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THE ROLE OF INDIVIDUAL DIFFERENCES IN YOUNG ADULTS' RESPONSES
TO GRAPHIC HEALTH HARMS ANTI-TOBACCO MEDIA

by

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Bachelor of Science, University of Iceland, 2010

A Thesis

Submitted to the Graduate Faculty

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This thesis, submitted by Harpa Lind Jónsdóttir in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done, and is hereby approved.

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Harpa Lind Jónsdóttir
6/23/2013

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ABSTRACT

Tobacco use is the most preventable cause of overall mortality. The highest smoking rate, about 30%, in the U.S. is among young adults between the ages of 18 and 25 years. Anti-tobacco media campaigns appear to be effective in preventing and reducing tobacco use, although little is known about how individual differences affect responses to anti-tobacco media. Participants were 144 students at the University of North Dakota. They watched six anti-tobacco advertisements that contained fear messages but varied in levels of graphic imagery. The following was measured: tobacco experience, self-control, locus of control, depression, stress, affect, arousal, valence, and effectiveness. Participants reported greater negative affect and greater effectiveness for the more graphic anti-tobacco advertisements. There appear to be some individual differences (gender, depression, locus of control, and smoking exposure) that predict responses to the ads. Overall, ads with more disgusting graphic imagery were better anti-smoking ads than others.

Keywords: anti-tobacco media, advertisements, fear, graphic imagery, locus of control, self-control, gender, tobacco exposure, depression, perceived stress

I. INTRODUCTION

Prevalence of Smoking

Although people have been smoking or chewing tobacco leaves for centuries, cigarettes did not become popular and frequently used until the early 1900's (Edwards, 2004). Recent trends suggest that tobacco use has been decreasing in developed countries such as the United States, Great Britain, and Australia over the past 50 years, but has been increasing in developing countries such as India and China over the same time period (Rigotti, Lee, & Wechsler, 2000). Smoking rates in the developing countries are especially high among men. In 2004, for example, the smoking rate among males in India, China, Indonesia, and Vietnam ranged from 45%-73% (Edwards, 2004; Hedley, et al., 2004). In contrast, the smoking rate in Australia has been about 20% since 1995 (de Meyrick, 2010). In the U.K. the smoking rate is also currently around 20% having decreased by 36% among men and by 13% among women in the past 50 years (Edwards, 2004). Similarly in the U.S., smoking rates have dropped from 42% to nearly 20% since 1965 (Edwards, 2004; Straub, Hills, Thompson, & Moscicki, 2003).

Tobacco use accounts for many deaths per year and is the most preventable cause of overall mortality (Edwards, 2004; Monograph, 2008; Silver, 2001). Cigarette smoking accounts for about 20% of deaths (McVey & Stapleton, 2000; Stewart et al., 2011) and about 50% of all smokers die prematurely of tobacco-related diseases. In 20-40 years it is estimated that about 180-450 million deaths will be traced to smoking, with the majority

occurring in the developing countries (Edwards, 2004; Maziak, Ward, Soweid, and Eissenberg, 2004; Monograph, 2008). The disorders related to tobacco use that appear to have the most impact on longevity are cancers in the respiratory system, and cardiovascular diseases (McGhee, Ho, Lapsley, Chau, Cheung, Ho, Pow, Lam, and Hedley, 2004; Monograph, 2008). Other disorders, such as osteoporosis, and emphysema are also strongly linked to smoking-related deaths according to studies done in the U.K. and the U.S. (Edwards, 2004; Monograph, 2008). Secondhand smoking also has adverse effects on health and has been linked to SIDS (sudden infant death syndrome), respiratory diseases in children and strokes in adults according to data collected in the U.K. (Edwards, 2004). Reducing the risk of smoking-related death includes both preventing smoking and promoting smoking cessation among those who have started to smoke, especially when they are still young adults. A study by Edwards (2004) in the U.K. for example showed that there appears to be minimal to no difference in survival between those who stop smoking before the age of 35 and those who never smoked. Similar results have been observed in the U.S. and specifically, the risk of having smoking-related diseases decreases once a person stops smoking (Morbidity and Mortality Weekly Report, 2011). This emphasizes the importance of having effective anti-tobacco strategies targeting youth and young adults that will prevent smoking in those who have not started and promote cessation in those who have already started to smoke (Edwards, 2004).

The Centers for Disease Control (CDC) estimates that health services for smokers cost the U.S. as much as \$96 - \$157 billion (6-9% of the total amount for health care) every year in addition to lower productivity, profits, and income because of employee absenteeism among smokers (Hedley, et al., 2004). Therefore, prevention of smoking is

important in terms of both costs for society as well as lives that could be saved. Mortality rates can be decreased the most by preventing the younger generations from smoking (Edwards, 2004). Smoking also decreases the quality of life of smokers and the caretakers of those with smoking-related diseases (Werner, 2009). This is another reason why it is important to have effective methods in order to lower or prevent tobacco use among youth and young adults.

Further decreases in smoking-related diseases, deaths and health costs are going to rely on further decreases in smoking rates. In spite of the overall reductions in smoking prevalence, the smoking rates among adolescents and young adults in the U.S. appeared to be increasing again in the early 2000's (Samu, & Bhatnagar, 2008; Straub, Hills, Thompson, & Moscicki, 2003); however in the past couple of years it appears to be approximating the overall prevalence among adults. Yet still the highest smoking rate, about 30%, in the U.S. is among young adults between the ages of 18 and 25 years (Ling, Neilands & Glantz, 2009; Morbidity and Mortality Weekly Report, 2011).

About 80-90% of those who smoke, start smoking prior to the age of 18-21 (Silver, 2001). About 33% of them will become established smokers. About one-quarter of young adults between the ages of 18 to 24 are regular smokers although the smoking intensity level (amount of nicotine inhaled) appears to be low. People are less likely to start smoking after the age of 20, although recent studies suggest that about 20% of smokers become established smokers between the age of 18-25 (Ling, Neilands & Glantz, 2009). It is therefore important to use effective anti-tobacco strategies among young adults since that appears to be the time when smoking becomes more consistent and heavier as the addiction to nicotine forms. Among young adults, women are most

likely to start smoking, and they are also less likely than men to stop smoking (Gilbert, 2005). Moreover, among college students, non-Hispanic Whites are most likely to become smokers (Cowell, Farrelly, Chou & Vallone, 2009; Smith & Stutts, 2006). Smoking may be more acceptable among college students since the majority of them (80%) tend to overestimate the actual smoking prevalence in their cohort (Blake, Viswanath, Blendon & Vallone, 2010; Devlin, Eadie, Stead & Evans, 2007; Mathers, Toumbourou, Catalano, Williams, and Patton, 2006; Murphy-Hoefer, Hyland & Rivard, 2010; Paek & Gunther, 2007; Smith & Stutts, 2006; Straub, Hills, Thompson, & Moscicki, 2003). Smoking has also been linked to other health risk behaviors, like marijuana use, binge drinking, lower grades, and more sexual partners (Richardson, Green, Xiao, Sokol, & Vallone, 2010). Therefore, it is important to use the most effective methods as early as possible in order to decreasing smoking, or prevent children, adolescents and young adults from starting to smoke.

Preventing and reducing smoking: the role of anti-tobacco media

Mass media campaigns are often a prominent component of tobacco control programs. These tobacco control programs attempt to prevent and reduce tobacco use in a comprehensive manner that includes several components such as smoking restrictions and bans (e.g., smoke-free hotels), cessation assistance (e.g., quitlines), higher taxes and cigarette prices, school-based programs, and mass media campaigns (Dietz, Delva, Woolley, & Russello, 2008; Gilbert, 2005; Paek & Gunther, 2007; Murphy-Hoefer, Hyland & Rivard, 2010; Thompson, Barnett & Pearce, 2009). These programs have generally been effective at preventing and reducing tobacco use in youth and adults (Cohen, Shumate & Gold, 2007; Cothell, Farrelly, Chou & Vallone, 2009; Goldman,

& Glantz, 1998; Pechmann & Reibling, 2000, 2006; Schmitt, & Blass, 2008; Straub, Hills, Thompson, & Moscicki, 2003). Some data suggest that mass media can enhance the effectiveness of other interventions in a tobacco control program. For example, Worden and colleagues (1996) found that, when accompanied by media, a school-based intervention program was significantly more effective than when presented without accompanying mass media for girls in grade 8-10. The combination of media and school-based intervention was particularly effective for high-risk girls in these grades.

Mass media campaigns are often directed toward adolescents and from 1997-2003 cigarette use dropped from roughly 36% to nearly 22% in this age group: a decrease which was attributed, at least in part, to anti-tobacco ads shown on television (Smith & Stutts, 2006). According to a study by Siegel and Biener (2000) youth between the ages of 12-15 exposed to anti-tobacco ads on television are not as likely to become regular smokers as those not exposed to such media. Studies by Dietz and colleagues (2008) and Richardson and colleagues (2010) suggest that young adults between the ages of 18-24 are aware of the messages in anti-tobacco media campaigns even when such ads are directed primarily at youth, and that such awareness may be linked to decreases in smoking rates in this age group (Arheart, Sly, Trapido, Rodriguez & Ellestad, 2004; Goldman, & Glantz, 1998; Richardson, Green, Xiao, Sokol, & Vallone, 2010). In contrast, a few studies have found that youth-focused media campaigns do not affect smoking rates in adults, suggesting that campaigns designed to fit one audience may not be effective for others (Delva, Dietz, Perron, Sanchez, & Woolley, 2009). Similarly, Lillard et al (2007) reported that education and socioeconomic status (SES) affect how people respond to anti-tobacco media. In this study, those with less education or with

lower SES were least likely to stop smoking in response to television ads. Similar results have been obtained in other studies (Durkin, Wakefield & Spittal, 2011; Thompson et al., 2009). Smoking status also appears to affect how people respond to anti-tobacco ads. Those who smoke tend to be more negative than nonsmokers toward ads that elicit fear by showing health consequences (Timmers & van der Wijst, 2007; Witte & Allen, 2000). Although these studies suggest that there are differences in how people respond to anti-tobacco media messages, this area has not been carefully or thoroughly examined.

Media campaigns have been part of tobacco control programs for roughly two decades, and many states in the U.S. have included media campaigns as part of their tobacco control programs. There have also been national media campaigns not affiliated with specific state tobacco control programs but rather designed and implemented by foundations such as the American Legacy Foundation (The truth[®] Campaign) and federal agencies such as the Centers for Disease Control and Prevention (CDC) (Tips From Former Smokers). Finally, there have been some national media campaigns launched in other countries such as Australia and New Zealand. The following paragraphs provide a brief overview of these media campaigns beginning with some of the state campaigns, followed by American Legacy national campaign and concluding with examples of non-U.S. campaigns.

The Minnesota Campaign. A media campaign (the Target Market campaign) was launched in Minnesota in 1999 and ran until 2002. This campaign emphasized the tobacco industry's manipulation of smokers, particularly young smokers in their messages. The tobacco companies were depicted as only caring about profits and as being willing to harm those who got in their way. This campaign may have been effective in reducing smoking

since smoking rates decreased by 11-21% among youth between the ages of 12-17 as measured by a survey two years after the campaign was launched (Arheart, Sly, Trapido, Rodriguez & Ellestad, 2004; Minnesota Department of Health, 2003).

The Arizona Campaign. The Tobacco Education and Prevention Campaign (TEPP) ran in Arizona in 1998-2001 (Schar, Gutierrez, Murphy-Hoefer & Nelson, 2006). Anti-tobacco ads were shown as part of Arizona's tobacco control program and also emphasized the social consequences associated with smoking, e.g. bad breath and smell and targeted youth. These ads may have been effective as the smoking rate among youth in grades 9-12 dropped by roughly 8% (from 26.1% to 17.7%) after the campaign was launched between 2000 and 2003 (Biener, Reimer, Wakefield, Szczypka, Rigotti & Connolly, 2006; Goldman & Glantz, 1998; Smith & Stutts, 2006).

The Florida Truth Campaign. The Florida Truth campaign was launched in 1998. The target audience was youth between the ages of 12-17 (Dietz, Delva, Woolley, & Russello, 2008; Paek & Gunther, 2007). In these ads, teens sought the truth about practices used by the tobacco industry. The goal was to give youth the idea they could conquer the tobacco industry and take the initiative to be a generation that was tobacco-free (Pechmann & Reibling, 2000). The campaign showed the tobacco companies in a negative light (i.e. their tendency to be manipulative, immoral, and concealing the truth), and emphasized that profit was their only goal without caring about likely negative consequences to their customer's health (Sly, 2001; Smith & Stutts, 2006). Ten months after the Florida Truth campaign was launched, smoking rates had dropped by about 11% among youth (Smith & Stutts, 2006). Other studies have reported a drop of 22% in smoking rates among youth in relation to the campaign (Richardson, Green, Xiao, Sokol, & Vallone, 2010).

A study by Dietz and colleagues (2008) showed that the Florida Truth media campaign also caught the attention of the adults. About 50% of the adults surveyed recognized the ads, the themes, and the logos used in the campaign. Even more of the adults knew about the campaign's theme if they had children. The adults who were aware of the media messages used in the campaign had intentions to stop smoking in the following month. This suggests that a campaign designed to target youth can also catch the attention of adults and it may affect their intentions to stop smoking (Dietz, Delva, Woolley, & Russello, 2008).

The Vermont Campaign. The Vermont Tobacco Control Program launched a campaign in several states that was designed for adolescents and informed them about the actual smoking rates among 10-13 year olds, i.e. that most adolescents do not smoke. The Vermont campaign ran between 1985 and 1989 and also emphasized the positive factors associated with being smoke-free as well as the social and physical consequences associated with smoking. Skills to say no to smoking were also modeled in the campaign (Devlin, Eadie, Stead & Evans, 2007; Pechmann & Reibling, 2000). Smoking prevalence reduced significantly among youth in Vermont after the campaign was launched. Two years after the media campaign stopped running the smoking prevalence was 16% among those exposed to the media campaign compared to 24% among those not exposed to the media campaign (Pechmann & Reibling, 2000).

The California Campaign. The California tobacco control program has included several media campaigns since launching its first in 1990. These media campaigns have focused on the theme of industry manipulation similar to the Florida Truth and Minnesota Target Market campaigns, but have also included other messages such as the effects of second-hand smoke (Pechmann & Reibling, 2000; Smith & Stutts, 2006). A decline in

smoking rates has been attributed to the California media campaigns (Friend & Levy, 2002; Pechmann & Reibling, 2000). For example, it was estimated that a drop of 12.2% in smoking rates between 1990 and 1991 could be specifically attributed to the anti-tobacco campaign, and not to other possible contributors, like a tax increase or anti-tobacco propositions (Goldman, & Glantz, 1998).

The campaigns also have appeared to affect tobacco use among adults (Friend & Levy, 2002). After an anti-tobacco media campaign was launched in California a survey was done in order to find out why adult smokers had decided to stop smoking. Nearly 7% of the smokers said they stopped smoking because of anti-tobacco advertisements. Roughly 34% of the former smokers said that anti-tobacco advertisements affected their decision to quit smoking, when they were asked directly about the advertisements and the anti-tobacco campaign (Goldman, & Glantz, 1998).

The Massachusetts Campaign. The Massachusetts media campaign ran between 1993 and 2001 and emphasized the medical effects of smoking on health in the ads, but cosmetic effects of smoking and the effects of second hand smoke were also included (Pechmann & Reibling, 2000). The Massachusetts media campaign showed anti-tobacco messages in television ads, radio ads, as well as on billboards, and in newspapers (Siegel & Biener, 2000). The campaign was estimated to have reached about 88% of adults and 94% of youth in Massachusetts according to a study by Biener (2000) which also suggested that anti-tobacco messages presented on television may be more likely to reach youth than other media (Siegel & Biener, 2000). A drop of about 20% in smoking prevalence was observed in Massachusetts after the campaign was launched in 1993 (Goldman, & Glantz, 1998). The smoking rate among youth dropped by 10% in

Massachusetts between 1995 and 2001 (from 36% to 26%) (Smith & Stutts, 2006), which further suggests that anti-tobacco campaigns, that utilize the media, can be effective in reducing smoking prevalence. The campaign was also effective in preventing youth from starting to smoke (Smith & Stutts, 2003).

The American Legacy Foundation Campaign. The American Legacy's Truth campaign was launched nationally in 2000 and utilized the radio, printed advertisements, and television ads to present their message. The American Legacy campaign is the largest campaign ever launched to prevent smoking among youth (Davis, Nonnemaker, & Farrelly, 2007; Krisberg, 2004). The campaign showed youth giving statements and presenting statistics that cast the tobacco companies in a negative light, and, contrary to what is suggested in many tobacco ads, indicated that the tendency to take risks and be rebellious is not associated with tobacco use. The campaign also reported strategies used by the tobacco industry, like deception, that could be misleading about the damaging effects of tobacco use on health (Davis, Nonnemaker, & Farrelly, 2007; Krisberg, 2004). It has been reported that smoking prevalence dropped by 22% among youth exposed to the American Legacy Truth campaign between 1999 and 2002 (Holtgrave, Wunderink, Vallone, & Heaton, 2009). Cowell and colleagues (2009) also reported that the American Legacy campaign was effective at changing the beliefs and attitudes towards the tobacco industry among youth which was associated with lowering the smoking prevalence.

Non U.S. Campaigns. Australia and New Zealand have launched numerous anti-tobacco media campaigns that have been shown to be effective in reducing smoking prevalence among youth and adults (Cowell, Farrelly, Chou & Vallone, 2009; Devlin, Eadie, Stead & Evans, 2007). Some of the Australian anti-tobacco campaigns are:

“Sponge” aired in 1983; “Quit for Life” launched in 1982; and the “National Tobacco Campaign” launched in 1997 (Cotter, Hung, Perez, Dunlop & Bishop, 2011; Thompson et al., 2009). The campaigns usually emphasize the negative effects of smoking on health and use graphic visual images combined with an anti-smoking narrative. The Australian campaign “Sponge” campaign was successful in that 87% of smokers were aware of the campaign and it was linked to a drop of 3.4% in smoking prevalence. Similar results were obtained from a study on the Quit For Life National Tobacco Campaign that was launched in Australia in 1983 and 1997 respectively (Cotter, Hung, Perez, Dunlop & Bishop, 2011; McVey & Stapleton, 2000).

Effectiveness of Anti-Tobacco Media Campaigns: A Summary. Although anti-tobacco media campaigns appear to generally be effective at preventing and reducing tobacco use (Cothwell, Farrelly, Chou & Vallone, 2009), it can be difficult to determine their effectiveness independent from other components of tobacco control programs occurring at the same time. In addition, media campaigns utilize different strategies in their ads to affect smoking and even within the same campaign ads may include different strategies for preventing and reducing tobacco use. This can make it very difficult to determine which ad strategies are most effective in media campaigns.

Strategies and Underlying Theories Used In Anti-Tobacco Advertisements

Anti-tobacco advertisements use many different strategies such as comedy, health consequences, testimonials, and negative emotions to prevent smoking and reduce smoking rates (Cohen, Shumate & Gold, 2007). It can be difficult to describe the strategies used in anti-tobacco media because media campaigns and even a single ad often use a composite of different strategies (Samu, & Bhatnagar, 2008). Some of the

more common strategies used in ads to lower smoking rates will be discussed in the following section and when applicable theories supporting specific advertising strategies will be introduced. Potential theoretical foundations underlying anti-tobacco strategies are often ignored (Cohen, Shumate & Gold, 2007), but can be useful for determining evaluation methods for existing ads and designing more effective ads.

Industry Manipulation Messages. Anti-tobacco ads depicting the tobacco companies as manipulative tend to be effective for youth and young adults (Devlin, Eadie, Stead & Evans, 2007; Goldman, & Glantz, 1998; Smith & Stutts, 2003). Ads using industry manipulation impress upon the viewer that tobacco companies have purposefully tried to make smoking seem popular and attractive to young people by identifying it with independence, power, and rebelliousness. Industry manipulation ads also try to cast tobacco companies as immoral and unethical institutions that while pursuing greater profits attempt to find new customers and get them addicted to their product regardless of the consequences to a person's health. The focus of industry manipulation anti-tobacco strategies is to make the target audience, primarily adolescents and young adults, angry with and disgusted by the tobacco companies so they are more likely to reject their product. Youth may start smoking in order to show independence, or rebel. As mentioned above tobacco promotion ads have depicted smoking as cool and linked it to rebelliousness. Industry manipulation addresses this. According to the social norms theory, the youth's attitude towards smoking may be made consistent with the manipulation by showing them the industry manipulation anti-tobacco ads (Pechmann & Reibling, 2000). Conversations about anti-tobacco ads could affect social norms about smoking which is consistent with the social diffusion model (Hwang, 2012; Wakefield, Flay, Nichter & Giovino, 2003).

These ads have been shown to make smokers angry and non-smokers less likely to start smoking (Goldman, & Glantz, 1998). Young adults that were exposed to these ads tend to have attitudes and beliefs that are more negative towards the tobacco industry, compared to those not exposed to these ads (Murphy-Hoefer, Hyland & Rivard, 2010). Industry manipulation ads have been used extensively in several state and national media campaigns (e.g., American Legacy Truth campaign, Florida Truth campaign, and the Minnesota Target Market campaign) and data have supported their effectiveness (Holtgrave, Wunderink, Vallone, & Healton, 2009; Minnesota Department of Health, 2003; Richardson, Green, Xiao, Sokol, & Vallone, 2010). However, studies comparing media strategies have not found them to be as effective as ads using graphic fear imagery to focus on the health consequences of tobacco use on (Biener, Reimer, Wakefield, Szczyka, Rigotti & Connolly, 2006; Vogeltanz-Holm, Holm, White Plume & Poltavski, 2009).

Norm Setting Messages. Some anti-tobacco media campaigns utilize persuasion and follow the social norms theory. Social norms challenge people's view towards a certain behavior like smoking (Cohen, Shumate & Gold, 2007). In the anti-tobacco media campaigns there is some norm presented that people want to adhere to (follow) that is different from the norm "everybody smokes". Social norms can be changed by presenting youth with actual data on smoking behavior among youth (Devlin, Eadie, Stead & Evans, 2007). Social norms appear to be effective in increasing self-efficacy and lowering smoking rates among youth and adults (Cohen, Shumate & Gold, 2007; Devlin, Eadie, Stead & Evans, 2007; Friend & Levy, 2002; Samu, & Bhatnagar, 2008). According to the social influence theory, people tend to compare themselves to a social group they belong to and find out what the appropriate and acceptable behavior is at a given moment among peers (Devlin, Eadie, Stead & Evans,

2007). Social influences are strongly linked to smoking initiation among youth (Samu, & Bhatnagar, 2008). Ads that emphasize social norms among youth, by using for example role modeling, have been successful in persuading youth and have been linked to less intention to start smoking, as well as lower smoking behavior (Cohen, Shumate & Gold, 2007; Friend & Levy, 2002; Murphy-Hoefer, Hyland & Rivard, 2010).

The norm is the main focus of both the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) and it affects smoking-related behaviors and intentions to smoke (Devlin, Eadie, Stead & Evans, 2007). According to the TPB model social norms, efficacy, and attitude towards smoking first affects the intention to begin smoking and then the smoking behavior. Studies suggest that the TPB can predict smoking behavior so that the intention predicts smoking behavior most effectively, and the attitudes, efficacy and social factors in turn affect the intention to smoke (Harakeh, Sholte, Vermulst, de Vries & Engels, 2004). According to the TRA model people's attitudes about a certain behavior and how they believe that their significant ones view the behavior (social norms) predict intentions to smoke which in turn predicts smoking behavior. This approach has been used in anti-tobacco campaigns for both adolescents and adults (Cohen, Shumate & Gold, 2007).

Health Consequence Messages. Messages in anti-tobacco media campaigns sometimes focus on the short-term and/or long-term effects of smoking on health. Messages focused on short-term effects often emphasize how unglamorous smoking is and smoking's effect on attractiveness (e.g., facial wrinkles, yellow teeth, bad breath, and smelly hair) (Pechmann & Reibling, 2000) and social relationships (e.g. undesirability and social rejection) (Smith & Stutts, 2006). Messages focused on the long-term effects of smoking tend to emphasize the symptoms and consequences of tobacco-related diseases or illnesses (Pechmann & Reibling, 2000).

Some researchers have questioned the effectiveness of ads focusing on short- and/or long-term effects of smoking (Goldman & Glantz, 1998), while others have found the ads to be effective at least with some audiences under some conditions (Samu & Bhatnagar, 2008). For example, Goldman and Glantz (1998) reported that the least effective strategy for adults is one that focuses on the short-term effects of tobacco use on attractiveness. Similarly, Pechmann and Reibling (2000) and Samu and Bhatnagar (2008) report that the least effective type of anti-tobacco ad for youth are those emphasizing the effects of tobacco use on health. This lack of effectiveness has been explained by theorizing that the long-term consequences of smoking on health for youth are so distant that the youth may feel invulnerable, and underestimate the possible dangerous effects of smoking. Some of the youth for example thought that the negative short-term effects of smoking, such as bad breath and premature aging, appeared later instead of immediately (Goldman, & Glantz, 1998).

In contrast, other studies have suggested that ads focusing on the short-term or the long-term effects of smoking are effective among youth and adults (Goldman, & Glantz, 1998; Smith & Stutts, 2003; Smith & Stutts, 2006), especially if the smoking-related harm is highly arousing and elicits strong emotions (Pechmann, & Reibling, 2006; Schmitt, & Blass, 2008; Smith & Stutts, 2003; Stewart et.al, 2011; Wakefield, Flay, Nichter & Giovino, 2003).

Negative Emotion-Eliciting Messages. Studies suggest that youth prefer anti-smoking ads that emphasize health by eliciting strong emotions that are also negative (Pechmann, & Reibling, 2006). Highly emotional ads also seem to be better recalled compared to other less emotional ads (Schmitt, & Blass, 2008). Negative emotions elicited by anti-tobacco ads often include fear and/or disgust.

Fear-Eliciting Messages. Fear has been described as high arousal, a negative emotion, and a feeling that is linked the desire to escape (Pechmann, & Reibling, 2006; Witte & Allen, 2000). Anti-tobacco ads that use fear messages typically deliver both a threat component and a way of removing that threat. For example, an event, like smoking, can be considered highly threatening when its consequences are portrayed as very negative, likely to happen to one, and if the viewer perceives her/himself as vulnerable (Leshner, Bolls & Thomas, 2009; Rogers, 1975). At the same time, fear messages aim to encourage people to change their behavior (e.g., smoking) by providing a way to remove the threat and helping the viewer to see her/himself as capable of doing the behavior (i.e., stop smoking) (Rogers, 1975; Schmitt, & Blass, 2008).

Ads that evoke high fear arousal tend to be more effective and more persuasive compared to ads that evoke lower levels of fear (Devlin, Eadie, Stead & Evans, 2007; Leshner, Vultee, Bolls & Moore, 2010; Samu, & Bhatnagar, 2008; Witte & Allen, 2000). This is especially applicable when people believe they can change their behavior, i.e. have high self-efficacy (Leshner, Bolls & Thomas, 2009; Thompson et al., 2009; Witte & Allen, 2000). A combination of high threat and high efficacy appears to be effective in changing attitude towards smoking, intentions to smoke as well as changing in smoking behavior (Witte & Allen, 2000). Results from a study on the Massachusetts campaign similarly suggest that adults and youth that are exposed to anti-tobacco ads, which are highly emotional and negative, perceive them to be more effective compared to the positive and neutral ads (Biener, 2000).

Some studies have suggested that fear messages in anti-tobacco media campaigns are most effective only when they elicit just the right amount of fear. If they elicit too

little fear it has been suggested that people may not elaborate enough on the negative and dangerous consequences of smoking; whereas, when the level of fear is too high people may elaborate too much which may impair processing of the anti-tobacco message (Keller & Block, 1996; Samu, & Bhatnagar, 2008) and may make people defensive (Leshner, Bolls & Thomas, 2009). This may explain why those who smoke tend to be more negative towards fear-eliciting ads and nonsmokers tend to be more positive (Timmers & van der Wijst, 2007; Witte & Allen, 2000).

One of the theoretical models of how fear-eliciting stimuli lead to changes in behavior is the Extended Parallel Process Model (EPPM) (Witte & Allen, 2000). According to the model, fear happens because of two factors. The first one is perceived efficacy and the second one is perceived threat. These two factors depend on appraisal processes. After people experience high enough threat they start thinking about how effectively they can do a certain behavior, like stop smoking, and how effective they believe the behavior will be for alleviating the threat. The motivation (fear) will drive people to protect themselves and in turn they will accept the anti-tobacco message. The opposite happens when people have low perceived efficacy or if the threat is not high enough. A study by Witte and colleague (2000) provided data that was mostly consistent with the EPPM. The protection motivation model, is similar to the EPPM in many ways, both models for example predict how people may respond to fear messages (Devlin, Eadie, Stead & Evans, 2007; Samu, & Bhatnagar, 2008; Witte & Allen, 2000). Both models have foundations on drive theories (Devlin, Eadie, Stead & Evans, 2007; Rogers, 1975; Witte & Allen, 2000).

Disgust-Eliciting Messages. Disgust has been described as a feeling that people have that is likely to lead to a tendency to move away from the stimuli eliciting this

feeling (Olatunji & Sawchuk, 2005). In discussing anti-tobacco media messages, Leshner and colleagues (2009) described disgust as an emotional response linked to defensive behavior elicited by graphic imagery of revolting stimuli (Leshner, Bolls & Thomas, 2009). Some factors that may be linked to disgust are germs, and body products, like urine, and organs (Leshner, Vultee, Bolls & Moore, 2010). For example, a typical way that anti-tobacco ads attempt to evoke disgust is by showing the health consequences of smoking-related diseases (Pechmann, & Reibling, 2006). Studies suggest that it may be very effective to use graphic imagery that elicits disgust in anti-tobacco messages in order to decrease smoking and make smoking less acceptable (Pechmann, & Reibling, 2006; Biener, Reimer, Wakefield, Szczypka, Rigotti, & Connolly, 2006; Schmitt, & Blass, 2008). Moreover, similar to responses to fear messages, studies suggest that smokers are more likely to call quitlines if graphic imagery eliciting disgust is also combined with a clear way the smoker can follow to change their behavior and avoid the “disgusting” consequences. For example, showing a current smoker calling a quitline after graphic imagery is more effective at increasing quitline calls than exposure to the graphic imagery alone (Durkin, Wakefield & Spittal, 2011). Ads that elicit fear, and disgust, have been shown to increase physiological arousal and activation of the amygdala, especially among those who are young. Activation in subcortical brain areas appears to be linked to faster and more permanent learning (Vogeltanz-Holm, Holm, White Plume & Poltavski, 2009) which suggests that anti-tobacco ads eliciting fear and disgust could be more effective than other ads.

Some researchers have suggested that fear and disgust while both effective individually, may not be as effective when combined (Leshner, Bolls, & Thomas, 2009;

Leshner, Vultee, Bolls, & Moore, 2010). Leshner and his colleagues suggest fear and disgust together make people defensive and shift their attention away from the stimulus. In other words, when anti-tobacco messages become very intense the aversive aspects of the ads may become so strong that people may stop encoding the stimuli. These arguments are consistent with the Limited Capacity Model of Motivated Media Message Processing (LC4MP) presented by Lang (Leshner et al., 2010). This model proposes that people have a limited capacity for processing stimuli that elicit strong emotions, which could lead to a rejection of that stimulus (Leshner, Bolls & Thomas, 2009). According to a study by Leshner, Bolls, and Thomas (2009), anti-tobacco messages containing either fear or disgust stimuli were recognized better, i.e. on a recognition task participants were more likely to believe they had seen a scene from a tobacco ad earlier, compared to those messages containing both fear and disgust attributes which supports this model.

Effective Anti-tobacco Media Messages: A Summary. Several types of anti-tobacco media messages (e.g., industry manipulation, health consequences, and negative emotion-eliciting messages) can be effective for at least some target audiences (Devlin, Eadie, Stead & Evans, 2007; Leshner, Vultee, Bolls & Moore, 2010; Samu & Bhatnagar, 2008). Messages that elicit fear or disgust and provide a clear way for the viewer to alleviate their discomfort (e.g., don't smoke, call the quitline, etc) may be the most effective for youth and young adults, although the lack of a clear consensus suggests that efforts to prevent and reduce tobacco use may benefit from identifying behavioral, psychological, emotional, and social factors that predict how people will respond to specific types of anti-tobacco media messages (Durkin, Wakefield & Spittal, 2011).

Individual Differences in Responses to Anti-Tobacco Media

As discussed above, studies examining the effectiveness of anti-tobacco ads have typically focused on the type of message, emotional tone, and images used in the ad. Therefore, our understanding of what makes an anti-tobacco ad most effective has increased in recent years with the most support for ads that use fear appeals with graphic images. However, relatively few studies have examined individual differences in how people respond to the media. Attempts to understand individual differences can be useful for better tailoring media to target specific groups of people. Some individual differences that have been examined include smoking status, gender, and self-control but data are not clear and need further examination. These and some individual differences that seem to warrant further examination will be examined in the following paragraphs in the context of the current knowledge about the effectiveness of anti-smoking ads.

Smoking status. It is critical to increase our understanding of how smoking status influences responses to anti-tobacco ads because media campaigns often have the dual purpose of reaching those (especially youth) who do not smoke and those who are already smoking. Studies indicate smokers and nonsmokers respond differently to graphic anti-tobacco ads. According to a recent review of this literature, Hwang, 2010 found that smokers tend to discount messages that emphasize the health harms of tobacco, and compared to non-smokers, they are more likely to belittle or disparage the messages. Other studies have similarly suggested that smokers tend to be more negative towards fear messages in anti-tobacco ads compared to non-smokers (Timmers & van der Wijst, 2007; Witte & Allen, 2000). Non-smokers have, on the other hand, been reported to be more affected by anti-tobacco ads, especially when the messages in the ads evoke

high levels of fear (Samu & Bhatnagar, 2008; Vogeltanz-Holm, Holm, White Plume & Poltavski, 2009). Samu & Bhatnagar (2008) found that nonsmokers are more likely to have more extreme views than smokers after watching anti-smoking ads, and are more likely to discuss the advertisements with smokers they know. Therefore, anti-smoking ads can affect smokers indirectly by changing those around them and may also reduce smoker's tendency to disparage or discount the messages in anti-tobacco ads. Clearly, we need to better understand how to reach and directly affect both nonsmokers and smokers with anti-tobacco messages, as well as further clarifying the indirect effects that reaching nonsmokers might have on smokers through social interactions.

Gender. Gender differences in attitudes toward smoking, tobacco use, and responses to anti-tobacco ads have been reported, but existing data are inconsistent. Understanding whether gender differences exist, and if so, under what conditions, is critical to increasing the effectiveness of anti-tobacco media campaigns.

Some studies suggest that there are no differences between men and women regarding how effective anti-tobacco ads are, whereas other studies suggest there are differences between the genders (Murphy-Hoefer, Hyland & Rivard, 2010). For example, men and women may evaluate anti-tobacco messages differently. According to a study by Smith, & Stutts (1999), girls and young women in middle school, high school, and college are more likely than boys and young men to believe that tobacco-use is addictive and dangerous, and they tend to be more worried about the effects of tobacco-use on health (Samu, & Bhatnagar, 2008). Another study by Smith & Stutts (2003) showed that among high-school students, girls were more affected by ads emphasizing the long-term effects of smoking on health compared to boys who were more affected by the short-term cosmetic effects on health (Samu, & Bhatnagar, 2008;

Smith & Stutts, 2003; Smith & Stutts, 2006). Finally, some data suggest that among youth, girls smoking uptake is more influenced than boys by social factors such as having a parent or a close friend who smoked (Smith & Stutts, 2003).

Fear-evoking anti-tobacco messages also may affect men and women differently. A review by Samu & Bhatnagar (2008) suggests that although women tend to be more easily influenced by anti-tobacco ads, they are even more influenced when the ads evoke high fear, compared to men, who are more likely to discount such ads.

Locus of control. Social learning theory is the foundation of concepts of locus of control which depends on whether reinforcement for behavior can be traced to people's own behavior or the behavior of others (Ludtke & Schneider, 1996). Locus of control can be divided into internal and external locus of control. External control is when people believe that an event or reinforcement happens because of something that is not directly linked to their behavior. People may believe that an event occurs because of destiny, chance, or luck (Foss, 1973; Rosenbaum & Argon, 1979). In other words, people may feel like others are in charge of the event. The events may also be considered unpredictable. If people believe that an event occurs as a result of their own behavior or characteristics they are said to have an internal locus of control (Rotter, 1966).

Studies suggest that externality may be linked to smoking among adults (Foss, 1973), and a similar, but weaker, relationship has been found among adolescent girls, but not boys. Nonsmoking students also tend to have higher internal locus of control scores than students who are former smokers, current smokers, or even those who indicate that they might smoke in the future (Ludtke & Schneider, 1996).

Smoking intensity and attempts to quit smoking have also been related to locus of control. Those who scored higher on internal locus of control scale tend to look for knowledge and facts about health issues and are more likely to stop smoking than others (Foss, 1973; Rosenbaum & Argon, 1979). They also tend to use less tobacco and have longer intervals between cigarettes than those with more of an external locus of control (Graffeo & Silvestri, 2006; Ludtke & Schneider, 1996).

Some studies suggest that those who score higher on the external locus of control scale may have problems with postponing gratification, planning for future, or acknowledging ideas or facts that are different from their current ones (Clarke, Machpherson & Holmes, 1982). Clarke and colleagues (1982) suggest that in order to reach external locus of control smokers, anti-tobacco campaigns might benefit from including more information about the benefits associated with not smoking and focus more on experience and feelings since facts about long-term health consequences may be less effective for those with external locus of control.

Self-control. Self-control has been defined as the capability to change and control behavior, emotions, and thoughts (Morris, Wood & Dunaway, 2006). This suggests that people with high self-control are capable of controlling their impulses and try to increase desirable behavior, while inhibiting less desirable behaviors. Self-control can be of two types: state and trait (dispositional) type. The difference between the two is that self-control of the state type differs across time and circumstances but self-control of the trait type tends to be more stable, regardless of time and circumstances. Research suggests that the capability to have self-control may depend on situational factors, mood, and motivation (Morris, Wood & Dunaway, 2006). Several theories can explain how self-control works.

According to the discounting model of impulsiveness, self-control is linked to preferring something valuable, even though there may be a delay in the delivery of it, over something less valuable delivered quicker (de Ridder, Lensvelt-Mulders, Finkenauer, Stok & Baumeister, 2012). This implies that people with high self-control are focusing on long-term goals by controlling their impulses. Those with low self-control may be tempted to delinquency and impulsivity. According to the self-regulatory strength model, self-control changes behavior and emotions, and resists temptations, via effort and willingness. This process depletes energy which in turn may make self-control less effective in changing behavior (de Ridder, Lensvelt-Mulders, Finkenauer, Stok & Baumeister, 2012).

De Ridder and colleagues (2012) did a meta-analysis to see how self-control affects behavior. The results suggest that youth and adults with low self-control are more likely to engage in risky behaviors, such as not using seatbelts, and smoking. It has been suggested that low self-control can be used, in general, to understand and predict some delinquent behaviors, such as crime and smoking behavior (Morris, Wood & Dunaway, 2006). Morris and colleagues (2006) sampled youth and young adults ranging from the age of 15 to 21 living in various areas in Oklahoma. Participants were representative of the population in Oklahoma and included about 20% American Indians and about 70% white youth. Questionnaires were administered in school. Those with high self-control tend to be less likely to use various substances and may avoid smoking in order to be less likely to get smoking-related diseases (Morris, Wood & Dunaway, 2006; de Ridder, Lensvelt-Mulders, Finkenauer, Stok & Baumeister, 2012). These studies suggest that low levels of self-control may increase the risk of smoking and as such further examination of how levels of self-control affect responses to anti-tobacco media are warranted. Media

messages tailored to individuals with low levels of self-control could perhaps be quite useful in attempts to further decrease smoking rates among youth especially.

Stress. Smoking has often been associated with higher levels of stress (Hajek, Taylor & McRobbie, 2010). Studies for example suggest that as stress becomes higher, the more vulnerable a person is to pro-tobacco messages (Straub, Hills, Thompson, & Moscicki, 2003), the more likely they are to begin smoking (Tsourtos, Ward, Muller, Lawn, Winefield, Hersh & Coveney, 2011), and the more difficulties they have when attempting to quit smoking (Erblich, Bovbjerg & Diaz, 2012). Those with lower stress-levels may on the other hand pay more attention to the messages in anti-tobacco ads and in turn be less likely to smoke (Straub, Hills, Thompson, & Moscicki, 2003). Former smokers report lower levels of stress after they stopped smoking (Hajek, Taylor & McRobbie, 2010) and non-smokers appear to be less affected by stress (Tsourtos, Ward, Muller, Lawn, Winefield, Hersh & Coveney, 2011). A study by Erblich, Bovbjerg and Diaz (2012) with adult smokers suggests that stress (induced by thoughts about dental work) can induce cigarette-cravings, via the stress-corticotropin pathway in the brain, even when the stress is mild. According to a study by McKee and colleagues (2011) smokers who have been deprived of nicotine have more difficulties resisting smoking when presented with a stress-cue, and when smoking take more cigarette puffs with shorter intervals. Craving and negative emotions also increased after stress cues were presented. Their results suggest that stress cues increase the release of cortisol and ACTH which has been suggested to be a possible reason for having difficulties with smoking resistance. According to a study by Bjornson and colleagues (1995) men have greater success quitting smoking, and Saladin and colleagues (2012) have suggested that a

possible reason for these findings is that stress may be associated with stronger cigarette cravings in women than in men. They suggest that women in general tend to be more reactive to stress and more easily aroused than men when exposed to stress-cues. Further understanding how stress might affect responses to anti-tobacco media could be helpful for improving such media's effectiveness.

Depression. Smoking and depression frequently go together. About 50% of depressed adults also smoke (Vinci, McVay, Copeland & Carrigan, 2012), and depressed individuals, both youth and adults, are about twice as likely as non-depressed individuals to be smokers. Furthermore, depressed individuals may be less likely to successfully stop smoking compared to non-depressed individuals (Gierisch, Bastian, Calhoun, McDuffie & Williams, 2011). A study by Minnix, Blalock, Marani, Prokhorov and Cinciripini (2011) suggests that depressive symptoms make depressed individuals more vulnerable to smoking. Other studies have obtained similar results although a few studies suggest that higher frequency of smoking is related to biochemical changes in the brain and thus make individuals more vulnerable to depression. According to Minnix and colleagues (2011), depressed individuals are likely to start smoking if they have low self-efficacy, i.e. if they do not believe they can handle certain situations.

Vinci and colleagues (2012) did a study among college students and found that depressed individuals may smoke in order to get positive reinforcement. Smoking was also reported to be a way for depressed individuals to get more companionship and friend-like relationships with smoking, which is another source of reinforcement for these individuals that frequently lack social reinforcement. Similar results were obtained in a study by Audrain-McGovern and colleagues (2011) on young adults in Virginia. Results revealed

that symptoms of depression could affect smoking behavior, such as uptake and frequency. Results further suggested that depression and smoking might be related via reinforcement. In other words, the main reinforcement from smoking and the lack of other types of reinforcements among those with depressive symptoms may be maintaining smoking. Introducing other reinforcements into the lives of those with depression could thus prevent or decrease smoking. Tsourtos and colleagues (2011) found that adults with depression frequently experience high levels of stress and suggested that stress may be a mediator between smoking and depression. It is important to see how level of depression affects responses to anti-smoking media, and possible interaction with stress, since that could be helpful for improving the effectiveness of tobacco control programs.

The Present Study

The present study will examine individual differences in responses to anti-tobacco advertisements among college students as a function of levels of smoking exposure/tobacco use, gender, locus of control, self-control, stress, and depression. This study is important in order to see how individual differences may change how effective anti-tobacco ads are, which could further suggest important factors to include in future anti-tobacco ads. The anti-tobacco advertisements used in this study include a combination of fear and disgust messages. My first hypothesis is that advertisements with more disgust-evoking imagery will be more effective than advertisements that have less disgust-evoking imagery. My second hypothesis is that participants with the least amount of experience with tobacco will be more affected by the anti-tobacco ads than those with more experience with tobacco. My third hypothesis is that women, more than men, will report that anti-tobacco messages in general, and those with fear and disgust messages

especially, are more effective. My fourth hypothesis is that participants having a more external locus of control will report that the anti-tobacco messages are less effective than those with a more internal locus of control. My fifth hypothesis is that those participants with higher self-control will report the anti-tobacco messages to be more effective than those with low self-control. My sixth hypothesis is that those participants reporting lower current levels of stress will be more affected by the anti-tobacco ads than those reporting higher current levels of stress. Finally, my seventh hypothesis is that participants with higher levels of depression will be more likely to report that the anti-tobacco messages are not as effective as those with lower levels of depression.

II. METHOD

Participants

Participants were 144 college students, 18 years and older, at the University of North Dakota enrolled in at least one psychology class. Participants got research credit for participating. Of the 144 participants, fifty-eight were men and eighty-six were women. The mean age was 19.78 years, $SD=2.04$, and participants ranged in age from 18-33. About 92% of the participants were white. About 8% of the participants were of other race. The estimated number of participants was determined by running a power analysis in G*Power with a moderate effect size (0.15), power of 0.8, and an alpha level of 0.05. Power was determined for a multiple regression analysis with six predictors: gender, locus of control, tobacco exposure, self-control, symptoms of depression, and perceived stress. This research was approved by the Institutional Review Board (IRB) at the University of North Dakota.

Apparatus

Advertisements. Six tobacco advertisements were shown to participants. The six ads were all approximately 30 seconds and were chosen because they focused on health consequences and used strong fear messages, but varied in the extent to which they included graphic disgust-evoking images. All six ads have been used in previous state or national anti-tobacco media campaigns. Two of the ads, Suzy and Terrie, were launched nationally by the Centers for Disease Control and Prevention (CDC) in 2012 and are part of

the campaign Tips from Former Smokers. They show two women, one whom has had a stroke and the other cancer due to smoking, describing their daily life. Two of the ads, Brain and Artery, were part of Australia's National Tobacco Campaign launched in 2000. They show an artery and insides of a brain of a smoker and the damaging effects that smoking has. The ad Echo was launched in 2002 as part of a California state campaign. It has since been used in other state campaigns (e.g., New York, Nevada) as well as redone for an Australian campaign. It shows people giving various reasons for why they can't stop smoking. The ad Still Can't Quit was launched in Iowa in 2002 and was a part of the Just Eliminate Lies campaign. It shows a teenager that has spot on his lungs due to smoking but still continues to smoke. The advertisements were shown to participants once in a random order. Further description of the anti-tobacco advertisements can be seen in appendix A.

Measures

The following ten instruments/questionnaires were used in this study:

Demographics Measure (DM), Tobacco Experience Questionnaire (TEQ), Brief Self-Control Scale (BSCS), Rotter's Locus of Control Scale (I-E scale), Center for Epidemiological Studies Depression Scale – short version (CES-D8), Perceived Stress Scale (PSS), Self-Assessment Manikin (SAM), Affective Adjectives (AA), Perceived Effectiveness Scale (PES), and Attention Measure (AM).

Demographics Measure (DM). The DM was administered to gather information about the age, gender, and ethnicity of the participants (see appendix B).

Tobacco Experience Questionnaire (TEQ). The TEQ has been designed to assess both current tobacco experience and possible future tobacco use. It includes items like "Have you ever tried or experimented with smoking, even a puff?" and "Do you

think you will try a cigarette soon?” The TEQ also assesses social aspects of smoking and health problems associated with smoking with items such as: “Do you think smoking is harmful to your health?” and “Do you think young people who smoke cigarettes have more friends?” (Goetz, 2007). See Appendix C. This questionnaire was used to create a tobacco exposure measure that was used to examine how experience with tobacco affected participants’ responses to the advertisements. This measure was formed by splitting participants in three groups based on their tobacco exposure. Participants in group one had tried smoking and had smoked more than 100 cigarettes in a lifetime. Participants in group two had tried smoking but had not smoked more than 100 cigarettes in a lifetime. Participants in group three had not tried smoking.

Brief Self-Control Scale (BSCS). The BSCS measures self-control and the ability to make changes. It was developed by Tangney and colleagues (Tangney, Baumeister, & Boone, 2004). The BSCS consists of 13 items on a five-point Likert scale from 1-5 where 1 stands for “Not at all like me” and 5 stands for “Very much like me”. Participants describe themselves with items such as: “I am good at resisting temptation” and “I refuse things that are bad for me”. The BSCS has shown high internal consistency ($\alpha=0.83-0.89$) and test-retest reliability ($\alpha=0.87$). It has also shown strong correlations with the full Self-Control Scale ($r=0.93$) (Ridder, Lensvelt-Mulders, Finkenauer, Stok, and Baumeister, 2012; Tangney, Baumeister, & Boone, 2004). See appendix D.

Rotter’s Locus of Control Scale (I-E scale). The I-E scale measures how much control people believe they have over events that affect them. Control is internal when people believe they can affect certain results with their behavior. External control is when people believe that others, chance, or fate have the most impact on them. The I-E scale

was developed by Rotter (Rotter, 1966) and consists of 29 (double) items like “Children get into trouble because their parents punish them too much” and “People’s misfortunes result from the mistakes they make”. There are 23 scoring items in the list and 6 filler items: 1, 8, 14, 19, 24, and 27. A high score indicates external locus of control, and a low score indicates internal locus of control. Reliability of the I-E scale is acceptable, $\alpha=0.65-0.79$ (Lange, and Tiggemann, 1981) and has been reported to be as high as 0.93 (Beretvas, Suizzo, Durham, and Yarnell, 2008). The I-E scale has been linked to various factors and psychological constructs (Rotter, 1966) and it is also the most established scale to measure internal and external control (Ludtke & Schneider, 1996). See appendix E.

Center for Epidemiological Studies Depression Scale – short version (CES-D8).

The CES-D8 measures depressive symptoms and is a shorter version of the full 20-item CES-D scale that was developed by Radloff for use with the general population (Radloff, 1977). On the shorter version of the original scale used in this study, participants describe themselves by answering items such as: “I felt depressed” and “I felt lonely”. The CES-D8 consists of 8 items on a 4 point Likert scale where the first option is “Rarely or none of the time” and the fourth option is “Most or all of the time”. Higher scores indicate that more items containing depressive complaints were endorsed. Internal consistency has been reported to be acceptable, $\alpha=0.73-0.88$ (Bracke, Levecque, & Van de Velde, 2008). See appendix F.

Perceived Stress Scale (PSS). The PSS measures perception of stress and estimates how unpredictable, uncontrollable and overloaded individuals find their lives. The PSS was developed by Cohen and colleagues for use with those with at least finished the junior year in high school (Cohen, Kamarck, & Mermelstein, 1983). The shorter version of the scale used in this study (Cohen & Williamson, 1988) consists of 10 items on a 5-point Likert

scale from 0-4 where 0 stands for “Never” and 4 stands for “Very often”. Participants describe themselves with items such as: “In the last month, how often have you felt that you were unable to control the important things in your life?” The PSS has been reported to be reliable, $\alpha=0.78-0.91$ (Cohen, & Janicki-Deverts, 2012). See appendix G.

Ratings of the Advertisements

Self-Assessment Manikin (SAM). Negative arousal was measured by using a mannequin figure (Self-Assessment Manikin – SAM) on two, 9-point Likert scale ranging from “Extremely calm” to “Extremely aroused” (Bradley & Lang, 1994). On these figures, participants indicated how they felt while watching the ads in terms of how pleasant and arousing the ads made them feel. Studies by Bradley and colleagues suggest that SAM is a reliable measure of arousal-evoking stimuli in advertisements (Morris, 1995).

Affective Adjectives (AA). Arousal was also assessed by asking participants to endorse various affective adjectives they associated with each advertisement. On a 5-point Likert scale where 1 = “Not at all” and 5 = “Very much so” participants indicate how scary, frightening, sickening, repulsive, and gross they think the advertisements are. These measurements have been used in similar ways in previous studies (Wakefield et al., 2002, 2003, Goetz, 2010; Goetz, Holm, Vogeltanz-Holm, White Plume, & Peterson, 2007). See appendix H.

Perceived Effectiveness (PE). The perceived effectiveness of the advertisements was measured by asking participants to indicate their agreement on a 5-point Likert scale with the following items: a) “Overall I thought this ad was a very good anti-smoking advertisement,” b) “This ad had a message that was important to me,” c) “This ad made me stop and think about my health,” and d) This ad is one that I will likely tell other people about.” These questions

have been used in similar formats in previous studies (Wakefield et al., 2002, 2003, Goetz, 2010; Goetz, Holm, Vogeltanz-Holm, White Plume, & Peterson, 2007). See appendix H.

Procedure

Students completed the study in small groups of about 2-15 participants. The procedure and the purpose of the study were described for all participants. Participants first completed informed consent (see appendix I) and then completed the Demographics Measure (DM). The following questionnaires were completed in a random order: Brief Self-Control Scale (BSCS), Rotter's Locus of Control Scale (I-E scale), Center for Epidemiological Studies Depression Scale – short version (CES-D8), and Perceived Stress Scale (PSS). Then participants answered the Tobacco Experience Questionnaire (TEQ), and those who had smoked at least one cigarette in the past thirty days also answered the Tobacco Cravings Questionnaire (TCQ) and the Fagerstrom Test of Nicotine Dependence. Finally, participants watched each of the six anti-tobacco advertisements on an overhead projection screen in a randomly determined order. After each advertisement, participants completed the following three measures: Self-Assessment Manikin (SAM), Affective Adjectives (AA), and Perceived Effectiveness (PE).

Design and Data Analysis

After data were collected they were entered into SPSS. The researchers entered the data twice into SPSS, and compared, to check if data were entered correctly. Descriptive analyses were performed on demographic data. Bivariate correlations between the individual difference predictors and tolerance indices for each predictor were examined to assess for possible multicollinearity.

Within-subjects repeated measures ANOVAs were conducted to examine differences between the six advertisements on the three sets of dependent variables: a) perceived effectiveness ratings, b) levels of negative arousal and valence, and c) affective adjectives. Greenhouse-Geisser adjustments were made to control for deviations from sphericity and paired-sample t-tests using Bonferroni adjustments for family-size error were conducted as follow-up tests. These analyses suggested that the advertisements could be split in two groups (see results section): those with more graphic disgust-evoking imagery and those with less graphic disgust-evoking imagery.

Several multiple regression analyses were then conducted to examine whether the individual difference variables (e.g., gender, stress, locus of control) predicted how participants responded to the two groups of ads (more and less graphic disgust-evoking imagery).

Finally, exploratory analyses were conducted to examine how a subset of current smokers responded to the advertisements. Specifically, paired-sample t-tests were conducted to determine whether current smokers showed different responses to the more graphic as compared to the less graphic ads.

III. RESULTS

Experience with and Exposure to Tobacco

The majority of the participants, 53.5%, had tried smoking cigarettes at some time in their life, but only 40.3% reported ever smoking a whole cigarette. Of those who had smoked a whole cigarette, the majority, 63.7%, did so for the first time when they were 17 years or older. Only 16.7% of the participants had smoked more than 100 cigarettes in a lifetime, but of these all but one (95.8%) were considered to be current smokers as they had smoked at least one day in the past 30 days. All of the current smokers in the sample smoked less than one half pack a day, with the majority smoking less than 5 cigarettes a day (95.6%). Most of the current smokers (73.9%) also reported having tried to quit smoking in the past 30 days. Relatively few participants reported using other forms of tobacco products in the past 30 days such as smoking cigars (11.5%) or chewing tobacco (11.5%). Finally, regardless of their own smoking status, many participants reported having immediate family members (37.7%) or close friends (32.6%) who smoke cigarettes.

Previous Exposure to the Anti-Smoking Advertisements

Discrepancies were observed in how frequently participants recalled having seen the six advertisements prior to participating in this study. The majority of participants (61.8%) recalled having seen the CDC ad “Terrie”, while 27.8% recalled having seen the other CDC ad “Suzy”, and 22.2% recalled having seen the California ad “Echo”. For all other ads, 6% or fewer participants reported having any previous exposure (see table 1).

Table 1. Number of participants, in %, who had seen the ads on TV.

Advertisement	Yes	No	Not sure
Echo	22.2	72.2	5.6
Still can't quit	2.8	95.8	1.4
Suzy	27.8	68.1	4.2
Terrie	61.8	33.3	4.9
Artery	5.6	92.4	2.1
Brain	4.2	91.0	4.9

Affective Responses to the Six Advertisements

Seven within-subject ANOVAs were conducted to examine whether participants showed different responses to the six ads. All seven ANOVAs were statistically significant (see table 2) indicating many differences in participants' affective responses to the ads.

Table 2. F-values, p values, and effect sizes for the within-subject ANOVAs for the affective dependent variables.

Affective Variables	<i>F</i>	<i>p</i>	η^2
Scary	42.46	<.001	.23
Frightening	42.77	.009	.23
Sickening	133.51	<.001	.49
Repulsive	132.82	<.001	.49
Gross	214.02	<.001	.60
Unpleasant	46.16	<.001	.24
Arousal	61.97	<.001	.30

The means and standard deviations for the affective response variables can be seen in table 3 below. Post hoc contrasts using Bonferroni's adjustment were used to test for pairwise differences between ads on each of the seven affective variables. The results of these tests can be seen in Appendix J, see tables 14 - 24. In general, examination of these tests and the means in table 3 show that participants reported greater negative affect for the advertisements, Terrie, Artery, and Brain, than they did for the other three advertisements, Echo, Still Can't Quit, and Suzy.

Table 3. Means and standard deviations for the affective dependent variables by the six advertisements.

Dependent variables		Advertisements					
		Echo	Still can't quit	Suzy	Terrie	Artery	Brain
Scary	Mean	2.28	3.01	2.58	3.64	3.06	3.22
	SD	1.21	1.38	1.34	1.31	1.35	1.24
Frightening	Mean	2.31	3.01	2.64	3.68	3.04	3.24
	SD	1.22	1.29	1.30	1.27	1.37	1.30
Sickening	Mean	1.90	2.13	2.61	3.54	4.03	3.60
	SD	1.11	1.28	1.38	1.32	1.14	1.26
Repulsive	Mean	1.67	1.81	2.25	3.25	3.76	3.29
	SD	0.94	1.06	1.28	1.38	1.31	1.36
Gross	Mean	1.50	1.71	2.38	3.32	4.19	3.61
	SD	0.86	1.05	1.30	1.31	1.11	1.32
Unpleasant	Mean	4.79	5.48	5.47	6.48	6.37	6.03
	SD	1.41	1.48	1.44	1.46	1.33	1.28
Arousal	Mean	2.92	3.60	3.43	4.85	5.10	4.73
	SD	1.85	2.14	1.92	2.16	2.18	2.13

Perceived Effectiveness of the Six Advertisements

Although the majority of the participants agreed that all six ads presented in this study were good anti-smoking ads, examination of the data suggested a clear hierarchy with the most participants agreeing or strongly agreeing that “Terrie” (93.1%) was a good anti-smoking ad followed by “Artery” (84.1%), “Brain” (77.1%), “Still Can’t Quit” (67.3%), “Suzy” (66%), and then “Echo” (56.3%), see table 4.

Table 4. Ratings, in %, of how good the anti-smoking advertisements were.

Advertisement	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
Echo	3.5	20.1	19.4	38.2	18.1
Still can't quit	2.1	8.3	22.2	45.8	21.5
Suzy	0.7	11.1	22.2	50.7	15.3
Terrie	0	1.4	5.6	36.8	56.3
Artery	0.7	4.2	11.1	42.4	41.7
Brain	0.7	4.9	17.4	55.6	21.5

Four within-subject ANOVAs were conducted to examine whether these and other effectiveness-related ratings were significantly different across the six ads. Three of the four ANOVAs were statistically significant (see table 5) with the only exception being ratings for how important each ad’s message was. The means and standard deviations for each of the six ads on the four perceived effectiveness variables can be seen in table 6. Post hoc contrasts using Bonferroni adjustments were used to test for pairwise differences between the ads on each of the three significant perceived effectiveness variables. The results of these tests can be found in Appendix J (see tables 14 - 24). The results of these tests and the means shown in table 6 show that participants have different responses to the three ads, Terrie, Artery, and Brain than they do to the remaining three ads, Echo, Still Can’t Quit, and Suzy. The former three ads were more likely to make participants stop and think about their health, tell other people about the ad, and were generally considered better anti-smoking ads than the latter three ads. The only perceived effectiveness variable that didn’t show significant between-ad differences concerned the importance of the ad’s message suggesting that participants perceived the ads as having equally important messages.

Table 5. *F*-values, *p* values, and effect sizes for the within-subject ANOVAs for the perceived effectiveness dependent variables.

Perceived Effectiveness Variables	<i>F</i>	<i>p</i>	η^2
Had Important Message	9.39	.59	.06
Made Me Think About My Health	17.83	.02	.11
Likely Tell People About Ad	39.17	<.001	.22
Overall, a Good Anti-Smoking Ad	31.82	<.001	.18

Table 6. Means and standard deviations for the perceived effectiveness dependent variables by the six advertisements.

Perceived Effectiveness Variables		Advertisements					
		Still Can't		Suzy	Terrie	Artery	Brain
		Echo	Quit				
Had Important Message	Mean	3.19	3.51	3.41	3.62	3.60	3.59
	SD	1.21	1.24	1.14	1.17	1.24	1.14
Made Me Think About My Health	Mean	2.85	3.11	3.11	3.47	3.52	3.40
	SD	1.23	1.23	1.22	1.23	1.25	1.15
Likely Tell People About Ad	Mean	2.57	2.90	2.72	3.65	3.49	3.34
	SD	1.21	1.24	1.10	1.17	1.21	1.18
Overall, a Good Anti-Smoking Ad	Mean	3.48	3.77	3.69	4.48	4.20	3.92
	SD	1.11	.95	.89	.67	.85	.81

Distinguishing the Ads on the Basis of Graphic Imagery

The above analyses revealed that participants' responses to the ads tended to vary by what appeared to the author to be the degree of disgust-evoking graphic imagery used in the ad. Responses to the ads Terrie, Artery, and Brain tended to be different from responses to Echo, Still Can't Quit and Suzy and the most obvious distinction between these two groups of ads was in the degree of graphic imagery used. Therefore, to test this possibility responses to the more graphic image ads, Terrie, Artery, and Brain were averaged as were responses to the less graphic image ads, Echo, Still Can't Quit and Suzy. Paired-sample t-tests were then conducted on all dependent variables to determine whether statistical differences existed between the more graphic imagery ad composite scores and the less graphic imagery ad composite scores (see table 7). All comparisons were statistically significant and the means and standard deviations are shown in table 8. These results indicate that the two groups of ads are different from each other for each of the dependent variables and support the decision to combine the advertisements into two groups of ads based on the degree of disgust-evoking graphic imagery, see table 8.

Table 7. Paired sample t-tests comparing the more and less graphic imagery ads on all of the dependent variables.

Dependent variables	<i>t</i>	df	<i>p</i>	Cohen's <i>d</i>
Scary	-11.91	142	.000	1.99
Frightening	-11.04	142	.000	1.85
Sickening	-20.03	142	.000	3.36
Repulsive	-18.77	141	.000	3.16
Gross	-23.75	142	.000	3.99
Unpleasant	12.65	138	.000	2.15
Arousal	-13.89	143	.000	2.32
Had Important Message	-4.93	143	.000	.82
Made Me Think About My Health	-7.12	143	.000	1.19
Likely Tell People About Ad	-11.27	143	.000	1.88
Overall, A Good Anti-smoking Ad	-8.96	143	.000	1.49

Table 8. Means and standard deviations for the dependent variables by more and less graphic ads.

Dependent variables		Mean	SD
Scary	Graphic	3.31	1.11
	Non-graphic	2.61	1.07
Frightening	Graphic	3.32	1.15
	Non-graphic	2.64	1.03
Sickening	Graphic	3.73	1.05
	Non-graphic	2.21	1.03
Repulsive	Graphic	3.44	1.16
	Non-graphic	1.90	.89
Gross	Graphic	3.71	1.06
	Non-graphic	1.86	.86
Unpleasant	Graphic	6.34	1.03
	Non-graphic	5.27	1.05
Arousal	Graphic	4.89	1.92
	Non-graphic	3.32	1.63
Had Important Message	Graphic	3.60	1.09
	Non-graphic	3.37	1.06
Made Me Think About My Health	Graphic	3.46	1.10
	Non-graphic	3.03	1.05
Likely Tell People About My Health	Graphic	3.50	1.02
	Non-graphic	2.73	.95
Overall, A Good Anti-Smoking Ad	Graphic	4.20	.60
	Non-graphic	3.64	.71

Individual Differences in Responses to More and Less Graphic Imagery Advertisements

Several individual difference variables were examined to determine whether they might predict participants' responses to more and/or less graphic imagery advertisements. These variables included a participant's gender and experience with tobacco as well as a measure of their stress level (PSS), depression level (CESD), locus of control (RLC), and self-control (BSCS). Information about gender and experience with tobacco have already been presented, but the means and standard deviations for the other predictors can be found in table 9.

Table 9. Means and standard deviations for the continuous individual difference predictors.

	CESD	BSCS	RLC	PSS
Mean	3.99	43.83	10.58	14.37
SD	3.73	8.08	3.73	6.50

Note. CESD: Center for Epidemiological Studies Depression Scale – short version, (CES-D8). BSCS: Brief Self-Control Scale, RLC: Rotter's Locus of Control Scale, PSS: Perceived Stress Scale.

Several multiple regression analyses were conducted to examine individual differences in responses to more and less graphic imagery advertisements, but first, tolerance indices and bivariate correlations were obtained to examine for possible multicollinearity problems in the data. None of the bivariate correlations were greater than .7 and none of the tolerance indices were less than .4. These data suggest that multicollinearity among the individual differences predictors is not a concern in the following multiple regression analyses.

Effects of Individual Differences on Affective Responses. Results of the regression analyses for affective adjectives indicate there are some individual difference variables that are useful for predicting affective responses to the ads, primarily the more graphic imagery ads. Regression analyses with the more graphic imagery ads found

significant effects for the following affective responses: scary, $R^2=.13$; $F(6)=3.22$, $p<.05$; frightening, $R^2=.15$; $F(6)=3.82$, $p<.05$; sickening, $R^2=.10$; $F(6)=2.23$, $p<.05$, and for arousal, $R^2=.19$; $F(6)=4.84$, $p<.05$. Significant predictors in these regression analysis included gender, symptoms of depression, and locus of control. Specifically, gender significantly predicted ratings of how scary ($\beta = -.33$; $t=-3.52$, $p=.001$), how frightening ($\beta = -.32$; $t = -3.43$, $p<.05$), how sickening ($\beta = -.23$; $t = -2.32$, $p<.05$), and how arousing ($\beta = -.42$; $t = -4.54$, $p<.05$) the more graphic ads were rated. In all cases, women had higher ratings on these affective responses. In addition, the more symptoms of depression participants' reported the more frightening they rated the more graphic ads ($\beta = .24$; $t = 2.02$, $p<.05$). Finally, participants with more of an internal locus of control had a tendency to rate the more graphic ads as more sickening ($\beta = -.20$; $t = -2.04$, $p<.05$).

Regression analyses with the less graphic imagery ads found a significant effect only when predicting arousal, $R^2=.11$; $F(6)=2.51$, $p<.05$. The only significant predictor for this model was gender, $\beta = -.31$; $t = -3.23$, $p<.05$, with women, more than men, finding the less graphic imagery ads more arousing.

Effects of Individual Differences on Perceived Effectiveness. Results of the regression analyses for the perceived effectiveness measures found some significant individual difference effects, but only for the more graphic imagery ads. The regression analysis predicting responses to “the ad made me think about my health” was significant for the more graphic ads, $R^2=.10$; $F(6)=2.28$, $p<.05$. Gender, $\beta = -.25$; $t = -2.60$, $p<.05$, and smoking exposure, $\beta = -.24$; $t = -2.41$, $p<.05$ were statistically significant predictors in this model showing that women and those with less smoking exposure reported that the more graphic ads made them think more about their health. In addition, the regression

analysis predicting the extent to which “the ad was one I would likely tell others about” was significant for the more graphic ads, $R^2=.12$; $F(6)=2.86$, $p<.05$. Gender, $\beta = -.20$; $t = -2.11$, $p<.05$, smoking exposure, $\beta = .21$; $t = 2.17$, $p<.05$, and locus of control, $\beta = -.24$; $t = -2.53$, $p<.05$ were statistically significant predictors in this model. These data suggested that women, those with less experience with tobacco, and those with more internal locus of control more likely to tell others about the graphic imagery ads.

Smokers

Exploratory analyses were done to examine whether a subsample of smokers’ responses to the ads seemed different from the overall sample. In these analyses the smoker subsample was defined as anyone who had smoked at least one cigarette in the past thirty days and had smoked more than 100 cigarettes in a lifetime ($n=21$).

Smokers’ responses to the Fagerstrom scale and the Tobacco Craving Questionnaire (TCQ) suggested that this group had very low nicotine dependence. The majority of the smokers, 76.2%, had a score of 0 on the Fagerstrom scale. 14.3% had a score of 1, and 4.8% had a score of 3 or 4. Scores on the TCQ-Total ranged from 20-76, with an average of about 45 points. These data also suggest there was little craving for tobacco among the subsample of smokers (see table 10).

Table 10. Means and SDs of smoking related cravings and dependency.

Cravings and dependency	Mean	SD
TCQ-Expectancy	11.68	4.88
TCQ-Purposefulness	11.68	5.11
TCQ-Emotionality	11.70	5.93
TCQ-Compulsivity	9.73	4.97
TCQ-Total	45.09	15.57
Fagerstrom	.47	1.08

Note. TCQ: Total Craving Questionnaire

Table 11 shows the means and standard deviations for all of the dependent variables by the six advertisements in this subsample of smoking participants. The pattern of responses to the six ads in this subsample appears to be essentially the same as it was for the complete sample. The three advertisements, Terrie, Artery, and Brain, were rated higher on almost all of the dependent variables than the other three advertisements, Echo, Still Can't Quit, and Suzy. The only notable difference observed in the smoker subsample was that the ad Suzy appears to have been associated with more negative affect by the smokers than by the sample overall.

Table 11. Means and standard deviations for all of the dependent variables by the six advertisements.

Dependent variables		Advertisements					
		Echo	Still Can't Quit	Suzy	Terrie	Artery	Brain
Scary	Mean	2.38	2.81	3.05	3.57	2.90	3.57
	SD	1.20	1.25	1.47	1.25	1.37	1.08
Frightening	Mean	2.33	2.86	2.86	3.62	2.90	3.24
	SD	1.15	0.96	1.42	1.36	1.30	1.37
Sickening	Mean	1.86	2.10	2.62	3.76	3.90	3.23
	SD	1.01	1.30	1.20	1.14	0.99	1.22
Repulsive	Mean	1.71	1.86	2.35	3.48	3.67	3.14
	SD	0.90	1.01	1.31	1.29	1.43	1.35
Gross	Mean	1.57	1.86	2.62	3.52	4.14	3.29
	SD	0.81	1.06	1.32	1.21	1.19	1.27
Unpleasant	Mean	4.99	5.00	5.71	6.57	5.95	5.67
	SD	1.07	1.26	1.27	1.33	1.50	1.43
Arousal	Mean	2.86	3.48	3.67	4.62	4.48	4.38
	SD	1.68	2.14	2.31	1.94	1.86	1.86
Had Important Message	Mean	2.86	3.19	3.14	3.52	3.43	3.48
	SD	1.31	1.40	1.42	1.12	1.25	1.21
Made Me Think About My Health	Mean	3.05	3.38	3.14	3.57	3.62	3.57
	SD	1.28	1.16	1.39	1.36	1.16	1.12
Likely Tell People About My Health	Mean	2.43	2.43	2.52	3.19	3.09	2.90
	SD	1.33	1.25	1.29	1.25	1.22	1.26
Overall, A Good Anti-Smoking Ad	Mean	3.43	3.52	3.81	4.33	3.81	3.52
	SD	1.21	1.08	1.17	.79	1.03	.98

Given the great similarity between the responses of the smoker subsample and the overall sample, the six ads were once again combined to form the more graphic imagery group (Terrie, Artery, and Brain) and the less graphic imagery group (Echo, Still Can't Quit, and Suzy). Paired sample t-tests were then conducted to test for statistical differences between the more and less graphic imagery ads and these results can be seen in table 12. All t-tests were statistically significant, except for the analysis of the perceived effectiveness item, "Overall, a good anti-smoking ad."

Table 12. Paired sample t-tests comparing ratings on all dependent variables for more and less graphic ads in the smoker subsample.

Dependent variables	t	df	p	Cohen's d
Scary	-4.02	20	.001	1.79
Frightening	-3.20	20	.004	1.43
Sickening	-7.49	20	.000	3.35
Repulsive	-6.18	19	.000	2.84
Gross	-7.90	20	.000	3.53
Unpleasant	3.74	20	.001	1.67
Arousal	-4.71	20	.000	2.11
Had Important Message	-3.92	20	.001	1.75
Made Me Think About My Health	-2.64	20	.016	1.18
Likely Tell People About My Health	-4.74	20	.000	2.12
Overall, A Good Anti-Smoking Ad	-1.91	20	.070	.85

Means and standard deviations for all dependent variables by the type of ad, more or less graphic, can be seen in table 13 below. In all cases the means for the more graphic ads were higher than the means for the less graphic ads suggesting that the more graphic ads were associated with more negative affect and also perceived as somewhat more effective by smokers just as they were in the analyses with the complete sample.

Table 13. Means and standard deviations for the dependent variables by more graphic and less graphic ads in the smoker subsample.

Dependent variables		Mean	SD
Scary	Graphic	3.35	1.02
	Non-graphic	2.74	0.91
Frightening	Graphic	3.25	1.15
	Non-graphic	2.68	0.79
Sickening	Graphic	3.63	0.85
	Non-graphic	2.19	0.87
Repulsive	Graphic	3.43	1.17
	Non-graphic	1.92	.75
Gross	Graphic	3.65	0.98
	Non-graphic	2.02	.77
Unpleasant	Graphic	6.07	1.16
	Non-graphic	5.25	.85
Arousal	Graphic	4.49	1.38
	Non-graphic	3.33	1.69
Had Important Message	Graphic	3.48	1.06
	Non-graphic	3.06	1.16
Made Me Think About My Health	Graphic	3.59	1.05
	Non-graphic	3.19	1.05
Likely Tell People About My Health	Graphic	3.06	1.12
	Non-graphic	2.46	1.04
Overall, A Good Anti-Smoking Ad	Graphic	3.89	.73
	Non-graphic	3.59	.89

IV. DISCUSSION

Overall, ads with more disgust-evoking graphic imagery appeared to be better anti-smoking ads than those with less of such imagery. More graphic imagery in ads was associated with a greater likelihood for participants to believe the ads had important health messages, to report that they would talk with others about the ads, and to say that the ads made them stop and think about their health. In addition, participants reported that the more graphic ads were associated with more negative emotional responses and were significantly more likely than less graphic ads to be characterized as scary, frightening, repulsive, gross, sickening, unpleasant, and arousing. These results support my first hypothesis that disgust-evoking graphic imagery is associated with increases in negative affect and greater perceived effectiveness in anti-smoking ads and they are consistent with findings from other studies which have found that anti-smoking messages containing disgust-evoking graphic imagery are effective anti-smoking ads (Biener, Reimer, Wakefield, Szczypka, Rigotti, & Connolly, 2006; Pechmann, & Reibling, 2006; Schmitt, & Blass, 2008; Vogeltanz-Holm, Holm, White Plume & Poltavski, 2009). Leshner and colleagues on the other hand found that fear and disgust messages combined are not as effective as fear and disgust messages delivered individually. They suggested that too intensive anti-tobacco messages interfere with the encoding of the messages (Leshner, Bolls, & Thomas, 2009; Leshner, Vultee, Bolls, & Moore, 2010). The results of this study are different from others in this field, such as those by Leshner and colleagues

(2009, 2010). Although Leshner and colleagues based their work in the laboratory, their studies contained different measures than were used in this study, which may affect differences in the results. They for example measured arousal and valence with skin conductance and facial EMG whereas this study used self-report measures. They also included additional tasks, such as audio recognition tasks to measure recognition, and reaction time to measure cognitive resources. Their studies also included more ads which had been pre-tested for levels of fear and disgust content before the main experiment was conducted. In spite of this, the results of this study did not suggest that a combination of fear messages and disgust imagery was impairing how effective the ads were. Instead the results supported using fear messages combined with graphic disgust-evoking messages, at least for those who are young adults and not frequent or heavy smokers.

Individual Differences as Predictors of Responses to Anti-smoking Advertisements

Several multiple regressions were conducted to determine the extent to which the individual difference variables examined in this study moderated participants' responses to the anti-smoking ads. Interestingly, all but one of the significant effects found in these analyses occurred in response to the more graphic rather than the less graphic ads, and gender was the most frequent significant predictor of how people responded to the ads, though experience with tobacco, symptoms of depression, and internal locus of control also predicted some responses to the graphic anti-tobacco ads.

As indicated above, gender was the most frequent significant predictor of participants' responses. I had hypothesized that women, more than men, would report that anti-tobacco messages, especially the graphic ones, were more effective. This hypothesis was supported by the data as women reported the graphic ads to be scarier,

more frightening, and more sickening than did men. These results show that women report more negative affect than men do after viewing the ads with more graphic imagery. Finally, women reported being more aroused than men by all of the anti-smoking ads (i.e., both the more graphic and less graphic). These results are intriguing because they suggest that gender differences are not ubiquitous in response to anti-smoking ads containing fear messages about health harms, but rather are specifically associated with the disgust-evoking graphic imagery in only some of the ads used in this study. Some studies in the literature have reported that anti-tobacco messages appear to be more effective for women than men (see for example Samu, & Bhatnagar, 2008 and Smith, & Stutts, 1999); however, the present study's results suggest that this is not necessarily true, at least in all circumstances. First, men and women did not differ in their responses to the less graphic ads (with the exception of overall negative arousal). Second, most of the differences between men and women were in their endorsement of various negative affect terms such as sickening or scary, only one difference on perceived effectiveness was found (i.e., the ad made me think about my health). Finally, on the overall assessment of whether an ad was a good anti-smoking ad, no significant gender differences emerged. Therefore, though not definitive, it appears that similar anti-smoking ads may be equally effective for men and women and media campaigns may not have to be overly concerned about gender differences in response to health harms ads with fear messages regardless of whether or not they employ disgust-evoking graphic imagery.

Participants' experiences with or exposures to tobacco did not affect their responses to the anti-smoking ads, at least to the extent that had been hypothesized or expected. Tobacco smoking exposure was a significant predictor only for the measure

assessing thoughts about health after viewing the more graphic imagery ads. It did not predict affective responses, arousal, or any of the other perceived effectiveness variables, most notably the item about how good of an anti-smoking ad each ad was for either more or less graphic imagery ads. Therefore, overall this study's results do not support the argument that people with more experience with tobacco will not respond as favorably as nonsmokers to health harms ads with fear messages and disgust-evoking graphic imagery. Despite this conclusion it is important not to minimize the importance of the finding that those with more experience with tobacco in this study were less likely to stop and think about their health after viewing a more graphic imagery ad than were those with less tobacco use experience. This finding is similar to others in the literature (see for example Hwang, 2010; Samu & Bhatnagar, 2008; Vogeltanz-Holm, Holm, White Plume & Poltavski, 2009), and it is also important that this difference did not occur with the less graphic imagery ads, possibly providing some support for the argument that combining fear messages and disgust-evoking graphic imagery can overwhelm the resources of smokers since they would feel more threatened by the material than nonsmokers (Leshner, Bolls & Thomas, 2009; Leshner, Vultee, Bolls, & Moore, 2010). Finally, it is possible that more statistically significant effects of tobacco experience were not found in this study because of the low level of current smoking. Only 14.6% of participants were current smokers and none reported smoking levels that could be characterized as heavy or even frequent consistent with their low scores on the Fagerstrom Scale and the Tobacco Craving Questionnaire.

It was hypothesized that a participant's locus of control might affect his or her responses to the anti-smoking ads with someone with an external locus of control perceiving the ads as less effective because of not believing themselves capable of

making meaningful change as to avoid the consequences. In only one case, however, did locus of control predict any response to the ads and that was where participants having a more internal locus of control rated the more graphic imagery ads as more sickening than those having a more external locus of control. Previous literature examining locus of control and smoking has examined the likelihood of smoking and have found that people with an internal locus of control are less likely to smoke and if they do smoke, more likely to eventually quit smoking (Graffeo & Silvestri, 2006; Rosenbaum & Argon, 1979). No studies have analyzed how locus of control beliefs might affect how people perceive and respond to anti-smoking advertisements and the present study suggests that it need not be a concern when developing anti-smoking ads and planning media campaigns.

Higher levels of depression were hypothesized to affect participants' responses to the ads so that they would perceive them to be less effective than participants with lower levels of depression. This hypothesis was not supported. In fact, the only statistically significant finding for depression was that those with higher levels reported the more graphic imagery ads to be more frightening than those with lower levels of depression. If reliable, this finding suggests that depressed individuals might show greater negative affective responses to the graphic imagery ads and therefore might respond better to these ads than non-depressed individuals. Overall, however, the bulk of the results of this study suggest that varying levels of depression do not have a meaningful effect on the manner by which people respond to these health harms ads with fear messages and varying levels of disgust-evoking graphic imagery.

Self-control was hypothesized to play a role in participants' responses to the ads in this study with individuals with higher levels perceiving the ads as more effective than

those with lower levels of self-control. This hypothesis was not supported as self-control did not predict responses to either the more graphic or the less graphic ads. This suggests that it may not be effective to tailor anti-tobacco messages to those with low self-control. And although those with high self-control are less likely to use various substances (Morris, Wood & Dunaway, 2006), this variable does not appear to be strong enough to predict responses to anti-tobacco media. De Ridder and colleagues (2012) recently reported that low self-control is linked to engaging in risky behaviors such as smoking and because few of the participants in the present study were smokers it is worth considering whether the range in self-control scores was restricted which could have attenuated correlations between self-control and responses to the ads. Examination of the self-control scores, however, did not reveal an exceptionally restricted range of scores for a young adult sample. Previous studies have used different measures of self-control than were used in this study. In a study by Morris and colleagues (2006), a self-control scale contained scores on a range between one standard deviation below and above the mean, indicating a non-restricted range of scores in a sample of young adults. Another study by de Ridder and colleagues (2012) did a meta-analysis using for example the same self-control scale (among others) used in this study. Results of that study indicated that the range of responses among young adults was fairly normal although the participants had a tendency towards embracing more symptoms of self-control, with scores ranging between about one standard below the mean and one standard deviation above the mean which was approximately the mean value of a scale from one to five. The distribution for this study therefore looked similar to those reported in other studies.

Finally, it was hypothesized that participants with lower levels of stress would be more affected by the anti-tobacco ads than those reporting higher levels of stress. This hypothesis was not supported. Stress levels did not significantly affect how the participants responded to either the more graphic or the less graphic anti-tobacco ads. Low stress-levels have been linked to being less likely to smoke, and more likely to be affected by anti-tobacco ads (such as paying attention to the ads) (see for example Straub, Hills, Thompson, & Moscicki, 2003), but we did not find such effects. This study included both non-smokers and individuals who had some experience with tobacco whereas some other studies have only included non-smokers which might explain why the results of this study are different from those of others. On the other hand, there were relatively few smokers in this study so it is not likely that their responses were affecting the results. A previous study for example was survey based and examined the frequency of exposure to anti-tobacco messages among participants in a variety of different media, such as on TV, and on billboards. Some of the media messages that participants were exposed to may have contained fear messages and graphic imagery although that is unclear. This current study exposed participants to specific advertisements, containing fear messages and graphic imagery, presented as ads seen on TV, instead of relying on previous exposure to any kind of media exposure, which might explain any differences in results.

There is some support for the argument that individual differences such as gender, smoking experience, locus of control and level of depression significantly affect some affective and evaluative responses young adults have to anti-tobacco ads, especially the ones with more graphic imagery. However, the findings are not very consistent and suggest that until we find more consistent and robust effects, the development of anti-

tobacco media and the planning of media campaigns do not have to be overly concerned about tailoring ads to any particular subgroup. In fact, this study demonstrated that health harms ads with fear messages are perceived by young adults as effective ads and that those with more disgust-evoking imagery are not only associated with greater negative affective responses but also greater perceived effectiveness ratings. Therefore future anti-tobacco media campaigns might want to emphasize including disgust-evoking, graphic imagery in ads when delivering the anti-tobacco messages.

Smokers' Responses to Anti-Tobacco Ads

The smokers in this study were only a small part of the complete sample. Additionally, the majority of the smokers in this study did not appear to be heavy smokers and they showed only a few signs of nicotine dependence. They also did not appear to be craving tobacco. The smokers appeared to respond to the ads in a similar way as other participants, although they did respond with more negative affect towards one of the ads (Suzy) compared to the overall sample. Since the response pattern to the anti-tobacco ads were similar for the smokers and the entire sample, the smokers also tended to show stronger responses to the more graphic ads than the less graphic ads.

Limitations and Future Directions

The subsample of smokers in this study, like the complete sample, showed stronger affective responses and greater perceived effectiveness ratings to the more graphic anti-tobacco ads compared to the less graphic ads. However, there were relatively few smokers in the study, and of those who smoked, most had low or very low nicotine dependency. Therefore, it is possible that with greater levels of nicotine dependency more differences in responses to the ads might have emerged within the smoker subsample.

The participants in this study were undergraduates taking at least one psychology course, and therefore the results may be different for other populations. Further examination of this topic could cast light on how people at different ages, for example, respond to anti-tobacco ads containing different levels of graphic material. The majority of the participants was Caucasian, lived in the Midwest, and were upper class. The study was also conducted in a classroom so the participants in this study watched the ads either alone or with a few other participants. They may respond differently to the ads in another environment, such as at home or with friends and family, which may affected how effective the anti-tobacco ads are. The ads were health harms and they used fear messages but differed in how much disgust they evoked. Different ads could therefore lead to different results from this study. This study also relied on self-report measures and some of the participants may find it easier to express their emotional responses to the ads whereas others may find it more difficult, which could be affecting the results. This study also suggests that women tend to show greater negative affective responses to the more graphic ads than men. This may be reflecting differences in gender roles regarding reporting or sharing affective responses and may not emerge with other assessments of affective responses that are measured through other ways than self-report. Future studies might therefore include some objective measures, such as EEG in addition to self-report measures.

This study examined a few individual differences but there may be other individual differences that could be affecting how people respond to anti-tobacco ads. This study did not find evidence suggesting that anti-tobacco ads should be tailored to any specific individual differences.

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APPENDICES

Appendix A
Description of anti-smoking advertisements.

Type	Title	Description	Campaign	Year
Less graphic	Still Can't Quit	A 15-year old boy that has spots on his lungs from smoking and is worried about his health. He still can't quit smoking.	Just Eliminate Lies (Iowa)	2002
	Echo	People give a reason for why they can't stop smoking. In between other people mention things they can't do because of smoking.	None	2002
	Suzy's Ad	Suzy had a stroke because of smoking. In this ad she describes her life and her loss of independence.	<i>Tips From Former Smokers. A campaign released by the Centers for Disease Control and Prevention (CDC).</i>	2012
Graphic	Artery	An artery (aorta) of a smoker is shown and the insides are squeezed out.	Every Cigarette Does Damage (NTC)	2000
	Brain	The insides of a brain are shown and the damage that smoking caused in the brain, e.g. the formation of a blot clot.	Every Cigarette Does Damage (NTC)	2000
	Terrie's Ad	Terrie describes how she gets ready for the day. She was diagnosed with throat and oral cancer and went through surgery that made her lose her teeth, hair and have a laryngectomy.	<i>Tips From Former Smokers. A campaign released by the Centers for Disease Control and Prevention (CDC).</i>	2012

Appendix B
Demographics

1. How old are you? _____

2. What is your gender?

Female

Male

3. Which of the following categories best describes your race or ethnic group?

White

Black

Hispanic

Asian

Other

Appendix C
Experience with tobacco

1. Have you ever tried cigarette smoking, even one or two puffs?
 Yes
 No

2. How old were you when you smoked a whole cigarette for the first time?
 I have never smoked a whole cigarette
 8 years old or younger
 9 or 10 years old
 11 or 12 years old
 13 or 14 years old
 15 or 16 years old
 17 years old or older

3. Have you smoked 100 cigarettes or more in your lifetime?
 Yes
 No

4. During the past 30 days, on how many days did you smoke cigarettes?
 0 days
 1 or 2 days
 3 to 5 days
 6 to 9 days
 10 to 19 days
 20 to 29 days
 All 30 days

5. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?
 I did not smoke cigarettes during the past 30 days
 Less than 1 cigarette per day
 1 cigarette per day
 2 to 5 cigarettes per day
 6 to 10 cigarettes per day
 11 to 20 cigarettes per day
 More than 20 cigarettes per day

6. Have you ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days?
 Yes
 No
7. During the past 12 months, did you ever try to quit smoking cigarettes?
 I did not smoke during the past 12 months
 Yes
 No
8. During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?
 0 days
 1 or 2 days
 3 to 5 days
 6 to 9 days
 10 to 19 days
 20 to 29 days
 All 30 days
9. During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?
 0 days
 1 or 2 days
 3 to 5 days
 6 to 9 days
 10 to 19 days
 20 to 29 days
 All 30 days
10. Does anyone in your immediate family smoke cigarettes?
 Yes
 No
 Don't know
 Refused
11. How many of your four closest friends smoke cigarettes?
 None
 Not sure
 One
 Two
 Three
 Four

Appendix D
Brief Self-Control Scale

Using the scale provided, please indicate how much each of the following statements reflects how you typically are.

		Not at all				Very much
SC1	I am good at resisting temptation	1	2	3	4	5
SC2	I have a hard time breaking bad habits	1	2	3	4	5
SC3	I am lazy	1	2	3	4	5
SC4	I say inappropriate things	1	2	3	4	5
SC5	I do certain things that are bad for me, if they are fun	1	2	3	4	5
SC6	I refuse things that are bad for me	1	2	3	4	5
SC7	I wish I had more self-discipline	1	2	3	4	5
SC8	People would say that I have iron self-discipline	1	2	3	4	5
SC9	Pleasure and fun sometimes keep me from getting work done	1	2	3	4	5
SC10	I have trouble concentrating	1	2	3	4	5
SC11	I am able to work effectively toward long-term goals	1	2	3	4	5
SC12	Sometimes I can't stop myself from doing something, even if I know it is wrong	1	2	3	4	5
SC13	I often act without thinking through all the alternatives	1	2	3	4	5

Appendix E
Rotter's Locus of Control Scale

For each question, please choose answer option a or b.

1. a. Children get into trouble because their parents punish them too much.
1. b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
2. b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
3. b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
4. b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
5. b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks, one cannot be an effective leader.
6. b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try, some people just don't like you.
7. b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
8. b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
9. b. Trusting fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely, if ever, such a thing as an unfair test.
10. b. Many times, exam questions tend to be so unrelated to course work that studying is really useless.
11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
11. b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
12. b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
13. b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
14. b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
15. b. Many times we might just as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
16. b. Getting people to do the right thing depends upon ability - luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
17. b. By taking an active part in political and social affairs the people can control world events.
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
18. b. There really is no such thing as "luck."
19. a. One should always be willing to admit mistakes.
19. b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
20. b. How many friends you have depends upon how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
21. b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
22. b. It is difficult for people to have much control over the things politicians do in office.
23. a. Sometimes I can't understand how teachers arrive at the grades they give.
23. b. There is a direct connection between how hard I study and the grades I get.
24. a. A good leader expects people to decide for themselves what they should do.
24. b. A good leader makes it clear to everybody what their jobs are.
25. a. Many times I feel that I have little influence over the things that happen to me.
25. b. It is impossible for me to believe that chance or luck plays an important role in my life.
26. a. People are lonely because they don't try to be friendly.
26. b. There's not much use in trying too hard to please people, if they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
27. b. Team sports are an excellent way to build character.
28. a. What happens to me is my own doing. 2
28. b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
29. b. In the long run the people are responsible for bad government on a national as well as on a local level.

Appendix F

Center for Epidemiological Studies Depression Scale – CESD-8

For each description, please tell me how often you have felt this way during the past week.

1. I felt that I could not shake off the blues even with help from my family or friends.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
2. I felt depressed.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
3. I thought my life had been a failure.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
4. I felt fearful.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
5. My sleep was restless.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
6. I felt lonely.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
7. I had crying spells.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)
8. I felt sad.	<input type="radio"/> Rarely or none of the time (less than 1 day) <input type="radio"/> Some or a little of the time (1-2 days) <input type="radio"/> Occasionally or a moderate amount of the time (3-4 days) <input type="radio"/> Most or all of the time (5-7 days)

Appendix G
Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

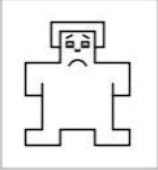
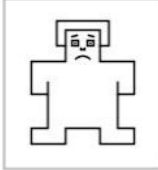
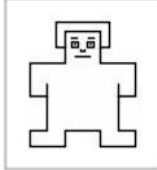
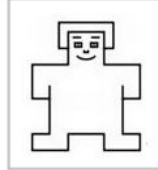
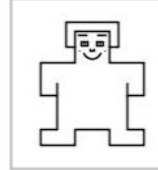
0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset
because of something that happened unexpectedly?..... **0 1 2 3 4**
2. In the last month, how often have you felt that you were unable
to control the important things in your life?..... **0 1 2 3 4**
3. In the last month, how often have you felt nervous and “stressed”? **0 1 2 3 4**
4. In the last month, how often have you felt confident about your ability
to handle your personal problems?..... **0 1 2 3 4**
5. In the last month, how often have you felt that things
were going your way?..... **0 1 2 3 4**
6. In the last month, how often have you found that you could not cope
with all the things that you had to do? **0 1 2 3 4**
7. In the last month, how often have you been able
to control irritations in your life?..... **0 1 2 3 4**
8. In the last month, how often have you felt that you were on top of things?.... **0 1 2 3 4**
9. In the last month, how often have you been angered
because of things that were outside of your control? **0 1 2 3 4**
10. In the last month, how often have you felt difficulties
were piling up so high that you could not overcome them?..... **0 1 2 3 4**

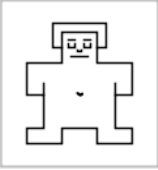
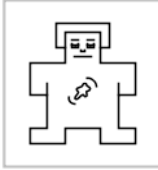
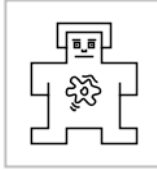
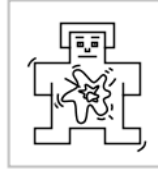
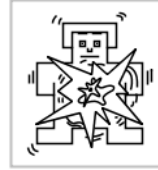
Appendix H
Advertisement Rating Form

1. This ad was....	Not At All					Very Much So
Scary	1	2	3	4	5	
Frightening	1	2	3	4	5	
Sickening	1	2	3	4	5	
Repulsive	1	2	3	4	5	
Gross	1	2	3	4	5	

2. While watching this ad, I felt (fill in the circle below that matches your reaction to this ad)

				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extremely Unpleasant				Extremely Pleasant

3. While watching this ad, I felt (fill in the circle below that matches your reaction to this ad)

				
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extremely Calm				Extremely Aroused

4. How well do the following phrases describe this ad? (Circle one number for each phrase)

This ad...	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
had a message that was important to me	1	2	3	4	5
made me stop and think about my health	1	2	3	4	5
is one that I will likely tell other people about	1	2	3	4	5

5. Overall, I thought this ad was a very good anti-smoking advertisement:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree

6. The overall production quality of this ad was...

1	2	3	4	5
Very Poor	Somewhat Poor	Average	Good	Very Good

7. Have you seen this ad on TV before today? (Circle one)

1=Yes 2=No 3=Not Sure

8. On a scale from 0-100%, to what extent did you pay attention to this ad?

_____ %

Appendix I

Informed Consent

This research is conducted by Harpa Lind Jonsdottir, a graduate student in clinical psychology at the University of North Dakota. She works under the supervision of Dr. Jeff Holm and Dr. Nancy Vogeltanz-Holm at the Center for Health Promotion and Prevention Research at UND, and the Psychology Department at UND. Consent to participate is based on the understanding of the nature and possible risks of the research. After reading through the following information you may decide if you want to participate.

The study will take approximately 45 minutes. By participating in the study you will receive extra credit. If you wish to discontinue the study you will not be penalized. If you wish to discontinue the study, then please inform the researcher.

The purpose of this study is to examine young adults' responses to anti-tobacco advertisements. If you agree to participate in this study, you will be asked to complete two initial questionnaires about your smoking status, demographics, and previous exposure to antismoking advertisements. You will then view six anti-tobacco advertisements. After watching each ad once you will complete a questionnaire about your attitudes and reactions to the ad.

All information obtained in this study will be confidential and your name will not be connected with your responses. All information from you will be stored in a locked office for a required time of three years. At that time, all questionnaires and consent forms will be destroyed. Only the researcher, advisers, research assistants, and people who audit IRB procedures will have access to the data. Additionally, you will receive a copy of this consent form.

There are some minor risks involved with participation in this study, like feeling uncomfortable or some emotional discomfort after viewing the advertisements. In the event that you have any such experiences, please let the researcher know or feel free to contact the principal investigator (Harpa Jonsdottir- 777-0296) or this project's faculty advisors, Dr. Jeffrey Holm (777-4046) or Dr. Nancy Vogeltanz-Holm (777-4046). Finally, you can contact the Psychological Services Center in 210 Montgomery Hall or at 777-3691 which provides services for a minor fee, or the University Counseling Center, 777-4189 which provides free services to university students.

Findings from this study are expected to further scientific knowledge about the effectiveness of antismoking campaigns and the role of individual differences. Participation in this study will contribute to that knowledge. Information obtained in this will be presented as a whole in combination with responses from all participants and no single participant can be identified.

If you have any questions or concerns about the research, please call Harpa Jonsdottir at (701) 777-0296. You may also contact Dr. Nancy Vogeltanz-Holm at (701) 777-3148 or Dr. Jeff Holm at (701) 777-3031, or the UND Office of Research and Program Development at (701) 777-4279.

By signing below, I am indicating that I have read and understood this consent form and voluntarily choose to participate in the study.

Participant Name (*Printed*)

Participant Signature

Date

Signature of Person Who Obtained Consent

Date

I also wish to be entered into the drawing for the \$25 Target Gift Card. I understand that should my name be drawn I will be required to provide my social security number before I can receive the \$25 Target Gift Card.

Participant Signature

Date

Appendix J

Table 14. Comparisons between “Scary” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-6.76	143	<.001	1.13
Echo vs. Suzy	-2.66	143	.009	.44
Echo vs. Terrie	-13.02	143	<.001	2.18
Echo vs. Artery	-7.42	142	<.001	1.25
Echo vs. Brain	-9.60	143	<.001	1.61
Still Can’t Quit vs. Suzy	3.73	143	<.001	.62
Still Can’t Quit vs. Terrie	-6.50	143	<.001	1.08
Still Can’t Quit vs. Artery	-.53	142	.59	.09
Still Can’t Quit vs. Brain	-2.38	143	.02	.39
Suzy vs. Terrie	-10.61	143	<.001	1.77
Suzy vs. Artery	-4.16	142	<.001	.69
Suzy vs. Brain	-6.06	143	<.001	1.01
Terrie vs. Artery	5.42	142	<.001	.91
Terrie vs. Brain	4.24	143	<.001	.71
Artery vs. Brain	-1.85	142	.07	.31

Table 15. Comparisons between “Frightening” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-6.22	143	.000	1.04
Echo vs. Suzy	-3.01	143	.003	.50
Echo vs. Terrie	-13.50	143	.000	2.26
Echo vs. Artery	-6.65	142	.000	1.11
Echo vs. Brain	-9.19	143	.000	1.54
Still can’t quit vs. Suzy	3.34	143	.001	.56
Still can’t quit vs. Terrie	-6.88	143	.000	1.15
Still can’t quit vs. Artery	-.34	142	.740	.06
Still can’t quit vs. Brain	-2.60	143	.010	.43
Suzy vs. Terrie	-10.92	143	.000	1.83
Suzy vs. Artery	-3.38	142	.001	.57
Suzy vs. Brain	-5.77	143	.000	.97
Terrie vs. Artery	6.23	142	.000	1.05
Terrie vs. Brain	4.88	143	.000	.82
Artery vs. Brain	-2.40	142	.018	.40

Table 16. Comparisons between “Sickening” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-2.41	143	.017	.40
Echo vs. Suzy	-6.52	143	.000	1.09
Echo vs. Terrie	-14.61	143	.000	2.44
Echo vs. Artery	-18.51	142	.000	3.11
Echo vs. Brain	-14.76	143	.000	2.47
Still can’t quit vs. Suzy	-4.28	143	.000	.72
Still can’t quit vs. Terrie	-13.26	143	.000	2.22
Still can’t quit vs. Artery	-17.77	142	.000	2.98
Still can’t quit vs. Brain	-12.88	143	.000	2.15
Suzy vs. Terrie	-8.68	143	.000	1.45
Suzy vs. Artery	-12.34	142	.000	2.07
Suzy vs. Brain	-8.88	143	.000	1.49
Terrie vs. Artery	-4.96	142	.000	.83
Terrie vs. Brain	-.46	143	.65	.08
Artery vs. Brain	5.35	142	.000	.89

Table 17. Comparisons between “Repulsive” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-1.88	143	.063	.31
Echo vs. Suzy	-5.60	142	.000	.94
Echo vs. Terrie	-14.17	143	.000	2.37
Echo vs. Artery	-18.24	142	.000	3.06
Echo vs. Brain	-13.64	143	.000	2.28
Still can’t quit vs. Suzy	-4.64	142	.000	.78
Still can’t quit vs. Terrie	-13.50	143	.000	2.26
Still can’t quit vs. Artery	-17.66	142	.000	2.96
Still can’t quit vs. Brain	-13.30	143	.000	2.22
Suzy vs. Terrie	-9.24	142	.000	1.55
Suzy vs. Artery	-12.51	141	.000	2.11
Suzy vs. Brain	-8.74	142	.000	1.47
Terrie vs. Artery	-4.62	142	.000	.78
Terrie vs. Brain	-.32	143	.750	.05
Artery vs. Brain	6.01	142	.000	1.01

Table 18. Comparisons between “Gross” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-2.65	143	.009	.44
Echo vs. Suzy	-8.35	143	.000	1.39
Echo vs. Terrie	-16.43	143	.000	2.75
Echo vs. Artery	-25.75	142	.000	4.32
Echo vs. Brain	-17.74	143	.000	2.97
Still can’t quit vs. Suzy	-6.57	143	.000	1.09
Still can’t quit vs. Terrie	-16.02	143	.000	2.68
Still can’t quit vs. Artery	-23.87	142	.000	4.01
Still can’t quit vs. Brain	-17.14	143	.000	2.87
Suzy vs. Terrie	-8.30	143	.000	1.39
Suzy vs. Artery	-16.13	142	.000	2.71
Suzy vs. Brain	-10.15	143	.000	1.69
Terrie vs. Artery	-8.60	142	.000	1.44
Terrie vs. Brain	-2.64	143	.009	.44
Artery vs. Brain	7.18	142	.000	1.21

Table 19. Comparisons between “Unpleasant” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	5.34	143	.000	.89
Echo vs. Suzy	5.29	143	.000	.88
Echo vs. Terrie	11.41	143	.000	1.91
Echo vs. Artery	10.33	143	.000	1.73
Echo vs. Brain	8.81	143	.000	1.47
Still can’t quit vs. Suzy	.21	143	.83	.04
Still can’t quit vs. Terrie	8.02	143	.000	1.34
Still can’t quit vs. Artery	6.10	143	.000	1.02
Still can’t quit vs. Brain	4.82	143	.000	.81
Suzy vs. Terrie	7.80	143	.000	1.30
Suzy vs. Artery	5.38	143	.000	.89
Suzy vs. Brain	4.42	143	.000	.74
Terrie vs. Artery	-1.36	143	.18	.23
Terrie vs. Brain	-3.75	143	.000	.63
Artery vs. Brain	-2.41	143	.02	.40

Table 20. Comparisons between “Arousal” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-4.43	143	.000	.74
Echo vs. Suzy	-3.13	143	.002	.52
Echo vs. Terrie	-11.39	143	.000	1.90
Echo vs. Artery	-12.55	143	.000	2.09
Echo vs. Brain	-10.25	143	.000	1.71
Still can’t quit vs. Suzy	1.06	143	.29	.18
Still can’t quit vs. Terrie	-7.86	143	.000	1.31
Still can’t quit vs. Artery	-8.85	143	.000	1.48
Still can’t quit vs. Brain	-6.81	143	.000	1.14
Suzy vs. Terrie	-9.47	143	.000	1.58
Suzy vs. Artery	-9.03	143	.000	1.51
Suzy vs. Brain	-8.03	143	.000	1.34
Terrie vs. Artery	-1.72	143	.09	.29
Terrie vs. Brain	.78	143	.439	.13
Artery vs. Brain	3.03	143	.003	.51

Table 21. Comparisons between “Had Important Message” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-3.78	143	.000	.63
Echo vs. Suzy	-2.67	143	.009	.45
Echo vs. Terrie	-5.19	143	.000	.87
Echo vs. Artery	-4.81	143	.000	.80
Echo vs. Brain	-4.73	143	.000	.79
Still can’t quit vs. Suzy	1.19	143	.235	.19
Still can’t quit vs. Terrie	-1.70	143	.091	.28
Still can’t quit vs. Artery	-1.32	143	.188	.22
Still can’t quit vs. Brain	-1.09	143	.279	.18
Suzy vs. Terrie	-2.88	143	.005	.48
Suzy vs. Artery	-2.32	143	.022	.39
Suzy vs. Brain	-2.51	143	.013	.42
Terrie vs. Artery	.411	143	.681	.07
Terrie vs. Brain	.523	143	.602	.09
Artery vs. Brain	.109	143	.913	.02

Table 22. Comparisons between “Made Me Think About My Health” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s d
Echo vs. Still Can’t Quit	-2.85	143	.005	.48
Echo vs. Suzy	-3.11	143	.002	.52
Echo vs. Terrie	-6.69	143	.000	1.12
Echo vs. Artery	-6.88	143	.000	1.15
Echo vs. Brain	-5.48	143	.000	.92
Still can’t quit vs. Suzy	.00	143	1.00	0
Still can’t quit vs. Terrie	-4.20	143	.000	.70
Still can’t quit vs. Artery	-4.88	143	.000	.82
Still can’t quit vs. Brain	-3.24	143	.002	.54
Suzy vs. Terrie	-4.14	143	.000	.69
Suzy vs. Artery	-4.37	143	.000	.73
Suzy vs. Brain	-3.05	143	.003	.51
Terrie vs. Artery	-.74	143	.46	.12
Terrie vs. Brain	.90	143	.368	.15
Artery vs. Brain	1.67	143	.097	.28

Table 23. Comparisons between “Likely Tell People About My Health” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s d
Echo vs. Still Can’t Quit	-3.16	143	.000	.53
Echo vs. Suzy	-1.53	143	.128	.26
Echo vs. Terrie	-10.06	143	.000	1.68
Echo vs. Artery	-8.74	143	.000	1.46
Echo vs. Brain	-7.02	143	.000	1.17
Still can’t quit vs. Suzy	1.69	143	.094	.28
Still can’t quit vs. Terrie	-7.83	143	.000	1.31
Still can’t quit vs. Artery	-6.05	143	.000	1.01
Still can’t quit vs. Brain	-4.16	143	.000	.69
Suzy vs. Terrie	-8.86	143	.000	1.48
Suzy vs. Artery	-7.61	143	.000	1.27
Suzy vs. Brain	-6.37	143	.000	1.07
Terrie vs. Artery	1.88	143	.063	.31
Terrie vs. Brain	3.19	143	.002	.53
Artery vs. Brain	1.90	143	.059	.32

Table 24. Comparisons between “Overall, A Good Anti-Smoking Ad” ratings for the advertisements.

Ad Pairs	<i>t</i>	df	<i>p</i>	Cohen’s <i>d</i>
Echo vs. Still Can’t Quit	-2.81	142	.006	.47
Echo vs. Suzy	-2.06	142	.041	.35
Echo vs. Terrie	-9.93	142	.000	1.67
Echo vs. Artery	-6.86	142	.000	1.15
Echo vs. Brain	-4.31	142	.000	.72
Still can’t quit vs. Suzy	.812	143	.42	.14
Still can’t quit vs. Terrie	-8.34	143	.000	1.39
Still can’t quit vs. Artery	-4.66	143	.000	.78
Still can’t quit vs. Brain	-1.71	143	.089	.29
Suzy vs. Terrie	-10.13	143	.000	1.69
Suzy vs. Artery	-5.41	143	.000	.90
Suzy vs. Brain	-2.65	143	.009	.44
Terrie vs. Artery	3.57	143	.000	.59
Terrie vs. Brain	7.35	143	.000	1.23
Artery vs. Brain	4.61	143	.000	.77