

**The influence of fear and authority on psychological reactance: A study of the  
effectiveness of public service announcement campaigns on drunk driving  
prevention among college students**

by

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**ABSTRACT**

This study investigates the influence of psychological reactance on the campaign message of “preventing drunk driving” to college students; it is based on different levels of source authority and fear appeal. 146 undergraduate students were divided into five groups to take an online survey examining their cognition with respect to different types of posters. Their perceived degrees of threat to freedom, psychological reactance, attitudes, and behavioral intention were tested among five hypotheses and one research question. This study found that: (1) Participants’ psychological reactance was significantly related with their threat to freedom, but strongly negatively related with both attitude and behavioral intention to follow the advice in the posters; (2) The level of source authority of spokespersons in the campaign was positively-related with psychological reactance; (3) A high level of fear appeal of message content significantly generated a significantly higher psychological reactance; (4) There was no significant interaction between level of source authority and level of fear appeal on psychological reactance.

## CHAPTER 1

### INTRODUCTION

As alcohol consumption in college students' daily lives has increased, both society and the government have become increasingly concerned about alcohol-related risky behavior. Recently, the results of the College Risk Behaviors Study (CRBS), conducted with full-time undergraduate students at the University of Delaware (University of Delaware Center for Drug and Alcohol Studies, 2012), indicated that 77% of the students had consumed alcohol during the previous month. In addition, 58% had experienced binge and drinking, i.e., had drunk five or more alcohol-based drinks in a single sitting, and 72% reported that they had drunk alcohol before they turned 21 years old. Compared with the results of the 2009 youth Risk Behavior Survey, the amount of alcohol consumed had increased by about 30% over a three year time span. Alcohol consumption is thus considered a major health problem among college students; in particular, about 7% of the students self-reported having driven under the influence of alcohol.

Considering the vulnerability of an individual driving under the influence of alcohol, 42 states, the District of Columbia, the Northern Mariana Islands and the Virgin Islands allow law enforcement authorities to appropriate a driver's license if the individual fails a chemical sobriety test (Governors Highway Safety Association, 2014). Although many Public Service Announcements (PSA) have tried to persuade people to avoid driving under the influence of alcohol, 28 people on average die every day because of drunk driving-related accidents (NHTSA FARS data, 2013), meaning that over 10,000 people lost their lives in 2012. During the 1980s, the number of deaths caused by drunk driving was only half the figure of today.

According to research by NHTSA (NHTSA, 2012), the highest proportion (32%) of drunk drivers was in the age range 21 to 24 and the majority were undergraduate students.

Psychological reactance theory (PRT), developed by Brehm (1966), is the most popular theory for explaining people's motivations to reject persuasive messaging, or even to intensify their behavior opposing such messaging. According to William R. Miller (2000), "Research demonstrates that a counselor can drive resistance (denial) levels up and down dramatically according to his or her personal counseling style." Many scholars and advertising practitioners have noted this phenomenon and have taken it into account in creating messages. It therefore seems important to study the relationship between message contents and people's resistant behaviors, using psychological reactance theory as a framework, in both academic and professional areas. The theory assumes that people have a natural motivation to pursue "free behavior," with respect to both the physical and psychological aspects, and this desire causes people to seek to restore their freedom by taking opposing actions (Brehm, 1966).

Many studies have shown that social influence is related to people's perceptions of threats to their freedom (J.W. Brehm, 1966; S. S. Brehm & Brehm, 1981) that can be associated with predicted reactance. Source credibility is a significant characteristic in persuasive messaging, is the perceived trustworthiness and motivation of the spokesperson of an advertisement (Kelman & Hovland, 1953). In recent years, many communication scholars have preferred to focus on the effects of moderators and mediators on information sources in persuasive messaging; such effects are directly related to persuasion results. However, current studies using reactance theory only slightly involve source credibility in persuasive messaging by

using reactance theory. The potential relationship between sources and audiences is an important aspect of credibility. Sivlia (2005) also confirmed that interpersonal similarity could overcome opposing forces in the persuasive process.

Because of the seriousness of college students' alcohol consumption and consequential driving under the influence of alcohol, it would appear important to identify the psychological status of these students when they are watching PSAs on preventing drunk driving, and to devise ways to design more effective and convincing campaign messages. The purpose of this study was to examine whether or not there is a relationship between audiences' reactance towards campaign messaging and the level of fear and sources' authority. These findings should provide reliable and valuable information for use in developing more effective public health campaign to protect college students from the risks of drunk driving, and thereby promote promoting their well-being.

## CHAPTER 2

### LITERATURE REVIEW

This section explains the effects of fear appeal and source authority of campaign messages on audiences' psychological reactance after exposure to the messages.

#### **Fear Appeal**

Fear is a primitive instinct that can activate and guide human behavior. It creates anxiety and tension, causing people to seek ways to reduce these feelings. Fear appeals have therefore often been employed as a persuasive communication strategy to arouse a self-protective action (Witte, 1992). We can also relate fear appeal to loss-frame messages. Several studies have shown that a loss-frame message has an advantage in encouraging audiences to engage in detection behaviors (e.g., mammographies [Banks et al., 1995; Schneider, Salovey, Apanovitch, et al., 2001], breast self-exams [Meyerowitz & Chaiken, 1987], and colonoscopies [Edwards, Elwyn, Covey, Matthews, & Pill, 2001]) and reduction of drug use among adolescents (Cho and Boster, 2008). According to LaTour and Zahra (1989), there are three necessary steps in efforts to persuade using fear appeal.

The first step is to construct a situation of fear and anxiety to arouse people's sense that they are at risk and vulnerable, thereby activating their sense of uncertainty about their environment. Many modern advertisements have been quite inventive in using fear appeal in this regard. In LaTour and Zahra's (1989) study of print and television media from 1979 to 1987, they pointed out that advertisers prefer to use fear appeal as a strategy in certain types of advertisements, such as for insurance policies, travelers' checks, and birth control products.

Creating a sensation of fear has been widely used to persuade undecided voters in political campaigning as well. The most common strategy is depicting “abuse” by other parties or candidates and describing the potential danger that could result from those views or policies. Fear appeal, considered a useful communication skill in these fields, is also often used in health communications. In recent decades, in the United States, Canada, and Europe, fear appeal has been a focal point used in educating the public concerning preventive measures to combat the AIDS epidemic. Nevertheless, one thing we must pay attention to when using this strategy is that fear appeal situations should be differentiated because of differences in the objectives underlying the various messages.

The second step in use of fear appeal is to describe the danger in term serious enough to arouse attention. An example of this is political propaganda used during the Second World War. Politicians today repeatedly warn us about the rise of neo-Nazi groups, comparing their ideology to that of the Fascists of World War II who committed crimes against humanity. In real-world applications, advertisers messages emphasize the vulnerability of potential targets. Once again, the response of audiences to certain threat messages will depend on their subjective assessments and experiences.

The third step is to provide an effective solution to reduce fear and evoke desired positive responses. The appeal is often coupled with assurances of “security from fear” to entice potential customers to pursue the suggested action. For example, buying an automobile insurance policy may be depicted as providing relief from worry about financial losses.

Although a number of researchers have shown that fear appeals can arouse people’s motivation to cope with danger, the efficiency of this process is related to the

level of fear appeal in the message. Keller and Block (1996) provided evidence that the level of perceived fear can be related to elaboration. Studies have shown some variation in the effectiveness of fear appeal. Hovland's (1953) study revealed that using fear resulted in less persuasion, a result opposite to the conclusion of King and Reid's (1990) study. If the level of fear is too low, people will not get involved in the scenario; conversely, if the severity of the message is too high to cope with, they will deny that the problem exists because of defensive human nature; this can also engage the audience in the way desired by the message designers. Keller and Block's (1996) study suggested that both low and high levels of evoked fear could drive people to engage in dangerous scenarios of danger in various ways. Low levels can cause people to become more involved in elaborating severity of problems, thereby increasing the possibility of their becoming motivated to seek solutions; conversely, people perceiving high levels of fear appeal may block out harmful consequences and focus on working out efficient solutions.

With regard to Psychological Reactance Theory, although few studies have been related to fear appeal, many have been conducted with gain- and loss-frame messages. Reinhart (2007) stated that, when studies among college students about organ donation were compared, gain-frame messages generated less resistance than loss-frame messages. Quick and Bates (2010) strengthened this argument with their own study. Kahneman and Tversky's (1979) prospect theory can explain the theoretical linkage in this study. Prospect theory states that people typically tend to be more risk-averse when they make choices based on gain-frame messages but prefer riskier options when they receive loss-frame messages.

Fear appeal is often used in loss-frame messages. For example, Rothman (1993) and his colleagues developed loss-frame messages to persuade people to detect skin

cancer by arousing their fear of death. Loss-frame messages were developed by Kahneman and Tversky (1979, 1992) in their Prospect Theory; they claimed that human beings have a natural inclination to maximize benefits and minimize losses or costs. Loss-frame messages attempt to arouse audiences' fear by highlighting the possibility of losing things that are important to them if they do not comply with the message. Therefore, fear appeals can be treated as a type of loss-frame messages. Several studies (Reinhart, & et.al., 2007; Quick & Bates, 2010) have confirmed that subjects in a loss-framed condition show greater psychological reactance than those in a gain-framed condition. Like loss-framed condition messages, messages constructed using fear appeal tend to invoke a feeling of fear that, like anger, disgust, or guilt, is a negative emotion. This feeling of fear comes with the possibility of undesirable consequences for those who do not comply with the behavior suggested in the message; audiences might perceive this as a restrictive and threatening pressure, resulting in reactance. Based on results of studies about the relationships between loss-framed messages and psychological reactance and between loss-framed messages and fear, it seems plausible to assume that the level of fear in messages is positively correlated with subjects' reactance.

### **Source Authority**

Brehm (J.W. Brehm, 1966; S. S. Brehm & Brehm, 1981) stated that the threat to freedom could be affected by social influences, including peer pressure and persuasion. Herbert Kelman (1958) identified three aspects of social influence: compliance, identification, and internalization. Compliance, associated with reactance theory, refers to the tendency of people to appear to agree with an opinion in opposition to their private thoughts. Interaction between compliance and reactance

can help the creators of messages achieve their persuasive goals (Knowles & Linn, 2004), by increasing a communicator's credibility, compliance attractiveness, or by decreasing negative aspects. When a message's content contains some element that threatens people's freedom, people will comply with the positive force of the communicator, that may outweigh their resistance, or their opposite opinion.

Therefore, the characteristics of persuasive sources play a significant role in reducing resistance. Authority can be defined differently in different areas. In governmental studies, authority is always used in the same sense as word power; in social sciences, according to the Encyclopedia of Social Sciences, authority represents the capacity, innate or acquired, for exercising superiority over a group; this is the sense we have used in this study. Source authority is therefore defined as the capacity of information sources about a specific topic in a campaign addressed to a group. Source authority is related to many factors, e.g., credibility or a spokesperson's age.

Source credibility is the impression on and perceived believability by audiences with respect to information sources in persuasive messages. The significance of source credibility of messages has been studied for many years. Aristotle said: "We believe good men more fully and more readily than others; this is true generally whatever the question is, and absolutely where exact certainty is impossible and opinion divided" (1954: 1356). Generally, there are four parts to credibility: expertise, trustworthiness, similarity, and attractiveness. Expertise and trustworthiness are considered the most powerful aspects of credibility; similarity and attractiveness have more subjective connections with audiences, and subjectivity may result in less control in the persuasive process. For purposes of clarity, we have treated source authority as part of source credibility, related to trustworthiness and expertise as well as age in this study.

College students, like adolescents, commonly believe that middle-aged people are more knowledgeable than they, and they tend to obey their authority without question (Caissy, 1994). However, the personalities of college students also cause them have considerable motivation and desire for freedom from those in authority. College students prefer to understand and explain information they obtain from mid-age adults and then use their own judgment to consider whether the messages they have received are a threat to their freedom. They often question not only the source of information, but also the persuasive message itself; this can lead to a decrease in effectiveness or even a counteracting reaction to the message.

Why do college students commonly show more reactance to people in other age groups? According to recent studies (Burgoon, Alvaro, Grandpre, & Voludakis, 2007; Poorman, 2000), the level of reactance generated during the processing of persuasive messages can vary based on differences in personality traits. Hong and Page's (1989) study associated the likelihood of reactance with several traits: the desire for the freedom of choice, conformity, behavioral freedom, and response to advice. These scholars suggest that these traits of young adults explain why they experience more reactance than other age groups (Hong, Giannakopoulous, Laing, & Williams, 1994).

On the other hand, source credibility is positively correlated with persuasiveness. Greenwald (1968) claimed that source credibility could invoke a subject's cognitive response in a persuasive process. Cognitive response theory states that the effect of a persuasive message depends on two factors: the favorability of thoughts and the current status of the particular topic. Therefore, when the subjects' and the sources' thoughts are at the same stage, the favorability of thoughts in messages plays a significant role in the persuasive process. Previous studies (Dean et al., 1971; McGinnies, 1973; Sternthal et al., 1978) have shown that higher source authority

messages are more persuasive than lower source authority messages because they inhibit one's own-thought activation.

### **Psychological Reactance Theory**

#### *Threat to Freedom and Psychological Reactance*

Brehm and colleagues (1966) developed Psychological Reactance Theory to explain why audiences perceived persuasive messages in an inefficient way and why these messages sometimes create, unintentional results. According to Brehm (1966), reactance occurs because people who process the messages feel that their freedom of choice is being threatened. Therefore this theory considers the threat to freedom to be the most significant factor. The main assumption of psychological reactance theory is that individuals believe they have the right to pursue "free behavior" at any point in their lives. To ensure they are free enough, they tend to associate their relevant physical and psychological aspects, and they must feel they are free to engage in a particular behavior at chosen moment or in the near future. Therefore, researchers believe, individuals are concerned about their freedom with respect to planning when and how to behave. The level of psychological reactance generated is related to individual awareness of freedom and the perceived ability to determine the behaviors necessary to satisfy that desire for freedom.

Based on this assumption, Brehm (1966) and other researchers developed four important elements of reactance theory: 1) perceived freedom, 2) threat to freedom, 3) reactance, and 4) restoration of freedom. Although we can conduct experiments to measure these four elements and thereby evaluate the level of reactance that occurs, individuals are rarely aware of their own reactance in ordinary situations. If individuals do become aware of reactance, they are already experiencing a relatively

high level of reactance and may already feel a high level of self-direction with respect to controlling their own behavior. To reduce this conflict between the psychological and the physical, individuals try to reestablish their freedom and regain control of their own behavior by resisting suggestions of others.

Empirical evidence suggests that psychological reactance occurs in real communication and it has been shown that several independent variables can influence an individual's reactance. Brehem and his colleagues (1981) conducted an experiment to detect differences in psychological reactance related to sex and age among children. Males showed greater desire than females for items they could not have. Another study, conducted by Miller et al. (2006), showed that adolescents experience more reactance to authoritative control than adults.

In addition to sex and age, social influence may play a significant role in influencing psychological reactance. If a persuasive message includes high levels of social pressure, individuals are more likely to resist its suggestions. At the same time, social implications can help reestablish the a feeling of "free behaviors." Silvia's (2005) study on the role of similarity on increasing compliance and reducing resistance suggests that similarity between information resources and audiences can increase credibility and compliance. To enhance the effect of a persuasive message, communicators should simultaneously reduce the threat to freedom while increasing the restoration of freedom.

#### *Psychological Reactance, Attitude, and Behavioral Intention*

Psychological theories, including psychological reactance theory, provide a theoretical framework for public health campaigns; the main purpose in studying these theories is to provide advice with respect to attitude and behavioral intent changing process.

McGuire, Lindzey, and Aronson (1985) defined attitude as “associated beliefs and behaviors towards some object.” However, while attitude may be stable over a long period; it may be easy to change when we communicate with other people or are exposed to other social influences; to diminish cognitive dissonance and maintain cognitive consistency, an individual must be highly motivated to make a change. In addition to a cognitive component, attitude has also been influenced by affective factors. Affective factors usually have been used in health campaigns (anti-smoking campaigns) and political campaigns (to emphasize the fear of terrorism). Many attitude-change research studies emphasize the significance of emotional factors such as fear, anxiety, and happiness (Brechler & Wiggins, 1992). Previous studies provide considerable evidence to support the influence of emotional components, such as fear arousal (Leventhal, 1970; Maddux & Rogers, 1980), empathy (Shelton & Rogers, 1981), or other positive-mood components (Janis, Kaye, & Kirschner, 1965), on the persuasion process.

Persuasiveness research always is related to emotions. Chaiken and Trope (1999) developed dual process models to provide a theoretical framework to explain that an individual’s attitude-changing process may be affected by both cognition and emotion; this can also be considered to be the basis of the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the Heuristic-Systematic Model (Chaiken, Liberman, & Eagly, 1989). Compared to ELM, the Heuristic-Systematic Model expounds that individuals tend to process information heuristically, emphasizing non-content cues of a persuasive message, when they are asked to evaluate the message’s information within a short time. Under these conditions, individuals unintentionally de-emphasize details and use less-systematic cognition to process information.

Therefore, the favorability toward a persuasive message may be determined by the degree of attitude change or final attitude toward suggestions in the message.

Based on psychological reactance theory, individuals always have strong motivation to seek personal freedom in decision-making processes; they often accomplish this by eliminating threat to freedom as far as possible. Some scholars suggest that reactance is either wholly or partially an emotion (Dillard & Meijnders, 2002; Nabi, 2002), this is similar as Brehm's original idea that considers reactance to be associated with adverse and aggressive feelings (Seltzer, 1983; White & Zimbardo, 1980; Wicklund, 1974). This emotional description states that reactance may generate negative emotions like anger (Dillard & Shen, 2007). If negative emotions occur when audiences are exposed to an announcement, they might consider the message to be less favorable, making them more unlikely to follow the message's suggestion.

The main purpose of most advertisements is not only to focus on attitude change, but additionally to turn this change into a desired behavioral change. Social psychologists have a continuing interest in examining the relationship between attitude and behavior (e.g., Brannon, 1976; Liska, 1975; D. J. Schneider, 1976; Schuman & Johnson, 1976). Although some studies have witnessed that behavior is also determined by other factors, the significance relationship between attitude and behavior has been reconfirmed by most studies. The possibility that an individual's action may or may not follow a suggestion could be influenced by other factors such as time, place, or feasibility; there must, however, be consistency between attitude and behavioral intention, defined as a person's perceived likelihood or "subjective probability that he or she will engage in a given behavior" (Committee on Communication for Behavior Change in the 21st Century, 2002, p. 31). It is usually considered that, if a people have a favorable with respect to a persuasive message,

they most likely have positive behavioral intention to copy the suggestion in the message, whether it becomes a final action or not; similarly, if people have an unfavorable attitude toward a persuasive message, they are unlikely have behavioral intentions to act as suggested by the message, even when other factors may lead them to do so.

### *Traits Reactance*

Since scholars have started to focus on the effectiveness of persuasion, they have noticed that personal difference factors may play a significant role in this cognitive process. Hovland and his colleagues (1959) first established a systematic study about the relationship between personality and persuasion at Yale during the 1940s through the 1950s; they found that influence, personality, and intellectual ability may affect on an individual's opinion change. Therefore, we should take individual personal traits into account when structuring a research study about persuasiveness.

The founder of Reinforcement Sensitivity Theory, Gray (1970,1981, 1982, 1991), suggests that human behavior has been governed by three independent biological systems: a behavioral-approach system, a fight-flight system, and a behavioral-inhibition system, all relating to individual difference. With respect to psychological aspects, individual difference is considered to reflect that individuals are dissimilar in their behavior and the processes generating it. This factor, which can be affected by personality, sex, age, or intelligence, helps us to explain the reasons for participants reacting differently in such experiments. Diversity of reaction in an experiment may cause variations that should be treated as errors and be addressed by control manipulation checks.

### **Hypotheses and Research Question**

Based on the literature review, five hypotheses and one research question have been proposed as listed. These will test the effect of fear appeal and source authority (independent variables) on psychological reactance (dependent variable). Also, relationships among threat to freedom, psychological reactance, attitude, and behavioral intention will be examined.

**H1: Perceived threat to freedom experienced from the persuasive messages is positively related with psychological reactance.**

**H2: After exposure to persuasive messages, psychological reactance is negatively related with attitude toward the messages.**

**H3: After exposure to persuasive messages, psychological reactance is negatively related with behavioral intention to follow the suggestions.**

**H4: Persuasive messages with high fear appeal contents will generate more psychological reactance than those with low fear appeal.**

**H5: Persuasive messages with high source authority will generate more psychological reactance than those with low source authority.**

**RQ1: Is there interaction between levels of source authority and levels of fear appeal with regard to effect on psychological reactance?**

## CHAPTER 3

### METHOD

This study design of this study is a revised version of the design of a study conducted by Quick and Bates (2010) that examined the influence of gain- or loss-frame and efficacy appeal on psychological reactance in health communications among college students. Participants were randomly assigned either to one of four treatment groups or to the control group when they connected to the online survey website. The treatment group subjects were directed to read one of four drunk driving campaign posters for 30 seconds before proceeding to the actual survey questions about their attitudes on “Preventing Drunk Driving” campaign and drunk driving; the control group subjects were asked questions about their general habits with regard to driving and drinking as well as demographic questions. A pretest was conducted before the invitational emails were sent.

#### **Participants**

Participants were randomly recruited from about 26,000 undergraduate students currently enrolled at a large mid-western university. The email addresses of 4,000 undergraduate students were obtained from the Registrar’s office; these were randomly selected from the e-mail list of all undergraduate students. Invitation and reminder emails were sent twice within two weeks, once on a Thursday and again 12 days later.

#### **Procedures**

This online study was managed by Qualtrics software, which is popular online survey software. Participants were directed to a survey webpage when they clicked on

an online link provided in the invitation email. Before the survey, an informed-consent document was provided to provide subjects with general information about the study and to ask them about their cognitive perception of a “preventing drunk driving” campaign and about their general habits. They were also notified that they had the right to leave this study at any time without finishing it.

After clicking the “Start” button to indicate they understood and accepted the study’s statement of terms, subjects were randomly assigned either to one of four treatments or to a control group. Those in the four treatment groups were given 30 seconds to read and evaluate a campaign poster about drunk driving that had been created by a fictitious agency, the “Preventing Drunk Driving Association”; those in the control group were asked to recall their general driving and drinking habits over the past six months. After those in the treatment groups had read the posters, they were asked, as a manipulation check, to estimate their perceived fear and source authority; they then answered several questions about their cognitive and affective feelings about the campaign posters to measure their perceived threat to freedom and psychological reactance. They next evaluated their attitude and potential behavioral intentions for the next six months in response to the campaign messages; to minimize the effect of personal differences on psychological reactance, participants were asked to complete questions, based on their daily lives, regarding their own psychological reactance. Finally, they were asked to provide demographic information as control measurement data. The entire study ended after subjects clicked on the “Finish” button.

### Stimuli

For the post-test only a 2×2 factorial design was conducted. The level of fear and the authority of the spokesperson were designated as either high and low. Four messages were created in the forms of a Public Service Announcement (PSA) about Drunk Driving. As Table 1 shows, the high-level fear message presents, in part, an actual accident scene resulting from Drunk Driving, including text but without the bloody aspects of accident scene, to of protecting participants' mental state.

**Table 1.** Summary of Stimulus

	<b>High fear appeal High source authority</b>	<b>High fear appeal Low source authority</b>	<b>Low fear appeal High source authority</b>	<b>Low fear appeal Low source authority</b>
<b>Text</b>	Nearly 12,000 people die in every in DUI-related accidents.	Nearly 12,000 people die in every in DUI-related accidents.	Think twice what consequences could be!	Think twice what consequences could be!
	Stop Drunk driving NOW!	Stop Drunk driving NOW!	Stop Drunk driving NOW!	Stop Drunk driving NOW!
<b>Visual aid</b>	Accident scene	Accident scene	Mix car	Mix car
<b>Spokesperson</b>	Policeman	College student	Policeman	College student

The low-level fear appeal message presents a simple mix of taxis and police cars with textual contents. Two different information sources, high source authority or low source authority, are presented in the messages. The high source authority spokesperson is a middle-aged male police officer, and the low source authority spokesperson is a person from the same age group as the undergraduate students at a typical university. Each message is includes about the same amount text.

## **Manipulation Check**

### *Perceived Fear appeal*

Three items were used to measure the perceived fear in the DUI campaigns. The statements were adapted from Keller's (1996) measurement of fear appeal: (1) change this section; (2) I think the spokesperson in this campaign is an expert in this topic; (3) I think the spokesperson in this campaign is well trained to talk about this topic.

Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.83.

### *Perceived Source Authority*

Three items were used to measure the perceived source authority in the DUI campaigns. The statements were adapted from McCroskey's (1966) measurement of source credibility: (1) I think the spokesperson in this campaign is trustworthy; (2) I think the spokesperson in this campaign is an expert in this topic; (3) I think the spokesperson in this campaign is well trained to talk about this topic. Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.78.

## **Dependent Variables**

### *Attitude*

Three items were used to measure the attitude of participants toward preventing DUI. The statements were adapted from Dillard and Shen (2005) measurement of attitude: (1) Preventing the driving under the influence by college students would be good for themselves. (2) Preventing the driving under the influence by college

students would be good for their friends. (3) Preventing the driving under the influence by college students would be good for others. Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.81.

#### *Behavioral Intention*

Three items were used to measure the behavioral intention of participants to follow the suggestions in the campaign messages during the next 3 months. The statements were adapted from Dillard and Shen (2005) measurement of attitude: (1) In the next six months, I will not drive if I have possibility to drink alcohol. (2) In the next six months, I will not drink anything with alcohol if I am driving a car. (3) In the next six months, I will not let my friends drive if they have possibility to drink alcohol. Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.79.

#### *Perceived Threat to Freedom*

Three items were used to measure the perceived threat to freedom of participants after exposed to campaign messages. The statements were adapted from Dillard and Shen (2005) measurement of perceived threat to freedom: (1)This message tried to threaten my freedom to choose. (2) This message tried to push me made the choice violating my own status. (3) This message let me feel pressure when I made a choice. Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.86.

### *Psychological Reactance*

Three items were used to measure the psychological reactance of participants after exposed to campaign messages. The statements were adapted from Dillard and Shen (2005) measurement of psychological reactance: (1) This message triggered a sense of doing drunk driving in me; (2) I feel I need to do drunk driving to erase the thought of being dependent on others; (3) I become angry when I saw this campaign message. Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.82.

## **Controlling Variable**

### *Trait Reactance*

Four items were used to measure the trait reactance of participants. The statements were adapted from Hong and Faedda's (1996) scale of trait reactance: (1) When something is prohibited, I usually think, "That's exactly what I am going to do"; (2) I become frustrated when I am unable to make free and independent decisions; (3) I become angry when my freedom of choice is restricted; (4) When someone forces me to do something, I feel like doing the opposite. Answers were measured by 5-points Likert scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. The Cronbach alpha reliability for these three items was 0.72.

## CHAPTER 4

### RESULTS

#### **Descriptive Statistics of Sample**

This study is based on an online survey conducted from April 3<sup>rd</sup>, 2014 to April 14<sup>th</sup>, 2014, and delivered using the online survey software application Qualtrics. A total of 151 participants, out of 4,000 undergraduate students that randomly selected by the registrar office from a pool of 26,000 students, submitted their answers over a period of two weeks. The response rate of this survey was therefore 3.775 percent. Among all responses, 5 incomplete surveys were discarded to protect the reliability and validity of this study, leaving 146 useful and completed surveys to be used in the data analysis.

Almost 21 (20.54) percent of participants were randomly assigned to read the campaign poster reflecting high fear appeal and high authority source (N = 30); about 23.29 percent of subjects read the poster reflecting high fear appeal and low authority source (N = 34); the campaign poster with low fear appeal and high authority source was given to 22.60 percent of those providing useful responses (N = 33); the other 26.03 percent of participants were randomly directed to the poster with low fear appeal and low authority source (N = 38); and 7.53 percent of students were in the control group (N = 11). Among the four treatment groups, the low fear appeal and low authority source group was slightly larger than the others, but they are still reasonably balanced.

Participants' demographic characteristics are shown in Table 2. As seen in the table, 54.79 percent (N = 80) of respondents were female and 45.21 percent (N = 66) were male. Caucasian/ White students (60.27%, N = 88) were the majority.

**Table 2.** Descriptive Statistics of the Sample (N=146)

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	146	100
Male	66	45.21
Female	80	54.79
Race	146	100
Caucasian/ White	88	60.27
African American/ Black	15	10.27
Hispanic or Latino	11	7.53
Asian/ Pacific Islander	28	19.18
Arabic/ Middle Eastern	0	0
Native American Indian	0	0
Other	4	2.74

of participants in this study, matching the population pattern of the university; Asian/ Pacific Islanders (19.18%, N = 28) were the second most numerous group; in addition, 10.27 percent were African American/ Black (N = 15) and 7.53 percent were Hispanic or Latino (N = 11); 2.74 percent of the participants (N = 4) indicated “Other” as their races.

## **Findings**

### *Descriptive Statistics*

Table 3 presents the means and standard deviations of responses from the four treatment groups in the survey. Because these descriptive statistics are totally focused on treatment groups, the number of respondents in this part was 135. There were three statements related to perceived source authority, i.e., the average value of the four treatment groups about their feelings with respect to the spokespersons in campaign messages: trustworthy (M = 3.178, SD = 1.414), expertise (M = 2.881, SD = 1.486), and well-trained (M = 3.007, SD= 1.463). The average of these three statements, the mean of perceived source authority of the spokespersons, was 3.022 (SD = 1.460). This means shows that perceived source authority from two sources in the four

campaign posters was approximately equal to the mid-point from the five-point Likert scale. Second, a descriptive statistic regarding the independent variable shows the

**Table 3.** Descriptive statistics

<b>Variables</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>
<i>Perceived source authority</i> <sup>a</sup>	3.022	1.460	135
I think the spokesperson in this campaign is trustworthy. <sup>b</sup>	3.178	1.414	135
I think the spokesperson in this campaign is an expert in this topic. <sup>b</sup>	2.881	1.486	135
I think the spokesperson in this campaign is well trained to talk about this topic. <sup>b</sup>	3.007	1.463	135
<i>Perceived fear appeal</i> <sup>c</sup>	2.810	1.458	135
This message makes me feel fearful. <sup>b</sup>	3.000	1.481	135
It lets me feel worried about my driving behaviors. <sup>b</sup>	2.711	1.465	135
It makes me feel anxious. <sup>b</sup>	2.719	1.407	135
<i>Perceived of threat to freedom</i> <sup>d</sup>	2.464	1.266	135
This message tried to threaten my freedom to choose. <sup>b</sup>	2.415	1.273	135
This message tried to push me made the choice violating my own status. <sup>b</sup>	2.422	1.232	135
This message let me feel pressure when I made a choice. <sup>b</sup>	2.556	1.286	135
<i>Psychological reactance</i> <sup>e</sup>	2.210	1.308	135
I feel I need to do drunk driving to erase the thought of being dependent on others. <sup>b</sup>	2.244	1.291	135
I become angry when I saw this campaign message. <sup>b</sup>	2.111	1.309	135
This message triggered a sense of doing drunk driving in me. <sup>b</sup>	2.274	1.319	135
<i>Attitude towards campaign message</i> <sup>f</sup>	4.484	0.712	135
Preventing the driving under the influence by college students would be good for themselves. <sup>b</sup>	4.422	0.765	135
Preventing the driving under the influence by college students would be good for friends. <sup>b</sup>	4.467	0.697	135
Preventing the driving under the influence by college students would be good for others. <sup>b</sup>	4.563	0.662	135
<i>Behavioral intentions</i> <sup>g</sup>	4.160	1.026	135
In the next six months, I will not drive if I have possibility to drink alcohol. <sup>b</sup>	4.170	1.065	135
In the next six months, I will not drink anything with alcohol if I am driving a car. <sup>b</sup>	4.156	1.017	135
In the next six months, I will not let my friends drive if they have possibility to drink alcohol. <sup>b</sup>	4.156	0.995	135

**Table 3.** Descriptive statistics (Continued)

<b>Variables</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>
<i>Trait reactance</i> <sup>h</sup>	2.626	1.169	135
When something is prohibited, I usually think, “That’s exactly what I am going to do.” <sup>b</sup>	1.874	0.873	135
I become frustrated when I am unable to make free and independent decisions. <sup>b</sup>	3.000	1.129	135
I become angry when my freedom of choice is restricted. <sup>b</sup>	3.081	1.129	135
When someone forces me to do something, I feel like doing the opposite. <sup>b</sup>	2.548	1.114	135

- a. Perceived source authority is the average value of four treatment groups about feeling towards the spokespersons in campaign messages.
- b. Responses were coded 5= *strongly agree*, 4= *agree*, 3= *neither agree nor disagree*, 2= *disagree*, 1= *strongly disagree*.
- c. Perceived fear appeal is the average value of four treatment groups about feeling towards visual and verbal parts in campaign messages.
- d. Perceived threat to freedom is the average value of four treatment groups on the perception toward the campaign message.
- e. Psychological reactance after exposing to campaign message is the average value of four treatment groups’ feeling towards the campaign message.
- f. Attitude towards campaign message is the average value after adding three questions on attitudes toward four “preventing drunk driving” messages.
- g. Behavioral intention after exposing toward campaign is the average value of four treatments groups about willingness to follow the suggestion in the campaign message for next six months.
- h. Trait reactance is the average value of individual difference that conceptually taps an individual proneness to psychological reactance.

average value of subjects’ feeling about verbal and visual part of four different campaigns, also estimated from three statements about three variables: fearful ( $M = 3.000$ ,  $SD = 1.481$ ), worried ( $M = 2.711$ ,  $SD = 1.465$ ), and anxious ( $M = 2.719$ ,  $SD = 1.407$ ). From these statements, the mean of perceived fear appeal with respect to the posters is seen to be 2.810 ( $SD = 1.458$ ) that, which like perceived source authority was also close to the Likert scale mid-point.

Four crucial dependent variables were each represented by three items. Perceived threat to freedom after exposure to the campaign poster was averaged from three statements: “This message tried to threaten my freedom to choice” ( $M = 2.415$ ,  $SD =$

1.273), “This message tried to push me made the choice violating my own status” ( $M = 2.422$ ,  $SD = 1.232$ ), and “This message let feel pressure when I made a choice” ( $M = 2.556$ ,  $SD = 1.286$ ). According to the results on these three items, the mean of perceived threat to freedom was calculated as 2.464 ( $SD = 1.266$ ), lower than the mid-point of the 5-points Likert scale.

The average value of psychological reactance after reading “Preventing Drunk Driving” campaign posters was computed from three different statements, including “I feel I need to do drunk driving to erase the thought of being dependent on others” ( $M = 2.244$ ,  $SD = 1.291$ ), “I become angry when I saw this campaign message” ( $M = 2.111$ ,  $SD = 1.309$ ), and “This message triggered a sense of doing drunk driving in me” ( $M = 2.274$ ,  $SD = 1.319$ ). Consequently, we calculated the total mean of psychological reactance as 2.210 ( $SD = 1.308$ ), close to two out of five on the 5-points Likert scale.

Another independent variable indicated by three items in the survey was attitude toward posters after exposure to campaigns. There were three statements about this variable: “Preventing the driving under the influence by college students would be good for themselves” ( $M = 4.422$ ,  $SD = 0.765$ ), “Preventing the driving under the influence by college students would be good for their friends” ( $M = 4.467$ ,  $SD = 0.697$ ), and “Preventing the driving under the influence by college students would be good for others” ( $M = 4.563$ ,  $SD = 0.662$ ). The mean of those statements represented the mean of their attitude toward the campaign posters, which was 4.484 ( $SD = 0.712$ ), much greater than the extremely over mid-point of the 5-points Likert scale.

The fourth independent variable was the respondents behavioral intentions to follow the campaigns’ suggestions during he next six months, represented by three items: “In the next six months, I will not drive if I have possibility to drink alcohol”

( $M = 4.170$ ,  $SD = 1.065$ ), “In the next six months, I will not drink anything with alcohol if I am driving a car” ( $M = 4.156$ ,  $SD = 1.017$ ), and “In the next six months, I will not let my friends drive if they have possibility to drink alcohol” ( $M = 4.156$ ,  $SD = 0.995$ ). Therefore, the overall average value of behavioral intentions based on three items was 4.160 ( $SD = 1.026$ ), significantly higher than the Likert scale mid-point.

Finally, four statements indicated a controlling variable: trait reactance, including “When something is prohibited, I usually think ‘That’s exactly what I am going to do’” ( $M = 1.874$ ,  $SD = 0.873$ ), “I become frustrated when I am unable to make free and independent decisions” ( $M = 3.000$ ,  $SD = 1.129$ ), “I become angry when my freedom of choice is restricted” ( $M = 3.081$ ,  $SD = 1.129$ ), and “When someone forces me to do something, I feel like doing the opposite” ( $M = 2.548$ ,  $SD = 1.114$ ). The average value of trait reactance regarding personal difference based on these responses was 2.626 ( $SD = 1.169$ ).

#### *Manipulation Check*

Table 4 showed that subjects randomly directed to the low source authority message ( $M = 2.0647$ ,  $SD = 1.03473$ ) perceived lower source authority for the spokesperson in the posters in terms of cognition than those in the high source authority group ( $M = 4.1271$ ,  $SD = 0.84569$ ). Independent sample t-tests showed a statistically significant difference between these two groups ( $t = -12.567$ ,  $d.f. = 133$ ,  $p < .0001$ ). This result indicates that participants perceived source authority in the different campaign posters as being manipulated.

Table 5 showed that there was a statistically significant difference in perceived fear appeal with regard to both verbal and visual contents in the posters between the low fear appeal ( $M = 1.9196$ ,  $SD = .93196$ ) and high fear appeal groups ( $M = 3.7966$ ,

SD = 1.07687),  $t = -10.885$ ,  $d.f. = 133$ ,  $p < .0001$ . Participants perceived fear appeal with respect to poster content as being successfully manipulated.

**Table 4.** Independent sample t-test for perceived source authority by manipulation.

Variables	Levels of Source Authority		<i>t-value</i>	<i>d.f.</i>	<i>Sig.</i>
	Low source authority group (n=72)	High source authority group (n=63)			
	Mean (SD)	Mean (SD)			
Perceived source authority	2.0647 (1.03473)	4.1271 (.84569)	-12.567	133	<.0001***

\* $P < .1$

\*\* $P < .05$

\*\*\* $P < .01$

**Table 5.** Independent sample t-test for perceived fear appeal by manipulation.

Variables	Levels of Fear Appeal		<i>t-value</i>	<i>d.f.</i>	<i>Sig.</i>
	Low fear appeal group (n=72)	High fear appeal group (n=63)			
	Mean (SD)	Mean (SD)			
Perceived fear appeal	1.9196 (.93196)	3.7966 (1.07687)	-10.885	133	<.0001***

\* $P < .1$

\*\* $P < .05$

\*\*\* $P < .01$

#### *Hypotheses testing and research question*

This study was based on a 2\*2 factorial design, leading to data and results being separated into high source authority high fear appeal, high source authority low fear appeal, low source authority high fear appeal, and low source authority low fear appeal groups, to which subjects were randomly directed.

Pearson Correlations tests were conducted to test Hypotheses. Hypothesis 1 declared that a perceived threat to freedom derived from the persuasive messages is positively related with psychological reactance. For testing the hypothesis, a Pearson

correlation coefficients test was performed. Table 6 shows that the correlation coefficients for perceived threat to freedom and psychological reactance in this study is  $r = 0.722$  ( $p < .0001$ ), which means there was a positive relationship between those two variables, supporting with Hypothesis 1.

**Table 6.** Pearson Correlations Test for perceived threat to freedom, psychological reactance, attitude, and behavioral intention (N = 135).

Variables	1	2	3	4
1. Perceived threat to freedom	-	.772***	-.503***	-.376***
2. Psychological reactance	-	-	-.515***	-.305***
3. Attitude	-	-	-	.485***
4. Behavioral intention	-	-	-	-

\* $P < .05$

\*\* $P < .01$

\*\*\* $P < .001$

Based on results of previous studies, participants' attitude toward campaign posters and behavioral intention to follow their suggestions were both considered to be negatively-related to psychological reactance in Hypothesis 2 and 3. According to the results in Table 6, the correlations of psychological reactance with attitude were  $r = -0.515$  ( $p < .0001$ ), and with behavioral intentions  $r = -0.305$  ( $p < .0001$ ), providing evidence to support Hypothesis 2 and 3. Therefore, it is reasonable to conclude that respondents developing greater psychological reactance after exposure to certain campaigns tend to have both lower attitude and behavioral intentions than those experienced lower psychological reactance face a "Preventing Drunk Driving" campaign. It is noteworthy that the correlation between psychological reactance and attitude is not as strong as with behavioral intentions, suggesting that there may be other mediators that modify the mechanism for generating attitude to a campaign attempting to re-orient behavioral intentions.

**Table 7.** Analysis of covariance (ANCOVA) of source authority and fear appeal on psychological reactance.

Independent Variables	Psychological Reactance
Covariate	
Trait reactance	.276
<i>F ratio</i>	1.212
Factors	
Main effect of levels of source authority	
High source authority group	2.5083
Low source authority group	2.0093
<i>F ratio</i>	6.273**
Main effect of levels of fear appeal	
High fear group	2.6980
Low fear group	1.8313
<i>F ratio</i>	19.217***
Interactions	
High source authority× High fear appeal	2.9003
High source authority× Low fear appeal	2.1518
Low source authority× High fear appeal	2.5194
Low source authority× Low fear appeal	1.5529
<i>F ratio</i>	.398

\**P* < .05\*\**P* < .01\*\*\**P* < .001

Analysis of Covariance (ANCOVA) tests were conducted to answer Hypothesis 4, Hypothesis 5, and the Research Question 1. Based on Table 7, the average value of

participants' psychological reactance from high fear appeal groups ( $M = 2.6980$ ) is higher than the average value of participants' psychological reactance from low fear appeal groups ( $M = 1.8313$ ). As indicated by the group comparison, levels of fear appeal of posters' contents was also reckoned as the main effect influencing psychological reactance,  $F = 19.217$ ,  $d.f. = 1$ ,  $p < .0001$ , indicating that subjects in the high fear appeal groups reckoned as generated more psychological reactance than those in the low fear appeal groups. Therefore, Hypothesis 4 was also confirmed in this study.

Compared means between high source authority and low source authority, participants' psychological reactance after exposure to high source authority posters was 2.5083, greater than the average ( $M = 2.0093$ ) for low source authority. As Table 7 shows, level of source authority was found to be the main effect impacting psychological reactance,  $F = 6.273$ ,  $d.f. = 1$ ,  $p = .013$ . The results of ANCOVA test were statistically significant, meaning that Hypothesis 5 was confirmed. Therefore, participants exposed to high source authority campaign posters generated more psychological reactance than those exposed to low source authority posters.

To answer Research Question 1, Table 7 provides a comparison among the four treatment groups. Based on the average value of these groups, the high source authority and high fear appeal group has the highest mean of psychological reactance ( $M = 2.9003$ ), and was obviously separated from the other groups. Furthermore, the low source authority and high fear appeal group generated the second highest amount of psychological reactance, 2.5194; the average value of psychological reactance ( $M = 2.1518$ ) from the high source authority and low fear appeal group was slightly lower than from the low source authority and high fear appeal group. The lowest average value of psychological reactance ( $M = 1.5529$ ) was from the low source

authority and low fear appeal group, and was obviously smaller than for those three treatment groups. However, the test result of authority by fear appeal interaction was not statistically significant, meaning that the variation of psychological reactance based on levels of authority would not change with levels of fear appeal in “Preventing Drunk Driving” campaigns,  $F = 0.398$ ,  $d.f. = 1$ ,  $p = 0.578$ .

Therefore, the answer to Research Question 1 is that there is no interaction between levels of authority and levels of fear appeal with respect to psychological reactance. However, it is worth mentioning that levels of fear appeal had a strong effect on all dependent variables, and levels of authority had an influence on only perceived threat to freedom and psychological reactance.

## CHAPTER 5

### DISCUSSION

This study examined how levels of source authority of campaign spokespersons and levels of fear appeal contents influence effectiveness of “Preventing Drunk Driving” campaigns directed toward college students, mediated by psychological reactance. To test the impact of the combinations of two independent variables on campaign results, five hypotheses regarding correlation between variables and one research question about interaction about source authority and fear appeal were formulated. In addition to investigating the impact of messages’ characteristics on persuasiveness, this study also compared psychological reactance between four different treatment groups. To explain these study results in depth, its theoretical contributions, methodological contributions and recommendations for professionals interested in preventing drunk driving among undergraduate students will be discussed.

#### **Correlations Between Fear, Authority, and Outcome Variables**

The primary concern in this research was to investigate the direct and indirect impacts of fear appeal and source authority in a “Preventing Drunk Driving” campaign process. Results confirmed that those two independent variables had a measurable influence on outcome variables.

With regard to the relationship between levels of source authority and psychological reactance, the findings support Hypothesis 5. Participants in the high source authority groups considered campaign messages to represent greater psychological reactance to following the campaign message suggestions about driving

and drinking behaviors. It is important and interesting to emphasize that levels of source authority were positively related to psychological reactance. Two different source authority groups were exposed to two different types of spokespersons (high source authority, a policeman; low source authority, a college student), with other aspects held with the same content. Participants, as expected, perceived the presence of source authority manipulations, triggering variation in psychological reactance.

In contrast with many studies, source authority played a negative role in enhancing persuasiveness in this study. Since 1961, many studies dealt with relationship between source authority and persuasive messages. A famous Milgram study (1974) examined how obedient people are to authority, and showed that people were more willing to obey a high source authority than a low one, even when asked to inflict a great deal of pain. However, mass media has been portraying expertise or professionals in a manner conflicting with reality. An expert has been described as a person not necessarily knowledgeable but always trying to explain phenomena in a plausible way. In fact, experts are increasingly losing credibility among the public. Moreover, since they have less credibility, their favorability is also decreasing. In addition, attitude change processes are influenced not only by cognition but also by affection; more favorable thoughts with respect to a topic or a person delivering the topic can lead to more willingness to change attitude, possibly neutralizing the perceived threat to freedom and psychological reactance. Therefore, losing public favorability may cause that expertise to create even higher psychological reactance. Finally, the particular nature of young adults may be another reason why they demonstrate higher psychological reactance to high source authority groups. Compared with people in other age range, college students are unlikely to follow many general ideas that are shared by the public. They reckon that expertise is

representative of the public and therefore may intentionally refuse to consider experts' suggestions in general.

As in Shen's (2011) study, posters constructed with high fear appeal contents were perceived as producing greater psychological reactance than posters with low fear content. Brehm (1966) suggested that language characteristics could easily create a feeling of restraining and demanding, especially when extremely highly negative emotional arousal words were used, because high fear appeal contents were not only were considered requests for subjects to accept the suggestions, but could also create certain negative cognitions to enhance existing threats.

Hypothesis 1, that perceived threat to freedom was positively related to psychological reactance after exposure to campaign posters, was clearly confirmed by the results. This result agreed with a previous study (Brehm, 1966) on psychological reactance theory. However, no study has examined the mechanism whereby a perceived threat to freedom causes psychological reactance. These two elements are considered as cognitive reactions inside participants' minds, and exhibit no obvious or way, of being measured. In previous studies as well as this one, perceived threat to freedom and psychological reactance that were both measured by responses to similar statements, so, it is not surprising to find that the two variables were positively related.

Unlike with other studies, there were direct relationships between psychological reactance and both attitude toward messages and behavioral intention to follow suggestions. According to previous studies (Quick & Bates, 2010), scholars considered psychological reactance to be directly related only to attitude, but indirectly related with behavioral intention. Considering that both attitude and behavioral intentions are perceptions about certain suggestion, they can be treated as happening at the same time. Therefore, we examined direct relationships of

psychological reactance with two ultimate variables. As expected and desired according to Hypothesis 2, the current study suggests that psychological reactance was significantly negatively associated with a favorable attitude to posters and to the topic “Preventing Drunk Driving.” Compared with attitude, the association with motivations to follow advocacy in the campaign was weaker. To sum up, the findings indicate that people may have low motivation and intention to conform with advocacy, even though they have relatively favorable attitudes toward a campaign or topic. One possible explanation for this result is that subjects may evaluate other impacts (capability, feasibility, or convenience) before creating intentions to behave. Another possible reason is that college students may consider their peers’ driving and drinking behaviors in their own decision-making process, meaning that people whose friends tend to drive drunk are more likely to have lower behavioral intention to avoid drunk driving behaviors in their own lives.

### **Psychological Reactance as a Mediator in Persuasive Progress**

Previous studies maintain that psychological reactance should be treated as one of the main reasons that many campaigns cannot generate the positive persuasive results desired by practitioners. Psychological reactance has been considered as a combination of negative cognition and anger (Dillard & Shen, 2005). This mixture suggests that subjects evaluate campaign messages and their suggestions and adjust their behavior based on both emotional and cognitive responses. Therefore, it is noteworthy that people generating more psychological reactions after exposure to a campaign poster tended to show a less positive attitude and less behavioral intention to follow suggestions.

Surprisingly, the level of fear appeal was much more powerful than the levels of source authority on the entire decision-making mechanism of the “Preventing Drunk Driving” topic. It is important to realize that fear appeal had a positive relationship with psychological reactance. Based on evidence that there are strong negative relationships among psychological reactance, attitude, and behavioral intention, it seems that level of fear appeals were negatively related to desired outcomes of campaign messages.

Although an extremely high level of fear appeal in campaigns can cause a persuasive intention to fail, as has been proposed in several studies (The Parallel Process Models: Leventhal, 1970; Witte, 1992; ELM: Petty and Cacioppo, 1986), it is also worth while to note that fear was a negative factor with respect to persuasiveness by generating psychological reactance. Fear is a type of negative emotional arousal, and easily creates psychological reactance; at the same time, high fear appeal contents can generate negative cognitions and emotions about the messages themselves, producing a less positive attitude toward campaign posters messages. On the other hand, high fear appeal also can lead participants to lose their cognitive processing ability, and limit their ability to analyze advantages and disadvantages of suggestions. Like other kinds of negative emotions such as sorrow, and anxiety, overwhelming fear may generate an emotional shock and limit cognitive processes. Cognition-processing limitation enhances the negative effect of psychological reactance on the attitude toward messages and behavioral intention to follow suggestions. Otherwise, overwhelming fear may result in taking other approaches, like escaping, to avoid an undesirable situation. This might be one reasonable explanation why levels of fear appeal had such a powerful influence through perceived threat to freedom with regard to behavioral intentions.

However, in spite of the fact that levels of source authority in campaigns were significantly positive related with psychological reactance, this factor was not as strong as levels of fear appeal. College undergraduate students, treated as young adults, have an obvious wish to gain freedom of choice. Therefore, messages with high source authority might trigger their fear of losing freedom to make their own decisions, possibly generating additional psychological reactance. However, levels of source authority are part of source credibility. We defined levels of source authority as a combination of expertise and trustworthiness. Many studies have investigated whether or not spokesperson expertise and trustworthiness of in campaign messages were positively related with persuasiveness, possibly counteracting the negative effects of psychological reactance on respondents' attitudes toward campaign messages and behavioral intentions. While some college students tended to trust the sources suggested in the message, they may have suffered from the fear of losing freedom to make their own choices about driving and drinking habits. This may explain why levels of source authority, while a main factor in psychological reactance, were not quite as strong.

### **Recommendation for Professional Practitioners**

Despite the differences between average values of psychological reactance that were strongly negatively-related with respect to adjusting behavioral intention, and among the four treatment groups too small to be significant, the results from the current study can still be recommended to practitioners who are interested in drunk driving campaigns. In particular, the number of deaths caused by drunk driving has been recently increasing nationwide. In the meantime, college students, whose

personalities probably tend to generate negative cognitions and reactance more than other group, are the largest collectively population frequently driving under the influence. The challenge is therefore to examine combinations of content characteristics that are high in effectiveness and feasibility to significantly reduce drunk driving behavior among undergraduate students.

The findings in this study indicate that a combination of high source authority and high fear appeal reinforce psychological reactance, leading to the least likelihood of successfully adjusting behaviors; in contrast, people exposed to a low source authority and low fear appeal poster demonstrated the least amount of reactance and the highest probability of following suggestions. It should be mentioned, however, that a low fear appeal content had to be considered as representing a moderate fear level in real practice. If target audiences do not want to accept messages because of extremely demanding advocacy, they will most likely not follow the suggestions. Therefore, to accomplish the goal of positively improving the campaign outcome, communication professionals should choose moderate fear contents in both visual and verbal aspects and a spokesperson relatively self-identified with college students to avoid psychological reactance and potential boomerang effects.

### **Limitations and Suggestions for Future Study**

Although all the hypotheses were supported in this study, several limitations should be noted. First, 146 participants (including 135 respondents in four treatment groups) represent a very small proportion of the whole population of undergraduate students at the university, Experiment method is strong to detect causal relationship, however, relatively weak for generalizing results.

Moreover, because the pictures of spokesperson were taken at different angles, participants might not perceive less source authority than actually existed. Differences in levels of source authority between different types of spokespersons could be achieved more precisely by using the same person in different settings. Also, spokespersons did not vividly deliver advocacy of the “Preventing Drunk Driving” campaign. Source authority also can be presented by still images alone. Future studies should construct manipulated testing depictions in video form.

Furthermore, this study did not consider measure personal alcohol consumption habits, general driving habits, or other personal characteristics related to the topic of “Preventing Drunk Driving” as independent variables. Personal differences in drinking and driving behaviors can be considered with this topic as personal involvement possibly impacting the outcome variables of interest. A suggestion for future studies is to include co-variables in path analysis to increase reliability and validity of the study.

Finally, the interaction between levels of authority and levels of fear appeal on psychological reactance should be tested based on different topics. Another possible explanation for the lack of significant results in multiple comparisons of behavioral intentions is that preventing drunk driving is a social desirable topic that unintentionally presents stereotypical images to show favorable attitudes and behavioral intentions. Therefore, participants might not display obvious differences in ultimate outcome variables even though there were statistically significant differences in perceived threat to freedom and psychological reactance. In short, future studies needed to test linkages between variables on more neutral topics (organ donation or blood donation), or marketing usages (products-promotion campaigns).

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APPENDIX A  
INVITATION EMAIL

Dear Iowa State University students,

My name is Xiaotong Zhang, a graduate student at the Greenlee School of Journalism and Communication at Iowa State University. I'm inviting you to participate my research about preventing drunk driving campaign targeting college students. The purpose of this research is to identify fear appeal and information sources of campaign messages that may lead college students' psychological reactance, as well as their attitude and behavioral intention to follow the suggestions. The study results will provide valuable information for the government, corporations and non-profit organizations to conduct effective public health campaigns targeting the young populations, especially college students.

The following survey will take approximately 10 to 15 minutes. Your participation in this study is completely voluntary. However, you need to be over 18 years old to take this survey. You may choose to stop at any time during the process of filling out the survey. There are no foreseen risks in participating in this research. If you would like to complete this survey, it will be greatly appreciated. The information you provide will only be used in this research and will not be shared with third party. No information can be traced to your identity.

If you are 18 or older and willing to take this survey, please click on the following link:

[https://iastate.qualtrics.com/SE/?SID=SV\\_0d2h5n9ESTLyGt7](https://iastate.qualtrics.com/SE/?SID=SV_0d2h5n9ESTLyGt7)

If you have any question regarding this study, please feel free to contact me at [xiaotong@iastate.edu](mailto:xiaotong@iastate.edu). You will get feedback in 24 hours.

Thank you very much for your participation!

Sincerely,

Xiaotong Zhang

## APPENDIX B

### INFORMED CONSENT DOCUMENT

Title of Study: The Influence of Fear and Authority on Psychological Reactance: A Case Study of the Effectiveness of Public Service Announcement Campaigns on Drunk Driving Prevention among College Students

Investigator : Xiaotong Zhang

This is a research study that has been approved by Institutional Review Board (IRB ID: 14-094) of Iowa State University. Please take your time in deciding if you would like to participate. Please feel free to contact Xiaotong Zhang at [xiaotong@iastate.edu](mailto:xiaotong@iastate.edu) before you click on the “Start” button.

#### INTRODUCTION

The purpose of this study is to identify certain characteristics of campaign messages of “preventing drunk driving” that may lead college students’ potential psychological reactance toward the messages, as well as their attitude and behavioral intention to follow the suggestions. You are being invited to participate in this study because your email address is on a randomly generated email list from the Office of the Registrar of Iowa State University. You should not participate if you are under age 18.

#### DESCRIPTION OF PROCEDURES

If you agree to participate, you will be asked to complete a survey about your reactions toward the poster from a “preventing drunk driving” campaign. Before you take survey questions you may need to watch a campaign poster for 30 seconds. The survey questions will ask about your thoughts and feelings after reading campaign poster, as well as your driving and drinking habits and the general demographic information. For those who are randomly assigned to the control group by Qualtrics, you will just answer several questions about your driving and drinking habits and the general demographic information. Your participation will last for 15 to 20 minutes.

#### RISKS

There are no foreseeable risks at this time from participating in this study.

#### BENEFITS

If you decide to participate in this study, there may be no direct benefit to you. It is hoped that the information gained in this study will benefit society by helping the government, corporations and non-profit organizations to conduct effective public health campaigns targeting the young populations, especially college students.

#### COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will not be compensated for participating in this study.

## PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. You can skip any questions that you do not wish to answer.

## CONFIDENTIALITY

Participants' responses will be kept confidential and will not be made publicly available. The information you provide will only be used in this research and will not be shared with third party. No information can be traced to your identity.

## QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time before starting this survey.

- ❖ For further information about the study contact
  - Xiaotong Zhang, graduate student, Greenlee School of Journalism and Communication, Iowa State University; email: xiaotong@iastate.edu, or
  - Dr. Suman Lee, research supervisor, Greenlee School of Journalism and Communication, Iowa State University; email: smlee@iastate.edu.
- ❖ If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.

## PARTICIPANT AGREEMENT

If you click on the “Start” button, it indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document, and that your questions have been satisfactorily answered. Please print a copy of the informed consent for your own file. If you do not want to participate in this study, just close the webpage. You are free from penalty to stop at any time before you completely finish this survey. If you click on the “Finish” button at the end of survey, the survey will be completely finished and your participation will be thanked.

## APPENDIX C

## HIGH AUTHORITY AND HIGH FEAR APPEAL GROUP OF SURVEY

Please read this Preventing Drunk Driving Campaign poster from PDDA (Prevent Drunk Driving Association) carefully for 30 seconds, then answer below questions.

The spokesperson in the poster is named Thomas Edwards, who is a police officer in Boone County, Iowa.



Please choose the choice which is closest to your feeling about the poster:

1. I think the spokesperson in this campaign is trustworthy.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

2. I think the spokesperson in this campaign is an expert in this topic.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

3. I think the spokesperson in this campaign is well trained to talk about this topic.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
4. This message makes me feel fearful.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
5. It lets me feel worried about my driving behaviors.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
6. It makes me feel anxious  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
7. This message tried to threaten my freedom to choose.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
8. This message tried to push me made the choice violating my own status.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
9. This message let me feel pressure when I made a choice.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
10. This message triggered a sense of doing drunk driving in me.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
11. I feel I need to do drunk driving to erase the thought of being dependent on others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
12. I become angry when I saw this campaign message.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
13. Preventing the driving under the influence by college students would be good for their friends.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
14. Preventing the driving under the influence by college students would be good for others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
15. Preventing the driving under the influence by college students would be good for themselves.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

16. In the next six months, I will not drive if I have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

17. In the next six months, I will not drink anything with alcohol if I am driving a car.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

18. In the next six months, I will not let my friends drive if they have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

19. When something is prohibited, I usually think, “That’s exactly what I am going to do”.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

20. I become frustrated when I am unable to make free and independent decisions.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

21. I become angry when my freedom of choice is restricted.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

22. When someone forces me to do something, I feel like doing the opposite.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

23. Your gender:

Male

Female

24. Your race:

White/ Caucasian

Black/ African American

Hispanic

Asian/ Pacific Islander

Arabic/ Middle Eastern

Native American Indian

Others

## APPENDIX D

## LOW AUTHORITY AND HIGH FEAR APPEAL GROUP OF SURVEY

Please read this Preventing Drunk Driving Campaign poster from PDDA (Prevent Drunk Driving Association) carefully for 30 seconds, then answer below questions

The spokesperson in the poster is named Thomas Edwards, who is a Freshman college student in Iowa State University.



Please choose the choice which is closest to your feeling about the poster:

1. I think the spokesperson in this campaign is trustworthy.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

2. I think the spokesperson in this campaign is an expert in this topic.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

3. I think the spokesperson in this campaign is well trained to talk about this topic.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
4. This message makes me feel fearful.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
5. It lets me feel worried about my driving behaviors.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
6. It makes me feel anxious  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
7. This message tried to threaten my freedom to choose.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
8. This message tried to push me made the choice violating my own status.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
9. This message let me feel pressure when I made a choice.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
10. This message triggered a sense of doing drunk driving in me.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
11. I feel I need to do drunk driving to erase the thought of being dependent on others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
12. I become angry when I saw this campaign message.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
13. Preventing the driving under the influence by college students would be good for their friends.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
14. Preventing the driving under the influence by college students would be good for others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
15. Preventing the driving under the influence by college students would be good for themselves.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

16. In the next six months, I will not drive if I have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

17. In the next six months, I will not drink anything with alcohol if I am driving a car.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

18. In the next six months, I will not let my friends drive if they have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

19. When something is prohibited, I usually think, “That’s exactly what I am going to do”.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

20. I become frustrated when I am unable to make free and independent decisions.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

21. I become angry when my freedom of choice is restricted.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

22. When someone forces me to do something, I feel like doing the opposite.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

23. Your gender:

Male

Female

24. Your race:

White/ Caucasian

Black/ African American

Hispanic

Asian/ Pacific Islander

Arabic/ Middle Eastern

Native American Indian

Others

## APPENDIX E

## HIGH AUTHORITY AND LOW FEAR APPEAL GROUP OF SURVEY

Please read this Preventing Drunk Driving Campaign poster from PDDA (Prevent Drunk Driving Association) carefully for 30 seconds, then answer below questions.

The spokesperson in the poster is named Thomas Edwards, who is a police officer in Boone County, Iowa.



Please choose the choice which is closest to your feeling about the poster:

1. I think the spokesperson in this campaign is trustworthy.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

2. I think the spokesperson in this campaign is an expert in this topic.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

3. I think the spokesperson in this campaign is well trained to talk about this topic.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
4. This message makes me feel fearful.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
5. It lets me feel worried about my driving behaviors.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
6. It makes me feel anxious  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
7. This message tried to threaten my freedom to choose.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
8. This message tried to push me made the choice violating my own status.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
9. This message let me feel pressure when I made a choice.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
10. This message triggered a sense of doing drunk driving in me.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
11. I feel I need to do drunk driving to erase the thought of being dependent on others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
12. I become angry when I saw this campaign message.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
13. Preventing the driving under the influence by college students would be good for their friends.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
14. Preventing the driving under the influence by college students would be good for others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
15. Preventing the driving under the influence by college students would be good for themselves.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

16. In the next six months, I will not drive if I have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

17. In the next six months, I will not drink anything with alcohol if I am driving a car.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

18. In the next six months, I will not let my friends drive if they have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

19. When something is prohibited, I usually think, "That's exactly what I am going to do".

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

20. I become frustrated when I am unable to make free and independent decisions.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

21. I become angry when my freedom of choice is restricted.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

22. When someone forces me to do something, I feel like doing the opposite.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

23. Your gender:

Male

Female

24. Your race:

White/ Caucasian

Black/ African American

Hispanic

Asian/ Pacific Islander

Arabic/ Middle Eastern

Native American Indian

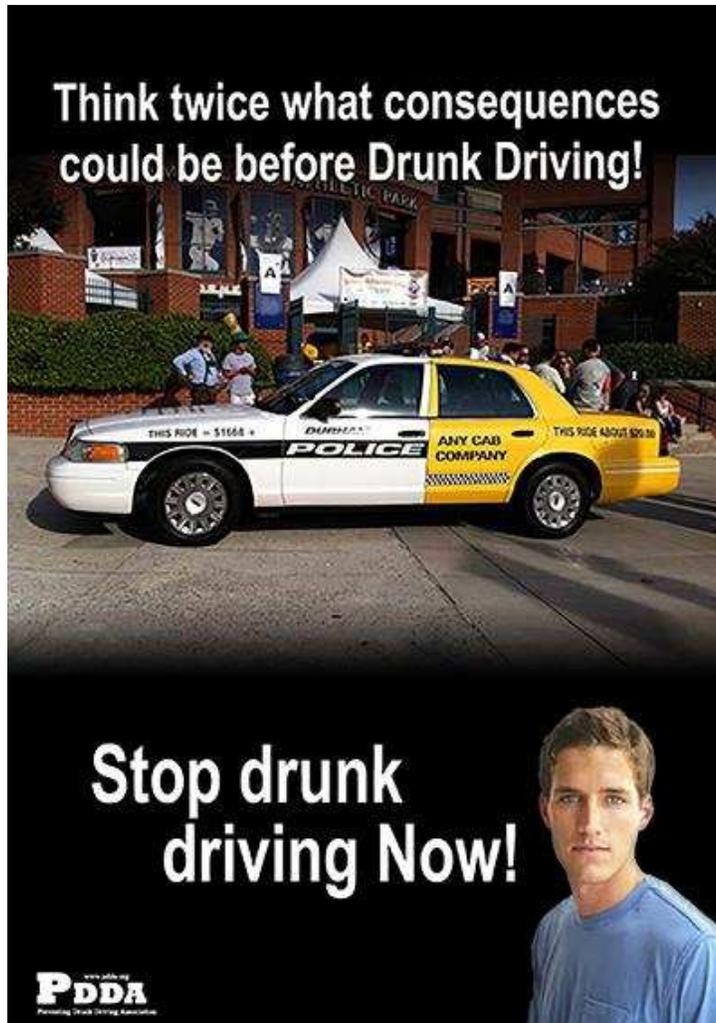
Others

## APPENDIX F

## LOW AUTHORITY AND LOW FEAR APPEAL GROUP OF SURVEY

Please read this Preventing Drunk Driving Campaign poster from PDDA (Prevent Drunk Driving Association) carefully for 30 seconds, then answer below questions.

The spokesperson in the poster is named Thomas Edwards, who is a Freshman college student in Iowa State University.



Please choose the choice which is closest to your feeling about the poster:

1. I think the spokesperson in this campaign is trustworthy.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

2. I think the spokesperson in this campaign is an expert in this topic.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

3. I think the spokesperson in this campaign is well trained to talk about this topic.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
4. This message makes me feel fearful.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
5. It lets me feel worried about my driving behaviors.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
6. It makes me feel anxious  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
7. This message tried to threaten my freedom to choose.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
8. This message tried to push me made the choice violating my own status.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
9. This message let me feel pressure when I made a choice.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
10. This message triggered a sense of doing drunk driving in me.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
11. I feel I need to do drunk driving to erase the thought of being dependent on others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
12. I become angry when I saw this campaign message.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
13. Preventing the driving under the influence by college students would be good for their friends.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
14. Preventing the driving under the influence by college students would be good for others.  
Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree
15. Preventing the driving under the influence by college students would be good for themselves.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

16. In the next six months, I will not drive if I have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

17. In the next six months, I will not drink anything with alcohol if I am driving a car.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

18. In the next six months, I will not let my friends drive if they have possibility to drink alcohol.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

19. When something is prohibited, I usually think, “That’s exactly what I am going to do”.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

20. I become frustrated when I am unable to make free and independent decisions.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

21. I become angry when my freedom of choice is restricted.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

22. When someone forces me to do something, I feel like doing the opposite.

Strongly disagree   Disagree   Neither agree or disagree   Agree   Strongly agree

23. Your gender:

Male

Female

24. Your race:

White/ Caucasian

Black/ African American

Hispanic

Asian/ Pacific Islander

Arabic/ Middle Eastern

Native American Indian

Others