

**Anorexia prevention messages: Effects on psychological reactance among
female college students**

by

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ABSTRACT

This study examined how anorexia prevention campaign messages affect female college students through a linear relationship among magnitude of requests, perceived threat to freedom, psychological reactance, attitude, and behavioral intention. A total of 163 female undergraduate students participated in an online survey and read four different fictional campaign messages (no request version, small request version, larger request version, and small and large request combined version) in terms of magnitude of requests regarding anorexia prevention.

Five hypotheses were examined to measure participants' level of reactance, threat to freedom, attitudes, and behavioral intention. The findings revealed a significant relationship between magnitude of requests and threat to freedom; i.e., more demanding requests in an anorexia prevention message can generate a higher level of threat to freedom. In addition, there was a positive relationship between threat to freedom and reactance; i.e., individuals who experienced a higher threat to freedom were more likely to experience stronger reactance whereas those who presented higher reactance exhibited a lower behavioral intention to follow anorexia prevention recommendations.

Nevertheless, there was not a significant relationship between reactance and attitude toward anorexia prevention recommendations. Furthermore, no significant positive relationship was revealed between attitude toward anorexia prevention recommendations and behavioral intention to follow anorexia prevention recommendations.

CHAPTER 1. INTRODUCTION

In today's society, eating disorders are a prevalent issue among young populations (Malinaukas, Raedeke, Aeby, Smith, & Dallas, 2006; Rosen, Reiter, & Orosan, 1995). The National Eating Disorders Association (2005) has noted that eating disorders can lead to dangerous consequences among individuals because of excessively negative emotions, attitudes, and thoughts about weight and food concerns. Anorexia is the most life-threatening eating disorder among the current population (National Eating Disorders Association, 2002). Anorexia involves self-starvation and immoderate weight loss (National Eating Disorders Association, 2005). "It is known that 3-8 percent of anorexic patients commit suicide, or die from heart disease and infections" (Cho, 2012, para. 4). Along with these serious health implications quoted by Cho (2012), anorexia can also be accompanied by severe health consequences such as low blood pressure, brittle bones, kidney failure, and other risks. These consequences can harm or kill the person when he or she loses weight in an extreme manner (National Eating Disorders Association 2002).

Tozzi, Sullivan, Fear, McKenzie, and Bulik (2003) explained that anorexia can emerge due to many factors: low self-esteem, poor family relationships, stress, and sociological reasons, such as messages that claim being thin is the most ideal body image. Furthermore, the media plays a role in generating an excessive level of people's dissatisfaction with their own body because it idolizes an ultimate body shape largely projected by professional models and celebrities (Smolak & Levine, 1996). Consequently, anorexia is usually related to one's negative body image (Cho, 2012).

Many college female students perceive they are actually overweight or obese although they are not, and consequently try to reduce their weight. Malinaukas et al. (2006) reported that 82% of female college students have tried to diet to reduce their weight and 58% of female students felt pressure to reach their ideal weight. More than one third (32%) of students were likely to skip breakfast to reduce their weight. Negative self-body image attitudes can lead to anorexia among individuals because they are excessively concerned about gaining weight and body shape (Rosen et al., 1995). In addition, greater attention bias towards food is directly related to poor eating behavior (Brooks, Prince, Stahl, Campbell, and Treasure, 2011).

Eating disorder prevention programs have been conducted in schools, with the majority of these studies targeting girls or young women. Stice, Shaw, and Marti (2007) found that the eating disorder prevention programs are effective reducing disorder factors among girls. However, there are possible boomerang effects in which educational persuasion may become ineffective to the targeted audience of young girls and women (Mann Huang, Burgard, Wright, & Hanson, 1997). Results of a study by Heinze, Wertheim, and Kashima (2000) revealed changes in behavioral intentions of diet, seeking thinness, and knowledge about eating disorders among young females. The study revealed that watching an eating disorder video successfully decreased intentions to diet, seek thinness, and knowledge about eating disorders among the subjects.

Stice, Chase, Stormer, and Apple (2001) surveyed young females having negative body image to determine if their eating disorder prevention intervention was effective. The results showed that participants in the dissonance intervention group reported significant decreases in negative emotions, negative body image, preoccupation to thinness, dieting

behaviors, and eating disorder symptoms whereas those in the control group did not exhibit significant results. Huon (1994) tested eating disorder prevention program effects among 24 college female students. Results indicated that facilitating change discussion improved attitudes toward weight concern and behavioral intentions to diet. Carter, Stewart, Dunn, and Fairburn (1997) examined effectiveness of an eating disorder program and found that it increased knowledge but had no long-term effect. Killen, Taylor, Hamper, Litt, Wilson, Rich, et al. (1993) studied the impact of a weight control curriculum targeting adolescent girls. After the curriculum intervention, subjects reported that prevention programs decreased their unhealthy eating habits and weight restriction behavior.

According to previous eating disorder prevention trials, although there were successful prevention interventions, there were cases in which interventions were not effective and led to more disordered eating behaviors or weight restriction behaviors. Brehm's (1966) psychological reactance theory can be applied to explain this result. This theory can explain how the ineffectiveness or failure of persuasive trials can occur. The theory conceptualizes the level of threat to the freedom of humans when their autonomy or freedom to make choices are threatened or reduced by persuasive trials. A higher threat to behavioral freedom or limited choices can cause a rebellious reaction, which may indicate failure of a persuasive trial.

Brehm (1966) posited that when freedom to choose is limited or reduced it can establish reactance. Dillard and Shen (2005) explained that reactance is comprised of negative cognitions and feelings. Furthermore, the reactance can adversely affect behavioral intentions and attitudes toward the persuasive message to create a higher threat to behavior freedom (Dillard & Shen, 2005). The theory of psychological reactance explains that

individuals can perceive a greater level of threat to their behavioral freedom when a persuasive message comes with higher levels of behavioral requests, and threats to freedom that may bring forth negative cognitions and anger. Threat to autonomy causes restoration behaviors and thoughts, and this can lead to more negative thoughts and feelings to among individuals (Brehm & Brehm, 1981; Ploug, Hasle, & Oinas-Kukkonen, 2010). Providing more support to this theory, Ploug et al. (2010) revealed that pro-environmental messages with high-threat-to autonomy produced more psychological reactance (negative feelings and cognitions) among the study participants compared to low-autonomy threatening messages.

The purpose of the current study was to apply the theory of psychological reactance in the context of an eating disorder prevention campaign targeting college students. This study investigated whether campaign messages with excessive behavioral requests (more challenging requests to follow) lead to psychological reactance, and this reactance negatively affects students' attitude and behavioral intent to follow anorexia prevention recommendations. "Boomerang effect" explains that certain campaign messages can lead to a less favorable reaction toward the campaign message among targeted audiences because audiences feel uncomfortable about the message (Benoit & Benoit, 2008). The current study may contribute to the health communication field by testing anorexia campaign message effects of psychological reactance which previous studies have not discussed. This study uncovered new findings regarding how anorexia prevention campaign messages affect female college students through a linear relationship of magnitude of requests, perceived threat to freedom, psychological reactance, attitude, and behavioral intention. The study revealed the importance of examining how people react differently to campaign messages

among female college students. The findings of this research may also assist organizations to communicate more effectively with young females.

CHAPTER 2. LITERATURE REVIEW

This study examined how anorexia prevention campaign messages affect female college students. This chapter covers health education campaigns in general and key concepts of psychological reactance theory. Previous studies related to health education campaigns and psychological reactance theory support concepts were utilized in the present study.

Health Educational Messages

Rogers and Storey (1987) defined health communication as “1) a campaign intends to generate specific outcomes or effects, 2) in a relatively large number of individuals, 3) usually within a specified period of time, and 4) through an organized set of communication activities” (p. 821). Public campaigns can inform about risks related to health issues and persuade the public to adopt healthy behaviors (Hornik, 2002; Parrott, Monhan, Ainsworth, & Steiner, 1998). Mitigating people’s unhealthy behaviors is crucial in society, and many experimental studies have been conducted to prevent health risks from smoking, high cholesterol, high blood pressure, and venereal disease (Hornik, 2002). Parrott, Egbert, Anderton, and Sefcovic (2002) emphasized the importance of using communication to promote healthy behaviors that will protect people living in communities from potential illnesses. The goal of health promotion campaigns is to induce behavior change over a long time period within the target audience (Rogers & Storey, 1987).

As noted in Parrott et al. (2002), health promotion campaign messages are generally focused on the following: (1) repeating of a campaign message; (2) emphasizing of success of positive outcomes rather than failure of negative outcomes; (3) giving instructions to reduce foreboding generated by fear appeal; (4) employing specific information rather than

general information; (5) making participatory feeling among audience; and (6) encouraging audiences to discuss about the campaign (Backer, Rogers, & Sopory, 1992; Hafstad & Aaro, 1997; Maibach, Flora, & Nass, 1991; Parrot et al., 1998). Although there have been successful cases, many health promotion campaigns still fail to change consumers' behaviors due to a lack of knowledge and involvement about the potential risk or dissonance between attitude and behavioral intention (Parrott et al., 1998; Salmon, Wooten, Gentry, Cole, & Kroger, 1996).

Fear appeals can be used for various health promotions campaigns regarding safety behaviors and fear appeals can bring either positive outcomes (following the recommendations) or negative outcomes (not following the recommendations or reactance) among the targeting audiences (Witte & Allen, 2000). Furthermore, Parrott et al. (2002) argued that fear appeals are sometimes ineffective because they could generate negative emotions which lead to message refusal (Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996). In addition, Thesenvitz (2000) mentioned that

*“... -when the perceived threat is low, the audience does not worry about efficacy and so they do not respond,
-when perceived threat is high and perceived efficacy is low(er), the result is avoidance, denial or anger towards the source or issue (fear control)...” (p. 3)*

There are many reasons why audiences may perceive that campaigns are ineffective. Fishbein, Hall-Jamieson, Zimmer, Haeften, and Nabi (2002) examined perceived effectiveness of 30 anti-drug campaigns among youths and suggested that there are potential contrasted results depending on the degree of perceived effectiveness of anti-drug campaign

messages. The researchers use five experimental conditions and one control group to test the effectiveness of student judgment in anti-drug PSAs. The anti-drug PSAs used different approaches for selected conditions to determine if a certain focus or emphasis of anti-drug PSAs is more effective in persuasion among students. In each condition, subject matters and emphasis were slightly different in terms of dramatic representation, negative outcomes, marijuana, and inhalants or heroine, and drug, avoidance behavior, self-efficacy, and self-esteem, and a message of “just say no”.

As a result, although PSAs focused on dramatic representation were seen as more effective, PSAs emphasizing “just say no” and avoidance behaviors were not effective (Fishbein et al., 2002). On one hand, when youth perceived that the message was persuasive, they believed that risky behaviors were highly dangerous. Fewer youth assumed that there would be other individuals joining in those risky behaviors. On the other hand, when youth perceived the message was not effective, they tended to avoid the risk less, and considered more risky behaviors (Fishbein et al., 2002).

Parrott et al. (2002) concluded that it is necessary to focus more specifically on audiences’ resistance toward the message persuasion. Therefore, it may be meaningful to explore people resist health promotion messages as explained by the theory of psychological reactance.

Psychological Reactance Theory

Brehm and Brehm (1981) defined psychological reactance as “...the motivational state that is hypothesized to occur when a freedom is eliminated or threatened with elimination” (p. 37). Brehm (1966), and Brehm and Brehm (1981) explained that reactance

theory is comprised of four main factors: perceived freedom, threat to freedom, reactance, and restoration of freedom. Brehm (1966), and Brehm and Sensening (1966) argued that when people perceive a threat to their freedom they will experience reactance. Thus, the message is not persuasive and they may try to restore their lost freedom by choosing the threatened option. This is related to the boomerang effect. Furthermore, psychological reactance can influence attitudes and behavioral intentions through cognitions and affects of people (Dillard & Shen, 2005; Leventhal; 1970; Rains & Turner, 2007).

Brehm and Brehm (1981) posited that individuals feel threatened when they perceive difficulties in exercising freedom due to pressure. Brehm (1966) argued that freedom of behavior is basically essential to most people. People can make their own decisions and satisfy their needs with freedom. The freedom to choose is beneficial to humans. Therefore, when people perceive a threat to their freedom, they will not want to lose it. They may try to restore the freedom they perceived was taken or threatened from them. This results in reactance behavior. The importance of freedom to an individual determines the intensity of reactance when he or she has knowledge or capability for using freedom (Brehm, 1966; Brehm & Cole, 1966). Several studies have revealed that reduced freedom behavior could be seen attractive when alternative choices are limited (Brehm, 1966; Brehm & Sensening, 1966; Hammock & Brehm, 1966). Overall, threat to freedom can bring about three results: (1) restoration of freedom, (2) increasing attractiveness to forbidden choice or behavior, and (3) decrease attractiveness to forced choice or behavior (Brehm, 1966).

Threats to freedom can come from either interpersonal communications or social pressure (Brehm, 1966). In addition, when individuals perceive their freedoms are increasingly threatened, the more likely they will attempt to rebuild their behavioral freedom

(Brehm, 1966). Several studies have revealed that perceived threat to freedom of behavior or choice is positively related to reactance state (Brehm & Cole, 1966; Hammock & Brehm, 1966; Worchel & Brehm, 1970). Worchel and Brehm (1970) tested the threat's effect to a person's attitudinal freedom by manipulating two types of messages (high level of threat and low level of threat). Worchel and Brehm tested the effects among undergraduate students by presenting different speeches that disagreed or agreed with the students' attitudes toward different groups. They found that high threats to freedom messages agreeing with students' initial attitudes caused negative effects because of the reactance, which were positively related to the "boomerang effect". In other words, the subjects wanted to restore their threatened freedom. On the other hand, students who were exposed to disagreeing messages with high threats to freedom showed more positive effects. Low threats to freedom produced more positive effects regardless of the messages' argument position (Worchel & Brehm, 1970).

Brehm and Cole (1966) argued that favor could function to reduce freedom and increase reactance. Findings of their study ascertaining the relationship between level of importance and favor return revealed that, for higher levels of importance of the freedom, favor caused less return whereas favor with lower levels of importance of freedom brought increased return. In another study, Hammock and Brehm (1966) tested the effects of threats to freedom to choose candy bars among children. When the children were forced not to choose specific candy bars, they tended to choose those specific candy bars with greater frequency. This result indicated that the children felt a greater attraction to the forbidden candy bars, which revealed a reoccurrence of reactance arousal and boomerang effect from a

perceived threat to freedom of behavioral choice. The results were consistent with findings by Brehm, (1966).

Reactance is related to individuals' psychological resistance to campaign messages or advocacy (Brehm, 1966). Brehm demonstrated that state reactance is unable to be measured. However, according to Dillard and Shen (2005), reactance can be measured by negative cognitions and negative emotions when individuals access campaign messages. Self-reported thought listing can be measured on counter arguing toward the campaign message (Cacioppo & Petty, 1981). Anger or negative emotions can be measured as irritation, annoyance, and rage (Dillard & Shen, 2005). Leventhal (1970) formed the parallel response paradigm and explained that both cognitions and emotions (affect) of targeting audiences can impact promotional message persuasiveness by changing the attitudes and coping behaviors of a danger message. Dillard, Plotnick, Godbold, Freimuth, and Edgar (1996) reported that both emotions and thoughts caused by fear appeal of AIDS PSA could impact message persuasion. Dillard and Peck (2000) also stated that both emotions and thoughts could be important factors of message acceptance or attitude toward the issue when individuals saw PSAs regarding social problems.

Rain and Turner (2007), Quick and Stephenson (2007b) support Dillard and Shen's (2005) argument. Rain and Turner (2007) examined reactance levels with negative cognitions and emotions by controlling argument quality, seriousness of consequences, and request intensity in campaign messages. They found that negative cognitions and emotions are the proper measurement for reactance. However, the intensity of the request influenced the reactance although the argument quality and the seriousness of consequences did not cause reactance in their study. Quick and Stephenson (2007b) also tested the reactance with

negative cognitions and emotions among college students by showing condom ads. They found that a higher perceived threat to choice can lead to a stronger reactance, and the reactance decreased message persuasion effects of ads. Miller, Lane, Deatrick, Young, and Potts (2007) also studied negative cognitions and emotions among college student when they were exposed to different health promotion messages depending on the level of controlling language and abstractness/concreteness. They suggested that higher levels of controlling language caused more negative emotions and cognitions about the message. Besides, the high levels of controlling language negatively affected the source credibility (Miller et al., 2007).

Moreover, Dowd, Wallbrwon, Sanders, and Yesenosky (1994) explain that trait reactance is related to individuals' personality. Individuals with high level of reactance proneness are independent or autonomous and tend to resist to other's advice or requests. Dillard and Shen (2005) and Quick and Stephenson (2008) explained that trait reactance or reactance proneness can be measured, and the level of trait reactance can influence message persuasion differently. Dillard and Shen (2005) tested messages with two different topics: flossing and excessive drinking consumption. They explored the relationship between the level of trait reactance and state reactance. Dillard and Shen (2005) concluded that there was a positive relationship between these two dimensions. Quick and Stephenson (2008) explored the relationships between the level of trait reactance and information seeking among individuals. The intensity of a perceived threat, state reactance, and restoration of the freedom by using two types of persuasive messages including dogmatic language and non-dogmatic language also were explored. They found that all subjects (with a high level of information seeking and trait reactance and a low level of information seeking and trait reactance) tried to choose alternatives. Dogmatic and vivid language reduced the message

persuasion (Quick & Stephenson, 2008). Furthermore, it was found that the perceived threat to choose mediated between language characteristics and state reactance among all subjects reduced message persuasion (Quick & Stephenson, 2008).

Worchel and Brehm (1971) explained that the restoration of freedom could mitigate the reactance effects by providing his or her autonomy to an individual. Brhem and Brhem (1981) and Quick and Stephenson (2007a) claimed that individuals are able to rebuild their threatened freedom and perform an oppositional behavior toward the threat. They can also rebuild their threatened freedom when they watch other individuals restoring their freedom. The direct boomerang effect emerges with the restoration of freedom (Brehm, 1966).

Previous studies have examined the restoration of freedom (Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003; Miller et al., 2007). Miller et al. (2007) studied how controlling language and lexical concreteness on health campaign messages effect persuasion among college students in restoration condition and non-restoration condition. They found that higher levels of language control tend to produce more reactance and message denial. Furthermore, a restoration postscript was perceived less explicit and decreased the perceived threat to freedom, and it was concluded that restoration postscript reduced the effect from psychological reactance (Miller et al., 2007). Grandpre et al. (2003) found an excessively persuasive antismoking message caused reactance among adolescents, and they tended to smoke more because of their predisposition to restore their threatened freedoms. The boomerang effect from the threat to freedom was discussed in a study by Worchel and Brhem (1970). A high threat to a freedom message agreeing with students' initial attitudes caused the "boomerang effect." This indicated that the study subjects wanted to restore their threatened freedom.

Magnitude of requests

Requests are intentions to persuade audiences to behave in a way that they have rarely or never done before, and requests threaten the behavior freedom of audiences by infringing the autonomy (Kim & Wilson, 1994). As Brhem (1966) posited, reactance is aroused when individuals desire to be more independent by achieving freedom. Thus, if individuals perceive that they lost their independence, or freedom, because a message forced them to perform more challenging behaviors, this can lead to reactance arousal. When an individual perceives requests, the person will perceive that his/her behavior freedom was reduced and goes to his/he initial plan (Clee & Henion, 1979). Clee and Henion assumed that the number of volunteers would substantially decrease if a blood donation promotion campaign requests an excessive amount of time and money by being a permanent member because people can perceive a higher threat to freedom according to psychological reactance theory. Rains and Turner (2007), and Berkowitz (1973) stated a large magnitude of request could be explained as an imposition of more time, energy, and finance that is consuming to an individual. For a small magnitude of request, an individual tends less to perceive it as imposition.

Several studies have reported a relationship between the reactance and magnitude of requests among their targeted audiences. Rains and Turner (2007) found that the magnitude of their requests was positively related with reactance in a study that measured negative cognition and anger on three different health promotion messages among college students. Berkowitz (1973) reported that individuals were less willing to help other individuals when they were asked for a heavier demand because this heavier demand threatened an individual's behavior freedom. He argued a larger request should produce higher reactance. Individuals would not be happy when they are asked more demanding cases or charged more

money and time. Berkowitz explained that it is necessary to reduce situational conditions to mitigate reactance. In another example, Zhang and Sapp (2013) found that teacher's large requests for being polite increased students' reactance intention and state. Furthermore, Knowles and Linn (2004) demonstrated that smaller requests are more effective for persuasion compared to larger requests.

The impact of reactance

In a reactance study conducted by Dillard and Shen (2005), the authors added two components (attitude and behavioral intention) into the original theory of psychological reactance, in which each component originated from the theories of reasoned action (Fishbein & Ajzen, 1975) and planned behavior (Ajzen, 1991). Attitude is a psychological state evaluating messages either negatively or positively (Bagozzi, Gurhan-Canli, & Priester, 2002). Ajzen (1991) explained that behavioral intention is an individual's predisposition to follow a specific behavior. According to Ajzen, greater behavioral intentions usually indicate a greater likelihood of the actual performance among individuals. In addition, Fishbein and Ajzen (1975) explained that attitude and behavioral intention generally have a positive relationship. This study was further extended by three additional studies (Dillard & Shen 2005; Miller et al., 2007; Rains & Turner, 2007).

Benoit and Benoit (2008) defined attitude as "...a cognition (a thought a mental construct) which is developed through experience, is evaluative, and influences our behavior" (p. 10). Finally, an individual's attitude impacts a behavior intention, and a behavior intention can be separated from behavior by the theories of reasoned action. "Behavioral intention concerns what a person would like to do or plans to do. This is a

compromise between only trying to predict attitude change and continuing to predicted behavior” (Benoit & Benoit, 2008, p.192). People’s attitudes and subjective norms can impact their behavioral intention (Benoit & Benoit 2008). Wiium, Aarø, and Hetland (2009) found that adolescent smokers showed higher psychological reactance and less favorable attitudes toward smoking control trials compared to nonsmokers. Furthermore, when individuals perceive their threat to behavioral or attitudinal freedom to choose through persuasive information, they will perceive psychological reactance. Those individuals will more likely choose an opposite option of the message’s intention to rebuild their attitudinal or behavioral freedom (Buller, Borland, & Burgoon, 1998). Miller et al. (2007) proposed that lexical concreteness of language in persuasive messages may increase the likelihood of psychological reactance and less positive attitudes toward health promotional messages among young individuals following low behavioral intention.

Burgoon, Alvaro, Grandpre, and Voulodakis (2002) explained threat to behavioral freedom can cause failure of the message persuasion, and audiences may be more likely to do the opposite of the message persuasions. In addition, young individuals presented negative (oppositional) attitudes and behaviors toward dogmatic alcoholic beverage warnings because they believed that their freedom to drink was threatened although they have the personal choice about alcohol consumption (Ringold, 2002). A study by Hyland and Birrell (1979) revealed that a smoking prevention campaign was also related to the oppositional behavior of the campaign’s intention. It increased negative attitudes toward the campaign and willingness to smoke, and this *was* more apparent among smokers because they felt the message violated their freedom to smoke. Thus, if individuals present more positive attitudes toward the messages, they would be more intent to follow the messages’ direction. On the other hand, if

individuals show more negative attitudes, they would not change their behavioral intentions or pursue risk behaviors.

A study by Reinhart, Marshall, Feeley, and Tutzauer (2007) revealed that, when organ donation messages were framed positively, they led to a more positive attitude towards the messages because the positively framed messages promoted behavioral freedom, whereas the negatively framed messages functioned to decrease behavioral freedom. Reinhart (2007) et al. concluded that a higher level of psychological reactance among respondents led to less intention to donate. In another study, Buller, Borland, and Burgoon (1998) tested the effects of language intensity among parents in a sun protection promotional message. In the study, the message with a high level of intensity caused a stronger threat to freedom and a higher level of reactance leading to less intention to follow the message's advocacy when compared to the message with low language intensity.

Grandpre et al. (2003) demonstrated that highly explicit smoking messages can bring more negative attitudes and more willingness to smoke among adolescents compared to implicit smoking messages. Negative attitude mediates reactance according to Dillard and Shen (2005). In another study, when vulnerable inhalant users read anti-inhalant messages targeting those inhalant users directly, the participants evaluated the messages negatively, and they were more willing to use inhalants. Inhalant users protested the messages explaining that the negative physical consequences were overstated (Crano, Siegel, Alvaro, & Patel, 2007).

Other studies have also presented a direct positive relationship between attitude and behavioral intention. Miller et al. (2007) reported a supportive finding in the relationship between attitude and behavioral intention in which a message with concrete language to

promote regular exercising produced a more positive attitude toward the campaign message and a higher behavioral intention among college students. Rains and Turner (2005) also found a positive significant relationship between attitude and behavioral intention when promotional health messages were shown to college students by controlling magnitude of request and the seriousness of consequences. Pavey and Sparks (2009) attained a supportive finding to explain a positive relationship between attitude toward campaign message and behavioral intention after college students read campaign messages on alcohol consumption.

Dillard and Shen (2005) reported that a negative attitude toward the campaign message directly led to low behavioral intention when college students were tested by promotional campaign messages for flossing teeth. Although there have been many studies arguing controlling language has a direct linkage with the level of threat to the behavior of freedom (Dillard & Shen, 2005; Grandpre et al., 2003; Miller et al., 2007; Quick & Considine, 2008), there are very few studies that have used magnitude of request to compare threats to freedom levels among individuals in order to examine health promotion message effects.

Based on the previous studies reviewed on attitude, behavioral intention, and reactance, this researcher hypothesized there is a positive relationship on magnitude of requests and reactance in health promotion messages. The following hypotheses specifically addressing health promotions messages regarding anorexia were proposed in this study:

Hypothesis 1: There will be a positive relationship between magnitude of requests in an anorexia prevention message and level of threat to freedom.

Hypothesis 2: There will be a positive relationship between the level of threat to freedom and reactance.

Hypothesis 3: There will be a negative relationship between reactance and attitude toward anorexia prevention recommendations.

Hypothesis 4: There will be a negative relationship between reactance and behavioral intention to follow anorexia prevention recommendations.

Hypothesis 5: There will be a positive relationship between the attitude toward anorexia prevention recommendations and behavioral intention to follow anorexia prevention recommendations.

CHAPTER 3. METHODOLOGY

This chapter reviews the methodology regarding participants, procedure, and measurement for the experiment. Upon receiving committee approval to pursue this study, my first step in the research process was to obtain approval to conduct research with human subjects from the Institutional Review Board at Iowa State University Prior to conducting this research. An experiment (posttest only) of one main factor with four levels was conducted to test the hypotheses. The experiment provided four anorexia prevention flyers conditioned by small requests, large requests, combination of small request and large requests, and no request messages. After reading a flyer, participants answered questions of reactance, attitude, and behavioral intent.

Participants

Approximately 15,000 female undergraduate students enrolled at a large Midwest university comprised the population of the study. A total of 4,000 female undergraduate students were randomly sampled among e-mail addresses that were provided by the Office of Registrar. Those students were recruited by sending them invitation email after study participants were selected. Only female college students were recruited because anorexia is highly prevalent among young women. They were contacted by e-mail and the invitation email contained an online survey link and informed that they participation is voluntary. The invitation email also clarified that all respondents need to be over 18 to participate in the study. The e-mail to ask the participation was sent three times, and these reminder e-mails were sent five days and eleven days after the first invitation e-mail. Data collection from the online survey was done over two weeks from April 10, 2014 to April 24, 2014.

Procedure

Participants read messages preventing eating disorder in each four different conditions, such as no threat without requests, small requests, large requests and a combination of small request and large requests depending on the behavioral magnitude of requests. After each subject received an invitation e-mail (Appendix A-1) that contained a link, the subject clicked the link to enter the survey. A consent form (Appendix A-2) was displayed first which explained the potential psychological discomforts and informed that there were no rewards or financial benefits for participation. The consent form also indicated that all participants were free to withdraw from a survey anytime. Participants could continue the survey after they clicked on “I agree to participate”. When participants did not agree to participate in the study, they were led to the end of the survey.

After participants agreed to participate in the study, a brief explanation about the purpose of the study was provided at the beginning of the survey (Appendix B-1). When subjects chose to continue the survey after the introduction, each participant was randomly assigned into one of the four groups (Appendix 2.1-2.4) depending on the magnitude of behavioral requests of anorexia prevention campaign messages by randomizing four different flyers in Qualtrics (online survey program).

During the survey, participants were asked to present their reactions including thoughts by responding in writing to short statements. These statements were categorized into subcategories related to several key words (negative, positive, neutral, irrelevant, and others). A manipulation check was done regarding magnitude of requests, threats to freedom, negative feelings related to anger, attitudes towards the messages, and behavior intentions to follow the recommendations. Subjects provided their demographic information regarding

their age and ethnicity at the end of the survey. After the survey, a debriefing statement concluded which provided detailed contact information about the Student Counseling Center and Student Health Center for students who might be concerned about anorexia or eating disorders (Appendix B-4).

Stimuli

To perform the experiment, a fictional group, “Anti-Anorexia Association” was created, and four different types of flyers containing different behavioral requests were distributed. A flyer was also presented containing no behavioral requests, providing general information about anorexia, two images related to weight loss, and a slogan was distributed. The general information was comprised of the statement: “It involves self-starvation, excessive weight loss, and life threatening consequences.” The slogan included a statement, “Anorexia is dangerous.” The two images showed a woman’s foot on a weight scale (KL Entertainment, 2013) and a waist measurement (Danaul Oriental Clinic, 2013) (see Appendix B.2.1-2.4 for the four different flyers).

Messages were created based on previous studies that argued magnitude of request is linked to threats to freedom and promotes a reactance towards the campaign message (Clee & Henion, 1979; Rains & Turner, 2007). Thus, four different anorexia prevention flyers were created with messages having no requests, smaller behavioral requests, and larger behavioral requests, and a combination of both small requests and large requests. Data analysis was applied to determine the magnitude of requests as well as the threats to the health portion of the message content reported various negative health consequences from anorexia. The messages were compiled from the existing content related to eating disorder from the Eating

Disorder Association (2002, 2005) and a flyer from the Eating Disorder Coalition of Iowa (2013). Message manipulation methods were adopted in this study based on research by Rains and Turner (2007), and Clee and Henion (1979) to manipulate magnitude of requests.

Demanding requests were set as high threats to freedom and small requests were set as low threats to freedom according to studies by Clee and Henion (1979), and Rains and Turner (2007). In large requests conditions, more time-consuming or energy-spending requests were made. For example, with the heading, “To prevent the danger, you must...” three larger behavioral requests were designed: “Stop reading fashion magazines and comparing yourself to celebrities!” “Never be overly critical of your body weight!” and “Eat three meals a day with balanced nutrition.”

Less time-consuming and energy-spending requests were formed in small requests conditions (Rains and Turner, 2007). With the heading, “To prevent the danger, you should...” there were three smaller behavioral requests: “Be positive of your body image. Everybody is different,” “Check your weight regularly but not too frequently,” and “Avoid skipping meals.”

The anorexia prevention flyer without treatment did not include any behavioral requests. Except for magnitude of requests, wordings were the same in the three different statements. A combination of both small requests and large requests included both small request and large request messages with the same slogan and general information about anorexia risks in one flyer. In this experiment, large requests and small requests were expected to be low-threats to freedom and high-threats to freedom. The independent variable was magnitude of behavioral requests (larger magnitude of requests/smaller magnitude of requests).

Measures

A manipulation check was conducted to determine if the prevention campaign messages were actually demanding or contained large behavioral requests and small behavioral requests through participants' responses. Perceived magnitude of requests was measured by two Likert-scale statements adapted from Rains and Turner (2007): "This message asks me to do too much work;" and "This message seems to burden to me." Responses were measured by 5-point Likert scale was used, 1=strongly disagree, 2= disagree, 3= neutral, 4=agree, and 5=strongly agree. Cronbach alpha reliability was .872.

The level of threat to freedom was measured by four statements: "The message threatened my freedom to choose," "The message tried to make a decision for me," "The message tried to manipulate me," and "The message tried to pressure me" (Dillard & Shen 2005). A 5-point Likert scale was used to collect responses from the participants, 1=strongly disagree, 2=disagree, 3= neutral, 4=agree, and 5=strongly agree. Cronbach alpha reliability was .894.

Reactance was measured by two dimensions: anger and negative cognition. Anger was measured by three statements: "I felt angry while reading this message," "I felt irritated while reading this message," and "I felt annoyed while reading this message," again using 5-point Likert scales (Dillard & Peck, 2000) from 1=none of this feeling, 2=a little bit of this feeling, 3=some of this feeling, 4=much of this feeling, and 5=a great deal of feeling based on studies conducted by Dillard and Shen (2005) and Quick and Stephenson (2007b). Cronbach alpha reliability was .906.

Participants were also asked to write their negative thoughts about the messages, and the responses (negative words) were coded into three groups: (1) negative words, (2) neutral

words, and (3) supportive words. However, only negative cognitions were used for the data analysis, which was similar to the method used in a previous study conducted by Cacioppo and Petty (1979). In the current study, negative cognitions were measured by asking respondents to write their thoughts on the campaign message. Nevertheless, their responses were highly irrelevant. For instance, the majority of responses were about images or font design in a flyer or critiques on oversimplified campaign message. Furthermore, many of the responses were about participants' or someone else's experience with anorexia. Therefore, negative cognition was discarded from further analysis.

Attitude toward anorexia prevention recommendations were measured by asking participants their attitudes after they had read anorexia prevention campaign messages, and items were rated on 5-point semantic differential scales with two extremely contrasted concepts in each item according to a study done by Dillard and Shen (2005). The pairs (foolish/wise, unfavorable/favorable, undesirable/desirable, unnecessary/necessary) were provided in the statement, stating "Preventing anorexia sounds foolish/wise to me," "I feel unfavorable/favorable about preventing anorexia," "Preventing Anorexia is undesirable/desirable to me," and "Preventing Anorexia is unnecessary/necessary to me." Cronbach alpha reliability was .762. Nunnally (1978) demonstrated that if the reliability is 0.70 or over, the reliability is acceptable.

Behavioral intentions were measured by the likelihood of performing anorexia prevention behaviors and adapted from Dillard and Shen (2005)'s for the current study. The items were rated on 5 point-Likert scales from 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree by evaluating the following statements: (1) "I intend to improve my eating behavior to prevent anorexia to prevent anorexia in the next three

months,” (2) “I intend to change my thoughts about body image to prevent anorexia,” and (3) “I intend to stop skipping meals to prevent anorexia.” Cronbach alpha reliability was .839. Finally, demographic information was measured from respondents’ responses including age and ethnicity.

Data Analysis

The computer software package, SPSS (version 22.00) was used for statistical data analysis after finishing data collection through the Qualtrics. The online survey was anonymous and the data were saved only in the Qualtrics and transferred to SPSS for data analysis. In this study, one-way analysis of variance (ANOVA) was used for a manipulation check. Independent sample *t*-tests and Pearson correlation tests were used to compare and analyze the results of four request groups.

CHAPTER 4. RESULTS

This study examined how anorexia prevention campaign messages affect female college students through a linear relationship of magnitude of requests, perceived threat to freedom, psychological reactance, attitude, and behavioral intention. Descriptive and were used to describe the sample population five hypotheses were tested using inferential statistics to measure participants' level of reactance, threat to freedom, attitude, and behavioral intention.

Sample Characteristics

Descriptive statistics

A total of 239 (5.98%) students participated in the survey. After deleting 76 incomplete responses, a total of 163 students were included for data analysis. Table 1 provides demographic information, including participants' age and ethnicity, and magnitude of requests among groups.

The majority of the participants were between 18 and 23 years old (96.9%, $n = 156$). The respondents were categorized into four groups by age: (1) 18 and 19 ($n = 79$; 49.1%; (2) 20 to 21 ($n = 59$; 36.6%; (3) 22 and 23 ($n = 18$; 11.2%; (4) age 24 or over ($n = 5$; 3.1%), with the last age group relatively smaller compared to the other age groups. The entire age group ranged between 18 and 24 years and over.

The majority (90%) of the participants were Caucasian ($n = 144$). They were in four ethnic groups: (1) Caucasian ($n = 144$; 90%; (2) Hispanic or Latino ($n = 8$; 5%; (3) Asian or Pacific Islander ($n = 6$; 3.8%; (4); and Other ($n = 2$; 1.3%).

Table 1. Frequency and percentage of participants by age, ethnicity, and magnitude of request for all groups ($N = 163$)

Variables	Frequency	Percent
Age		
18-19	79	49.1
20-21	59	36.6
22-23	18	11.2
24 or over	5	3.1
Total	161	100%
Ethnicity		
Caucasian	144	90
African American	0	0.0
Hispanic or Latino	8	5.0
Asian or Pacific Islander	6	3.8
American Indian	0	0.0
Other	2	1.3
Total	160	100%
Magnitude of requests groups		
No request	45	27.6
Small requests	35	21.5
Large requests	41	25.2
Small+ Large requests	42	25.8
Total	163	100%

The category, magnitude of requests, provides the number of participants who were exposed to each four different anorexia prevention flyers. Among the 163 participants: 27.60% ($n = 45$) were exposed to an anorexia prevention flyer without request; 21.50% ($n = 35$) were exposed to an anorexia prevention flyer of the small requests version; 25.20% ($n = 41$) were exposed to an anorexia prevention flyer of the large requests version; and 25.80% ($n = 42$) were exposed to an anorexia prevention flyer with a combination of the small and large requests version. Table 2 provides the means and standard deviations for magnitude of requests, reactance, threat to freedom, attitude, and behavioral intention toward an anorexia prevention campaign.

Table 2. Means and standard deviations for all participants who were exposed to the different anorexia prevention flyers

Variables	Mean	SD
Reactance ^a	2.26	1.16
I felt irritated while reading this message. ^b (N=163)	2.46	1.29
I felt angry while reading the message. ^b (N=162)	1.80	1.12
I felt annoyed while reading this message. ^b (N=163)	2.52	1.35
Magnitude of requests. ^c	2.33	1.12
This message asks me to do too much work. ^d (N=163)	2.24	1.16
This message seems to burden to me. ^d (N=163)	2.42	1.22
Level of threat to freedom ^e	2.54	1.14
The message threatened my freedom to choose. ^d (N=163)	2.17	1.22
The message tried to make a decision for me. ^d (N=163)	2.66	1.39
The message tried to manipulate me. ^d (N=163)	2.57	1.27
The message tried to pressure me. ^d (N=162)	2.77	1.35
Attitude toward an anorexia prevention message ^f	4.46	0.75
Preventing anorexia sounds (foolish/wise). ^g (N=162)	4.41	1.04
I feel (unfavorable/favorable) about preventing anorexia. ^g (N=162)	4.51	0.96
Preventing anorexia is (undesirable/desirable) to me. ^g (N=163)	4.56	0.88
Preventing anorexia is (unnecessary/necessary) to me. ^g (N=163)	4.37	1.03
Behavioral intention ^h	2.79	0.94
I intend to improve my eating disorder behavior to prevent anorexia in the next three months. ^d (N=161)	2.71	1.06
I intend to change my thoughts about body image to prevent anorexia. ^d (N=161)	2.88	1.09
I intend to stop skipping meals to prevent anorexia. ^d (N=161)	2.77	1.09

^a. Reactance is the average value of responses from three items on feelings about the anorexia prevention campaign message.

^b. Responses are coded from 1 to 5 (e.g., ranging from “None of this feeling” to “A great deal of this feeling”).

^c. Magnitude of requests is the average value of two items about perception after reading an anorexia prevention campaign message.

^d. Responses are coded from 1 to 5 (e.g., ranging from “Strongly disagree” to “Strongly agree”).

^e. Level of threat to freedom is the average value of four items on feelings regarding the anorexia prevention campaign message.

^f. Attitude on an anorexia prevention message is the average value after combining each response of four items regarding attitudes after reading an anorexia prevention campaign message.

^g. Responses are coded from 1 to 5 (e.g., a higher score reveals a more positive evaluation of the anorexia prevention message).

^h. Behavioral intention is the average value of three items regarding readiness to follow recommended behaviors in the anorexia prevention campaign after reading the message.

Table 2 also displays means and standard deviations of each dependent variable. The variable of reactance after reading the anorexia prevention campaign message as the mean value of three items regarding feelings about the anorexia prevention campaign message: irritated ($M = 2.46$, $SD = 1.29$); angry ($M = 1.80$, $SD = 1.12$); and annoyed ($M = 2.52$, $SD = 1.35$). The average of reactance after reading the anorexia prevention campaign message was 2.26 ($SD = 1.16$). This indicates that participants did report a high level of reactance after reading the anorexia prevention campaign message because the average value was slightly lower than the mid-point on the five-point Likert scale.

Magnitude of requests after exposure to the anorexia prevention campaign message was calculated by the average of the values of two items regarding the perceptions about the anorexia prevention campaign message: “This message asks me to do too much work” ($M = 2.24$, $SD = 1.16$) and “This message seems to burden to me” ($M = 2.42$, $SD = 1.22$). The average of magnitude of requests was 2.33 ($SD = 1.12$). This implies that the average participants did not perceive that the prevention message was requesting much because the value is lower than the mid-point on the five Likert scale.

Level of threat to freedom after reading the anorexia prevention campaign message was calculated as the average of the values of four items: “The message threatened my freedom to choose” ($M = 2.17$, $SD = 1.22$), “The message tried to make a decision for me” ($M = 2.66$, $SD = 1.39$), “The message tried to manipulate me” ($M = 2.57$, $SD = 1.27$) and “The message tried pressure me” ($M = 2.77$, $SD = 1.35$). The average of threat to freedom was 2.54 ($SD = 1.14$), and this value was also slightly lower than the mid-point on the five-point Likert scale.

The attitude toward an anorexia prevention message was obtained by the mean value from four semantic differential questions: Preventing anorexia sounds foolish/wise to me” ($M = 4.41$, $SD = 1.04$); “I feel unfavorable/favorable about preventing anorexia” ($M = 4.51$, $SD = 0.96$); “Preventing anorexia is undesirable/desirable to me” ($M = 4.56$, $SD = 0.88$); and “preventing anorexia is unnecessary/necessary to me” ($M = 4.37$, $SD = 1.03$). The average of attitude toward an anorexia prevention message was 4.46 ($SD = 0.75$). This suggests that the average respondents presented highly positive attitudes toward the anorexia prevention campaign message because the value is higher than the mid-point on the five-point Likert scale and is close to the full point.

The last variable, behavioral intention after reading the anorexia prevention campaign message was calculated by the mean value of three items asking readiness to follow the prevention recommendations, including: “I intend to improve my eating behavior to prevent anorexia in the next three months” ($M = 2.71$, $SD = 1.06$); “I intend to change my thoughts about body image to prevent anorexia” ($M = 2.88$, $SD = 1.09$); and “I intend to stop skipping meals to prevent anorexia” ($M = 2.77$, $SD = 1.09$). The average of attitude toward the prevention recommendations was 2.79 ($SD = 1.09$). This value is slightly higher than the mid-point the five-point Likert scale and indicates that the average participants seem to be willing to follow the prevention message’s direction.

Manipulation Check

One-way analysis of variance (ANOVA) was used to analyze results from the manipulation check for magnitude of requests among four versions of anorexia prevention flyers. There was a significant difference among the three request versions, $F(3, 162) =$

11.99, $p < .001$. As revealed in Table 3, participants who read a large request version ($M = 2.82$, $SD = 1.17$) perceived that the campaign message was more demanding than those who read a small request version ($M = 1.90$, $SD = 0.88$). Thus, magnitude of request in terms of statement quality was successfully manipulated because the mean difference (0.92) was quite significant. However, magnitude of requests in terms of the number of statements, including; no request ($M = 1.80$, $SD = 0.84$); three requests ($M = 2.39$, $SD = 1.14$); and six requests (small and large requests combined version), ($M = 2.79$, $SD = 1.15$) were not successfully manipulated. Participants did not recognize magnitude of request based on the number of requests (zero, three, and six request statements $F(2, 163) = 9.534$, $p < .001$).

Although the result from one-way analyses of variance showed that the difference of the three request statements were significant, Bonferroni analyses by comparing two different request statements each other indicated that there was no significant differences between zero request versus three requests and three requests versus six requests.

Table 3. Results of ANOVA testing for magnitude of requests

Four versions of magnitude of requests			
No request Mean (SD)	Small requests Mean (SD)	Large requests Mean (SD)	Small + Large Requests Mean (SD)
1.80 (0.84)	1.90 (0.88)	2.82 (1.17)	2.79 (1.15)
<i>F</i>	11.99***		
<i>df</i>	162		
<i>Sig.</i>	< .001		

* $p < .05$; ** $p < .01$; *** $p < .001$

The mean differences for no requests and between groups were not statistically significant. For example, the mean difference between three request version and six request version was only 0.39 ($p = 0.175$). Also, the mean difference between no request version and three-request version was 0.59 ($p = 0.01$) although the mean difference between the no request version and six-request version was 0.99 ($p < .001$). This implies that participants in six-request version were more likely to perceive that the message as large requests compared to the participants from no request version. Furthermore, respondents from three-request version slightly more perceived that the prevention campaign messages request much compared to respondents from the no request version. Nevertheless, respondents from the three-request version and six-request version showed a little difference about the perceptions. Therefore, the results indicate that the second approach cannot be used in this study. From now, further results analyses will be focused on the first approach, which contains small requests and large requests, excluding the second approach with no request version, small and large request combination version (six request version).

Hypotheses Testing

Five hypotheses were tested using inferential statistics to measure participants' level of reactance, threat to freedom, attitude, and behavioral intention.

Hypothesis 1: There will be a positive relationship between magnitude of requests in an anorexia prevention message and level of threat to freedom.

To test the first hypothesis, an independent samples t -test was used to compare the results regarding level of threat to freedom between small request version and large request version. There was a significant difference on level of threat to freedom between small request version and large request version ($p < 0.05$), $t(72) = -4.05$, $p < .001$. Results of

independent samples *t*-test in Table 4 reveal that participants from the large request version ($M = 2.93$, $SD = 1.11$) perceived a significantly higher level of threat to the freedom compared to the participants from the small request version ($M = 1.98$, $SD = 0.87$). The mean difference between these two versions was .95. As a result, hypothesis 1 was supported.

Table 4. Independent samples *t*-test for the level of threat to freedom and magnitude of requests ($n = 74$)

Group	Level of threat to freedom				
	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>
Small requests ($n = 34$)	1.98	0.87	-4.05	72	< .001***
Large requests ($n = 40$)	2.93	1.11			

* $p < .05$; ** $p < .01$; *** $p < .001$, two tailed.

Hypothesis 2: There will be a positive relationship between the level of threat to freedom and reactance.

Table 5 reveals there was a significant positive relationship between the level of threat to freedom and reactance ($r = .43$; $p < .001$). Therefore, hypothesis 2 was supported. This result indicates that participants who perceived higher threat to freedom perceived stronger reactance after they read an anorexia prevention campaign message with either small requests or large requests. In addition, participants who perceived low threat to freedom reported weaker reactance.

Table 5. Pearson correlation tests for level of threat to freedom, reactance, attitude toward an anorexia prevention message, and behavioral intention ($n = 74$)

Variable	Variable	
	Reactance	Attitude toward the prevention message
Level of threat to Freedom	.430** ($n = 73$)	
Attitude toward the prevention message	.137 ($n = 74$)	
Behavioral Intention	-.568** ($n = 74$)	.127 ($n = 73$)

* $p < .05$; ** $p < .01$; *** $p < .001$, two tailed.

Hypothesis 3: There will be a negative relationship between reactance and attitude toward anorexia prevention recommendations.

On one hand, there was not a significant relationship— either positive or negative— between reactance and attitude toward anorexia prevention recommendations a negative relationship between reactance and attitude toward anorexia prevention recommendations ($r = .137$; $p = .246$) as illustrated in Table 5. On the other hand, there was an insignificant positive relationship according to the test results. In other words, a higher reactance did not cause much negative influences of attitude toward the campaign message in this study. Thus, hypothesis 3 was not supported.

Hypothesis 4: There will be a negative relationship between reactance and behavioral intention to follow prevention recommendations.

As revealed in Table 5, there was a significant negative relationship between reactance and behavioral intention to follow the prevention recommendations ($r = -.568$; p

< .001). This result implies that respondents were less willing to follow the prevention recommendations when they perceived stronger reactance. The result also can indicate that respondents who perceived weaker reactance reported that they were more willing to follow the prevention recommendations. Therefore, hypothesis 4 was supported.

Hypothesis 5: There will be a positive relationship between attitude toward anorexia prevention recommendations and behavioral intention to follow anorexia prevention recommendations.

According to results from Table 5, there is not strong positive relationship between attitude and behavioral intention ($r = .127$; $p = .284$), unlike findings from previous studies. Thus, hypothesis 5 was not supported.

CHAPTER 5. DISCUSSION

This study tested the effects of anorexia prevention campaign messages among college female students on magnitude of requests. This chapter addresses the significance of the study, limitations, and suggestions for future study.

Significance of the Study

The hypothesis testing results show that three hypotheses were supported, but others were not. The results indicated there was a positive relationship between magnitude of requests and threat to freedom. There was a strong positive relationship between level of threat to freedom and reactance. A negative relationship between reactance and behavioral intention to follow the campaign's recommendation was found. However, supportive results were not found in reporting a negative relationship between reactance and attitude toward anorexia prevention recommendations. Furthermore, no significant positive relationship between attitude toward anorexia prevention recommendations and behavioral intention to follow anorexia prevention recommendations was found.

Manipulation check results from ANOVA tests imply that young females perceived that more demanding messages in terms of the message content are larger requests although less demanding messages were relatively related to small requests. Large requests in an anorexia prevention campaign message led to higher threats to freedom among young females. On the other hand, small requests in the campaign message led to lower threats to freedom. This can imply that the more textually demanding message can generate the stronger threats to their freedom in performing certain behaviors regarding anorexia prevention. This supports a previous study's explanation. For example, when individuals

were asked for help from others, more demanding requests in terms of consuming and energy could generate higher threats to freedom (Berkowitz, 1973). In this study, statistical results state that participants who perceived a higher level of threat to freedom perceived stronger reactance in terms of negative affects although participants who perceived a low level of threat to freedom perceived weak reactance after they read either small request version or large request version of the anorexia prevention campaign message. Brehm (1966), and Rains and Turner (2007) previously suggested that demanding messages or words related to threat to freedom could increase the reactance or message rejection and rebuild the behavior freedom. Respondents who were exposed to either the small request or large request version of the anorexia prevention campaign message and perceived stronger reactance had less behavioral intention to follow the anorexia prevention messages' recommendations. This finding supports ideas from previous studies. Dillard and Shen (2005) suggested the negative relationship of reactance and behavioral intention. Miller et al. (2007) and Rains and Turner (2007) supported the same idea and extended the model. The result implies that respondents who perceived higher reactance were related to lower behavioral intention, which leads to message persuasion failure.

Although findings by Miller et al. (2007), Rains and Turner (2007), and Dillard and Shen (2005) proposed there is a relationship between reactance and attitude in testing health promotional message effects, no supportive evidence was revealed in this study. It was assumed that individuals who perceived stronger reactance could have positive attitudes or vice versa. Individuals' attitudes could have been influenced by other factors such as flyer design. Otherwise, some individuals could have maintained their original attitude toward the campaign message. In this study, young females' attitude toward the anorexia prevention

campaign message did seem to be significantly related to the behavioral intention to follow the message's recommendation. This hypothesis failed to support the previous study's findings although Fishbein and Ajzen (1975) Ajzen (1991) explained the positive relationship of attitude and behavioral intention in the theory of reasoned action and planned behavior. The possible explanation of this failure would be that preventing anorexia is still challenging to change or improve their behavior although they have positive attitudes toward the message. Instead of attitude toward the campaign message, there might be stronger factor such as their experience and knowledge to intention to follow the message's persuasion and prevent anorexia. Based on the results from respondents who read either small or large request version of the anorexia prevention message, no significant relationship was reported regarding attitude and behavioral intention. This result implies that magnitude of requests impacted threat to freedom. The threat to freedom was linked to reactance, and the reactance negatively influenced behavioral intention. However, this did not occur because of the relationship of attitude and behavioral intention. Reactance impacted behavioral intention negatively. These theoretical implications from this study can also inspire practical implications based on the anorexia prevention study.

This study attempted to explain the psychological reactance effects of anorexia prevention campaign targeting young females and relationships among different variables. There were several previous studies discussed anorexia in the past. However, a public campaign message was uniquely created in this study to prevent anorexia because anorexia can be a long-term women's health issue threatening their life. This study can contribute to designing more effective anorexia prevention campaign messages that can generate less reactance or other female health promotional messages in the future.

The current study followed suggestions from findings by Dillard and Shen (2005), and Rains and Turner (2007) who developed an extended psychological reactance model based on the original idea of Brehm (1966). Dillard and Shen (2005), and Rains and Turner (2007) provided more detailed justifications regarding the theory of psychological reactance by explaining how psychological reactance can be measured by anger and negative cognition. However, in this study, measurement of negative cognitions was not valid according to the participants' responses, and excluded from results analyses. Magnitude of requests was measured by two statements with 5-point Likert scales as applied in the study by Rains and Turner (2007). Only large and small request were examined in the study by Rains and Turner (2007), whereas the current study attempted to measure magnitude of requests by two approaches regarding request intensity in terms of the message content versus the quantity of requests in a flyer.

Reactance (anger) measure was based on 5-point Likert scale questions as Dillard and Shen (2005) proposed. However, in attitude measures, although the current study used semantic differential point semantic scales as Dillard and Shen (2005), three items, including (bad/good), (negative/positive), and (detrimental/ beneficial) were excluded because these pairs were repeated in other word pairs. In addition, 7- point semantic differential questions were adjusted to 5-point semantic differential questions for measurement consistency with other variable measures. In this study, two more behavioral intention items were also added whereas Dillard and Shen (2005) used only one item to measure behavioral intention, and this was very critical. Furthermore, unlike other previous studies, the same visual contents were placed in each flyer with different textual messages.

Findings of this study indicated that a public health campaign may fail if a persuasive message creates reactance in the people's mind. The findings revealed there was a clear relationship between magnitude of requests and threat to freedom. There was a relationship between threat to freedom and reactance. The findings from this current study can help non-profit organizations to design more persuasive health promotional messages for young adults. In our current society, anorexia is a dangerous health issue among young females. Many young females are unsatisfied with their body shapes which may be a threat to their lives because a poor body image has the potential to lead to bad health or even death.

At this time, it will be important to persuade young females to adopt healthy body images of themselves by creating effective campaign messages that both prevent and reduce potential dangers leading to anorexia. The results from the current study suggest that anorexia prevention campaign messages with large requests or more demanding requests generate higher threats to freedom. The higher threats to freedom bring a stronger reactance among female college students, which lead to poor behavioral intention. The finding suggests that campaign planners should pay greater attention to language use in persuasive messages. Oftentimes, campaign planners are deeply involved with cause and rationale of their campaigns and tend to use demanding language. Sometimes this approach may work, whereas other times it may not. This study revealed one potential cause (reactance) leading to a failed campaign. According to this study, in terms of magnitude of requests, the quality of messages is of greater importance rather than the quantity.

Limitations and Suggestions for Future Study

There were several limitations of this study. First, participants in this study could have different levels of experience with anorexia. Some participants may have personally experienced anorexia, whereas others did not. Therefore, it appears to be challenging to manipulate magnitude of requests in campaign messages because audiences have different levels of experience with anorexia. A future study could be more targeted to focus on actual anorexics and test the anorexia prevention campaign message effects on them.

Second, the averages of variables were quite low, although average of attitude toward campaign message was much higher than others. One possible explanation would be that participants could have presented positive attitudes about the topic but not about the message content if participants did not read the questions carefully. Another possibility may be that magnitude of requests would not be the most significant measure with the current topic because of the different participants' experiences with anorexia. Probably, it will be more interesting to test other health topics such as consumption of healthy food and healthy diet/exercise.

Third, negative cognition measures related to reactance needs to be developed further. In this current study, many responses regarding negative cognition were invalid because participants discussed their own story or what they had heard rather than experienced. In addition, many of those respondents discussed visual factors, excluding textual message reactions. It may be important to examine other potential variables that link threat to freedom and reactance in the future.

Fourth, magnitude of requests in terms of the number of requests could not be explained further in this study although the approach was considered and designed before the

data analysis. A message without requests and the maximum number (six) of requests revealed a clear difference in the manipulation check result, but insignificant differences were found in comparison with other cases. In the future, requests in terms of the message content could potentially be used in comparing these two cases.

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APPENDIX A. INVITATION EMAIL AND INFORMED CONSENT DOCUMENT

A-1. INVITATION E-MAIL

Dear Iowa State University Students,

Hello! My name is Minsun Kim. I am a graduate student in the Greenlee School of Journalism and Communication at Iowa State University. You are invited to participate in my research study about anorexia prevention campaigns targeting female college students. The purpose of this study is to examine how people react differently to campaign messages targeting female college students. The study results will be helpful for organizations to communicate more effectively with young female students like you.

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. Although risks are minimal, there are questions that can lead to psychological discomfort for some individuals who have experienced anorexia in the past or are currently involved. 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 any 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:

If you have any questions regarding this study, please feel free to contact me at mkim@iastate.edu.

Thank you very much for your participation!

Sincerely,
Minsun Kim

A-2. INFORMED CONSENT DOCUMENT

Title of Study: Testing Anorexia Campaign Message Effects on Psychological Reactance among Female College students.

Investigator : Minsun Kim

This is a research study that has been approved by the Institutional Review Board of Iowa State University. Please take your time in deciding if you would like to participate. Please feel free to contact Minsun Kim at mkim@iastate.edu before you click on the “Start” button.

INTRODUCTION

The purpose of this study is to examine campaign message effects depending on the message content, and attitudes toward the messages and willingness to follow the recommendations among female college students.

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 a campaign message titled “Anorexia is dangerous.” Fictional messages were designed from the Anti-Anorexia Association, an imaginary organization. This organization was created fictionally for the current study, and the organization does not actually exist. The survey questions will ask about your thoughts and feelings after reading some general facts of anorexia and a campaign message. Also, questions related to your attitudes and willingness to follow the recommendations towards the campaign, and the general demographic information will be asked. Your participation will last for 10 to 15 minutes.

RISKS

You may experience some psychological or emotional discomfort when reviewing the fictional messages or answering some of the survey questions. This is particularly true if you have experience with anorexia or eating disorders.

BENEFITS

This study may bring no direct benefit to you. However, it is hoped that the information gained in this study will benefit society by helping clinics or hospitals 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

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

To ensure confidentiality to the extent permitted by law, the following measures will be taken:

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

- Minsun Kim, graduate student, Greenlee School of Journalism and Communication, Iowa State University; email: mkim@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.

I agree to participate.

**APPENDIX B. SURVEY INTRODUCTION, CAMPAIGN MESSAGES,
QUESTIONNAIRE, AND DEBRIEFING STATEMENT**

B-1. Survey Introduction

In this survey, Anti-Anorexia Association will provide general facts about anorexia in a flyer. We would like to know your opinion about anorexia prevention campaign messages that will potentially be distributed to the public in the near future. Please provide your thoughts after reading the messages in an anorexia prevention flyer. You will be asked to evaluate the campaign and its messages. You will also be asked questions about your general demographic information. After finishing all the questions, please click the “Finish” button to complete this survey.

B-2. Four Anorexia Campaign Messages

B-2.1. No Request Version



Anorexia is dangerous

*Because it involves self-starvation,
excessive weight loss,
and life threatening consequences.*

Anti-Anorexia Association
www.antianorexiaassociation.com

B-2.2 Small Request Version

Anorexia is dangerous

*Because it involves self-starvation,
excessive weight loss,
and life threatening consequences.*


To prevent the danger, you should:

Be positive of your body image. Everybody is different.

Check your weight regularly, but not too frequently.

Avoid skipping meals.

Anti-Anorexia Association
www.antianorexiaassociation.com

B-2.3. Large Request Version

Anorexia is dangerous

*Because it involves self-starvation,
excessive weight loss,
and life threatening consequences.*

To prevent the danger, you must:

Stop reading fashion magazines and comparing
yourself to celebrities!

Never be overly critical of your body weight
everyday!

Eat three meals a day with balanced
nutrition!

Anti-Anorexia Association
www.antianorexiaassociation.com

B-2.4. Small and Large Request Combined Version



Anorexia is dangerous
*Because it involves self-starvation,
excessive weight loss, and life
threatening consequences.*

To prevent the danger,
you must:

- Stop** reading fashion magazines and comparing yourself to celebrities!
- Never** be overly critical of your body weight everyday!
- Eat** three meals a day with balanced nutrition!

To prevent the danger,
You should:

- Be positive** of your body image.
- Check** your weight regularly, but not too frequently.
- Avoid** skipping meals.

Anti-Anorexia Association
www.antianorexiaassociation.com

B-3. Questionnaire

1). Please provide all the thoughts you have on your mind when you read the message.

****Please indicate your answers for the following statements on a 5-point scale from 1 (None of this feeling) to 5 (a great deal of this feeling) after reading the prevention message.***

2). I felt irritated while reading this message.

1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4.

Much of this feeling 5. A great deal of this feeling

3). I felt angry while reading this message.

1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4.

Much of this feeling 5. A great deal of this feeling

4). I felt annoyed while reading this message.

1. None of this feeling 2. A little bit of this feeling 3. Some of this feeling 4.

Much of this feeling 5. A great deal of this feeling

****Please indicate the extent to which you agree or disagree with the following statement on a 5- point scale from 1(strongly disagree) to 5(Strongly agree) after you read the prevention message.***

5) This message asks me to do too much work.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

6) This message seems to burden to me.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

****Please indicate the extent to which you agree or disagree with the following statement on a 5- point scale from 1(strongly disagree) to 5(Strongly agree) after you read the prevention message.***

7) The message threatened my freedom to choose.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

8) The message tried to make a decision for me.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

9) The message tried to manipulate me.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

10) The message tried to pressure me.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

****Please indicate your positions about the anorexia prevention message.***

11) Preventing anorexia sounds _____ to me.

Foolish ____:____:____:____:____ Wise

12) I feel _____ about preventing anorexia.

Unfavorable ____:____:____:____:____ Favorable

13) Preventing anorexia is _____ to me.

Undesirable ____:____:____:____:____ Desirable

14) Preventing anorexia is _____ to me.

Unnecessary ____:____:____:____:____ Necessary

****Please indicate the extent to which you agree or disagree with the following statement on a 5- point scale from 1(strongly disagree) to 5(Strongly agree) after you read the prevention message.***

15) I intend to improve my eating behavior to prevent anorexia in the next three months.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

16) I intend to change my thoughts about body image to prevent anorexia.

1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

17) I intend to stop skipping meals to prevent anorexia.

1.Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree

About yourself.

18) Your age?

1. 18-19

2. 20-21

3. 22-23

4. 24 or over

19) Your ethnicity?

1. Caucasian

2. African American

3. Hispanic or Latino

4. Asian or Pacific Islander

5. American Indian

6. Other

B-4. DEBRIEFING STATEMENT

Thank you so much for participation!

The messages you viewed were fictional and created for purposes of the study.

The messages do not necessarily represent the opinions of any individuals or organizations with expertise in anorexia or other eating disorders.

If you are concerned about anorexia or eating disorders, it will be necessary to contact a medical professional or seek professional counseling. Free student counseling at ISU Student Counseling services is available on the Third floor in the Student Services Building on the campus. Walk-in intake appointments can be arranged by checking with a receptionist. To visit the Student Counseling Services website, please click on the following link <http://www.counseling.iastate.edu>. For more inquiries, please contact 515-294-5056.

You can also visit Thielen Student Health Center located at 2260 Thielen Student Health Center on campus. To set up your appointment please call 515-294-5801. If you would like to visit the Thielen Student Health Center website, please click on the following link <http://www.cyclonehealth.org>.

If you have any questions about the study, please feel free to contact Minsun Kim at mkim@iastate.edu or Dr. Suman Lee at smlee@iastate.edu.

Thank you again for your participation!