# ENHANCING MOTIVATION, SELF-EFFICACY, AND RESPONSE-EFFICACY

# THROUGH REGULATORY FIT

#### THESIS

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by

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## ABSTRACT

# ENHANCING MOTIVATION, SELF-EFFICACY, AND RESPONSE-EFFICACY THROUGH REGULATORY FIT

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According to the Theory of Self-Regulatory Focus, individuals can be characterized by a regulatory focus of either promotion or prevention. Promotion focus involves sensitivity to the presence/absence of positive outcomes and is characterized by a strategy of pursuing desirable end-states, whereas prevention focus involves sensitivity to the presence/absence of negative outcomes and is characterized by a strategy of avoiding undesirable end-states. Regulatory fit is experienced when individuals use means of goal pursuit to match their regulatory focus. The objectives of this study were to determine the effect of regulatory fit on motivation and overall efficacy in regards to eating a healthy diet, and to determine which regulatory fit combination most enhances self- and response-efficacy. A total of 193 participants were recruited for this study and were randomly assigned to receive information about healthy eating via a positive or negative role model and gain- or loss-framed information. This study demonstrated that positive role models and self-efficacy both play a role in enhancing an individual's intention to eat a healthy diet. Promotion-focused individuals in a regulatory fit condition also showed greater intention to eat a healthy diet. Promotion-focused individuals were found to have higher self-efficacy than prevention-focused individuals. Interestingly, promotion-focused individuals were found to have higher response-efficacy, particularly those presented with a positive role model and gain-framed message.

#### **CHAPTER I**

#### INTRODUCTION

#### Overview of Obesity and Eating Behaviors

According to the most recent National Health and Nutrition Examination Survey, 30.4% of adolescents and young adults 12 to 19 years of age are overweight or at risk for becoming overweight (Peng, 2009; Department of Health and Human Services, 2000). Obesity has also been found to be directly linked to many chronic conditions including type II diabetes, heart disease, and hypertension (National Heart, Lung, and Blood Institute Expert Panel on the Identification Evaluation and Treatment of Overweight and Obesity in Adults, 1998). Although there are many causes of and risk factors associated with obesity, the consensus is that the most easily modifiable cause, and most prominent risk factor, is that of an excess of calories consumed relative to calories expended which is typically a result of poor eating and physical exercise habits (Hampson, Andrews, Peterson, & Duncan, 2007).

College students represent a population segment that typically fails to meet dietary recommendations for health with poor nutrition being identified as a high-risk behavior that places them at risk for poor health outcomes (Strachan & Brawley, 2009; Douglas, 1997). According to the National College Health Assessment, only 7.3% of college students eat at least five daily servings of fruit and vegetables, which is

recommended by the U.S. Department of Agriculture dietary guidelines (American College Health Association, 2004). It is increasingly alarming that rates of overweight and obesity appear to be increasing most dramatically among young adults, the 18-to-29year old age group (from 7.1% to 12.1% from 1991 to 1998), with those having some college education demonstrating even greater increases in overweight and obesity (from 10.6% to 17.8%) (Lloyd-Richardson, Bailey, Fava, Wing, & Tern, 2009; Mokdad et al., 1999). Therefore, it is important to discover what factors are necessary to encourage behavior change in young adults, specifically, change in eating habits.

#### Role Models

It is commonly assumed that both positive and negative role models can motivate or influence individuals to change their behavior. In fact, many public service programs use positive and negative role models to motivate people to adopt a health behavior change. Negative role models are individuals that have suffered a negative consequence as a result of not performing the advocated behavior. Positive role models are individuals who are experiencing benefits from carrying out the behavior. Real-life examples of the utility of negative role models include public service campaigns that highlight individuals who smoke and get lung cancer or vehicular accidents that are a result of drinking and driving. Weight loss programs, such as Jenny Craig<sup>TM</sup>, generally use positive role models to motivate individuals. It is thought that negative models promote the adoption of the advocated behavior by frightening the individual into preventing the demonstrated undesirable outcome while positive role models promote changes in behavior by inspiring others to achieve a similarly desirable outcome (Lockwood, Chasteen, & Wong, 2005). However, whether positive or negative role models are more effective in motivating an individual to implement behavior change may be dependent on other factors as well.

#### Regulatory Focus and Model Preference

An individual's regulatory focus may also have an effect on role model preference. Individuals' inclination to make a behavior change may rely upon the context in which the goals of the message are framed. The incentives for change could be presented as promoting a positive outcome or preventing a negative outcome. According to the Theory of Self-Regulatory Focus, individuals can be characterized by a regulatory focus of either promotion or prevention (Higgins, 1997). Promotion focus involves sensitivity to the presence or absence of positive outcomes and is characterized by a strategy of pursuing desirable end-states. Prevention focus involves sensitivity to the presence or absence of negative outcomes and is characterized by a strategy of avoiding undesirable end-states. In addition, individuals with strong promotion focus are especially likely to observe and recall information about successes that other individuals have achieved while individuals with a strong prevention focus are especially likely to attend to information about others' failures (Higgins, 1997).

In general, promotion-focused individuals favor a strategy of pursuing success over a strategy of avoiding failure (Higgins, 1997). Again, promotion-focused individuals are characterized by vigilantly scrutinizing their social surroundings for information regarding how to obtain success. Promotion goals entail striving to achieve an ideal self and so strategies for achieving the promotion goal are oriented toward eagerly pursuing its attainment. It therefore stands to reason that positive role models will be more motivating for those with promotion focus since positive models exemplify the positive outcomes to be pursued and inspire others too by encouraging the pursuit of the goal, which is a promotion strategy (Lockwood, Jordan, & Kunda, 2002). On the other hand, prevention-focused individuals tend to favor strategies that help avoid failure rather than pursue success (Higgins, 1997). These individuals are noted for their attention to losses or failures in their social surroundings. Prevention goals entail striving to avoid negative consequences and so individuals' strategies are oriented to avoiding losses or failures. Negative role models are thought to be more motivating for individuals with this particular focus because they illustrate negative outcomes to be avoided and therefore encourage others to avoid failure, a prevention strategy (Lockwood et al., 2002).

In essence, people are more susceptible to information that fits their dominant regulatory focus style, promotion or prevention, and demonstrate enhanced motivation when encouraged to pursue strategies that fit their focus (Hong & Lee, 2008). This notion has gained support from recent research in which role model preference was determined among those with promotion and prevention focus. In one study, individuals' chronic regulatory focus was measured, and they were asked to describe a time that they were motivated by the academic success or failure of another person. It was found that promotion-focused individuals were more likely to recall, and be motivated by, the success of another person while those with prevention focus were more likely to recall, and be motivated by, another person's failures (Lockwood et al., 2002). In another study, it was found that promotion-focused individuals preferred a positive role model when contemplating adopting a beneficial, additive behavior, such as exercising more frequently and prevention-focused individuals preferred a negative role model when contemplating cutting out, or subtracting, a harmful behavior such as cutting out fatty foods from their diet (Lockwood, Sadler, Fyman, & Tuck, 2004).

#### Message Framing

Effective health messages should communicate information relevant to the behavioral issue at hand, and this information should be conveyed in a way that maximizes its impact on people's thoughts and behavior (Rothman, Bartels, Wlaschin & Salovey, 2006). For decades, researchers have explored the impact of fear appeals on health behaviors; however, the assertion that shifting how information is framed can affect people's behavioral decisions was motivated by the framing postulate of prospect theory (Tversky & Kahneman, 1981). According to prospect theory, people will act to avoid risks when considering the potential gains associated with a decision (risk aversive) but are willing to take risks when considering the potential losses associated with a decision (risk seeking). Information about a health behavior can emphasize the benefits of taking action (i.e., a gain-framed appeal) or the costs of failing to take action (i.e., a loss-framed appeal) (Rothman et al., 2006). Nearly all health-related information can be construed in terms of either benefits or costs (Rothman & Salovey, 1997). For example, a pamphlet promoting healthy eating could emphasize either the costs of not eating healthy (e.g., "Not eating a healthy diet could lead to an increased risk of diabetes") or the benefits of healthy eating (e.g. "Eating a healthy diet leads to a decreased risk of diabetes").

The usual prospect-theoretic reasoning about appeal variations is that for relatively low-risk behaviors, such as preventive health behaviors, gain-framed messages should be more persuasive than loss-framed messages, but for riskier behaviors, such as

mammography and disease-detection behaviors, loss-framed appeals should be more persuasive (Salovey, Schneider, & Apanovitch, 2002). The most common explanation for this reasoning invokes prospect theory by suggesting that potential losses are more motivating than potential gains when risky actions are contemplated (detection behaviors), but gains are more motivating than losses for low-risk behaviors (preventive behaviors) (O'Keefe & Jensen, 2007; Kahneman & Tversky, 1979). This reasoning implies that gain-framed messages, which motivate by emphasizing the benefits of performing a specific action, will be more persuasive for the low-risk, preventive behaviors whereas loss-framed messages, which motivate by stressing the costs of failure to take action will be more persuasive for high-risk, detection behaviors.

#### Message Framing and Regulatory Focus

However, a recent meta-analytic review (O'Keefe et al., 2007) found that though gain-framed messages were significantly more persuasive than loss-framed messages in regards to disease prevention, the difference is actually quite small (r=.03) and could be attributable to a relatively large effect for messages advocating dental hygiene behaviors. This analysis also found no statistically significant differences in persuasiveness between gain- and loss-framed appeals concerning other preventive actions, including safer-sex behaviors, skin cancer prevention behaviors or diet and nutrition behaviors. Prospect theory offers a conceptual framework within which to understand shifts in preferences from risky to certain options as the decision frame changes from loss to gain, where for relatively low-risk behaviors (such as preventive health behaviors like applying sunscreen), gain-framed messages should be more persuasive then loss-framed, but for riskier behaviors (such as detection health behaviors, like screenings for cancer), loss-

framed messages should be most persuasive (O'Keefe et al., 2007). In prospect theory, the term risk can be applied to a behavior when its outcomes are probabilistic, but not certain (Kahneman & Tversky, 1979).

This theory was derived based on preferences obtained from decision problems that specified the formal probabilities and expected values associated with each response option (Rothman & Salovey, 1997). As long as one examines the influence of message frames within the context of decisions such as the hypothetical disease problem, this theory is applicable. The hypothetical disease problem is one in which participants receive information about an epidemic in which 600 people are expected to be affected, and they are asked to choose between two interventions (framed as wither gain or loss) to combat the disease. Again, these decision problems specify the formal probabilities and expected values for each option [i.e. "If Program A is adopted, 200 people will be saved (72%); "If Program B is adopted, there is a 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved (28%); Tversky and Kahneman, 1981]. However, in the application of message framing to actual health communication, there is considerably less control over the situations in which the framed messages are expected to exert their influence (Rothman et al., 1997; Dunegan, 1993). One's theoretical analyses can no longer focus on factors such as the magnitude of the relative outcomes and the probabilities associated with the risky alternative (Rothman et al., 1997).

It is important to note that there are factors that can affect the influence of gainframed and loss-framed messages. Rothman and Salovey (1997) proposed that there are at least three important stages in the decision-making process which determines the weight of framed messages: 1) The amount of attention directed to the message influences the degree to which it is integrated into a mental representation; 2) People differ in their receptivity to the message frame depending on personal experience and current situations; 3) The influence of the particular frame depends on the perceived function of the advocated behavior. An individual cannot respond to a framed message without first perceiving it. It has been argued that perceived risk is a critical determinant of how people respond to gain- and loss-framed appeals; however, in studies that have used message framing to promote health behaviors, risk has been operationalized more broadly as people's subjective perception of the behavior (Rothman et al., 2006). Therefore, it stands to reason that people's subjective perception of a health behavior reflects not only the probability of a particular outcome as a result of that behavior, but also feelings of concern about the behavior. It has also been suggested that an individual's perception of a health behavior may reflect reasoning strategies elicited by the possibility of a favorable or unfavorable outcome (Rothman et al., 2006).

The information that is presented in a message intended to influence health behavior is understood within the framework of an individual's experiences and knowledge. Thus, if the individual has a typical way of perceiving certain information, in this case, health information, then this may influence which type of message framing is more persuasive. For example, the extent to which someone has a characteristic optimistic or pessimistic outlook on life might also shape his or her willingness to adopt the perspective advocated by a gain- or loss-framed appeal (Scheier & Carver, 1985). Recent research has demonstrated that variability in people's general awareness of positive or negative outcomes regulates their reactions to gain- and loss-framed appeals

(Cesario, Grant & Higgins, 2004; Lee & Aaker, 2004; Mann, Sherman & Updegraff, 2004).

Therefore, an individual's regulatory focus may be an important factor in how people perceive framed messages. Some people may primarily focus on achieving goals and aspirations and pursue goals that lead to favorable outcomes (promotion-focused orientation) while others focus on duties or obligations and pursue goals that help them avoid negative outcomes (prevention-focused orientation). As a result, studies have found that gain-framed appeals were more effective for those who tend to be promotionoriented, and loss-framed appeals were more persuasive for people who tend to be prevention-oriented (Uskul, Sherman & Fitzgibbon, 2008; Rothman et al., 2006; Ceasrio et al., 2004; Lee & Aaker, 2004). Gain-framed messages should be more successful when promoting behaviors that elicit a promotion-focused mindset whereas a loss-framed message should be more effective when promoting behaviors that elicit a preventionfocused mindset. However, there are likely behaviors for which people differ systematically in the mindset that it is elicited (Rothman et al., 2006). For instance, for one person, adopting a healthier diet may invoke a prevention-focused mindset characterized by feelings of anxiety and tension about gaining weight and developing diseases associated with obesity (e.g. diabetes, heart disease). For others, adopting a healthier diet may invoke a promotion-focused mindset, characterized by feelings of satisfaction and success about staying trim or having better cholesterol.

#### Regulatory Fit

According to the Theory of Self-Regulatory Focus, regulatory fit is experienced when individuals use means of goal pursuit to match their regulatory focus. Individuals

feel right about what they are doing, or want to do, and their engagement in goal-directed behaviors is strengthened (Higgins, 1997). Studies have found that tailoring behavior change messages to individuals' regulatory focus enhances motivation to engage in the advocated behavior (Uskul et al., 2008; Cesario et al., 2004; Lee & Aaker, 2004). In a study by Latimer and colleagues (2008), tailored messages that fit an individual's regulatory focus led to greater physical activity participation and more positive feelings than messages that did not fit. In regards to healthy eating, prior research has shown that providing prevention-focused individuals with information highlighting the potential costs (loss-framed messages) associated with failing to adopt healthy eating, creating regulatory fit, resulted in increased consumption or intention to consume fruits and vegetables (Spiegel, Grant-Pillow, & Higgins, 2004).

In a pair of experiments by Hong and Lee (2008), regulatory fit and non-fit were primed in participants via a questionnaire or by evaluating an advertisement based on either feelings or reason. It was predicted that people would become more motivated to self-regulate, engage in healthy eating behavior, when they adopted goals or strategies that fit with their regulatory focus and become less motivated when they did not. Participants in each experiment were significantly more likely to choose an apple over a chocolate bar as a snack when in the regulatory fit condition as opposed to those in either the control or non-fit conditions. It was also found that those in the control conditions were significantly more likely to choose the apple over the chocolate bar than those in the non-fit condition. The authors suggest that regulatory non-fit may have a detrimental effect on self-regulation by weakening resistance to temptation.

Tailoring messages and strategy use to an individual's regulatory focus seems to increase motivation to engage in the advocated behavior. It is therefore well-reasoned that matching a role model to regulatory focus would produce the same desired effect. Because positive role models promote strategies that approach a desired end-state, they are most likely to 'fit' promotion-focused individuals who tend to favor strategies that help them reach their goals. Negative role models suggest strategies to avoid an undesirable outcome. Individuals with a prevention-focus may be more likely to be influenced by such role models since their primary goal is to avoid failure and undesirable end-states.

#### Enhancing Efficacy

Regulatory focus and fit have both been implicated in the enhancement of selfand response-efficacy. In health literature, self-efficacy and response-efficacy are commonly used to refer to Bandura's notions of perceived personal efficacy and response-outcome expectancies, respectively (Keller, 2006; Bandura, 1982). A broad array of theoretical perspectives suggest that beliefs concerning both the effectiveness of a behavior (response-efficacy) and one's ability to perform that behavior successfully (self-efficacy) predict the likelihood of the health behavior being carried out (Rothman & Salovey, 1997; Bandura, 1986). Enhancement of efficacy is associated with increased motivation to perform an advocated behavior. In fact, self-efficacy is assumed to be crucial for both intention formation and change in behavior, which is aligned with Bandura's Social Cognitive Theory (Scholz, Nagy, Gohner, Luszcyznska & Kliegel, 2009; Bandura, 1997). Though literature has suggested that self-efficacy is more closely associated with intentions to perform a new behavior than response-efficacy, it also suggests that even when self-efficacy is high, many people do not perform the desired behavior. This may be because self- and response-efficacy are weighted differently in response to people's concerns.

For example, in a health communication context, enhancement of self-efficacy is usually achieved by providing information on how easy it is to perform an advocated behavior, which empowers the recipient of the communication. Enhanced response efficacy is usually attained by providing information that enhances outcome expectancies of beliefs about the effect of an advocated behavior. A study by Fuglestad, Rothman, and Jeffery (2008) found that people higher in promotion focus had better initiation success, that is initiation of behavior change, when attempting to quit smoking and lose weight and speculated that this may be due in part to resilience to setbacks and feeling more self-efficacious. Prevention-focused individuals had better maintenance success, that is, maintenance of the behavior change, and the authors speculated that this may be because they are more focused on preventing a negative outcome (e.g., gaining back weight lost on a diet), and are therefore more response-efficacious.

Keller (2006) specifically looked at the effect of regulatory focus on efficacy, both self- and response-efficacy, and stated that individuals reported feeling more "eager", a dominant promotion focus feeling, in response to self-efficacy items. They also reported feeling more "vigilant", a dominant prevention focus feeling, in response to response-efficacy items. It was also found that intentions to perform the advocated behavior, in this case sunscreen use, increased when self-efficacy features were paired with promotion-focused individuals and when response-efficacy features were paired with prevention-focused individuals. These findings indicate that regulatory focus and

efficacy covary, which suggests that regulatory focus could play a role in increasing an individual's self- or response-efficacy. Depending on which regulatory focus is activated, either self-efficacy or response-efficacy could be enhanced.

#### Research Questions and Hypotheses

The purpose of the current study is to examine the main and interaction effects that regulatory focus, role model type, and message frame have on individuals' intention, self-efficacy, and response-efficacy in regards to eating a healthy diet. Three main research questions are addressed in this study. First, are individuals in a regulatory fit condition (matched regulatory focus, role model and message frame) more motivated to form healthy eating habits than those in a non-fit/non-matched condition? Matching role model and message frame to the regulatory focus of an individual has been found to increase motivation (intention) to change a behavior because of the strategies that they promote (e.g. approach success or avoid failure). It was predicted that matching regulatory focus, role model and message frame, thereby inducing regulatory fit, will enhance individuals' motivation to form healthy eating habits more than those in a nonmatched (non-fit) condition.

Second, how do self-efficacy and response-efficacy differ depending on the dominant regulatory focus of an individual? It was predicted that the highest levels of self-efficacy would be reported in individuals with a high level of promotion focus, whereas response-efficacy would be higher in those with a high level of prevention focus. Promotion-focused individuals are more oriented towards achieving success or obtaining a goal. Individuals also report feeling more eager, a promotion-focused feeling, in response to self-efficacy items. On the other hand, prevention-focused individuals tend to be more vigilant about avoiding negative outcomes. In addition, individuals have reported feeling more vigilant in reaction to response-efficacy items.

Third, do regulatory focus, role model and message frame interact and affect an individual's self- or response-efficacy? It was predicted that role model, message frame and regulatory focus will affect self- and response-efficacy in that self-efficacy will be highest for promotion-focused individuals presented with a positive role model and gainframed messages, whereas response-efficacy would be highest for prevention-focused individuals presented with a negative role model and loss-framed messages. The strategies promoted by the role models and by the framed message may also increase feelings of self- or response-efficacy. Since promotion-focused individuals are focused on achieving a goal, and therefore feel more eager, it is possible that a positive role model and gain-framed message will enhance feelings of self-efficacy in an individual by demonstrating that the goal behavior can be achieved and may be easier than the individual expected. Prevention-focused individuals, on the other hand, are determined to avoid negative outcomes, which leads them to feel more vigilant. Negative role models and loss-framed messages may increase their feelings of vigilance by demonstrating what will happen if they do not perform the behavior. This may lead them to weigh response-efficacy (outcome expectations) as more important.

#### **CHAPTER II**

#### METHOD

#### Design

The present study had a 2 x 2 x 2 between-subjects experimental design. Participants were randomly assigned to one of four conditions: 2 (role model) x 2 (message frame). This study intended to examine individual's chronic regulatory focus; therefore, regulatory focus was not induced and was treated as a subject variable so participants were not randomly assigned to a regulatory focus condition. Participants were asked to look over framed information (gain or loss) about the benefits of healthy eating and the consequences of not eating healthy and were also asked to read a paragraph written by a bogus student. This bogus student served as a role model, either positive or negative, for the participant and was intended to either induce regulatory fit by matching the role model to the participants' regulatory focus, or not produce regulatory fit because of a mismatch between the role model and the participants' regulatory focus. The independent variables were the role model (positive or negative), the message framing (gain- or loss-framed), and the participants' regulatory focus (promotion or prevention). The dependent variables were participants' intention to eat a healthy diet, self-efficacy, and response-efficacy.

#### *Participants*

Participants were 193 undergraduates, 148 (76.7%) females and 42 (21.8%) males, enrolled in undergraduate courses in psychology at Texas State University-San Marcos. Three students (1.6%) were unaccounted for as they did not specify their gender on the survey. Of the students that participated in this study, 49 were classified by the University as freshmen (25.4%), 58 were classified as sophomores (30.1%), 55 as juniors (28.5%), and 31 as seniors (16.1%). Participation in the study was voluntary, but those that participated received extra credit in their class as compensation for taking part in the study. Participants that were interested signed up for a specific time slot and were given a room number in which to meet the researcher.

#### Procedure

Participants were tested in groups of approximately five to ten. This study was attempting to increase an individual's motivation to perform an advocated behavior, specifically, healthy eating. If a participant became wise to the fact that there was an attempted manipulation of their behavior, the data would become corrupted. In order to combat this problem, a cover story was used. Participants were informed that the researcher had been gathering data to investigate the factors associated with successful healthy behavior initiation, specifically healthy eating, and failed healthy behavior initiation. The participants were also told that the researcher was interested in learning about students' impressions of other individuals' experiences and also in their own level of adjustment to college life. Before beginning the study, participants were asked to sign a consent form. They were informed that if they chose not to continue they would be excused from the study with no penalty. Once students consented to be a part of the study, they received a sealed manila envelope containing scales used to assess their general regulatory focus, intention to eat a healthy diet, and self- and response-efficacy regarding eating a healthy diet. The envelope also contained a scenario about the benefits (consequences) of healthy (unhealthy) eating presented by a role model (positive or negative) as well as information about healthy eating. Participants were randomly assigned to one of four conditions: positive role model and gain-framed information, positive role model and loss-framed information, negative role model and loss-framed information, or negative role model and gain-framed information. Surveys were color coded and assigned a letter (A, B, C, or D) in order to determine which condition the participant was given. Surveys were placed in the manila envelope, which was then sealed, and then the envelopes were shuffled so the researcher and the participants were blind as to which condition they received.

During debriefing, knowledge of the individual about the purpose of the study was assessed by asking what they believed the study was about. No individual intimated that they knew that the study was attempting to increase their intention, self- or responseefficacy in regards to eating a healthy diet; therefore, none of the data was excluded for this reason.

#### General Regulatory Focus Scale

Participants' were first asked to fill out the 18-item General Regulatory Focus scale (Lockwood et al., 2002), with subscales for promotion-focus (Cronbach's  $\alpha = .81$ ) and prevention-focus (Cronbach's  $\alpha = .75$ ), in order to assess their regulatory focus. The promotion subscale consists of nine items which measure the strength of an individual's

promotion goals (e.g. "I frequently imagine how I will achieve my hopes and aspirations", "I typically focus on the success I hope to achieve in the future", and "In general, I am focused on achieving positive outcomes in my life"). The prevention subscale also consists of nine items which measure the strength of an individual's prevention goals (e.g. "In general, I am focused on preventing negative events in my life", "I often think about the person I am afraid I may become in the future", "I frequently think about how I can prevent failures in my life"). All items were rated on a 9-point scale with endpoints labeled 1 ("not at all true of me") and 9 ("very true of me").

The goal for measurement of regulatory focus was to create a measure of promotion goal strength and a measure of prevention goal strength by averaging the items belonging to each of these subscales. On average, promotion goal strength (M = 7.67, SD = .97 was greater than prevention goal strength (M = 5.75, SD = 1.31), t(193) = 18.58, p <.00001. However, a majority of the participants were relatively high on both promotion and prevention scales. This finding made it impossible to polarize the participants into clear promotion- or prevention-focused groups. Our model depends on the ability to distinguish which regulatory focus is most dominant in an individual (i.e., regulatory focus subject variable in our model). Previous literature has been able to differentiate between groups by creating a measure of dominant regulatory focus by creating an index of relative differences between promotion and prevention scores (Lockwood, Jordan & Kunda, 2002). Therefore, we used the same procedure to examine the relative strength of each participant's promotion and prevention goals because regardless of the strength of each of these goals, their relative strength may determine which regulatory concerns will gain salience and drive behavior (Lockwood et al., 2002). We created a measure of

dominant regulatory focus by subtracting scores on the prevention goal subscale from scores on the promotion goal subscale. The median of these difference scores (1.89) was used to determine whether the participants had a strong promotion-focus or if they were relatively weak in promotion-/high in prevention-focus. Scores higher than the median on this measure reflect relatively greater promotion than prevention focus. Scores lower than the median on the measure reflect a relatively weaker promotion-focus/higher prevention-focus. These difference scores were then standardized which is in line with the procedures used by Lockwood et al. (2002).

#### Positive and Negative Role Model Descriptions

Participants were then exposed to either a positive or negative role model with a scenario written by the researcher. First, participants read a one-page sign-up sheet that included blanks for name and a checkbox that indicated university classification (i.e. freshman, sophomore, junior and senior). The sign-up sheet was filled in by hand, supposedly by a participant in a previous study. The name was blacked out in marker, as though to preserve anonymity of the bogus student. The role model was designated a senior classification in order to ensure that, for most participants, the model was farther along in school than they were. The page following the sign-up sheet was a self-description, seemingly written by the same person. In the positive model condition, the model described healthy eating behaviors and their positive experiences associated with it. For example,

I had always heard about the "Freshman 15" that most incoming college students gained their first year in college. This weight gain typically occurs as a result of all the unhealthy foods that people eat while in college like ramen, hot pockets, fast food and sodas. I was determined to not be one of those that gained weight so I made sure to eat a healthy diet. I ate more fruits and vegetables, more lean meat, such as chicken and fish, and cut out unhealthy foods, like fried foods, soda and

candy. I not only succeeded in not gaining 15 pounds of weight, I also felt more energized throughout the day, keeping me alert, especially in my classes. I had the energy to keep up with my schoolwork and have fun with extracurricular activities as well. As the year went on, my friends would compliment me on how great my complexion looked, and they would always ask me how I kept from gaining weight. Before coming back to school this year, I went to the doctor for my yearly physical check-up. My cholesterol actually dropped 10 points, and my blood pressure is really great too. As a result of eating healthily, I have never felt more energized, or felt better about myself, than I do now. Even my grades improved!

In the negative model condition, the model described experiencing difficulties as a result

of not eating a healthy diet. For example,

I had always heard about the "Freshman 15" that most incoming college students gained their first year in college. However, I just disregarded it as a myth. As a freshman living on campus, I typically frequented the dining halls that were "buffetstyle", and I would go back for seconds or thirds sometimes. I also tended to eat lots of fried foods and drank a lot of soda to help keep my energy level up throughout the day. However, after the soda or sugar rush would wear off. I usually felt more tired and groggy than I did before. After a while, I noticed that I would have to eat or drink more to get the same energy level that I did before. My lack of energy made it hard for me to keep up with school work and any extracurricular activities that I was involved in. I also began to notice that all of the greasy food that I was eating was causing my complexion to dull and I began to get pimples more often. Before coming back to school this year, I went to the doctor for a regular physical check-up. My cholesterol actually went up 15 points, and my blood pressure is higher than it was just a year ago. By not watching what I ate, or how much I ate, I didn't gain the mythical 15 pounds that most freshmen gain. I actually gained 25 lbs during my first year in college!

#### Message Framing

After reading the description of the positive or negative role model, participants were then asked to read over some information regarding eating a healthy diet. The health information provided was either gain-or loss-framed. Gain-framed information focused on the positive effects of eating more fruits and vegetables and less fat, whereas the loss-framed information focused on the costs of eating a diet high in fat and low in fruits and vegetables (Appendix A).

#### *Motivation to Eat a Healthy Diet*

After reading the gain- or loss-framed information about healthy eating, participants were then asked to rate how motivated they felt to eat a healthy diet by filling out the Intention to Eat a Healthy Diet Scale (Peng, 2009; Cronbach's  $\alpha$ =.92). This scale consists of 10 items that measure intention to perform certain healthy eating behaviors (e.g. "In the future, I will pay attention to how many servings of vegetables I eat every day", "In the future, I will pay attention to how much fat I consume every day" and "In the future, I will pay attention to how many servings of vegetables I eat every day"). Participants provided answers on a seven-point Likert scale anchored by "strongly disagree-strongly agree".

#### *Self-Efficacy*

Participants then rated their self-efficacy in regards to healthy eating by answering a modified version of the 8-item, Self-Efficacy for Healthy Eating Scale originally developed by Reynolds, Yaroch, Franklin and Maloy (2002) for adolescents and modified by Peng (2009; Cronbach's  $\alpha$ =.84) for use with a young adult population. The dietary behaviors of interest are fruit and vegetable intake, eating less dietary fat, and eating smaller portions (e.g. I am confident that I can: eat at least two fruits or drink two cups of fruit juice every day; eat fruits and vegetables as snacks; plan meals or snacks with more fruits during the next week). These items were rated on a seven-point Likert scale anchored by "strongly disagree-strongly agree".

#### *Response-Efficacy*

Response-efficacy was then rated via the 7-item, Positive Outcome Expectancy Scale developed by Renner, Knoll & Schwarzer (2000; Cronbach's  $\alpha$ =.87). Participants were

asked, "What do you think will be the consequences for yourself if you adopt a low-fat diet?" Following this heading, responses were elicited from seven more specific questions: "If I stick to a low-fat diet, then..." (a) "I will feel physically more attractive", (b) "I will feel better mentally," (c) "I will have no (or fewer) body weight problems," (d) "I will lower my cholesterol level," (e) "I will lower my blood pressure," (f) "I will be healthier," and (g) "I will reduce my risk of suffering a heart attack." Responses were made on a four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). *Restatement of Research Questions and Hypotheses* 

The goal of the current study is to investigate the main and interaction effects that regulatory focus, role model type, and message frame have on individuals' intention, self-efficacy, and response-efficacy in regards to eating a healthy diet. Three main research questions are addressed. First, are individuals in a regulatory fit condition (matched regulatory focus, role model and message frame) more motivated to form healthy eating habits than those in a non-fit/non-matched condition? Second, how do self-efficacy and response-efficacy differ depending on the dominant regulatory focus of an individual? Third, do regulatory focus, role model and message frame interact and affect an individual's self- or response-efficacy?

#### **CHAPTER III**

#### RESULTS

#### Power Analysis

A preliminary power analysis indicated that in order to obtain a medium effect size (.5) for a three-way ANOVA, a sample size of 20 per cell (160 participants) was necessary for adequate power. A total of 193 participants were recruited for this study to ensure adequate power.

#### Effects of Regulatory Focus, Model & Message Frame on Dependent Variables

The purpose of the present study was to examine the main and interaction effects that regulatory focus, role model type, and message frame have on individuals' intention, self-efficacy, and response-efficacy in regards to eating a healthy diet. In order to examine these effects, we conducted three 2 (model) x 2 (frame) x 2 (dominant regulatory focus) between-subjects ANOVAs, for each dependent variable (i.e. intention, self-efficacy and response-efficacy). The results of the ANOVA for intention showed a significant main effect for model type (F(1, 185) = 4.43, p < .032, r = .15) with those presented with a positive role model having a significantly higher intention to eat a healthy diet (M = 5.12, SD = 1.33) than those presented with a negative role model (M = 4.74, SD = 1.35; See Figure 1). No other significant effects were found. Table 1 shows the means and standard deviations for this analysis.

The results for the 2 (model) x 2 (frame) x 2 (dominant regulatory focus) between-subjects ANOVA for self-efficacy in regards to eating a healthy diet showed a significant main effect for dominant regulatory focus (F(1, 185) = 5.02, p < .026, r = .16) which indicates that those who are relatively high in promotion focus (M = 5.35, SD =1.11) had significantly higher self-efficacy than those participants relatively weak in promotion focus (M = 4.93, SD = 1.29; See Figure 2). This finding partially supports the second hypothesis, which predicted that overall, self-efficacy would be highest for promotion-focused individuals. There were no other significant effects revealed. See Table 2 for the pattern of means and standard deviations.

A 2 (model) x 2 (frame) x 2 (dominant regulatory focus) between-subjects ANOVA was also conducted in order to investigate the effect of these independent variables on participants' response-efficacy in regards to eating a healthy diet. Though no significant effects were found for response-efficacy, a strong trend for main effect for model type was found (F(1, 185) = 3.37, p < .07, r = .13). Participants who received a positive role model had significantly higher positive response-efficacy in regards to eating a healthy diet (M = 26.56, SD = 5.17) than those who were exposed to a negative role model (M = 25.48, SD = 3.29; See Figure 3). The means and standard deviations can be found in Table 3.

#### Testing Regulatory-Fit vs Non-Fit Hypotheses

We predicted that individuals in a regulatory fit condition would have greater intentions to eat healthy than those in a non-fit condition. Specifically, it was predicted that matching regulatory focus, role model, and message frame, thereby inducing regulatory fit, would enhance individuals' intention to form healthy eating habits more than those in a non-matched (non-fit) condition. In order to test this prediction, we created an overall-fit (i.e., promotion focus/positive model/gain frame and prevention focus/negative model/loss frame groups combined) versus non-fit condition (i.e., all six other groups combined). The planned comparison test comparing regulatory fit vs. non fit on intention to eat a healthy diet revealed no significant difference (t(191) = .42, p = .67).

It was also predicted that role model, message frame and regulatory focus would affect self-efficacy in that self-efficacy would be higher for promotion-focused individuals presented with a positive role model and gain-framed message compared to any other combination of conditions. In order to test this hypothesis, we created a promotion-fit (i.e., promotion focus/positive model/gain-frame) vs. all other condition (i.e., all seven other groups combined). A planned comparison test comparing the promotion-fit condition to the all other conditions yielded no significant difference (t(191) = -.41, p = .69).

It was also predicted that response-efficacy would be higher for preventionfocused individuals presented with a negative role model and loss-framed message compared to any other combination of conditions (i.e., prevention-fit). In order to test this prediction, we created a prevention-fit (i.e., prevention focus/negative model/lossframe) versus all other condition (i.e., all seven other groups combined). A planned comparison test comparing the prevention-fit condition to the all other conditions revealed no significant difference between groups (t(191) = .228, p = .82).

#### Follow-up Analyses

As previously stated, it was found that on average, promotion goal strength (M = 7.67, SD = .96) was significantly greater than prevention goal strength (M = 5.75, SD =

1.3), t(192) = 18.59, p < .00001) for our participants. This made it impossible to separate the participants into clear promotion- versus prevention-focused groups. As a result, a measure of dominant regulatory focus was created in order to establish clear-cut groups. However, when looking at the distribution of participants along this measure, it became apparent that the measure of dominant regulatory focus was not distinguishing between strong promotion-focused and strong prevention-focused individuals. Instead, participants were distinguished along the lines of strong promotion focus versus neutral/undecided focus (i.e., the difference between promotion and prevention scores was close to zero).

Therefore, we decided to examine how our two independent variables, model and frame, affect intention specifically within the only clearly defined regulatory focus group, which was the subsample of strong promotion-focused individuals. We ran a 2 (model) x 2 (frame) between-subjects ANOVA with intention as the dependent variable with only participants that were high in promotion focus included in the analysis. The results revealed no significant effects for model, frame, or model and frame interaction on participants' intention to eat a healthy diet (p > .05 for all three effects).

Another 2 (model) x 2 (frame) between-subjects ANOVA was conducted, again, including only participants that had strong promotion focus, with response efficacy as the dependent variable. The results showed a trend for interaction between model and frame type (F(1, 91) = 2.97, p = .09, r = .18) with response-efficacy being highest for participants presented with a positive role model and gain-framed message (M = 27.00, SD = 3.48) and lowest for those who received a negative role model and gain-framed message (M = 25.2, SD = 2.9; See Figure 4). The main effects of model and frame were not significant (p > .05). Table 4 lists the means and standard deviations.

Further exploratory analyses of our data indicated that regulatory focus (i.e., the dispositional variable) is overall positively correlated with self efficacy (r = .17, n = 193, p < .05). This might suggest that our assessment of self-efficacy, specifically regarding healthy eating habits, though intended to measure situational changes in this construct in response to model and message frame manipulation, in fact may have reflected individual differences in pre-existing dispositions of self-efficacy. Since the data also indicated that self-efficacy is positively correlated with intention (r = .48, p < .001), we decided to test how model and frame affects intention for our subsample of strong promotion-focused participants while controlling for self-efficacy. A 2 (model) X 2 (frame) ANCOVA was run with self-efficacy included as a covariate in order to control for it. The only significant finding was a significant interaction effect found for model and frame (F(1, 1)) 90) = 4.85, p < .03, r = .23). Intention was higher for participants who received a positive role model and gain-framed message (M = 5.32, SD = 1.10) and a negative role model and loss-framed message (M = 5.01, SD = 1.48) compared to those who received a mismatched/non-fit combination of model and frame condition. The means and standard deviations are listed in Table 5. Figure 5 shows the pattern of the interaction between model and frame and its effect on intention.

A 2 (model) x 2 (frame) between-subjects ANCOVA was also conducted with self-efficacy included as a covariate in order to determine the effects of model and frame on response-efficacy. A strong trend was again revealed for model and frame interaction (F(1, 90) = 3.46, p = .07, r = .19) with response-efficacy being highest for those participants presented with a positive role model and gain-framed message (M = 27.00, SD = 3.48) and lowest for those who received a negative role model and gain-framed message (M = 25.2, SD = 2.9). No significant main effects for model and frame were found (p > .05).

## **CHAPTER IV**

#### DISCUSSION

#### Effects of Regulatory Focus, Role Model, and Message Frame on Intention

One goal of this study was to examine the main and interaction effects that regulatory focus, role model type, and message frame have on individuals' intention to eat a healthy diet. Findings indicate that role model type appears to play an important role regarding the strength of an individual's intention to eat a healthy diet. Participants presented with the positive role model, who demonstrated the benefits associated with eating a healthy diet, were found to have greater intention to eat a healthy diet than those presented with the negative role model. It is generally assumed that both types of models, positive and negative, are able to increase motivation to perform an advocated behavior (e.g. eating a healthier diet); however, whether positive or negative role models are more effective in motivating an individual to implement behavior change may be dependent on other factors as well, such as regulatory focus. Though the results may seem to contradict the notion that regulatory focus drives role model preference by suggesting that positive role models, overall, lead to the highest intention to eat a healthy diet, in fact they do not. It was found that on average, promotion goal strength in our participants was higher than prevention goal strength. This may indicate that the positive role model led to greater intentions to eat a healthy diet than the negative role model because generally, promotion focus was the more prevalent focus. Fewer participants may have deemed the negative role model more motivating because relatively fewer participants had a dominant prevention focus.

#### Effects of Regulatory Focus, Role Model, and Message Frame on Self-Efficacy

Another goal of this study was to examine the effects of regulatory focus, role model, and message frame on individuals' self-efficacy in regards to eating a healthy diet. In the present study, self-efficacy was found to be highest, overall, for those participants who were relatively strong in promotion focus. Previous research has discovered that initiation of a health behavior is more successful for individuals higher in promotion focus (Fuglestad, Rothman, & Jeffery, 2008), and it has been speculated that this may be due in part to resilience to setbacks and feeling more self-efficacious. Other literature (Keller, 2006) specifically looked at the effect of regulatory focus on efficacy and found that individuals reported feeling more "eager", a dominant promotion focus feeling, in response to self-efficacy items. The findings of the present study reinforce the findings of the previous literature and support the second hypothesis which states that self-efficacy would be highest for promotion-focused individuals.

#### Effects of Regulatory Focus, Role Model, and Message Frame on Response-Efficacy

The effects of regulatory focus, role model and message frame on responseefficacy were also investigated. Our findings suggest that the type of role model presented is also important in regards to individuals' response-efficacy. Increased response efficacy is usually attained by providing information that enhances outcome expectancies of beliefs about the effect of an advocated behavior. Previous literature has suggested that prevention-focused individuals had better success maintaining behavior change as a result of increased focus on preventing a negative outcome (e.g. gaining back weight lost on a diet), and therefore, prevention focus is thought to be more associated with response-efficacy (Fuglestad et al., 2008). Other research found that individuals reported feeling more "vigilant", a dominant prevention focus feeling, in reaction to response-efficacy items (Keller, 2006).

It was therefore surprising to find a trend that suggested that overall, positive role models, rather than negative models, elicited the highest ratings of response-efficacy in our participants, contradictory to our second hypothesis and the literature. Again, one reason that these results were found could be that the majority of participants were relatively high in chronic promotion focus. It therefore stands to reason that negative role models and loss-framed messaging would not be particularly useful in enhancing these individuals' response-efficacy anyway. If there were more participants high in prevention focus, the results may have indicated that the highest response-efficacy scores were for those who were presented with a negative role model and/or loss-framed message.

#### Regulatory Fit vs. Non-Fit

Our hypotheses predicted that regulatory fit conditions would have greater impact on participants' intention, self-efficacy, and response-efficacy in regards to eating a healthy diet. Specifically, it was expected that participants in a regulatory fit condition, promotion fit (i.e. promotion focus/positive role model/gain-framed message) or prevention fit (i.e. prevention focus/negative role model/loss-framed message), would result in greater intention to eat healthy than participants in the non-fit conditions. It was also predicted that self-efficacy would be highest for those participants in a promotion fit condition than in any other condition, and response-efficacy would be highest for participants in a prevention fit condition than in any other condition. None of the hypotheses were confirmed. There were no significant differences between any of the groups.

#### The Role of Self-Efficacy and Promotion Focus

However, further analyses indicated that self-efficacy was significantly correlated with strong promotion focus as well as with intention. Self-efficacy is defined as one's perceived ability to perform a behavior successfully (Bandura, 1986). Previous literature has suggested that self-efficacy is more closely associated with intentions to perform a new behavior than response-efficacy (Scholz, Nagy, Gohner, Luszczynska, & Kliegel, 2009). In the context of health communication, it is typically thought that enhancement of self-efficacy can be achieved by providing information on how easy it is to perform an advocated behavior. Self-efficacy is thought to be increased because this type of information should empower the recipient.

Yet, our finding that self-efficacy is significantly correlated with strong promotion focus seems to suggest that self-efficacy should be treated as a subject variable, like regulatory focus, rather than as a dependent variable. Because self-efficacy is an individual's perception of their abilities, it could be that one already has preconceived notions regarding what they may or may not be able to do. In the case of this study, the participants may have already had high self-efficacy in regards to eating a healthy diet. It was therefore decided that self-efficacy would be run as a covariate for further analyses. In addition, a majority of the participants were relatively high on both promotion and prevention scales. This finding made it impossible to polarize the participants into clear promotion- or prevention-focused groups. Our model depends on the ability to distinguish which regulatory focus, promotion or prevention, is most dominant in an individual. As a result, a measure of dominant regulatory focus was created in order to establish clear groups. However, it became apparent that the measure of dominant regulatory focus was not distinguishing between strong promotion-focused and strong prevention-focused individuals. Instead, participants were distinguished along the lines of strong promotion focus vs. neutral/undecided focus. Therefore, it was decided that for further analyses, we would also examine the effect of our two independent variables, model and frame, on intention and response-efficacy specifically within the only clearly defined regulatory focus group, which was the subsample of strong promotion-focused individuals.

#### Intention

Though the previous analyses indicated there were no significant interaction effects between regulatory focus, frame, and role model type, the pattern of means listed in Table 1 indicated a pattern in which individuals high in promotion focus, presented with both a positive role model and gain-framed information, had the greatest intention to eat a healthy diet. When only participants high in promotion focus were included and self-efficacy was controlled for, this pattern became statistically significant. For individuals who were dominant in promotion focus, model and frame significantly interacted with each other with participants who received a positive role model and gainframed information demonstrating the highest intention to eat a healthy diet compared to participants who received a negative role model and loss-framed message, participants who received a positive role model and loss-framed message, and participants who received a negative role model and gain-framed message (non-fit conditions). However, participants exposed to a negative role model and loss-framed message also exhibited relatively greater intention to eat a healthy diet than participants in the other non-fit conditions.

Promotion-focused individuals are characterized by a constant scrutiny of their surroundings for the attainment of success. Positive role models demonstrate the positive outcomes to be pursued and inspire others by encouraging the pursuit of the goal while gain-framed messages emphasize the benefits of adopting a particular action. Use of these strategies should be more persuasive when presented to promotion-focused individuals, who are constantly looking for ways to achieve their goals and obtain positive outcomes. Participants exposed to a negative role model and loss-framed message also had relatively higher intention to eat a healthy diet than those in the non-fit conditions.

This is interesting because only individuals with strong promotion-focus were included in this analysis, suggesting that when attempting to increase intention, particularly for strong promotion-focused individuals, it may be more important to match the strategies used to increase intention (i.e. pairing a positive role model and gainframed message or negative role model and loss-framed message) than creating a regulatory fit condition in which both strategies must match the particular focus of the individuals. Nonetheless, these findings partially support the first hypothesis that predicted matching role model and message frame to regulatory focus, thereby inducing regulatory fit, would enhance the motivation of the participants to engage in healthy eating.

#### *Response-Efficacy*

Previous analyses demonstrated that only role model had a significant effect on participants' response-efficacy. Specifically, response-efficacy was highest for those who received a positive role model rather than a negative role model. Further analysis was conducted in order to investigate the effects of model and frame on participants' response-efficacy. Self-efficacy was controlled for by including it as a covariate in the analysis. Furthermore, only participants with strong promotion focus were included. The analysis revealed a strong trend for a model and frame interaction effect with responseefficacy being highest for individuals who received a positive role model and gainframed information and lowest for those presented with a negative role model and lossframed message. This is in stark contrast to the second and third hypotheses which proposed that response-efficacy would be highest for prevention-focused individuals and specifically highest for prevention-focused individuals in a regulatory fit condition (negative role model and loss-framed message).

Because the participants included in this analysis were considered to be strong in promotion focus, it stands to reason that negative role models and loss-framed messaging would not be particularly useful in enhancing these individuals' response-efficacy anyway. If we had access to more participants that were high in prevention focus, the results may have indicated the highest response-efficacy scores for those who were presented with a negative role model and loss-framed message. In addition, outcome expectancies provided in the scale were all positive. That is, the items were related to

what positive outcomes would occur as a result of doing the advocated behavior, which was eating a healthy diet. It is likely that if the items on the outcome expectancy scale included or consisted primarily of negative outcome expectancies, what adverse events would occur as a result of not performing the behavior, then perhaps a negative role model and loss-framed message would have produced higher response-efficacy scores. *Strengths* 

This study is the first to examine the effects of regulatory focus, role models, and framed messages on an individual's intention to eat a healthy diet, self-efficacy, and response-efficacy. This study is also the first, to our knowledge, to try to create regulatory fit by presenting individuals with both a role model and framed message. Past research has only attempted to create regulatory fit by pairing the appropriate role model with the person's regulatory focus or by pairing the appropriate message with their regulatory focus.

#### Limitations

A possible limitation of this study may be that the role models, particularly the negative role model, were not viewed as relevant to the participants. Relevancy, that is, whether one compares oneself to this person or role model, depends on the attainability of the role model's success (or failure; Lockwood & Kunda, 1997). Possible future selves also play a central role in guiding aspirations and satisfaction and may sometimes be even more important to well-being than current perceptions of self (Markus & Nurius, 1986). Continuing with this line of thought, role models should be able to enhance and inspire by making successful (unsuccessful) future selves appear more tangible and by illustrating how future achievements (failures) can be accomplished (avoided; Lockwood

& Kunda, 1997; Meichenbaum, 1971). Therefore, the role models in the present study may have been more effective if the participants had perceived them as more attainable. In a previous study, Lockwood and colleagues (2002) ensured that their participants perceived the role model as relevant, and attainable, by leading them to believe that the role model was a graduate from the participant's own academic program. This enabled the participants to believe that they could become like this individual in the future. Though the role model in this study was described as a senior at Texas State University, 44.6%, roughly half, of our participants were upperclassmen (juniors and seniors) which may have made the role model less relevant as they may have felt less likely to become like this individual in the future.

Another limitation of this study was that there were not enough participants high in prevention-focus. This study really only looked at differences between individuals high in promotion-focus and those weak in promotion-focus. Unfortunately, there were very few individuals that were actually higher in prevention focus than promotion focus. Because there were not enough prevention-focused individuals, it was not possible to fully test our hypotheses. Another limitation of this study includes the fact that the response-efficacy/outcome expectancy scale only included positive outcomes (e.g. "I will feel physically more attractive"), which may be directed toward promotion-focused individuals, who are more oriented toward obtaining success rather than preventionfocused individuals, who are more oriented toward avoiding negative events.

In addition, it may have been more beneficial if health-related regulatory focus had been measured rather than general/chronic focus. According to regulatory focus theory (Higgins, 1997), all goal-directed behavior is regulated by two distinct motivational systems (promotion and prevention) which serve a distinct survival function. The human promotion system is concerned with obtaining nurturance (e.g., nourishing food) whereas the prevention system is concerned with avoiding negative outcomes (e.g., in the realm of security). However, although individuals may have a pervasive focus (e.g., promotion), there may be instances or events where individual's dominant focus actually switches to their non-dominant focus (e.g., prevention). For example, even if a person has a chronic regulatory focus of promotion, in situations of security and safety, it is very likely that they are prevention-focused. One takes actions for security to avoid a potentially negative outcome (e.g., burglary). Therefore, there may be specific situations in which a particular regulatory focus is dominant for most people. In regards to health behaviors, Lockwood, Chasteen and Wong (2005) found that young adults have strong health-related promotion-focus, which may explain why so many participants in the present study were higher in promotion-focus than prevention-focus. In the future, it may be beneficial if a temporary state of promotion or prevention focus was induced, to better analyze the effect of focus, role model, and framed message on intention, self-efficacy, and response-efficacy.

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#### Implications and Future Research

The findings of the present study indicate that providing an individual with a positive role model will lead to higher motivation or intention to perform the healthy behavior, specifically healthy eating. If self-efficacy can be controlled for, providing individuals with a positive model and gain-framed message may also lead to greater intention to eat a healthy diet. In addition, the results revealed an interesting pattern in which individuals presented with a positive role model and gain-framed message

exhibited the lowest self-efficacy scores. It may be that presenting both a positive role model and gain-framed message, which demonstrate the advantages of adopting an advocated behavior, may be too intimidating for those who are not already high in selfefficacy, or perhaps it may induce a sort of psychological reactance. Therefore, utilizing only role model or framed message may be best when attempting to boost an individual's self-efficacy in regards to eating a healthy diet.

Finally, when attempting to enhance a person's response-efficacy, a positive role model was determined to be the most effective. However, it must be stated again that most participants were primarily promotion-focused and the scale measured positive outcome expectancies only, as opposed to negative. If one is attempting to enhance response-efficacy in promotion-focused individuals, it should be more effective to provide them with positive role models and emphasize positive outcomes since promotion-focused individuals are more attuned to achieving success and obtaining goals.

As obesity is quickly reaching pandemic status, it is especially important to find successful ways to implement effective prevention programs to motivate and initiate healthy eating behaviors. The implications of the findings of this research may be very significant in regards to tailoring an obesity prevention program to individuals' needs. Creating regulatory fit, providing the 'right' role model and message for a person's regulatory focus, could target the efficacy that needs to be enhanced in order for motivation to perform the behavior, healthy eating, to occur. Priming a specific efficacy could also help individuals at different stages of the behavior change process. For instance, someone who needs motivation to initiate a behavior change may find it more beneficial if their self-efficacy is enhanced, rather than response-efficacy. However, if an individual needs motivation to maintain their behavior change, it may be more beneficial to boost their response-efficacy. This is especially important in public service campaigns, which typically use media avenues such as billboards and television to convey their message.

A positive role model appears to be beneficial in that an individual's intention to eat a healthy diet is enhanced. In addition, when individuals are high in promotion focus and self-efficacy is controlled for, model and frame, specifically the combination of positive role model and gain-framed information, further increases an individual's intention to eat a healthy diet. Because most people are generally higher in promotion focus than prevention focus, especially young adults, it may be advantageous for health campaigns to present both a positive role model and gain-framed information about the benefits of eating a healthy or low-fat diet.

Response-efficacy also appears to increase for those presented with a positive role model, and a strong trend indicates that for promotion-focused persons, a positive role model and gain-framed message leads to the highest response-efficacy. Responseefficacy has been linked to the maintenance of behavior change. Therefore, if a health promotion program is attempting to assist individuals with maintaining their behavior change, specifically regarding healthy eating, then it may be beneficial to provide them with a positive role model and gain-framed message. However, one must be cautious when using this approach. This study also found a pattern that suggested individuals relatively high in promotion-focus and presented with the combination of a positive role model and gain-framed message had the lowest self-efficacy scores in regards to healthy eating. Although this combination may increase intention, or motivation, to eat a healthy diet and response-efficacy, it may also decrease the individual's self-efficacy. Because self-efficacy has been linked to successful initiation of health behavior, decreasing self-efficacy also may increase the likelihood of failing to initiate the behavior. Perhaps when attempting to target a person's self-efficacy, health promotion programs should utilize either a role model or a framed message (and not both), or perhaps they should not match both role model type and framed message to the individuals' regulatory focus (thereby creating regulatory fit).

Health promotion and prevention programs should therefore be aware that while creating regulatory fit by matching role model and framed message to the individual's regulatory focus may be effective for some aspects of behavior change (intention and response-efficacy), it may also hinder others (self-efficacy), particularly in promotionfocused individuals. Further research is necessary to determine whether creating regulatory fit in this manner affects prevention-focused individuals similarly or in a different manner altogether.

	Strong Promotion Focus		Neutral/Undecided Focus	
	Gain	Loss Frame	Gain Frame	Loss Frame
	Frame			
Positive Role Model				
М	5.32	4.84	5.25	5.17
SD	1.10	1.18	1.51	1.52
Negative Role Model				
М	4.62	5.01	4.81	4.48
SD	1.44	1.47	1.07	1.44

Table 1. Means and Standard Deviations of ANOVA Comparing the Effects of Regulatory Focus, Role Model and Framed Message on Intention

	Strong Promotion Focus		Neutral/Undecided Focus	
	Gain Frame	Loss Frame	Gain Frame	Loss Frame
Positive Role Model				
Μ	5.25	5.47	4.73	5.03
SD	1.16	1.28	1.40	1.36
Negative Role Model				
М	5.39	5.25	5.07	4.93
SD	1.02	1.00	1.02	1.44

Table 2. Means and Standard Deviations of ANOVA Comparing the Effects of Regulatory Focus, Role Model and Framed Message on Self-Efficacy

	Strong Promotion Focus		Neutral/Undecided Focus	
	Gain Frame	Loss Frame	Gain Frame	Loss Frame
Positive Role Model				
М	27.00	25.22	27.22	27.11
SD	3.48	3.70	7.88	2.82
Negative Role Model				
М	25.20	25.72	25.24	25.79
SD	2.90	2.69	3.30	4.24

Table 3. Means and Standard Deviations of ANOVA Comparing the Effects of Regulatory Focus, Role Model and Framed Message on Response-Efficacy

	Gain Frame	Loss Frame
Positive Role Model		
М	27.00	25.22
SD	3.48	3.7
Negative Role Model		
М	25.2	25.72
SD .	2.9	2.69

Table 4. Means of ANOVA Comparing the Effects of Role Model and Message Frame on Response-Efficacy

	Gain Frame	Loss Frame
Positive Role Model		
М	5.32	4.84
SD	1.10	1.18
Negative Role Model		
М	4.62	5.01
SD	1.44	1.47

Table 5. Means of ANCOVA Comparing the Effects of Model and Frame on Intention with Self-Efficacy as a Covariate



**Figure 1. Main Effect of Model on Intention.** This figure shows the significant main effect of model on intention with individuals presented with a positive role model having higher intention to eat a healthy diet than those presented with a negative role model.



**Figure 2. Regulatory Focus and Self-Efficacy.** This figure demonstrates the significant main effect of promotion focus on self-efficacy with strong promotion-focused individuals having higher self-efficacy than individuals weak in promotion focus.



**Figure 3. Main Effect of Model on Response-Efficacy**. This figure demonstrates the trend for main-effect of model for response-efficacy. Participants presented with a positive role model have higher response-efficacy than those presented with a negative role model.



**Figure 4. Model x Frame Interaction for Response-Efficacy.** This figure shows the strong trend for the interaction between model and frame. Participants presented with a positive role model and gain-framed message have the highest response-efficacy scores while those presented with a negative role model and gain-framed message have the lowest.



**Figure 5. Model x Frame Interaction for Intention.** This figure shows the significant interaction effect between model and frame for participants high in promotion-focus and when self-efficacy is controlled. Intention to eat a healthy diet is highest for those presented with a positive role model and gain-framed information (a "fit" condition) and lowest for those presented with a negative role model and gain-framed message (a "non-fit" condition).

# APPENDIX

## Gain-Framed Information about Eating a Healthy Diet

People who eat enough fruits and vegetables and eat a low-fat diet:

- Have more resistance against diseases, such as the flu and cold
- Probably have less chance of getting cancer
- Often have an adequate intake of dietary fibers and therefore, more chance of healthy bowels.
- Have less chance of getting arteriosclerosis and therefore a heart attack
- Often have adequate intake of vitamins which protect the body against cardiovascular diseases
- Have more chance of feeling good about themselves
- Have more chance to stay healthy
- Often have an adequate intake of important nutrients and therefore more chance that their body will continue to function normally.
- Have more chance of staying fit or feeling energetic
- Have more chance of losing weight and therefore, have more of a chance of having a normal weight
- Have more chance of having normal blood pressure

## Loss-Framed Information about Not Eating a Healthy Diet

## People who eat too much fat and not enough fruits and vegetables:

- Have more chance of becoming ill
- Probably have more chance of getting cancer
- Often have inadequate intake of vitamins which can cause cardiovascular diseases
- Have more chance of getting arteriosclerosis and therefore a heart attack
- Have more chance of feeling bad about themselves
- Have more chance of staying unfit or feeling less energetic
- Have less chance of losing weight and therefore more chance of being overweight
- Have more chance of having high blood pressure; having heart damaged
- Have less resistance against disease such as flu and cold
- Often have inadequate intake of dietary fibers and therefore more chance of bowel problems
- Often have inadequate intake of important nutrients and therefore have more chance that their body will not continue to function normally

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