favor of smoking (Brigham, Henningfield, & Stitzer, 1991)

**EXPERIMENTAL PROCEDURE**

Participants were randomly assigned to either a control or experimental group. The control group watched the PSA addressing texting and driving and the experimental group viewed the antismoking PSA. In order to verify participants could watch video and hear audio an innocuous video with verification questions was presented to participants. Both of the control and experimental stimulus were followed by questions to verify participants watched and paid attention to video.

**Experimental Stimulus**

This antismoking advertisement titled “Tips to get ready for the day from Terry” was utilized as the experimental stimulus. This video is part of a recent antismoking campaign launched in the spring of 2012 by The Centers for Disease Control and Prevention titled “Tips from former smokers.” The antismoking PSA consists of Teri telling us how she gets ready for her day. Teri has cancer caused by smoking cigarettes and has lost her hair, vocal chords and parts of her jaw bone. The video shows Teri putting on her wig, prosthetic jawbone and inserting her hands free device for speaking and then covering it with a
handkerchief. This message was selected due to its use of a fear appeal which according to Rains and Turner (2007) would be perceived as threatening and freedom limiting thus causing reactance. After the video participants were presented with two questions to assess if they were paying attention the experimental stimulus.

**Control Stimulus**

The control stimulus for this experiment was a public service announcement created by AT&T. The video is titled “Where r…” and was produced by AT&T (2011) for use in their no texting and driving campaign. In this video, the star is a man named Will who explains how his life was dramatically changed due to him texting while driving leading to his involvement in a serious motor vehicle collision. This video was selected because it is not aiming to reduce any substance use, but it is very similar to the PSA utilized as the experimental stimulus in both design and length. After the video, participants were presented with a question to assess if they were paying attention.

**Preliminary Analysis**

Preliminary analyses were conducted which consisted of a bivariate correlation analysis of the variables of interest (see Table 1) and a t test to compare posttest dependent variables by which video participants were exposed to.

The difference between smoking consequences post-test addressing appetite and weight for experiment (M=1.867, SD=35.43) and for control (M=2.33, SD=37.13), (t(107)=-.067, p=.93) indicating the experimental manipulation had no effect.

The difference between smoking consequences posttests addressing negative reinforcement for experiment (M=11.42, SD=57.235) and for control (M=1.73, SD=68.96) (t(107)=.794, p=.87) indicating the experimental manipulation had no effect.

The difference between smoking consequences posttests addressing positive reinforcement for experiment (M=3.88, SD=37.49) and for control (M=-.59, SD=32.86) (t(108)=.67, p=.10) indicating the experimental manipulation had no effect.

The difference between smoking consequences posttests addressing the negative consequences of smoking for experiment (M=-8.07, SD=38.92) and for control (M=2.51, SD=52.498), (t(108)=-1.187, p=.06) indicating the experimental manipulation had no effect.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Hispanic or Latino</th>
<th>Age</th>
<th>Someone smoked in home growing up</th>
<th>Someone smokes at home now</th>
<th>Pos. Reinforcement pre</th>
<th>Neg. Reinforcement pre</th>
<th>Appetite/weight pre</th>
<th>Pos. Reinforcement post</th>
<th>Neg. Reinforcement post</th>
<th>Appetite/Weight post</th>
<th>Neg. Consequences post</th>
<th>Smoker Identity</th>
<th>Reactance</th>
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<tr>
<td>Someone smoked in household growing up</td>
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<td>.169</td>
<td>1</td>
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<tr>
<td>Someone smokes in household now</td>
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<td>.061</td>
<td>.271*</td>
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<td>.099</td>
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<td>.509*</td>
<td>.361*</td>
<td>-.071</td>
<td>.259*</td>
<td>.410*</td>
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<td>.071</td>
<td>.090</td>
<td>.023</td>
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</table>
**Data Analysis**

The data was analyzed using SPSS 20.0. To test hypothesis 1 which stated that an antismoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pretest attitudes, a regression analysis was performed using the ad condition (anti-smoking ad = 1, control ad = 0) as independent variable, the posttest attitudes as dependent variable, and control variable include, whether someone smoked in household while growing up and whether someone currently smoked in their household. Age, sex, and whether the participant identified as African American or not were also used as control variables. A separate analysis was run for all four factors in the smoking consequences questionnaire. In order to test hypothesis 2 which stated that reactance would be negatively associated with the strength of post-test attitudes against smoking, controlling for pretest attitudes, regression analyses were also performed using reactance as the independent variable, posttest attitudes as a dependent variable and using pretest attitudes as a control. A separate analysis was conducted for each factor in the smoking consequences questionnaire.

H3 which stated that exposure to an anti-smoking PSA would have an indirect effect on strength of posttest attitudes against smoking via reactance, a procedure developed by Hayes (2012) was used. Exposure to the antismoking PSA was used as the independent variable, reactance was used as the mediating variable and posttest attitudes were used as the dependent variable. This procedure allows for the estimation of indirect effects of an independent variable on a dependent variable via a mediating variable. This procedure also allowed for the testing of H4 which stated Smoker identity would moderate the reactance produced by an anti-smoking PSA. Exposure to antismoking message was used as the independent variable, smoker identity was used as the moderating variable and posttest attitudes were used as the dependent variable. Both H3 and H4 required separate analyses to test each factor measured in the smoking consequences questionnaire. Additionally, both H3 and H4 utilized the same control variables which included whether the participant was African American, their age, their sex, whether someone smoked in their household now, and whether someone smoked in the home they grew up in.
CHAPTER 4

RESULTS

HYPOTHESIS 1

Testing hypothesis one which stated that exposure to an antismoking PSA would be positively associated with posttest attitudes, controlling for pretest attitudes, required four separate analyses for each factor measured in the smoking consequences questionnaire which include negative reinforcement, negative consequences, positive reinforcement, and appetite and weight control.

The first regression analysis using negative consequence for testing an antismoking PSA’s effects on posttest attitudes, controlling for pretest attitudes revealed significant results, however, they did not support the hypothesis, $F(2, 116) = 26.14, p < .001$, $R^2 = .33)$. The analysis showed that pretest attitudes were the best predictor of posttest attitudes ($\beta = .58$, $t(116) = 7.19, p < .001$) while exposure to the antismoking ad had no association with posttest attitudes ($\beta = -.06$, $t(116) = -.75, p = .45$).

The second regression analysis using the positive reinforcement factor from the SCQ for testing an antismoking PSA’s effects on posttest attitudes, controlling for pretest attitudes revealed significant results, however, these were not supportive of the hypothesis, $F(2,105) = 58.57, R^2 = .52, p < .001)$. The analysis showed that pretest attitudes were the best predictor of posttest attitudes ($\beta = .72$, $t(105) = 10.79, p < .001$) while exposure to the antismoking message had no association with posttest attitudes ($\beta = .020$, $t(105) = .29, p = .77$).

The third regression analysis using the negative reinforcement factor from the SCQ for testing an antismoking PSA’s effects on posttest attitudes, controlling for pretest attitudes revealed significant results, however, these were not supportive of the hypothesis, $F(2,105) = 34.74, R^2 = .39, p < .001$). The analysis showed that pretest attitudes were the best predictor of posttest attitudes ($\beta = .631$, $t(105) = 8.28, p < .001$), while exposure to antismoking message had no association with posttest attitudes ($\beta = -.001$, $t(105) = -.008, p = .99$).

The fourth regression analysis using the factor addressing appetite and weight control from the SCQ for testing an antismoking message’s effects on posttest attitudes, controlling
for pretest attitudes revealed significant results, however, they did not support the hypothesis. 
\((F(2, 106)=65.11, R^2=.543, p<.000)\), the analysis showed that pretest attitudes were the best predictor of posttest attitudes \((\beta=.74, t(106)= 11.41, p<.001)\), while exposure to antismoking message had no association with posttest attitudes \((\beta=-.05, t(106)= -.893, p=.96)\), as predicted. (see Table 2).

**HYPOTHESIS 2**

In order to test hypothesis 2 which stated that reactance would be negatively associated with the strength of posttest attitudes against smoking, controlling for pretest attitudes, four regression analyses were performed using the four different factors addressed in the smoking consequences questionnaire.

The first regression analysis testing the hypothesis using the factor addressing the negative consequences of smoking revealed significant results that did not support the hypothesis. \((F(2, 101)=26.19, R^2=.329, p<.001)\). The pretest measuring attitudes about the negative consequences of cigarettes, \((\beta=.585, t(101) = 7.192, p<.000)\) was a better predictor than reactance \((\beta=-.061, t(101)= -.801, p =.43)\).

The second regression analysis performed using the factor addressing positive reinforcement from the smoking consequences questionnaire revealed significant results, however, these results did not support the hypothesis, \((F(2,105)= 59.416, R^2 = .522, p<.001)\). The pretest of attitudes concerning positive reinforcement of cigarettes, \((\beta=.725, t(105)= 10.584, p<=.001)\) was a better predictor than reactance \((\beta=-.063, t(105)= .941, p=.349)\).

The third regression analysis performed using the factor addressing negative reinforcement from the smoking consequences questionnaire revealed significant results, however, these results did not support the hypothesis, \((F(2,105)=34.985, R^2 = .388, p<.001)\). The attitudes regarding the negative reinforcement of cigarettes, \((\beta=.628, t(105)= 8.282, p<.001)\) was a better predictor than reactance \((\beta=.041, t(105)= .547, p=.586)\).

The fourth regression analysis performed using the factor addressing appetite and weight control from the smoking consequences questionnaire revealed significant results; however, they did not support the hypothesis. \((F(2,106)=65.234, p<.000, R^2=.540)\). Pretest attitudes \(\beta=.743, t(106)= 11.335, p<.000\) were a better predictor than reactance \((\beta=.016, t(106)= .952, p=.243)\). (see Table 3).
Table 2. Hypothesis 1

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Negative reinforcement post</th>
<th>Positive reinforcement post</th>
<th>Negative consequences post</th>
<th>Appetite/weight post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>2.153</td>
<td>.164</td>
<td>1.26</td>
<td>.495</td>
</tr>
<tr>
<td>Sex</td>
<td>.483</td>
<td>.005</td>
<td>10.04</td>
<td>.304</td>
</tr>
<tr>
<td>Exposure to antismoking message</td>
<td>-.175</td>
<td>-.002</td>
<td>9.97</td>
<td>.955</td>
</tr>
<tr>
<td>Someone smokes in household</td>
<td>17.622</td>
<td>.147</td>
<td>12.41</td>
<td>.744</td>
</tr>
<tr>
<td>Someone smoked in house while</td>
<td>-4.071</td>
<td>-.035</td>
<td>11.72</td>
<td>.616</td>
</tr>
<tr>
<td>growing up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>-15.10</td>
<td>-.049</td>
<td>27.08</td>
<td>.823</td>
</tr>
<tr>
<td>Negative reinforcement Pretest</td>
<td>.406</td>
<td>.487</td>
<td>.063</td>
<td>.000</td>
</tr>
<tr>
<td>Positive reinforcement pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative consequences pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appetite/weight pretest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3. Hypothesis 2

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Negative reinforcement post</th>
<th>Positive reinforcement post</th>
<th>Negative consequences post</th>
<th>Appetite/weight post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>2.153</td>
<td>.164</td>
<td>1.26</td>
<td>.495</td>
</tr>
<tr>
<td>Sex</td>
<td>.483</td>
<td>.005</td>
<td>10.04</td>
<td>.304</td>
</tr>
<tr>
<td>Exposure to antismoking message</td>
<td>-.175</td>
<td>-.002</td>
<td>9.97</td>
<td>.955</td>
</tr>
<tr>
<td>Someone smokes in household</td>
<td>17.622</td>
<td>.147</td>
<td>12.41</td>
<td>.744</td>
</tr>
<tr>
<td>Someone smoked in house while growing up</td>
<td>-4.071</td>
<td>-.035</td>
<td>11.72</td>
<td>.163</td>
</tr>
<tr>
<td>Participant was African American</td>
<td>-15.10</td>
<td>-.049</td>
<td>27.08</td>
<td>.823</td>
</tr>
<tr>
<td>Negative reinforcement Pretest</td>
<td>.406</td>
<td>.487</td>
<td>.063</td>
<td>.000</td>
</tr>
<tr>
<td>Positive reinforcement pretest</td>
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<td>.082</td>
<td>.048</td>
<td>.000</td>
</tr>
<tr>
<td>Negative consequences pretest</td>
<td>-.413</td>
<td>.495</td>
<td>.072</td>
<td>.000</td>
</tr>
<tr>
<td>Appetite/weight pretest</td>
<td>-.764</td>
<td>-.778</td>
<td>.056</td>
<td>.000</td>
</tr>
</tbody>
</table>
**HYPOTHESIS 3**

The first analysis for the hypothesis used the factor addressing positive reinforcement of cigarettes. The hypothesis stated that exposure to an antismoking PSA would have an indirect effect on posttest attitudes against smoking via reactance. The hypothesis was not supported. Exposure to an antismoking PSA did not have a direct effect on the factor addressing positive reinforcement \( (b=-4.4750, p=.5339) \). Exposure to PSA did not significantly predict reactance \( (b=.8387, p=.1374) \). Exposure to PSA did not have an indirect effect on posttest attitudes of positive reinforcement of cigarettes via reactance \( (b= 7.6612, 95\% \text{ CI } [-1.4519 – 17.0224]) \).

The second analysis for the hypothesis used the factor addressing negative reinforcement of cigarettes. The hypothesis stated that exposure to an antismoking PSA would have an indirect effect on posttest attitudes against smoking via reactance. The hypothesis was not supported. Exposure to an antismoking PSA did not have a direct effect on the factor addressing negative reinforcement \( (b=-9.2739, p=.5102) \). Exposure to PSA did not significantly predict reactance \( (b=1.1058, p=.3176) \). Exposure to PSA did not have an indirect effect on posttest attitudes regarding negative reinforcement via reactance \( (b= 10.0173, 95\% \text{ CI } [-6.4496 – 26.7997]) \).

The third analysis to test the hypothesis used the factor address the negative consequences of smoking. The hypothesis stated that exposure to an antismoking PSA would have an indirect effect on posttest attitudes against smoking via reactance. Exposure to an antismoking PSA did not have a direct effect on the factor addressing negative consequences \( (b=-.3784, p=.7075) \). Exposure to PSA did not significantly predict reactance \( (b=-3.6887, p=.7789) \). Exposure to PSA did not have an indirect effect on posttest measuring attitudes about the negative consequences of cigarettes via reactance \( (b= 3.5135, 95\% \text{ CI }[-19.8896 – 21.5826]) \).

The fourth analysis to test the hypothesis used the factor addressing appetite and weight. The hypothesis stated that exposure to an antismoking PSA would have an indirect effect on posttest attitudes against smoking via reactance. Exposure to an antismoking PSA did have a direct effect on the factor addressing appetite and weight control \( (b=- 8.3872, \ p=.1745) \). Exposure to PSA did not significantly predict reactance \( (b=.7082, p=.1306) \).
Exposure to PSA did have an indirect effect on posttest measuring attitudes of the appetite and weight effects of cigarettes via reactance \((b= 6.6986\, 95\%\, \text{CI} [0.067 – 13.1559])\) indicating that the hypothesis was partially supported. There is a positive indirect effect on posttest attitudes regarding appetite and weight control.

**Hypothesis 4**

The last hypothesis stated that smoker identity would act as a moderator on the reactance produced by an antismoking PSA. The overall model was significant, \(F(8,118)= 17.30, p<.001; R^2=.5398,\). Exposure to the antismoking advertisement, \((\beta=11.1630, t(118)=5.0215, p<.000)\), did predict smoker reactance, such that those who viewed the anti-smoking PSA had higher levels of reactance \((\beta=-.84, t(118)=-.2982, p<.000)\). The interaction between those who received the antismoking PSA and smoker identity \((\beta=-.0739, t(118)=-.7, p=.4853)\), did not significantly predict reactance in participants.
CHAPTER 5

DISCUSSION

The key findings of this study were the indirect effect of viewing an antismoking message on attitudes concerning cigarettes and their effects on appetite and weight control. Additionally, this study also found that there was no moderating effect of smoker identity and exposure to antismoking message on reactance (see Table 4).

Table 4. Hypotheses Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Supported?</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Exposure to an anti-smoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pre-test attitudes.</td>
<td>No</td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pre-test attitudes. (positive reinforcement)</td>
<td>No</td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pre-test attitudes. (negative reinforcement)</td>
<td>No</td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pre-test attitudes. (negative consequences)</td>
<td>No</td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will be positively associated with strength of post-test attitudes against smoking, controlling for pre-test attitudes. (appetite/weight)</td>
<td>No</td>
</tr>
</tbody>
</table>

(table continues)
Table 4. (continued)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2: Reactance will be negatively associated with the strength of post-test attitudes against smoking, controlling for pre-test attitudes.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactance will be negatively associated with the strength of post-test attitudes against smoking, controlling for pretest attitudes.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactance will be negatively associated with the strength of post-test attitudes against smoking, controlling for pretest attitudes.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactance will be negatively associated with the strength of post-test attitudes against smoking, controlling for pretest attitudes.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactance will be negatively associated with the strength of post-test attitudes against smoking, controlling for pretest attitudes.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>H3: Exposure to an anti-smoking PSA will have an indirect effect on strength of post-test attitudes against smoking via reactance.</td>
<td>Partially Supported</td>
<td></td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will have an indirect effect on strength of post-test attitudes against smoking via reactance (negative reinforcement)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will have an indirect effect on strength of post-test attitudes against smoking via reactance (positive reinforcement)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Exposure to an anti-smoking PSA will have an indirect effect on strength of post-test attitudes against smoking via reactance (negative consequences)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Exposure to anti-smoking PSA will have an indirect effect on strength of posttest attitudes against smoking via reactance (appetite/weight)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>H4: Smoker identity will moderate the reactance produced by anti-smoking PSA.</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
This study’s finding of reactance in people who identify as smokers is consistent with several research studies investigating smokers’ responses to antismoking messages (Emery et al., 2000; Harris et al., 2007; Leshner et al., 2009). Erceg-Hurn and Steed (2008) reported that antismoking messages consisting of graphic warnings depicting negative consequences of smoking produced psychological reactance and Reardon and Miller (2008) also reported that antismoking messages emphasizing the negative effects of smoking consistently elicited negative responses from viewers and evoked defensive reactions. The types of messages investigated in these studies were graphic and focused on negative consequences of cigarette use which are all very similar to the experimental stimulus. The video participants viewed depicted a woman who had been negatively affected by the consequences of smoking. As this woman prepared for her day she inserted a prosthetic jaw, placed a wig on her bald head and inserted a vocal simulation device into her neck. The theme of focusing on negative consequences of smoking is very common in antismoking messages.

The messages investigated in this study and the above mentioned studies were all loss framed. Loss framed messages as described by O’Keefe and Jensen (2008) are messages like “If you do not quit smoking you will get lung cancer” or “If you do not wear sunscreen you will get skin cancer”. These loss framed messages tend to elicit negative reactions from receivers. The intent of such appeals is to get people to cease an unhealthy behavior in order to avoid a negative consequence. According the Extended Parallel Process Model (Witte, 1994) the receiver of a message that invokes fear of a negative consequence will do one of two things; engage in an activity to reduce the potentials of experiencing the negative consequence or avoid the source of the threat. The response the viewer engages in is dependent upon the self-efficacy he or she has surrounding the addressed issue. It is likely that such loss framed appeals targeted toward smokers will elicit avoidance tactics due to the addictive nature of smoking. The reactance recorded in this study and past studies could very well be a psychological strategy to avoid or minimize a threat thus making the message virtually ineffective in an at risk population.

The messages that focus on the negative consequences of smoking and aim to invoke fear often have unintended consequences. In order to avoid inadvertent consequences it may be beneficial to design message that persuade from a positive perspective. O’Keefe and Jensen (2008) reported that loss framed messages did not encourage more engagement from
viewers, in fact, gain-framed messages were unexpectedly found to encourage more engagement. Gain framed messages should more often be utilized by designers of persuasive health messages. This study utilized a loss-framed fear appeal and observed reactance occurring in the sample. A positive framed message could encourage adoption of a new replacement behavior for smoking or a message that promoted the positive consequences of being smoke free could reduce reactance.

This study also found that the exposure to the antismoking message produced reactance which indirectly increased attitudes in favor of smoking regarding weight and appetite control only. The lack of attitude change on the other factors addressed in the smoking consequences questionnaire such as negative reinforcement, positive reinforcement, and negative consequences was not expected. A review of relevant literature on cigarettes and weight control assisted in interpreting results. Camp, Klesges, and Relyea (1993) reported that adolescents who believed in cigarettes as a weight management strategy were more likely to be regular smokers. French and Jeffery (1995) also reported that individuals who smoked cigarettes were more likely to perceive weight control as a benefit of smoking.

Cognitive dissonance theory may help us to interpret the results of this study. Festinger (1957) defines cognitive dissonance as an uncomfortable state of mind that occurs when an individual holds two opposing cognitions. The discomfort associated with dissonance causes human beings to be naturally motivated to reduce or eliminate the state. Individuals will engage in strategies such as altering cognitions and minimizing importance of thoughts responsible for dissonance. It is possible that the exposure to the antismoking message which displayed negative physical consequences of smoking created dissonance within participants. The Participants natural motivation to reduce inconsistencies in cognitions may have caused them to focus on perceived benefits of smoking regarding appetite and weight control.

It is interesting that smokers did not increase in attitudes in favor of smoking for other perceived benefits such as releasing tension, stress and coping with emotions measured by the negative reinforcement factor of the smoking consequences questionnaire. The level of addiction to cigarettes has been reported to be a predictor of the amount of perceived benefits smokers hold about their smoking behavior (Fidler & West, 2009; Peretti-Watell, et al., 2007). It is possible that the participants’ strength of addiction has not yet reached a level
where they have either begun to depend on cigarettes from coping with emotions or at least do not yet perceive themselves to depend on cigarettes for emotional regulation.

Unexpectedly, smoker identity did not moderate the relationship between antismoking PSA and attitude change concerning the negative consequences of cigarettes. Much research highlights the role that identification as a smoker has on subsequent behavior and quit attempts (Emery et al., 2000; Falomir & Invernizzi, 1999; Freeman et al., 2001). This research, however, has utilized various measures to assess smoker identity. Identification with anything involves an individual themselves to participate in the identification process. It may be possible that individuals who smoke may avoid identification to reduce negative affective states in response to fear appeals such as the experimental stimulus used in this study. Smoker identity had only a slight relationship with amount smoked in lifetime ($r = .311, p < .000$). Hoek, Maubach, Stevenson, Grendall, and Edwards (2011) investigated strategies that people who smoke engage in to avoid identification as a smoker. Strategies identified were demarcation, labeling themselves as social smokers and associating smoking with alcohol consumption. The smoker identity scale did address the concept of social smokers, but people who are actively avoiding identification may prefer to identify as being a social smoker when in reality their behavior is more consistent with definitions of a regular smoker. Without identifying as a smoker individuals can avoid attending to the consequences addressed in antismoking messages. It may be possible that incorporating the number of cigarettes smoked in lifetime with measures of smoker identity may be a more accurate way to assess smoker identity and better predict reactance.

Additionally, the threat of smoking to one’s health has become common knowledge in the United States, thus the antismoking message may have had little effects on attitudes because people who smoke may already be well aware of the potential harms. Weinstein (1998) reported that light smokers are able to perceive the potential consequences that smoking poses to them personally. However, moderate and heavy smokers were aware of negative consequences, but were less likely to perceive those risks a personal threat.
LIMITATIONS

This study encountered limitations due to the small sample size acquired. Out of the 623 potential participants who accessed the experiment only 128 were classified as smokers. The small sample of smokers is reflective of the small population of smokers that exist in the state of California and especially southern California. This low amount of smokers proved to be a barrier in gaining enough participants who scored high on the smoker identity scale, thus making it difficult to test for reactance in a person with strong identification as a smoker. Theoretically a greater level of reactance increasing attitudes in favor of smoking would come from an individual with a strong smoker identity. The administration of the experiment online also limits the study because it is not possible to know with great certainty if participants were actively engaged in then experiment and completed items to the best of their ability; however questions were inserted into experiment to assess if participants were paying attention. The reactance restoration scale is difficult to administer to participants as it requires participants to list and rate their own thoughts in response to the stimulus. Participants might have misinterpreted instructions and perhaps rated negative thoughts such as, “smoking kills” or “smoking causes cancer” as positive because it is consistent with the message of the ad. Additionally, dependence upon a subject to record their own thoughts makes assessment of reliability difficult. Previous studies have utilized two separate coders to code thoughts of participants and reported significant results (Miller, Lane, Deatrick, Young, & Potts, 2007; Quick & Stephenson, 2007).

Additionally, this experiment only utilized one message that was only thirty seconds in length thus it was not conducive to producing a large effect, previous studies that have successfully found reactance in response to antismoking PSA have had participants view several antismoking messages and then measured reactance (Falomir & Invernizzi, 1999). Most experiments that have reported adverse changes in attitudes in response to antismoking messages have measured post-test attitudes with a different measure than the pretest or have waited at least twenty four hours measure posttest attitudes when the same instrument was used for pretest and posttest (Falomir & Invernizzi, 1999; Robinson, Vander Weg, Riedel, Klesges, & McLain-Allen, 2003; Schofield, Lynagh, & Mishra, 2003). A future study could either have participants access the survey at a later time to measure posttest attitudes or
different measures could be used for pretest and posttests that are proven to measure the same constructs.

**Future Research**

Future research should continue to investigate reactance and smoker identity. The smoker identity scale was produced recently and although it is reported to be reliable it may in fact not be valid neglecting measure both cognitive and emotional aspects of social identity. Future research should continue to utilize this measure to as well as other instruments designed to measure identity as a smoker to assess validity. Also, other research studies could further investigate the process of reactance produced in smokers to more clearly identify strategies smokers engage in to reduce a perceived threat and alleviate reactance. Discovering what types of strategies smokers engage whether it be demarcation of a smoker identity, counter-arguing or overestimation of smoking’s benefits, would allow health communication scholars to find ways to combat these strategies.

**Conclusion**

Although the findings of this study did not support all predictions, it still was able replicate previous research and strengthens the literature surrounding antismoking messages and their ability to produce reactance in viewers. The unexpected findings of an increase in attitudes in favor of smoking only surrounding cigarette’s perceived benefits on appetite and weight also may indicate a new way to address college age smokers (i.e. social norm campaign) and prevent progression of smoking behavior. The topic of antismoking messages and their effects on the public will continue to be a significant issue as long as cigarettes continue to be produced. Identity, as suggested by the literature does indeed impact behavior so it is important to continue investigation of this concept as it pertains to smoking. Further understanding individuals and how they interact and identify in the social world is necessary in order to design antismoking messages that not only prevent initiation of smoking but also increase rates of smoking cessation.
REFERENCES


APPENDIX A

STATEMENT OF INFORMED CONSENT
STATEMENT OF INFORMED CONSENT

Thank you for your interest in this study about smoking and antismoking messages. This study is being conducted by a graduate student in the school of communication in partial requirement for the degree of master of arts in communication studies. This study investigates smokers, smoking behavior, and antismoking advertisements. A portion of this study will assess your smoking behavior; your eligibility to complete the remainder of this study depends on your responses in this first questionnaire. You will still receive credit for participating in the survey whether or not you are selected to proceed. The remaining portions of the study will require you to complete surveys on your attitudes toward smoking and your identity as a smoker. You will then view one of two health campaign advertisements.

Potential risks: it is very unlikely that you will feel uncomfortable with any of the questions in this survey. However, if you feel uncomfortable for any reason you may cease participation in survey at any time.

Compensation: if you are to receive extra credit for a class for your participation in this study you will earn 1 hour of credit for this study. It is up to you to confirm that you can receive credit for participation in this survey.

Your confidentiality: Your answers to the questions on this questionnaire will be completely confidential to the extent allowed by law. Once data collection is complete, we will remove all data that could contain information that could be used to link your identity with your responses from the complete data set. The only way for anyone to know your responses will be for you to tell them. When your results and those of other participants are combined and entered into a computer, they will not contain any identifying information that could connect the data to you. The results of the study may be published but only the combined data from all participants will be made public. If we determine that you do not meet the eligibility criteria for further participation in the study, we will immediately remove your responses from the data we are collecting.

Your rights as a research participant: Your participation in this study is completely voluntary. You may withdraw from the study at any time. If you have any questions about your rights as a participant in this study, you may contact the Division of Research.
Administration, San Diego State University (telephone: 619-594-6622; email: irb@mail.sdsu.edu). If you have general questions about this study please contact Roy Gabriel Hernandez at gabe.hernandez83@gmail.com By selecting the option “I agree to participate” you are confirming that you accept conditions of the informed consent.
APPENDIX B

INSTRUMENTS
Demographic questions

1. What is your sex? M___ F___

2. What is your Age? ___ (provide a drop down list of ages to save you trouble coding later)

3. Please specify your ethnicity ___ Hispanic or Latino ___Not Hispanic or Latino

4. Please specify your race (check all that apply).
   ___ American Indian or Alaska Native
   ___ Asian
   ___ Black or African American
   ___ Native Hawaiian or Other Pacific Islander
   ___ White
   ___ Other (please indicate: ____________________)

5. What is your relationship status? Single/ married /divorced/widowed/decline to state

6. Sexual orientation? heterosexual/ homosexual/ bisexual / decline to answer

7. Did anyone smoke in your household when you were growing up? Yes/ no

8. Does anyone smoke in your household now? Yes/ no

9. How many semesters of college have you completed? (please select number from drop down list)

10. What is the highest degree or level of education your mother achieved?
    A. Grade school
    B. some high school
    C. High school diploma
    D. some college
    E. college degree
11. What is the highest degree or level of education your father achieved?

A. Grade school
B. some high school
C. High school diploma
D. some college
E. college degree
F. some graduate school
G. Graduate degree
Smoker Identity Scale (Tracy, Lombardo & Bentley, 2012)

1- strongly disagree; 2- disagree; 3 slightly disagree; 4- slightly agree; 5- agree; 6- strongly agree

1. I think of myself as a smoker
2. I am not a smoker
3. My friends see me as a smoker
4. I only smoke when I drink alcohol
5. I’m a typical smoker
6. I only smoke when I go out
7. I identify with a smoker’s lifestyle
8. I see myself as a real smoker
Modified version of Youth Tobacco Survey (CDC, 2009)
1. Have you ever tried cigarette smoking, even one or two puffs? Yes/ No/ Don’t know
2. About how many cigarettes have you smoked in your entire life?
   A. I have never smoked cigarettes, not even one or two puffs
   B. 1 or more puffs but never a whole cigarette
   C. 1-5 cigarettes
   D. 5-15 cigarettes (about 1/2 a pack total)
   E. 16 to 25 cigarettes (about 1 pack total)
   G. 26 to 99 cigarettes (more than 1 pack, but less than 5 packs)
   H. 100 or more cigarettes (5 or more packs)
3. During the past 30 days, on how many days did you smoke cigarettes? (Please indicate your response by selecting an option from the drop down box)
4. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?
   A. I did not smoke cigarettes during the past 30 days
   B. Less than 1 cigarette per day
   C. 1 cigarette per day
   D. 2 to 5 cigarettes per day
   E. 6 to 10 cigarettes per day
   F. 11 to 20 cigarettes per day
   G. More than 20 cigarettes per day
5. When was the last time you smoked a cigarette, even one or two puffs? (Please choose best answer)
   A. I have never smoked cigarettes, not even one or two puffs
   B. Earlier today
   C. Not today but sometime during the past 7 days
   D. Not during the past 7 days but sometime during the past 30 days
   E. Not during the past 30 days but sometime during the past 6 months
   F. Not during the past 6 months but sometime during the past year
   G. 1 to 4 years ago
   H. 5 or more years ago
6. Do you now smoke cigarettes every day, some days or not at all?"
   A. every day
   B. some days
   C. not at all
7. During the past 30 days, have you smoked part or all of a cigarette? Yes/no
Reactance Restoration Scale (Quick & Stephenson, 2007)

This portion of this survey will ask you to list thoughts you may have had in response to the video you just watched.

Instructions: Please take the next 90 seconds and list any thoughts that passed through your mind in response to the ad on the lines below. After you have listed your thoughts please indicate by clicking on the appropriate box whether this thought is positive, neutral or negative toward the video.

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
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In response to the video please indicate the extent to which you agree with the following statements on a scale of 1 to 7.

1= I do not feel this feeling at all, 7 = I feel this feeling a lot

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<th>Statement</th>
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<td>1. I feel irritated</td>
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Smoking Consequences Questionnaire (Myers, Macpherson, McCarthy & Brown, 2003)

This questionnaire will present you with statements about smoking and yourself. Please rate each item on both desirability and likelihood. 0= completely unlikely 9= completely unlikely. -5 = undesirable, 5 desirable.

1. Smoking is taking years off my life
2. Smoking is hazardous to my health
3. The more I smoke, the more I risk my health
4. By smoking I risk heart disease and lung cancer
5. Cigarettes taste good
6. I enjoy the taste sensations while smoking
7. When I smoke, the taste is pleasant
8. I will enjoy the flavor of a cigarette
9. I enjoy feeling a cigarette on my tongue and lips
10. When I’m angry a cigarette can calm me down
11. Cigarettes help me deal with anger
12. Cigarettes help me deal with anxiety or worry
13. Smoking calms me down when I feel nervous
14. Smoking helps me deal with depression
15. Cigarettes help me reduce or handle tension
16. When I’m upset with someone, a cigarette helps me cope
17. Smoking helps me control my weight
18. Smoking keeps my weight down
19. Cigarettes keep me from eating more than I should
20. Smoking controls my appetite
21. Cigarettes keep me from overeating