THE IMPACT OF THE INDIVIDUAL’S LOCUS OF CONTROL ON
MESSAGE PERSUASIVENESS

A Thesis in
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by
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ABSTRACT

Considerable research has been done in the past on the relationship between health message effectiveness and recipients’ characteristics, such as motivations and involvement. However, the role of the recipients’ beliefs about locus of control belief on health message effectiveness has not been fully explored. This study attempts to extend prior literature by examining the moderating role of individuals’ chronic and temporary locus of control on message framing effectiveness. It posits that preexisting locus of control and message framing will have interaction effects on message persuasiveness. The current research used two experimental studies to test this assumption in the context of obesity. The first experiment found that individuals with high chronic internal locus of control were more likely to enhance behavioral intentions when they were exposed to individual responsibility messages than social responsibility messages. This observed effect only occurred when individuals were also low in chronic external locus of control. However, individuals with high chronic external locus of control were not more persuaded by social responsibility messages than by individual responsibility messages, even though they were also low in chronic internal locus of control. The second experiment demonstrated that locus of control can be temporarily primed. It found that there was a congruity effect between primed locus of control and responsibility framing. This effect was found for individuals in both high and low cognitive load conditions.

Overall, this study is the first to examine the moderating effects of both chronic and temporary locus of control on message effects. It provides some evidence in support of the need to tailor health communication messages to the individual’s locus of control.
It also extends research on health message framing from traditional valence framing to responsibility framing. Such a new approach has the advantage of allowing researchers to examine health issues not only at an individual level, but also at societal level. The results of this study can also have important practical implications as many of today’s health issues, such as smoking and binge drinking, are often discussed and interpreted in terms of both individual and social factors.
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CHAPTER ONE

INTRODUCTION

For the past few decades, media coverage of health issues has increasingly focused on two responsibility frames: individual responsibility versus societal responsibility. For instance, a content analysis of the *New York Times* from 1985 to 2003 has found that a vigorous frame contest had been waged between arguments emphasizing personal responsibility for preventing obesity, and arguments emphasizing the social environment, including corporate responsibility, for preventing obesity (Lawrence, 2004). This frame contest has also been reflected in many health campaigns. Although health communication campaigns come in many forms, the field is increasingly making a distinction between at least two main types of campaigns based on who should be responsible for solving a health problem—the individual or society. For example, in order to promote healthy eating, the National Cancer Institute launched their *5 A Day Program*¹, which approaches audiences with a simple message: eat five or more servings of vegetables and fruits daily for better health. Obviously, this message assigns the responsibility for solving the problem of unhealthy eating to individuals. In comparison, British health communicators designed a *Feed Me Better Program*² which urges schools to improve the quality of meals served. This program assigns responsibility to the institution.

Message frames can have a strong impact on a recipient’s attitude. However, studies on framing effects have also shown that the effectiveness of framed messages can be varied, and that frames alone do not determine attitudes toward complex social
issues. As many studies have indicated, preexisting beliefs and values can be important moderators of framing effects (e.g. Shah, Domke and Wackman, 1996). For example, Iyengar (1991) notes, “framing effects are limited or enhanced by ‘built in’ preferences for particular attributions” (p. 117). People attempt to engage in causal attributions when an event is negative, unexpected, or important (Weiner, 1986), such as when they encounter a health issue. Because people vary in terms of how they attribute causes to a health problem, it is expected that the preexisting causal attribution might moderate the impact of messages that frame issues in terms of individual or social responsibility.

Causal attribution has several dimensions: locus of control, stability, and controllability (Weiner, 1985). In health communications, the most often used dimension is locus of control because it is the most relevant. According to the locus of control dimension, people always ascribe a health problem to either internal causes or external causes (Williams-Piehota, Schneider, Pizarro, Mowad and Salovey, 2004).

Several studies have examined the effects of health campaigns/programs that do or do not take into account individuals’ preexisting designation of locus of control, one dimension of causal attribution. In these studies, it was expected that messages consistent with individuals’ locus of control beliefs should be more effective, because people have a natural tendency for consistency. For example, Wallston, Wallston and DeVellis (1978) examined the association between health locus of control and satisfaction with a weight loss program that was either matched or mismatched to the locus of control beliefs of the participant. Those in the matched program reported
more satisfaction with the program than those in the mismatched program, and the 
former group also lost slightly more weight. In contrast, in a study of cigarette 
smoking, Best (1975) found no compatible effect between individuals’ locus of 
control beliefs and smoking treatment.

These inconsistent findings evoked debate regarding how the construct should 
be operationalized. Originally, Rotter (1966) coined the term “locus of control” and 
conceptualized it as a personality trait, positing that a person attributes the 
determinants of an event to either internal factors or external factors. Accordingly, he 
developed an I-E (Internal-External) scale to measure the construct. One problem with 
this scale is that it is continuous, and researchers frequently use a median split to 
arbitrarily divide people into internals and externals, based on the characteristics of 
their sample. Consequently, the results depend on how researchers decided on the 
splitting score. Apart from that, some investigators used factor analysis to 
demonstrate that the scale used as the locus of control measurement was 
multidimensional rather than unidimensional (Lefcourt 1972). Similarly, Levenson 
(1974) proposed that internality and externality were different dimensions rather than 
opposite ends of the same continuum.

The current study attempts to contribute to prior research by examining the 
moderating role of both chronic and temporary locus of control on responsibility-
framed messages. It will distinguish itself from other studies in four ways. First, this 
study will examine health message effectiveness instead of health program 
effectiveness in highly controlled experiment surroundings. Most prior studies have
focused on the effectiveness of health programs and always relied on field
experiments (e.g., Best, 1975; Wallston et al., 1978). Second, this study will use two
scales instead of a unidimensional scale to measure locus of control. Third, previous
studies only examined the effect of chronic locus of control. According to Higgins
(1996), greater temporary accessibility of a construct is a function of priming, and
greater chronic accessibility is a function of an individual difference. Both predict
strong responses to stimulus information in terms of the accessible construct. Hence,
this study will examine the moderating role of both chronic and temporary locus of
control. Finally, although many studies on message framing and preexisting beliefs
have shown that the congruency effects between the two variables are robust (e.g,
Shen and Edwards, 2004; Bullock and Fernald, 2005), other research presents
evidence that is contrary to these findings (e.g, Chang, 2002; Wang and Lee, 2006). In
this article, drawing on the cognitive capacity theory, I also attempt to resolve these
conflicting findings by examining the moderating role of cognitive load on these
congruency effects.

In order to achieve these goals, the chapters will be as follows: Chapter Two
will contain a thorough literature review, including prior research on locus of control
theory, message framing theory and cognitive load theory. This will be followed by
four hypotheses. Chapter Three and Chapter Four will consist of two experimental
studies, respectively. These chapters will include a discussion of the research
methodology, data analysis and findings. Finally, Chapter Five includes the
conclusions, implications, and recommendations for future research.
CHAPTER TWO
LITERATURE REVIEW

LOCUS OF CONTROL THEORY

As mentioned earlier, locus of control is one of several dimensions of causal attribution. Scholars define causal attributions as the explanations people offer about a variety of intrapersonal and interpersonal events in their lives. Psychologists and philosophers have contended that the interest in causality serves a number of functions for people, such as increasing people’s mastery and control over the environment and satisfying their desire to understand the world around them (Bell-Dolan and Anderson, 1999). Making attributions for experienced or observed events is a basic cognitive process. When faced with important, unusual, or unexpected events, people search for meaningful explanations of their causes (Heider, 1958).

Causal attributions can vary on a number of dimensions. Although the exact number of relevant dimensions is still in debate, at least three valid dimensions have been identified. According to Weiner (1985), attributions can be classified along three causal dimensions: locus of control, stability, and controllability. The locus of control dimension has two poles: internal versus external locus of control. Events can be ascribed to causes that are internal or external to a subject. The stability dimension captures whether causes change over time or not. It can range from causes that would be expected to fluctuate over time, such as luck, to causes that show temporal
consistency, such as ability. The controllability contrasts causes that one person can control from causes that one cannot control. It is associated with emotions like guilt and shame (Bell-Dolan and Anderson, 1999).

These causal dimensions have been used to predict cognitive, emotional, and behavioral outcomes in a wide variety of research areas. Nevertheless, different research areas have different foci. For example, educational research tends to explore such causes as students’ ability or effort, which are related to the stability dimension of causal attribution. In health communications, the most often used dimension is locus of control because it is the most relevant. People tend to ascribe the causes of a health problem to either themselves or to external forces. In light of that, this study will focus on this one dimension.

The Construct of Locus of Control

In psychology, locus of control is considered to be an important aspect of personality. The construct was originally developed by Julian Rotter in the 1950s. Rotter (1966) stated that people vary in the degree to which they recognize a contingent relationship between their own behaviors and the resulting outcomes. Certain people believe that resulting outcomes are controlled by forces external to themselves such as powerful others, fate, chance, or luck. Others tend to believe that their own behaviors are the primary factors that influence the resulting outcomes; that is, control rests within the power of the individual. People therefore see the ability to exert control over specific events as being present either in them or in the environment. This simple classification allows one to consider where causes are
perceived on an internal-external continuum (Weiner, 1985).

By extension, people also differ in the extent to which they believe that their health outcomes are determined primarily by their own behavior or by situational forces (Williams-Piehota et al., 2004). Individuals are described either as “internals” if they believe that they are primarily in control of their health or as “externals” if they believe that powerful others are primarily responsible for their health outcomes (Wallston et al., 1978).

Locus of Control Research

Research on locus of control has generally addressed one of two aspects: the antecedents of locus of control and the consequences of locus of control (McArthur, 1972). The antecedent side focuses on how certain information about behavior and the circumstances of its occurrence are used by the subject to infer locus of control, while the consequence side is concerned with the cognitive, affective and behavioral outcomes of locus of control (Kelly and Michela, 1980). The current study will focus on the second aspect: the consequences of locus of control on message evaluation and behavior intention.

One area in which locus of control is widely used is that which is related to health and illness, particularly in the realms of coping with serious illness and in deciding on preventive actions. The current belief in the field is that the way in which a person explains or interprets the causes of a particular illness will influence certain beliefs about the illness, which in turn will affect behavior (King, 1983). Research demonstrating the impact of health locus of control on behavior has traditionally
emphasized the importance of internal locus of control rather than external locus of control. For example, high levels of internal control beliefs have been linked with high participation in physical activity (Chatzisarantis, 2002). Similarly, Hagger and Armitage (2004) found that young people are more likely to report intrinsic motives to participate in physical activity, if they already have a general tendency toward an internal locus of control in the physical domain.

The concept of locus of control has also been used in the marketing context. Studies have shown that characteristics associated with individuals with either an internal or external locus of control orientation are likely to affect consumer behavior. For example, in a study of individuals’ locus of control and financial behavior, Perry and Morris (1995) found that externals are less likely to engage in responsible financial behavior because their perceived control of financial outcomes lies in luck, fate or powerful others.

In terms of the consequences of locus of control, few investigators have examined the utility of locus of control for developing health messages. In one study, Quadrel and Lau (1989) found that messages consistent with women’s health locus of control beliefs were more likely to motivate breast self-exams, although this benefit was found primarily among internals. Similarly, Williams-Piehota et al. (2004) found that women who received information consistent with their health locus of control beliefs generally were more likely to obtain a mammogram 6 and 12 months after the intervention than women who received information that was not consistent with their health locus of control orientation. Both studies examined only the effect of chronic
locus of control. The current study will make the first attempt to investigate the
impact of both chronic and temporary locus of control.

**Measurement of Locus of Control**

Prior to hypothesizing relationships between locus of control and other
variables, it is necessary to address a measurement issue. There has been extensive
debate over whether locus of control is a one-dimensional or two-dimensional
construct. If it is two-dimensional, then high internal locus of control would not be
considered equivalent to low external locus of control.

Rotter’s (1966) original conceptualization of locus of control involved one
dimension with two polar opposites – internal and external locus of control.
Consistent with the conceptualization that internal and external locus of control
categories are mutually exclusive, Rotter developed an I-E (Internal-External) Scale,
which is a 29-item scale that assesses internal locus of control with a forced-choice
format pairing external and internal control alternatives. Later, Wallston et al. (1976)
developed the first health-related locus of control measure. The health locus of control
scale consists of 11 items with a 6-point Likert response format. High scores on the
scale indicate agreement with the six externally worded statements and disagreement
with the five internally worded items. Individuals with scores above the median are
called “health-externals;” those with scores below the median are “health-internals.”

This uni-dimensional perspective of the locus of control construct has raised
both theoretical and empirical inconsistencies (Levenson, 1981). A series of
inconsistent findings led to calls for revisions to this initial scale. Therefore,
researchers proposed separate measures for each of the two dimensions. Wallston and Wallston (1982) proposed a multidimensional version of the health locus of control in which individuals were categorized according to different possible locus of control patterns, based on whether they scored high or low (determined by median split) on each of the subscales. For example, low scores on the internal health locus control scale do not mean that individuals believe that external factors determine their health; all that can be said about low internal locus of control scores is that they are not indicative of internal beliefs. The multidimensional health locus of control scale is superior to the unidimensional health locus of control scale in that the multidimensional scale is more internally consistent. Currently, the psychology literature now accepts the fact that locus of control is a multidimensional construct (Skinner 1996) and that internal and external are theoretically independent constructs.

Nevertheless, for the sake of simplicity the majority of empirical research on health locus of control still treats locus of control as one continuous variable and researchers use a median split to distinguish between internals and externals (e.g. Holt et al, 2000, Williams-Piehota, 2004). Hence, little is known about the behavioral, cognitive and affective differences between a variety of possible patterns, such as high internals and high externals or low internal and high externals. Thus, this research will adopt a two-dimension scale to measure health locus of control and provide important insights into the theoretical nature of the construct.

**Chronic and Temporary Locus of Control**

Locus of control, as a personality trait, has only been studied as a chronic
construct in previous studies. However, studies have shown that personality constructs can also be temporarily accessible through priming (Aaker, 1999).

**Accessibility**

Accessibility refers to the activation potential of available knowledge. Basically, there are two types of accessibility—chronic and temporary. In chronic accessibility, a particular way of thinking is immediately brought to mind upon mere exposure to an object that has been repeatedly encountered over time. Temporary accessibility refers to a particular way of thinking that is made accessible by short-term contextual factors or is ‘primed’ (Higgins, 1996).

The accessibility theory can be explained by the storage bin model proposed by Wyer and Srull (1989). According to this model, schemas, such as concepts and relationships, are thought of as stacked in a storage bin and a search for a schema that is applicable to the current stimulus occurs in a top-down fashion. A schema that is nearer the top of the storage bin is more accessible. This model accounts for the effects of recent use by assuming that a schema is replaced at the top of the storage bin after each use, increasing the schema’s probability of future use.

Temporary accessibility as a function of priming, and chronic accessibility as an individual difference, can both influence responses to stimulus information in terms of the accessible construct. When both chronic and temporary activation are present, there could be two possible outcomes. When the chronic construct and the primed construct are the same, the two accessibilities combine additively. The additive nature of long- and short-term sources of accessibility suggests that construct
activation ranges along a continuum. Frequent use of a given construct may gradually increase its baseline level of excitation, making it more likely to be used in general, across different contexts. Recent use, or other temporary states that may cause the construct to be activated, result in a further increase above this baseline level (Bargh et al., 1986).

When the chronic construct and the primed construct are different, the construct that impacts behavior depends on the accessibility decays. Higgins et al. (1985) conducted an experiment to examine this hypothesis. In the experiment, participants were primed with one concept repeatedly, but were primed with another concept more recently. Therefore they had two constructs primed. Each of them was potentially useful for describing a behavior they then had to judge. The experimenters then recorded the delay between when a construct was primed and when the judgment was made. They found that when the delay was brief (15 seconds), the recently primed concept was more accessible and used to guide the judgment. When the delay was of a longer duration (2 minutes), the frequently primed concept was more accessible. Higgins et al. (1985) argued that after a sufficient delay, the frequently primed construct would be at a higher level of action potential than the recent construct because of its slower rate of dissipation.

**Chronic and primed locus of control**

According to Aaker (1999), a personality trait is regarded as relatively stable while also being malleable. Locus of control can be viewed as a personality trait, because it is concerned with the extent to which a person attributes causality to
himself/herself. On one hand, locus of control is stable because the way people explain and understand their experiences related to health and sickness interacts with specific medical, social and cultural contexts (Tishelman, 1997). These causation-related conceptions are chronically accessible. On the other hand, locus of control is also malleable because the salience of the trait can vary on the basis of causality-related conceptions that are made accessible in the situation.

As mentioned earlier in this chapter, in almost all studies dealing with the impact of locus of control, researchers examined only the chronic locus of control by measuring it alone, instead of also testing temporary locus of control via priming. The current study will investigate the impact of primed locus of control as well as chronic locus of control.

Prior research has provided evidence that locus of control can be primed. In communication research, scholars have shown that certain kinds of news frames tend to encourage placing locus of control with individuals, while other kinds of news frames are associated with a tendency to attribute locus of control more to societal factors than to individuals. Iyengar’s (1991) studies of news frames and attribution of responsibility document this connection. He showed that news stories typically used either episodic frames or thematic frames. The episodic frames depicted concrete events that illustrated issues, while thematic frames put issues in a more general context. He found that episodic framing, which is the more common kind of news frame, leads to individual attributions of responsibility, while thematic framing leads to more attribution to social responsibility. Therefore, Iyengar’s (1991) study provides
evidence that different causal attributions can be temporarily accessible via different information presentation.

MESSAGE FRAMING THEORY

Message framing has been widely examined by mass communication scholars, social psychologists and health communication researchers. Different frames imply not only different ways to understand social problems, but also different courses of action (Saguy and Riley, 2005). The phrase “message framing” has been used to capture a variety of meanings. In order to define more precisely what is meant by message framing, the components of a message that have been manipulated in previous research must be considered (Wilson, Purdon and Wallston, 1988).

Framing Levels

In public debate, who is responsible for a negative event is frequently analyzed in terms of individualizing versus systemic frames. Individualizing frames attribute the responsibility of solving a problem to particular individuals, while systemic frames broaden the focus, assigning responsibility to government, business, and larger social forces (Lawrence, 2004).

Individualizing Frame

When Erving Goffman (1974) introduced the term “frame,” he focused on how individuals make sense of the world. According to Fischer and Johnson (1986), this microscopic approach examines frames as individual means of processing and structuring incoming information. This approach is reflected in work on prospect theory (Kahneman & Tversky, 1979).
According to prospect theory (Kahneman & Tversky, 1979), risk seeking behavior is associated more with loss domains, while risk averse behavior is associated more with gain domains. This type of framing effect occurs when individuals are presented with alternatives that are objectively equivalent, but differ in terms of whether the problem leads you to consider gains or losses.

Prospect theory has been widely applied in the decision making literature on framing effects, and researchers have imported the logic of this theory in an attempt to understand the effects of framing on message-based persuasion (Smith and Petty, 1996). Levin et al. (1998) have proposed a categorization based on three different types of framing operationalizations. The first is called risky choice framing. In this type of framing, the outcomes of a potential choice involve options differing in level of risk (e.g., one option will save 200 people for sure and the other has a 1/3 chance of saving all 600 and a 2/3 chance of saving no one). The second is called attribute framing, in which some characteristic of an object serves as the focus of the framing manipulation (e.g., beef described as 3/4 lean versus 1/4 fat). The third type is goal framing, in which the goal of an action or behavior is framed. Goal framing is also called positive-negative or gain-loss framing. That is, a message’s contents can be framed in two basic ways, a positive/gain frame that emphasizes the advantages of compliance or a negative/loss frame that emphasizes the disadvantages of noncompliance.

Individualizing framing has become popular in studies of persuasive communications, especially in the context of health and consumer judgment. For
example, in a health context (breast self-examination), Meyerowitz and Chaiken (1987) found that subjects who read a loss-framed pamphlet showed significantly more positive attitudes, intentions and actual behavior four months after an experiment than subjects in a gain-frame group and subjects in two control groups. Similarly, in a study by Steward et al. (2003) on smoking-cessation, gain-framed messages focused on the benefits of quitting smoking (1 in 5 lives could be saved in the U.S. if people didn’t smoke), whereas loss-framed messages emphasized the costs of not quitting (1 in 5 deaths occur in the U.S. because people smoke). The results demonstrate that the influence of framing was moderated by participants’ need for cognition. Specifically, individuals lower in need for cognition had greater intention to quit after reading a gain-framed message than after reading a loss-framed message; however, framing did not affect the persuasiveness of messages among people with a higher need for cognition.

Research into the nature of how cognitive framing operates has undergone subtle but significant changes in recent years. A shift has occurred from a focus on the way that individual level heuristics shape judgments to a focus on collectively shared frames. This new perspective suggests that in addition to heuristics that relate primarily to individual level limitations on cognitive resources, frames that are shared and communicated in social and political settings can also influence and simplify judgments (Fitzgerald, Elliott and Krasteva, 2003).
Systemic Frame

Unlike the microscopic approach, the macroscopic approach to framing examines contexts and social factors as important determinants of decision-making behavior. This approach, although drawing on theoretical approaches in various fields and disciplines, is commonly linked to attribution theory (Scheufele, 2000).

Drawing on attribution theory, which makes a distinction between societal and individual attributions of responsibility, Iyengar (1991) argued that people try to make sense of political issues by reducing them to questions of responsibility. In other words, responsibility for social issues or problems can be framed as individual responsibility or the responsibility of society at large.

Concerning health issues, a potentially important characteristic of persuasive health messages is their relative emphasis on who is responsible for maintaining one’s health (Rothman et al., 1993). According to Entman (1993), frames have at least four functions: to define problems, diagnose causes, make moral judgments, and suggest remedies. For health communications, the last function is the most relevant, primarily because one of the major themes in health campaigns is how to remedy health problems appropriately.

Attributions of treatment responsibility refer to the assignment of a person or institution to the duty of finding a remedy for an issue (Budzilowicz, 2002). The categories for attribution of responsibility are the same as those for attributions of causality. According to Lawrence (2004), responsibility can be analyzed in terms of “individualizing” versus “systemic” frames. Since frames are rarely “pure” in real
world discourse, it is useful to think of individualizing and systemic frames as anchoring opposing poles of a continuum of discourse, with some arguments drawing from elements of both. The closer the overall pattern of public discourse moves toward the systemic end of the continuum, the more likely it is that responsibility for remedying the issue will fall on public policy makers that hold political office. Defining a problem in individualized terms limits governmental responsibility for addressing it, while systemic frames invite governmental action (Lawrence, 2004).

**OBESITY, LOCUS OF CONTROL AND FRAMING**

**Obesity and Locus of Control**

As discussed earlier, people tend to look for causes when they encounter a health issue. Obesity is no exception. During the past 20 years, obesity among adults has risen significantly in the United States. The latest data from the National Center for Health Statistics show that 30 percent of U.S. adults 20 years of age and older—over 60 million people—are obese. This increase is not limited to adults. The percentage of young people who are overweight has more than tripled since 1980. Among children and teens aged 6–19 years, 16 percent (over 9 million young people) are considered overweight (Centers for Disease Control and Prevention, 2006). These facts raise a series of questions such as what kind of problem obesity is, what should be done about it, and by whom. There is a heated ongoing debate regarding answers to these questions (Lawrence, 2004).

Some believe that obesity is a personal matter. They believe that people are obese because they don’t have self control: it is their choice to eat too much junk food.
To the contrary, some others think that the fast food industry has been aggressively marketing junk food products and that individuals are merely innocent victims of an environment created by irresponsible marketers. While personal habits play an undeniable role, there is clear and abundant evidence that environmental factors loom large in contributing to the problem. When immigrants from low-obesity countries such as India, Somalia, and Japan move to countries where there is more obesity, they tend to gain weight. It is unlikely that they suddenly become less responsible when they move. More likely, they are responding to their new environment's cues to eat more calories and be less active. These cross-cultural analyses make it clear that there are disastrous environmental forces that almost guarantee an obese population (Wallis, 2004).

**Media Framing of Obesity**

Despite the alarming growth of the obesity epidemic, public opinion on its causes is still less certain. Although people routinely make judgments about causality in their daily lives, it is often a difficult task for a single individual to identify the cause of a health issue. Most people do not have carefully considered, coherent, inherently consistent views because they have limited time, interest, and skills to devote to this issue. Political elites and mass media play a crucial role by digesting the complex and conflicting information and sending out much simpler, clearer messages for the public to use to make competent judgments about health issues (Oliver and Lee, 2005).

Public discourse has transformed obesity from a personal issue and a medical
issue to a social issue. According to Sobal (1995), the perception of fat shifted over
time from a sign of health and wealth in traditional societies to being seen as bad,
sinful, and ugly in modern societies. With the agricultural and industrial revolutions,
there were more regular food sources and fat began to be viewed unfavorably. This
shift provided the basis for a moral model of fatness, suggesting that fat people are
responsible for their condition and should be punished as a means of social control.
During the 1950s, full-fledged medicalization of obesity took place. This
medicalization involved naming the problem officially as obesity, defining obesity as
a disease, initiating a surge of professional activities, and beginning the application of
medical treatments. More recently, research on tobacco frames indicated that the
tobacco industry had played an important role in increasing smoking. Because of the
similarities between smoking and obesity, researchers suggest that big business may
exert one of the structural influences on obesity (Kersh and Morone 2002).

For the past twenty years, individual responsibility framing and societal
responsibility framing have been competing with each other in the media’s portrayal
of health issues. This “frame contest” has also been reflected in many obesity
prevention campaigns. For example, in a health campaign from the White House’s
Fitness Web site, a tag line on an ad urges individuals to take responsibility for their
own health. It says “Make Healthy Choices. Be Physically Active Each Day. Eat a
Nutritious Diet. Get Preventive Screenings.” The behavioral frame points to
individualized solutions rather than to changes in the health environment. To the
contrary, on the “Feed Me Better” Web site, a campaign to improve the nutritional
value of school dinners in the UK, advocates suggest that the fast food industry’s marketing practices and the food choices provided by the school are responsible for the obesity epidemic. This frame contends that the industry has flooded school cafeterias with unhealthy “fast foods.” It puts individual choice in a larger context of environmental influences and policy choices.

CONGRUITY THEORY

Many theories have tried to explain why messages are more persuasive when they match individuals’ characteristics. One of the theories is congruity theory.

Self-Message Congruity

Individuals learn to process incoming information in selective ways (Chang, 2002). People have a need for consistency that arises from an inborn preference for things that are predictable, familiar, stable, and that reduce uncertainty (Swann, 1983). Situations that are unfamiliar prompt individuals to hold onto familiarity and predictability in as many areas as possible, partly to satisfy the motive for a consistent and stable self, and partly for the sake of cognitive economy (i.e., the cognitive system copes with a wide array of information and stimuli by categorizing the information it receives to make the information processing demands more manageable). As a result, feedback that is inconsistent with an individual’s self-schema is distorted more often, less likely to be recalled, and more likely to produce negative affect than feedback that is consistent (Eisenstadt and Leippe 1994).

A number of studies have demonstrated that matching health messages to dispositional tendencies can increase the effectiveness of the messages. In a study of
flossing behavior, Sherman, Mann and Updegraff (2006) showed that participants who had an approach orientation flossed more after reading a gain-framed article, and participants who had an avoidance orientation flossed more after reading a loss-framed article. In another study, Apanovitch, McCarthy and Salovey (2003) have found that among those women who viewed HIV testing as having a certain outcome (with a low risk of testing positive), gain-framed messages better encouraged self-reported HIV testing than loss-framed messages. Other individual difference characteristics that have been studied in health contexts include coping style (Williams-Piehota et al., 2005), need for cognition (Williams-Piehota et al., 2003), and locus of control (Holt et al., 2000).

Causality and Responsibility

Locus of control is one of the most examined individual dispositions in health communications. For example, in one study that examined persuasiveness of matching health messages to individuals’ health locus of control beliefs in an effort to promote mammography screening, Williams-Piehota et al. (2004) found that women who received information consistent with their health locus of control beliefs generally were more likely to obtain a mammogram 6 and 12 months after the intervention than women who received information that was not consistent with their health locus of orientation.

However, in studies such as the one above, researchers used the two terms “locus of control” and “responsibility attribution” interchangeably. Shaver and Drown (1986) indicated that causality and responsibility are similar, but are distinct concepts.
The cause of an event is the antecedent, or subset of antecedents, sufficient for the effect to occur. Responsibility pertains to the outcome of an event. Despite their detailed conceptual analysis of the differences between these concepts, the researchers also note that laypersons commonly do not distinguish between the two terms.

An attribution of responsibility, whether as blame or praise, always rests on a claim about causation (Shafer, 2001). An appeal to personal responsibility inherently assumes causal connections between people’s deeds and health outcomes, even if this connection is merely implied (Guttmann and Ressler, 2001). For example, saying that one needs to lose weight to prevent cardiovascular disease implies a causal connection between excessive food consumption and illness. Similarly, by saying that people need to be responsible for their health behaviors, it is implied that they are culpable for adverse consequences when they do not adopt preventive measures.

Past research also suggests that there is a relationship between the way people think about causation and their attitudes toward responsibility appeals. Brickman et al. (1982) suggested that for an intervention to be successful, the responsibility attributions promoted by the program should be aligned with the locus of control made by people about the health problem and its alleviation.

**Congruity Effects and Cognitive Load**

**Congruity and Processing Style**

According to the heuristic-systematic model (Chaiken, 1987), there are two types of information processing styles. Heuristic processing is particularly likely to take place in situations in which people are not motivated, or for other reasons are not
able, to think thoroughly about the content of a message (e.g., low personal relevance of the topic, time constraints). In contrast, systematic processing is more likely to occur in situations in which participants are highly motivated and able to scrutinize a message (e.g., high topic relevance, no time constraints).

When a schema closely matches the structures of the input information, so that the stimulus is completely accounted for or comprehended, minimal processing will be necessary, and processing will occur effortlessly or automatically, perhaps outside conscious awareness (Markus and Zajonc, 1985). Very often, however, the fit between the input and the schema is less than perfect. Yet schemas can tolerate market deviations and still have a powerful effect on processing. The consequence of an incongruent relationship between a schema and an event is the deployment of additional cognitive resources (Hastie, 1981). Therefore, congruity favors heuristic processing style while incongruity favors systematic processing style.

Congruity and Cognitive Load

We humans are bound by our mental abilities. The stimuli present in any situation are too numerous and complex for total representation by the information processing system. Cognitive load is the term used to describe this mental state in which so much mental effort has been allocated to a cognitive task that it taxes mental resources, diminishing the ability to process information related to other cognitive tasks. A consequence of this is that we come to see new information in a manner that is consistent with the expectancies provided by our schemas (Moskowitz, 2005).

This effect of congruency or fit on judgment reflects a misattribution effect
that stems from people confusing the source of their feelings with characteristics of
the target they are evaluating. The implication is that when people are made aware of
how they feel about their reactions and believe that this feeling may potentially bias
their judgments, they adjust their judgments to correct for the potential bias (Higgins
et al., 2003). Therefore, it is expected that cognitive load may moderate this
self-message congruency effect.

The dual-processing model can explain this moderating mechanism. When
cognitive load is high, people have limited information-processing capacity. Thus,
they adopt simplified mental strategies, or a heuristic strategy, to cope with the
complexities of the problem (e.g., Tversky and Kahneman, 1974). When a heuristic
strategy is employed, people strive to form views that are more efficient than accurate.
In such cases, judgments tend to be based on the favorableness of convenience
(Higgins, 1996). Because belief-consistent information is easier to process, high
cognitive load typically encourages people to simplify a judgment task by narrowing
their attention and processing consistent information.

Conversely, when cognitive load is low, people are likely to engage in a
systematic process where they scrutinize the message in greater detail, since they care
more about making accurate judgments (Higgins, 1996). In such cases, message
claims are likely to have a bigger impact on persuasion than the degree of congruency
of the message and preexisting beliefs (Shiv et al., 2004). That is, people are less
likely to rely on self congruency to evaluate the message (Chang, 2002).

Therefore, selective processing based on existing knowledge structures has
been shown to be more likely to occur when an individual’s ability to process information is constrained (Markus & Zajonc, 1985). There is evidence in the literature to support the above argument. Wang and Lee (2006) manipulated regulatory focus and involvement across a series of studies. In one study, for example, they presented participants in high- versus low-involvement conditions with product information that consisted of both promotion- and prevention-focused features. The results showed that participants selectively searched for, and spent more time processing, features that fit their regulatory orientation, but only when they were not motivated to process the information. Similarly, Briley and Aaker (2006) demonstrated that participants who were culturally inclined to have a promotion or prevention focus had more favorable attitudes toward products that address their regulatory concerns. However, this effect occurred only when participants were asked to provide their initial reactions to the products or when their evaluation was made under cognitive load or time pressure. The culturally induced regulatory relevance effect disappeared when participants were asked to make deliberate evaluations or when they were able to expend cognitive resources on the task.

**HYPOTHESES**

Taken together, the previously reviewed research suggests that matching the frame of a persuasive message to people’s beliefs about locus of control should render that message more effective. Moreover, the extent to which an individual is cognitively capable of processing a message will moderate the influence of the congruency effect. Specifically, this congruency effect is more likely to occur when
people are not capable of processing information carefully. Therefore, the following hypotheses are proposed.

Firstly, according to self-message congruity theory, when information is presented in a frame that is compatible versus incompatible with dispositional traits, greater persuasion effects will result. Therefore, the following two hypotheses are predicted:

**H1:** Individuals with high chronic internal locus of control will be more persuaded by individual-framed messages than individuals with low chronic internal locus of control, but only when their chronic external locus of control is low.

**H2:** Individuals with high chronic external locus of control will be more persuaded by social-framed messages than individuals with low chronic external locus of control, but only when their chronic internal locus of control is low.

Secondly, temporary accessible locus of control is expected to function in a similar pattern as chronic accessible locus of control. Hence, this study also predicts a congruity effect between primed locus of control and message framing.

Also, despite the growing evidence that tailoring health messages can increase message effectiveness, the topic of when tailoring works is still unclear. Most studies have examined only the effects of tailoring on behavioral outcomes, without assessing potential moderators. So, this study will also test whether cognitive load will moderate this congruity effect.

**H3:** Individuals primed with internal locus of control will be more persuaded by individual-framed messages than by social-framed messages, but only when...
cognitive load is high.

**H4:** Individuals primed with high external locus of control will be more persuaded by social-framed messages than by individual-framed messages, but only when cognitive load is high.

In the following two chapters, two experiments will be conducted to test the above hypotheses. Specifically, Experiment 1 will measure individuals’ chronic locus of control and test H1 and H2. Experiment 2 will manipulate individuals’ locus of control and test H3 and H4.
CHAPTER THREE
EXPERIMENT 1

METHODOLOGY

Overview

Experiment 1 examined how individuals with different chronic locus of control would respond toward a public service announcement that conveyed either individual responsibility or social responsibility on obesity prevention. This experiment also tested if chronic locus of control would affect the way people assign responsibility to the same health issue. In this experiment, chronic internal and chronic external locus of control was measured as two independent constructs. Individual and societal responsibility frames were manipulated by varying the emphasis in the messages on individual responsibility and social responsibility to prevent obesity. The prediction is that an interaction between chronic locus of control and responsibility-framed messages will be present. Specifically, individuals with high internal locus of control should have more positive attitudes toward the Public Service Announcement (PSA) and greater behavior intention after exposure to the individual-focused information. These effects should only occur when their chronic external locus of control is low. Conversely, individuals with high external locus of control should have more positive attitudes toward the PSA and greater behavior intention after exposure to the society-focused information. This effect should occur only when their chronic internal locus of control is low. Thus, a 2 (Chronic Internal...
Locus: high vs. low) x 2 (Message Framing: individual versus social) x 2 (Chronic External Locus: high vs. low) between-subjects factorial design was used.

Participants

A total of 99 undergraduate students from a large northeast university took part in the study. Participants were recruited from communication and marketing classes, receiving extra credit in their respective courses in exchange for participation. The sample was comprised of 32.3% men and 67.7% women. Eighty-eight percent of the participants were Caucasian, 4% were African-American, 7.1% were Asian and 1% listed “other” as their ethnicity.

Stimuli

Two versions of a Public Service Announcement (PSA) on healthy eating were created. Headlines and slogans were manipulated to represent two distinctive appeal types. The same body copy was included to eliminate any bias created by more elaborate executions.

Specifically, within the individual-responsibility condition, the slogan said “Promoting a healthy eating habit” with the tagline “Make a better choice. Your determination and effort will be most important in keeping obesity away!” The social-responsibility PSA slogan said “Promoting a healthy environment” with the tagline “Fast food restaurants’ determination and effort will be most important in keeping obesity away!” In addition, one of the sub-headlines differed between the two conditions. In the individual-responsibility condition, it says “studies have shown that individuals can make a difference in the fight against obesity,” while in the
social-responsibility condition, it says “studies have shown that fast food restaurants can make a difference in the fight against obesity.” (See Appendix A for stimuli.)

Procedure

Approximately two weeks before the experiment, the experimenter e-mailed 144 students an invitation to participate in a study under the disguise of a newly designed health campaign. To participate in the study, subjects had to return a short questionnaire that assessed their chronic locus of control regarding why people are overweight and obese. Subjects were asked to answer four questions adapted from the Weight Locus of Control (WLOC) scale (Stotland & Zuroff, 1990). Two of them were used to measure internal locus of control, “Unsuccessful dieting is due to lack of effort” (“Effort”) and “People who are overweight lack the willpower necessary to control their weight” (“Willpower”). The other two were used to measure external locus of control, “There is so much fattening food that losing weight is almost impossible” (“Fattening Food”) and “People are obese because there is too much unhealthy fatty food in restaurants and supermarkets” (“Fatty Food”) (see Appendix B). The questionnaire also collected their demographic information.

As expected, a two-dimensional rather than a unidimensional scale best represented the locus of control. A factor analysis yielded two factor components. The variables that loaded highly on the first factor reflected internal locus of control. The variables that loaded highly on the second factor related to external locus of control (see Table 1).
TABLE 1

Factor Analysis

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Locus of Control</td>
<td>.80</td>
<td>-.25</td>
</tr>
<tr>
<td>Effort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willpower</td>
<td>.77</td>
<td>-.35</td>
</tr>
<tr>
<td>Fattening Food</td>
<td>.41</td>
<td>.66</td>
</tr>
<tr>
<td>Fatty Food</td>
<td>.26</td>
<td>.76</td>
</tr>
<tr>
<td>Eigen Value</td>
<td>1.47</td>
<td>1.19</td>
</tr>
<tr>
<td>% Variance</td>
<td>36.65</td>
<td>29.85</td>
</tr>
</tbody>
</table>
Therefore, an internal locus of control index was created by averaging the two internal questions and an external locus of control index was created by averaging the two external questions. A correlation test between the two indexes exhibited an orthogonal relation ($r = .076$, $p = .41$), further confirming that the two constructs are independent of each other.

As a result, each participant received one score for individual locus of control and one score for external locus of control. Participants were categorized as high or low on these measures using median splits. For example, for internal index, subjects whose score was greater than the median were coded as “high internal,” whereas those whose score was less than the median were coded as “low internal.” Similarly, for external index, subjects whose score was greater than the median were coded as “high external,” whereas those whose score was less than the median were coded as “low external.” Eventually, each participant fell into one of the four cells: high internal and high external, low internal and low external, high internal and low external, low internal and high external (see Table 2). People with high internal and high external locus belief have a strong opinion on obesity causation, believing that both individuals and society would contribute to the obesity problem. In contrast, people with low internal and external locus of control may have weak opinions on this issue, arguing neither factor would lead to the problem.
Two weeks after they returned the questionnaire, the 144 subjects were contacted and invited to participate in the main study. Eventually, 99 students participated in this study (students who showed up without completing the short survey were assigned to other tasks). In groups of 10 to 20 in a laboratory setting, subjects in each cell were randomly allocated to one of two conditions respectively (individual framing vs. social framing).

At the beginning of the experiment, participants were told that the Ad Council was in the process of designing an advertising campaign targeting students like them and that the Ad Council would like them to help evaluate the ad draft. The subsequently shown PSA on obesity prevention assigned responsibility to either

### TABLE 2

Number of Subjects with Chronic Internal and External Locus of Control

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>High</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Locus of Control</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>31</td>
<td>20</td>
<td>51</td>
</tr>
<tr>
<td>High</td>
<td>33</td>
<td>38</td>
<td>71</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>64</td>
<td>58</td>
<td>122 *</td>
</tr>
</tbody>
</table>

*Note. Of the 144 students, 122 completed the short survey to measure their chronic locus of control*
individuals or society. After reviewing the public service announcement, participants rated the three main dependent variables which included attitudes towards the ad, behavior intention, opinion on responsibility attribution of obesity, and several ancillary dependent variables.

**Dependent Measures**

Two distinct dependent variables were used to measure persuasion effects in the context of this experiment. The first measure, Attitude Toward the PSA Index, aimed at assessing the participants’ overall impressions of the public service announcement. Participants were asked to rate the public service announcement content on a seven 7-point scale anchored by unfavorable / favorable, uninformative / informative, unpleasant / pleasant, not useful / useful, boring / interesting, not impactful / impactful, unpersuasive / persuasive and not recommend publishing / recommend publishing.

The second measure, termed the Behavior Intention Index, was defined as the likelihood of getting involved in an obesity prevention action. Specifically, the following four questions were used to measure the variable: (1) I feel the need to engage in more eating healthy behaviors after reading the PSA; (2) I want to learn more about eating healthy; (3) I want to gather more information about eating healthy; and (4) I want to change my behavior with respect to eating healthy. These four questions were presented on 7-point scales ranging from “strongly disagree” to “strongly agree.”

This study is also interested in whether locus of control will affect the way
people assign responsibility to the same issue. So, both perceived individual responsibility and perceived social responsibility on obesity prevention were measured. Social responsibility attribution was measured on a 7-point Likert scale with two items: (1) “In order to reduce obesity among young adults, we should eliminate fast food from our public schools” (“School”) and (2) “The government should impose a snack tax on unhealthy food and use the proceeds to support the production and distribution of nutritious foods” (“Government”). Individual responsibility was measured on a 7-point scale by the two statements: (1) “By restricting what one eats, one can lose weight” (“Restrict”) and (2) “People will be most successful in dieting if they make healthy food choices” (“Choice”).

An individual responsibility index and a social responsibility index were created by averaging the two items respectively (alpha = .56 and .51). Since the reliabilities between each item were not high, it was necessary to perform a factor analysis to see if the two Indexes really measured two different constructs. The final solution yielded two factor components. The variables that loaded high on the first factor reflected individual responsibilities. The variables that loaded high on the second factor were related to social responsibilities (see Table 3).
### TABLE 3

Factor Loading for Components Measuring Responsibility Attributions.

(Rotated Component Matrix)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual Responsibility Attribution</td>
<td>Social Responsibility Attribution</td>
</tr>
<tr>
<td>School</td>
<td>.13</td>
<td>.81</td>
</tr>
<tr>
<td>Government</td>
<td>-.06</td>
<td>.83</td>
</tr>
<tr>
<td>Restrict</td>
<td>.85</td>
<td>-.03</td>
</tr>
<tr>
<td>Choice</td>
<td>.83</td>
<td>.10</td>
</tr>
<tr>
<td>Eigen Value</td>
<td>1.50</td>
<td>1.27</td>
</tr>
<tr>
<td>% Variance</td>
<td>37.61</td>
<td>31.85</td>
</tr>
</tbody>
</table>
Finally, a framing manipulation check was included. Participants were asked to rate, on a 7-point scale ranging from 1 (individual responsibility) to 7 (social responsibility), the extent to which the message focused on individual responsibility or social responsibility.

Ancillary Variables

The following three variables are not predicted in the hypotheses, but this study is also interested in examining them because of their relevance. The first variable, termed Message Involvement Index, focuses on the extent to which participants felt involved in the overall public service announcement. Five questions were used to measure this variable, (1) “It aroused my attention”; (2) “It makes me think about obesity”; (3) “It makes me consider the harm of eating unhealthy food”; (4) “It makes me think about prevention of obesity”, and (5) “It reminds me of the importance of eating healthy.” These questions were presented on 7-point scales ranging from “strongly disagree” to “strongly agree.”

The second measure, termed Perceived Message Credibility Index, was used to evaluate participants’ perception of the credibility conveyed in the public service announcement. Participants were asked to rate the specific content on 7-point scales anchored by not at all convincing/very convincing and not at all credible/very credible.

The third measure, termed Ease of Processing Index, aimed at evaluating the fluency of processing the information. Participants were asked to rate the public service announcement content on 7-point scales anchored by difficult to process/easy
to process and difficult to comprehend/easy to comprehend (see Appendix C).

RESULTS

Manipulation Checks

The manipulation check on message framing was performed to ensure the effectiveness of the intended manipulation. One manipulation check question was used with higher scores reflecting a greater degree of perceived social responsibility, and with lower scores indicating a greater degree of perceived individual responsibility. As expected, the mean for the manipulation check variable was greater in the social framing condition ($M = 4.94$, $SD = 1.53$) than in the individual framing condition ($M = 2.81$, $SD = 1.48$), and these means differed significantly, $F (1,97) = 49.54$, $p < .01$.

Hypotheses Testing

H1 and H2 predicted an interaction effect of chronic internal locus of control, message framing and chronic external locus of control on message persuasiveness. Persuasiveness was measured by two variables, Attitude Toward the PSA and Behavior Intention. An Attitude toward the PSA Index was created by averaging the 7 items ($\alpha = .89$). Four items were averaged to create a Behavior Intention Index ($\alpha = .90$) (see Appendix C).

To investigate the predicted interaction, a three-way Multivariate Analysis of Variance (MANOVA) was first conducted, with chronic internal locus of control, message framing, and chronic external locus of control as the three independent variables, and attitude and behavioral intention as dependent variables. There were no
main effects of chronic internal locus of control ($p = .60$), message framing ($p > .57$) or chronic external locus of control ($p > .33$). However, there was a marginally significant interaction among the three independent variables, Wilks’s lambda = .94, $F(2, 90) = 2.92, p < .06$).

Further, a univariate analysis was performed on Attitude and Behavioral Intention respectively. The results of a $2 \times 2 \times 2$ between-subjects analysis of variance (ANOVA) on Attitude Toward the Index yielded no significant three-way interaction effect, $F(1,91) = .18, p = .67$. Two-way tests also indicated that there was no two-way interaction between chronic internal locus of control and framing, $F(1, 95) = .01, p = .93$, and no two-way interaction between chronic external locus of control and framing, $F(1,95) = .62, p = .43$. There was no main effect for any of the three independent variables.

The above univariate test was repeated on the other dependent variable, Behavioral Intention. The three-way ANOVA test analysis revealed that there was a significant three-way interaction among the three variables, $F(1,91) = 5.48, p < .05$. Specifically, chronic internal locus of control and frame had a compatibility effect, but only when chronic external locus of control was low. When chronic external locus of control was low, those with a high internal locus of control were more likely to seek out information on obesity after exposed to individual-framed messages ($M = 4.92, SD = 1.07$) than those with a low internal locus of control ($M = 4.05, SD = 1.49$) (see Table 4 and Figure 1). So, hypothesis 1 was partially supported.

When internal locus of control was low, however, there was no compatibility
effect between chronic external attribution and message frame. Two-way tests yielded no two-way interaction between chronic internal locus of control and framing, \( F(1,95) = .45, p = .50 \), and none between chronic external locus of control and framing, \( F(1,95) = .89, p = .35 \). No main effect was found for any of the three variables. Therefore, hypothesis 2 was not supported.

**TABLE 4**

Behavior Intention Means as a Function of Message Frame, Chronic Internal Locus of Control, and Chronic External Locus of Control

<table>
<thead>
<tr>
<th>( \text{Behavioral Intention} )</th>
<th>( \text{Individual Frame} )</th>
<th>( \text{Social Frame} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \text{High Internal} )</td>
<td>( \text{Low Internal} )</td>
</tr>
<tr>
<td>High Internal</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Low Internal</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>High External</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Low External</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>4.47</td>
<td>4.92</td>
</tr>
<tr>
<td>Intention</td>
<td>(1.37)</td>
<td>(1.08)</td>
</tr>
<tr>
<td>n=18</td>
<td>n=13</td>
<td>n=6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.22</td>
<td>4.06</td>
</tr>
<tr>
<td></td>
<td>(1.14)</td>
<td>(1.49)</td>
</tr>
<tr>
<td></td>
<td>n=18</td>
<td>n=9</td>
</tr>
</tbody>
</table>

*Note*: Higher score indicates greater behavior intention. Numbers in parentheses are standard deviations.
FIGURE 1

Interaction Effect of Chronic Locus of Control and Framing on Behavior Intention
(when chronic external locus of control is low)
Supplementary Analysis

Covariate

Some research has shown that there is a correlation between gender and locus of control: females tend to be more external than males (Sherman et al., 1997). So, in order to examine the confounding influence of gender, additional MANOVA were performed on the Attitude variable and Behavioral Intention with gender as a covariate. Results indicated that the three-way interaction remained insignificant for Attitude ($p = .72$), and remained significant for Behavioral Intention ($p < .05$). Therefore, gender did not confound the impact of chronic locus of control and message framing on either Attitude or Behavioral intention.

Mediators

According to Lee and Aaker (2004), when a message frame is consistent versus inconsistent with the way in which individuals naturally think about issues that involve positive versus negative outcomes, the message becomes easier to process. This ease of processing is subsequently transferred to more favorable attitudes. So, it is expected that ease of processing can function as a mediator of the impact of chronic locus of control and message framing on attitude and behavioral attention. In addition, studies have also shown that matching message to audience preexisting cognitive or affective conditions can also lead to higher perceived message credibility (Wathen and Burkell, 2002) and message involvement (Ravaja et al., 2006). Therefore, message credibility and message involvement were also tested as potential mediators.

According to Baron and Kenny (1986), in order to establish a mediating
relationship, three conditions need to be met: (1) a significant relation between the independent variable and the dependent variable must be demonstrated; (2) a significant relation between the independent variable and the mediator needs to be demonstrated, and (3) the mediator must have a significant effect on the dependent variable after controlling for the independent variable. In the current study, the independent variables are chronic internal locus of control, message framing, and chronic external locus of control; the dependent variable is behavioral intention and the mediators are ease of processing, message credibility, and message involvement.

A series of regression analysis were performed to test the mediating relationship. The first necessary condition for demonstrating the mediating relationship is to show that the interaction of the three independent variables does, indeed, account for variance in the behavioral intention. The relationship between the interaction of the three independent variables and behavioral intention was significant ($\beta = 4.51, t = 2.34, p < .05$). The second requirement is that the interaction of the three independent variables accounts for variability in the mediators. This relationship was not significant either for processing ($p = .86$) or for message credibility ($p = .33$) and message involvement ($p = .92$). Therefore, these three variables did not function as mediators of the congruity effect found in the main study.

**Perceived Responsibility on Obesity**

Prior studies have suggested that causal attributions will affect the way people assign responsibility to the same issue. Two independent t-tests were performed to examine the main effect. The results indicated that chronic internal locus of control
had a significant main effect on the responsibility attribution. Specifically, participants who were high in internal locus of control were more likely to assign responsibilities to individuals ($M = 5.92$, $SD = 1.00$) than those who were low in internal locus of control ($M = 5.50$, $SD = 1.10$), and they differed significantly, $t (97) = -1.98$, $p < .05$. A second t-test indicated that participants who were high in external locus of control were more likely to assign responsibility to social sources ($M = 4.06$, $SD = 1.55$) than those who were low in external locus of control ($M = 3.91$, $SD = 1.38$). However, the difference was not statistically significant, $t (97) = -0.48$, $p = .63$ (see Table 5).

Message frames may also affect the way people assign responsibility on the same issue. Results of two independent t-tests indicated that there was a significant frame main effect on the perceived responsibility attribution. Participants who were exposed to social-framed messages were more likely to attribute social responsibility for solving the problem of obesity ($M = 4.25$, $SD = 1.30$) than people who were exposed to individual-framed messages ($M = 3.70$, $SD = 1.59$, $t_{\text{one-tailed}} (97) = -1.88$, $p < .05$). There was also an effect for individual-framed messages. Yet, the resulting pattern was opposite to what was expected. Participants who were exposed to individual-framed messages were less likely to attribute individual responsibility for solving the problem of obesity ($M = 5.41$, $SD = 1.06$) than people who were exposed to social-framed messages ($M = 6.05$, $SD = .98$, $t (97) = -3.09$, $p < .05$) (see Table 6).
### TABLE 5

Perceived Responsibility Attribution Means (1)

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Chronic Internal</th>
<th>Chronic External</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Perceived Individual Responsibility Attribution</td>
<td>5.92 (1.00)</td>
<td>5.5 (1.11)</td>
</tr>
<tr>
<td></td>
<td>n=58</td>
<td>n=41</td>
</tr>
</tbody>
</table>

*Note.* Higher means indicate higher responsibility attributions. Numbers in parentheses are standard deviations.
### TABLE 6

Perceived Responsibility Attribution Means(2)

<table>
<thead>
<tr>
<th>Responsibility Frame</th>
<th>Dependent Variables</th>
<th>Individual</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Individual Responsibility Attribution</td>
<td>5.41 (1.06)</td>
<td>6.04 (0.98)</td>
<td></td>
</tr>
<tr>
<td>n=47</td>
<td>n=52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Social Responsibility Attribution</td>
<td>3.70 (1.59)</td>
<td>4.25 (1.30)</td>
<td></td>
</tr>
<tr>
<td>n=47</td>
<td>n=52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Higher means indicate higher responsibility attributions. Numbers in parentheses re standard deviations*
DISCUSSION

The goal of Experiment 1 was to examine the interaction effect of individuals’ chronic locus of control and responsibility-framed messages on attitude toward obesity prevention messages and behavior intention to prevent obesity. Based on the premise that internal locus of control and external locus of control are chronically accessible, the extent to which individuals are persuaded by campaign messages that are congruent versus incongruent with their locus of control was examined. This experiment found that matched messages were more likely to motivate behaviors, but only among those with high chronic internal locus of control. It did not find any congruity effects among those with high chronic external locus of control. This result was consistent with the study of Williams-Piehota et al. (2004). In their study, they found that mammography utilization was not as high for the externals who received the matched messages as it was for internals who received the matched messages.

This experiment also found a main effect of chronic internal locus of control. As expected, individuals with high chronic internal locus of control were more likely to assign individual responsibility for obesity prevention. Although the pattern for individuals with high external locus of control was as expected--- individuals with high chronic external locus of control are more likely to assign social responsibility for obesity, the main effect for external group was not statistically significant.

The results also showed that social framed messages were more likely to make people attribute social responsibility for obesity prevention than individual framed messages. Yet, individual framed messages have less impact on perceived individual
responsibility than social framed messages, which was inconsistent with the prediction. One possibility for this inconsistent result might be that counterarguing occurred during the processing of the message. When we told a person that he or she was responsible for a problem and he/she should do this or that to resolve it, if too much responsibility was assigned to one person, as shown in the individual-framed message, the person tended to feel uncomfortable and defensive. Because people do not like being told what to think or how to feel, they resist (Petty and Cacioppo,1979) by counterarguing against the statement in the message.

Collectively speaking, high chronic external locus of control is not as good as high chronic internal locus of control as a predictor of perceived responsibility attribution and the interaction effect with message framing. However, this result is not entirely surprising, and can be explained by looking at the dominant position of internal locus of control over external locus of control throughout history and across cultures. As suggested by Wallack and Lawrence (2005), the first language of American culture is individualism, which is also reflected in the language used in the public health domain. This language focuses on the value of freedom, self-determination, self-discipline, personal responsibility, and limited government. As a result, internal locus of control has stronger salience than external locus of control and therefore has established a stronger relationship with an individual responsibility attribution. In contrast, external locus of control or social responsibility attribution represents the second language in US culture, a language of interconnectedness. Most Americans do not articulate these values as easily as they
use the language of individualism (Wallack and Lawrence, 2005).

According to Higgins (1996), chronic accessibility can be compared to frequent priming. The priming effect on behavior judgments increased as the frequency of priming increased. In this sense, external locus of control is less primed than internal locus of control, and is, therefore less accessible.

In addition, the measured data indicated that an external locus of control was less accessible than an internal locus of control. The median for the internal scale was 3.5 while the median for external scale was 3. Participants were classified as high internals when they scored higher than 3.5, while participants were classified as high externals as long as they scored higher than 3. Therefore, qualifying as a high external was a lower bar than qualifying as an internal in terms of locus strength.

The findings in experiment 1 indicated that the congruent obesity prevention campaigns are more effective for internals than for externals, suggesting that externals may have different needs that are not met by locus congruent messages. Other types of framing strategies should be developed for externals. This study also showed that there is a compatibility effect of social-framed messages for externals, indicating that it would be possible for the campaign message to change peoples’ perceived social responsibility attributions via social-framed messages. This strategy does not apply for internals.

Although the findings are conceptually consistent with some of the other studies that explored matching messages to psychological variables (e.g., Williams-Peihota, 2004), two questions arise. First, does temporary accessible locus
of control influence people’s attitude and behavior in the same way? In Experiment 1, only two chronically accessible locus of control were examined. Second, to what extent does the self-message congruity effect occur? In Experiment 2, to address the first question, internal and external locus of control were manipulated by priming. As for the second question, according to previous studies, the congruity effect is more likely to occur under heuristic processing. That means cognitive load might be a moderating factor. Individuals with high cognitive load are expected to be more persuaded by matched messages than individuals with low cognitive load. So, Experiment 2 also examined the moderating role of cognitive load on the interaction between primed locus of control and responsibility-framed messages.
CHAPTER FOUR

EXPERIMENT 2

METHODOLOGY

Overview

The second experiment examined the role of primed locus of control on the effectiveness of health messages that focus on individual versus social responsibility. Internal locus of control and external locus of control were manipulated by priming. Subjects were randomly assigned to one of eight conditions in a 2 (primed locus of control: internal vs. external) x 2 (responsibility framing: individual vs. societal) x 2 (cognition load: present vs. absent) between-subject experimental design. If the primed locus indeed operates as a moderator, it should be observed that messages in compatible conditions (internal-individual and external-social) would be more effective than messages in incompatible conditions, and this effect would be more likely to occur when cognitive load is high.

Participants

A total of 164 undergraduate students from the communication and marketing departments of a large northeast university participated in the study for extra credit for their courses. Sixty-six percent were men and 34 % were women. Caucasians accounted for 82.9%, Asians 11.6%, African-Americans 3%, Hispanics .6% and other 1.8%.
Procedure.

To achieve the objectives of the experiment, the second study relied on the same design as in Experiment 1 with two exceptions: (1) locus of control was manipulated instead of measured, and (2) cognitive load was manipulated.

First, as a cover story, participants were told they were taking part in two unrelated studies: a social issue survey by the Sociology Department, and a health campaign survey on obesity by the College of Communications. For the first study, primed internal locus of control was manipulated by asking students: “What do you think is the most important individual cause in the following issues?” External locus of control was primed by asking students: “What do you think is the most important social cause for the following issues?” Subjects were given three social issues including poverty, violence, and binge drinking. According to Iyengar (1996), there are spillover effects among attributions of responsibility. Therefore, locus of control elicited by the priming task on other issues is expected to carry over to influence locus of control for obesity. Next, participants took part in a second, supposedly unrelated, health campaign survey containing an obesity prevention public service announcement.

To ensure that the manipulation would be successful in priming the internal and external locus of control, a pretest was conducted in which participants (n = 30) were randomly assigned to one of the two conditions in the experiment. After completing the priming task, they were asked to respond to two statements. The first statement was used to measure internal locus of control on obesity (‘Individual
behavior is the most important cause for the obesity epidemic”) while the second was used to measure external locus of control (“Society is the most important cause for the obesity epidemic”). Participants responded on a 7-point scale (1 = strongly disagree; 7 = strongly agree).

An ANOVA test yielded significant main effects on both scales. Participants primed with internal locus of control scored higher ($M = 6.09, SD = .83$) on the internal scale than those primed with external locus of control ($M = 4.68, SD = 1.49, F (1,28) = 8.21, p < .01$). Participants given the external prime scored higher ($M = 5.05, SD = .91$) on the external scale than those given the internal prime ($M = 4.00, SD = 1.67, F (1,28) = 5.03, p < .05$) (see Table 7).

In Experiment 2, cognitive load was manipulated by asking participants in the high load condition to hold an eight-digit number in memory as they performed the task and not asking participants in low condition to hold the number in memory. This method has been used successfully in past research to deprive participants of processing resources (e.g., Gilbert & Hixon, 1991; Gilbert and Osorne, 1989). As a means of assessing retention, these participants were asked to write down the eight-digit number on a slip of paper at the end of the task.
### TABLE 7

Perceived Locus of Control Means

<table>
<thead>
<tr>
<th>Priming</th>
<th>Individual</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>6.09</td>
<td>4.68</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>(.83)</td>
<td>(1.49)</td>
</tr>
<tr>
<td>n=11</td>
<td>n=19</td>
<td></td>
</tr>
<tr>
<td>External</td>
<td>4.00</td>
<td>5.05</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>(1.67)</td>
<td>(.91)</td>
</tr>
<tr>
<td>n=11</td>
<td>n=19</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Higher means indicate higher attributions. Numbers in parentheses are standard deviations*
RESULTS

Manipulation Checks

A manipulation check on responsibility framing was performed to ensure the effectiveness of the intended manipulations. One manipulation check question was used with higher scores reflecting a greater degree of perceived social responsibility, and lower scores indicating a greater degree of perceived individual responsibility. As expected, the mean for the manipulation check variable was greater in the social framing condition \((M = 4.11, SD = 1.83)\) than in the individual framing condition \((M = 2.95, SD = 1.50)\), and these means differed significantly, \(F(1,162) = 19.58, p < .001.\)

Hypotheses Testing

H3 and H4 predicted an interaction effect of primed locus of control, message framing and cognitive load on message persuasiveness. Persuasiveness was measured by two variables, Attitude Toward the PSA and Behavior Intention. An Attitude Toward the PSA Index was created by averaging the 7 items \((\alpha = .85)\). Four items were averaged to create a Behavior Intention Index \((\alpha = .91)\) (see Appendix E)

To investigate the predicted interaction, a three-way Multivariate Analysis of Variance (MANOVA) was performed, with the primed locus of control, message framing, and cognitive load as independent variables, and attitude and behavioral intention as dependent variables. There were no significant main effects of primed internal locus of control \((p = .07\) for attitude, \(p = .47\) for intention), message framing \((p = .69\) for attitude, \(p = .72\) for intention), or cognitive load \((p = .07\) for attitude, \(p = .07\) for intention),
effect, Wilks’s lambda = .99, $F(2, 155) = .15, p = .86$. However, there was a significant interaction between priming and framing, Wilks’s lambda = .96, $F(2, 155) = 3.18, p < .05$.

Further a univariate analysis was performed on Attitude and Behavioral Intention, respectively. First, a 2 (Priming: internal vs. external) x 2 (Responsibility Framing: individual vs. social) ANOVA was conducted on Attitude toward PSA Index. The results of the 2 x 2 between-subjects analysis of variance yielded a significant interaction effect, $F(1, 160) = 6.08, p < .05$. Specifically, participants primed with internal locus of control scored higher when exposed to individual-responsibility framed message ($M = 4.99, SD = .68$) than when exposed to social-responsibility framed message ($M = 4.70, SD = .93$). In contrast, participants primed with external locus of control scored higher when exposed to a social-responsibility framed message ($M = 5.25, SD = .84$) than when exposed to an individual responsibility framed message ($M = 4.87, SD = 1.02$) (see Table 8 and Figure 2).
**TABLE 8**

Attitude Means, Behavior Intention Means
as a function of Message Frame and Primed Locus of Control

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Individual Frame</th>
<th>Social Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primed Internal</td>
<td>Primed Internal</td>
</tr>
<tr>
<td></td>
<td>Primed External</td>
<td>Primed Internal</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>Locus of Control</td>
<td>Locus of Control</td>
</tr>
</tbody>
</table>

|                     | n=43             | n=40           | n=36           | n=45           |
| Attitude Toward the PSA | 4.89 (.70)       | 4.86 (1.03)    | 4.66 (.96)     | 5.20 (.83)     |
| Behavior Intention  | 4.70 (1.35)      | 4.13 (1.45)    | 4.35 (1.18)    | 4.63 (1.32)    |

*Note. Higher means indicate more positive attitude or stronger behavior intentions. Numbers in parentheses are standard deviations.*
FIGURE 2

Interaction of Prime and Frame on Attitude Toward the PSA

- Internal Prime
- External Prime

Message Framing

Attitude
FIGURE 3

Interaction of Prime and Frame on Behavior Intention

Behavior Intention

- Internal Prime
- External Prime

Message Framing

Individual  Social
Second, a 2 (Priming: internal vs. external) x 2 (Responsibility Framing: individual vs. social) ANOVA test was conducted on the Behavior Intention Index. The results of a 2 x 2 between-subjects analysis of variance yielded a significant interaction effect, $F (1, 160) = 4.23, p < .05$. Specifically, participants primed with internal locus of control scored higher in their behavior intentions when exposed to an individual framed message ($M = 4.70, SD = 1.34$) than when exposed to a social framed message ($M = 4.35, SD = 1.17$). In contrast, participants primed with external locus of control scored higher in their behavior intentions when exposed to a social framed message ($M = 4.63, SD = 1.31$) than when exposed to an individual framed message ($M = 4.12, SD = 1.45$) (see Table 8 and Figure 3). Therefore, hypotheses 3 and 4 were partially supported.

 Supplementary Analysis

 Cognitive Load

 In the main study, cognitive load was not found to be a significant moderator for the interaction between priming and framing. In order to make sure that the cognitive load manipulation was effective, those who were in the high load condition but did not remember all the 8-digital numbers were eliminated from further data analysis. For the rest of the data, a 2 (priming) x 2 (framing) x 2 (cognitive load) MANOVA test was performed on the Attitude Index and the Behavioral Intention Index. The test yielded no significant results, Wilks’s lambda = .99, $F (2, 124) = .076$, $p = .92$.  

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**Covariate**

In order to examine the confounding influence of gender, additional tests (MANOVAS) were performed on the Attitude variable and Behavioral Intention with gender as a covariate. Results indicated that the two way interaction remained significant for both Attitude ($F(1, 155) = 4.31, p < .05$) and Behavioral Intention ($F(1, 155) = 4.09, p < .05$). Therefore, gender did not confound the impact of primed locus of control and message framing on both Attitude and Behavioral intention.

**Mediators**

A series of regression analyses were also performed to test the mediating role of ease of processing, message credibility and message involvement, with primed locus of control and message framing as independent variables, and with attitude and behavioral intention as dependent variables.

Regression analysis was first performed on the attitude variable. The first requirement of a mediation process is to demonstrate the relationship between the interaction of priming and framing, and its impact on attitude. The results showed this relationship was significant ($\beta = .86, t = 2.5, p < .05$). The second requirement is that the interaction of the priming and framing account for variability in the mediators. This relationship was significant for message credibility ($\beta = .89, t = 2.52, p < .05$), message involvement ($\beta = .83, t = 2.35, p < .05$), but not significant for ease of processing ($\beta = .28, t = .80, p = .43$). The third requirement was to demonstrate the relationship between the message credibility/message involvement and attitude. The relationship was significant for credibility ($\beta = .76, t = 14.67, p < .05$) and
involvement (β = .71, t = 13.09, p < .05). These results indicated that the mediators did carry the influence of the independent variables to the attitude variable (see Figure 4).

Figure 4

Note: * p < .05; the number below the dotted line is the regression coefficient after controlling for the mediators.

A similar analysis was performed on the behavior variable. The results showed the relationship between the interaction of priming and framing, and behavioral intention was significant (β = .73, t = 2.06, p < .05). Moreover, the relationship between the independent variables and the mediators was significant for message credibility (β = .89, t = 2.52, p < .05), message involvement (β = .83, t = 2.35, p < .05), but not significant for ease of processing (β = .28, t = .80, p = .43). Finally, the relationship between the mediators and the behavioral intention variable was significant for credibility (β = .43, t = 6.04, p < .05) and involvement (β = .66, t =
11.30, $p < .05$). These results indicated that the message credibility variable and message involvement variable also mediated the influence of the interaction of priming and framing on behavioral intention (see Figure 5).

**Figure 5**

Note * $p < .05$; the number below the dotted line is the regression coefficient after controlling for the mediators.

**Perceived Responsibility**

Independent t-tests were also conducted on the perceived responsibility attribution as in Experiment 1. Those were not in the hypotheses, but it would be useful to make a comparison between the two conditions.

A t-test examining the main effect of priming indicated that participants who were primed in internal locus of control were more likely to attribute individual responsibilities ($M = 5.81, SD = 1.06$) than those who were primed in external locus of control ($M = 5.71, SD = 1.05$), yet the difference was not significant, $t = .59$, ...
There was no main effect on social responsibility either, $t = 1.37, p = .17$.

Results of another t-test on the main effect of framing yielded no significant effect on perceived individual responsibility and perceived social responsibility.

**DISCUSSION**

Past research exploring the effect of locus of control and congruent message framing on attitude and behavior has provided us with a good understanding of how people approach health campaigns or programs congruent with their chronic locus of control (e.g., Williams, 2004). However, what has been lacking in the research is a discussion with respect to whether this effect would occur for a temporarily accessible locus of control construct. This experiment specifically explored the effect of primed locus of control and message frame in determining a campaign evaluation and behavioral intentions. The results of this study offered evidence that message frames can be moderated by temporarily primed locus of control.

Specifically, the second experiment demonstrated that locus of control can be temporarily primed by asking people to engage in causal thinking. The causal thinking on other issues can have a carry-over effect on how people think about the issue of obesity. Furthermore, it found that there was a congruity effect between the primed locus of control and responsibility framing on people’s attitude to and behavior intention for the issue of obesity. This effect was found for individuals in both high and low cognitive load conditions.

Although some studies have shown that cognitive load moderates self-message congruity effects, this study did not detect such a relationship. In the
current study, when cognitive load was high, participants relied on primed locus of control to process the following information and demonstrated a congruent effect. However, when cognitive load was low, the congruent effect still existed. One possible explanation is that participants might not have been motivated to process the information in general in this study. According to Markus and Zajonc (1985), a self-congruency effect is more likely to occur when an individual’s motivation or cognitive capacity is constrained. When the level of processing motivation is low, persuasion is more likely to be determined by simple heuristics than by a careful scrutiny of the message claims. When the level of processing motivation is high, people are likely to engage in systematic processes where they scrutinize the claims in greater detail. They care more about making accurate judgments (Shiv et al., 2004).

For the current study, participants were recruited to gain extra credit for their courses. Participation, instead of quality of participation, was used as the requirement for extra credit. Regardless of cognitive capacity, people with low motivation tend to process information heuristically. Therefore, it appears that both cognitive load and motivation have to be met simultaneously to make a congruency effect possible.

Although this experiment did not find moderators of the interaction effect of priming and framing, supplementary analyses found two mediators of the process. That is, the congruity relationship between priming and framing has an impact on attitude and behavioral intention by influencing message involvement and perceived message credibility.
CHAPTER FIVE

GENERAL DISCUSSIONS

SUMMARY

In an effort to inform and persuade individuals to take proactive actions in preventing being overweight or obese, health educators or communicators traditionally have developed uniform health materials focusing either on personal responsibility or social responsibility for the general population. Although these standard materials provide important information to recipients, they do not take into account individual differences in psychological characteristics that could influence individuals’ decisions to engage in health-related behaviors. The objective of this research was to determine the dynamic relationship between chronic and temporary locus of control and responsibility-framed messages.

Overall, the present findings underscore that preexisting locus of control is an important factor in developing obesity prevention campaigns. Generally speaking, individuals with high internal chronic locus of control were more persuaded by individual-responsibility framed messages than by social-responsibility framed messages, but only when their chronic external locus of control was low (Experiment 1). As for temporarily accessible locus of control, individuals primed with an internal locus of control were more persuaded by individual-responsibility framed messages than by social-responsibility framed messages. Similarly, individuals primed with external locus of control were more persuaded by social-responsibility framed messages than by individual-responsibility framed messages (Experiment 2).
In addition, previous studies have suggested that there is a high correlation between perceived causality and assignment of responsibility (Shafer, 2001), so it is expected that preexisting locus of control should lead to congruent responsibility attributions on the same issue. The two experiments also examined the main effect of locus of control on responsibility attributions. Experiment 1 found a significant main effect of chronic internal locus of control. Participants with high chronic internal locus of control were more likely to attribute individual responsibility for obesity prevention. Participants with high chronic external locus of control also showed a pattern of more attribution of social responsibility for obesity prevention. However, Experiment 2 did not find temporary locus of control to have main effect on perceived responsibility on obesity prevention.

The lack of a significant main effect of primed locus of control may be attributed to two reasons. First, according to Higgins et al. (1985), primed constructs decay when there is a longer duration between the time when the construct was primed and when the judgment was made. In Experiment 2, the questions measuring perceived responsibilities were placed near the end of a four page questionnaire. Possibly, at the time when participants started working on those questions, the accessibility of primed locus of control had already decreased. As a result, participants would rely on their chronic locus of control to make their judgments. The experimenter did not measure participants’ chronic locus of control in the second experiment.
IMPLICATIONS

Theoretical Implications

This study extends research on tailoring health messages from a traditional approach relying on prospect theory, such as gain-loss framing research, to a new approach relying on attribution theory. Under the umbrella of attribution theory, health issues can be explored in a larger social, cultural, and environmental context.

Moreover, to the best of the experimenter’s knowledge, the present research is the first to manipulate rather than measure the construct of locus of control in health message effectiveness research, and also empirically to demonstrate its moderating role in message framing effects when shaping health behavior intentions. In addition, in the process of priming, the design also took into consideration the possible interaction of chronic locus of control and primed locus of control. Although chronic locus of control was not measured directly in the second study, previous studies have demonstrated that in conditions in which the priming is different from what is chronically accessible, self-related values are shifted towards the primed conditions (Higgins, 1985). For example, in a study of self-construal, Gardner et al. (1999) found that members of a culture that chronically encourages an independent self-construal, shifted their values to reflect relatively more relationship- and group- enhancing goals in response to an interdependent prime. Participants in a culture that chronically encourages interdependent self-construal shifted their value endorsements to reflect relatively more individualistic goals when primed with independence. In contrast, members of a culture that chronically encourages an independent self-construal
remained unaffected by the independence prime, while participants in a culture that chronically encourages interdependent self-construal remained unaffected by the interdependence prime. This is because, according to Bargh et al. (1986), when chronic and temporary constructs are consistent to each other, the two independent sources of accessibility combine in an additive fashion.

**Practical Implications**

The findings have important implications for health campaigns and program development. As suggested by the two studies in this research, message developers should take two factors into consideration when designing health messages. One is the target audience’s locus belief; the other is contextual information in which the message will be inserted. When an individual’s locus belief and contextual information are consistent (both are internal or both are external), then the message should be designed to match the locus orientation. When the individual’s locus belief and the contextual information are inconsistent to each other (one is internal and the other is external), this study has shown that contextual information will dominate over chronic locus belief in the immediate evaluation of the health message. Therefore, the health message should be designed to match the contextual information instead of the audiences’ chronic locus belief.

How might this occur? Message designers might tailor health information to specific group characteristics (e.g., ethnic background, cultural beliefs), especially among those who are high in chronic internal locus of control, as suggested by Experiment 1. For example, people in individualistic cultures tend to attribute causes
to individuals while people in collectivistic cultures tend to have an external locus of control (Morris and Peng, 1994). This study confirmed this argument with the fact that there were more individuals with high chronic internal locus of control than individuals with high chronic external locus of control (see Table 2). Therefore, health communicators may want to consider using more individual responsibility framed messages than social responsibility framed messages in individualistic cultures.

Message developers might also want to take contextual information into consideration, as suggested by Experiment 2. It can be argued that media coverage of health issues has the potential to activate particular attributions. Specifically, media framing of issue information—by highlighting some dimensions of issues while excluding other aspects—seems likely to foster priming effects. As Scheufele (2004) suggested, relational representations of the recipients’ ideas of the causes of a health issue can be conceived as a causal link between schema nodes in a cognitive network. If the media repeatedly highlight certain causal explanations, recipients’ chronic locus of control may diminish for the benefit of a new causal link being suggested by media-framing.

In addition, coverage style can also prime locus of control. For example, Iyengar (1991) found that episodic framing tends to lead to an internal attribution while thematic framing tend to lead to external attribution. Studies have shown that television tends to use an episodic portrayal for image presentations, while print media tend to use a thematic portrayal because of a great amount of space for complex presentation of information (Smith, 2001). These facts provide useful
information for media planners when they choose a media platform for their clients. Based on the above analysis, media planners might want to consider the possibility that individual-responsibility-framed messages would be more effective on television than in newspapers while social-responsibility-framed messages would be more effective in newspapers than on television.

**Methodological Implications**

Although Experiment 1 conceptually replicates past findings regarding the critical role of chronic locus of control on message framing effects (e.g., Williams-Piehota et al., 2004), this study is the first to use the two-dimension health scales to measure the unique constructs of internal and external locus of control.

An Internal-External (I-E) unidimensional scale designed by Rotter (1966) has been used in many studies to assess an individual’s causal beliefs. While one may refer to an individual as appearing to be either internal or external, Rotter’s scale in fact is a continuum upon which scores are assigned to examine internalization. Any dividing point along this scale is somewhat arbitrary. Therefore, the division between internal and external attributions depends on the nature of the sample studied.

Measuring the two constructs separately has two merits. First, a two-dimensional scale is consistent with their theoretical meanings. Theoretically, internal locus of control and external locus of control can co-exist. In the current sample, internal and external locus of control co-exists in all individuals with differentiating levels. In this study, about 35 percent of participants had both high internal and high external locus of control, while about 24 percent had both low
internal and low external locus of control. The correlation test between the two constructs was also in support of the theoretical distinction between the two constructs ($r = .076, p = .41$). Second, a two-dimensional scale allows us to investigate the interaction between internal level and external level within the subject, which is impossible via a unidimensional scale.

This study also provides the first empirical evidence that temporary accessible locus of control can moderate the message framing effect. The second experiment relied on carry-over effects of the primed locus of control to assess persuasiveness of message framing. Future research is needed to examine how different manipulations of locus of control may reveal similar or different results. Iyengar’s (1991) episodic and thematic portrayal of message and Kelley’s (1967) combination of distinctive, consistent and consensus information can be used as priming techniques.

Mediation analyses indicated that the interaction effects of priming and framing on attitude and behavioral intention were mediated by message involvement and perceived message credibility. However, this study did not look at other measures such as open-ended responses that may provide more insight into how people process health messages. Future studies might want to include those measures.

LIMITATIONS AND SUGGESTIONS

First, as with any study, this research may have limits on the generalization of the results. With its convenience sample—undergraduate students from communication and marketing classes, some groups (e.g., students with other majors, less educated individuals, certain ethnic groups) were not represented in the study. As
a result, this type of investigation should be replicated with a more representative sample.

Second, it is possible that this experimental method has oversimplified the nature of obesity locus of control. In many situations, perceived locus of control of a health issue may include elements other than individuals and society, such as, parents, fate, or luck. Future research should explore all possible attributions. There are also measurement limitations in that the internal/external scales showed somewhat low internal reliability.

Third, despite the evidence that tailoring health messages can increase effectiveness, it remains unclear when tailoring works. This current study attempted to identify conditions under which the congruity effect may occur, but be unsuccessful. Most studies have examined only the effects of tailoring on behavioral outcomes, without assessing potential moderators. To maximize the effectiveness and efficiency of this approach, we must learn more about the conditions under which it is most effective. This study provides the first empirical explanation for the variability in the effectiveness of responsibility-framed messages for both chronic and primed locus of control. Hopefully, it will stimulate others to examine new characteristics that might further expand our understanding of this promising approach.

Finally, it would be beneficial to replicate this type of investigation with other health issues in which responsibility-framed materials have been used, such as binge drinking, recycling, violence, and poverty. Previous studies have suggested that psychological tailoring may be particularly effective for certain types of health
behavior. For example, Latimer et al. (2005) found that materials congruent with individuals’ health locus of control were more persuasive than discordant materials for promoting mammography, but less effective for promoting fruit and vegetable consumption. Therefore, systematic research in this area is needed to determine whether specific health issues might be a moderator for those matching effects.
REFERENCES


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In G. Lindzey & E. Aronson (Eds.), Handbook of social psychology (pp. 137-230). New York: Random House.


Wallis, C. (2004, June 7). The obesity warriors: What will it take to end this epidemic? These experts are very glad you asked. TIME, 76-89.


Hillsdale, NJ: Lawrence Erlbaum.


Note

1 http://cancercontrol.cancer.gov/5ad_1_intro.html

2 http://feedmebetter.com

3 http://www.whitehouse.gov/infocus/fitness/

4 http://www.jamieoliver.com/schooldinners/
APPENDIX A
Experiment 1
Online Recruit Survey
(Chronic Locus of Control Measurement)

Page 1
We are looking for participants for a health improvement study, which will take place in
the next two weeks. You will receive extra credit for participation.
If you are interested, please click “Next”
Thanks.

Page 2
We need your name so you will get proper credit for the experiment in which you
participate.
First Name___________________________
Last Name_____________________________

Please provide an email address we can use to contact you about this experiment. Please note
that we will keep the email address you provide confidential and
only use it to contact you about this research study.
Email

Page 3
Before you are able to sign-up for this experiment, please complete this mini survey. We
would like to know your general attitudes to nutrition and overweight. It is important to
answer all questions honestly. Your response is kept in the database with no reference to
your name.

*1. On average, I eat enough fruits and vegetables.

1 2 3 4 5 6 7
Strongly Disagree
Strongly Agree

*2. I use supplements or single nutrient vitamins to enhance my health.

1 2 3 4 5 6 7
Strongly Disagree
Strongly Agree
3. There is so much fattening food around that losing weight is almost impossible.

1  2  3  4  5  6  7  
Strongly Disagree  Strongly Agree

4. Unsuccessful dieting is due to lack of effort.

1  2  3  4  5  6  7  
Strongly Disagree  Strongly Agree

5. People who are overweight lack the willpower necessary to control their weight.

1  2  3  4  5  6  7  
Strongly Disagree  Strongly Agree

6. People are obese because there is too much unhealthy and fatty food in restaurants and supermarkets.

1  2  3  4  5  6  7  
Strongly Disagree  Strongly Agree

Page 4
Please select one session that you will be available to participate. Write down the session number in the following box. (please also write down the date/time/location in your notebook). Then, click “Next”.

Page 5
Thank you!
Please show up to the experiment on time. If you have general questions about this experiment, please contact Ying Kong at yxk172@psu.edu.

(*NOTE: The first two questions were used to hide the purpose of the main study).
APPENDIX B
RESPONSIBILITY FRAME MANIPULATION

(Individual-Responsibility Frame)

HEALTHY EATING

Promoting a Healthy Eating Habit

- Fast food and college life go together like a burger and fries.
- The prevalence rate of obesity in college students has doubled over the past 10 years.
- Studies have shown that individuals can make a difference in the fight against obesity.

What Can You Do?

Small Steps. Big Rewards

- Select meats or poultry that are baked, broiled, or grilled items rather than fried.
- For a beverage, choose water, fat free milk, limit soda and fruit drinks (They contain excess sugar, which adds empty calories).
- Choose low calorie condiments such as vinegar, mustard, lemon juice, or jelly instead of mayonnaise, butter, and cream cheese, which can add 100 calories to the meal with just one tablespoon.
- Include foods such as whole grain cereal or bread, vegetables and fruit which will add fiber.

Is there a connection between fast food and obesity?
The answer to the above question is a big YES! Fast food and obesity are closely linked. Studies have shown that fast foods are very high in energy density (the amount of calories different foods contain weight for weight) and these high density foods can cause people to accidentally eat more calories than they need. A typical fast food meal has an energy density 150% more than an average traditional meal. A fast food meal contains many more calories than a similarly sized portion of a healthy meal. Fast foods also contain high amounts of sodium (salt), oil, refined sugar and refined flour which are not good for the body.

Your Determination and Effort Will be Most Important in Keeping Obesity Away!

For more information on developing a healthy eating habit, please visit our website at www.nutrition-education.org.
Promoting a Healthy Eating Environment

- Fast food and college life go together like a burger and fries.
- The prevalence rate of obesity in college students has doubled over the past 10 years.
- Studies have shown that fast food restaurants can make a difference in the fight against obesity.

What Can Fast Food Restaurants Do?

**Small Steps. Big Rewards**

- Offer smaller portions
- Provide meats or poultry that are baked, broiled, or grilled items rather than fried
- Provide low calorie condiments such as vinegar, mustard, lemon juice, or jelly instead of mayonnaise, butter, and cream cheese, which can add 100 calories to the meal with just one tablespoon.
- Include foods such as whole grain cereal or bread, vegetables and fruit which will add fiber.
- Provide calorie content and general nutrition information on the menu

Fast Food Restaurants’ Determination and Effort Will be Most Important in Keeping Obesity Away!

Is there a connection between fast food and obesity?

The answer to the above question is a big YES!

Fast food and obesity are closely linked. Studies have shown that fast foods are very high in energy density (the amount of calories different foods contain weight for weight) and these high density foods can cause people to accidentally eat more calories than they need.

A typical fast food meal has an energy density 150% more than an average traditional meal. A fast food meal contains many more calories than a similar-sized portion of a healthy meal. Fast foods also contain high amount of sodium (salt), oil, refined sugar and refined flour which are not good for the body.

For more information on developing a healthy eating environment, please visit our website at www.nutrition-education.org.
APPENDIX C
EXPERIMENT 1 QUESTIONNAIRE

INSTRUCTIONS

In this study, you will be asked to evaluate a rough draft of a Public Service Announcement (PSA). After reading the PSA, you will be asked to complete a series of questions that will help us understand your opinions on it.

Please complete every question. It is very important that you do not skip any questions. Your careful consideration of each question will be very much appreciated in this important study.

(Please do not look back at the PSA while you are answering the questions about it.)

Please turn over to read the PSA
In this section, we want your opinion about the PSA you’ve just seen. Please do not go back to previous pages.

1. Based on the PSA you have read, how much do you agree or disagree with the following statements? Please indicate your opinion by circling an appropriate number.

- It aroused my attention
- It makes me think about obesity
- It makes me consider the harm of eating unhealthy food
- It makes me think about prevention of obesity
- It reminds me of the importance of eating healthy.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

2. Please indicate your overall evaluation of the PSA by circling the appropriate number on each of the following lines:

- Unfavorable
- Uninformative
- Unpleasant
- Not useful
- Boring
- Not impactful
- Unpersuasive
- I would definitely not recommend that the PSA be published in a regional magazine

<table>
<thead>
<tr>
<th>Unfavorable</th>
<th>1 2 3 4 5 6 7</th>
<th>Favorable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninformative</td>
<td>1 2 3 4 5 6 7</td>
<td>Informative</td>
</tr>
<tr>
<td>Unpleasant</td>
<td>1 2 3 4 5 6 7</td>
<td>Pleasant</td>
</tr>
<tr>
<td>Not useful</td>
<td>1 2 3 4 5 6 7</td>
<td>Useful</td>
</tr>
<tr>
<td>Boring</td>
<td>1 2 3 4 5 6 7</td>
<td>Interesting</td>
</tr>
<tr>
<td>Not impactful</td>
<td>1 2 3 4 5 6 7</td>
<td>Very impactful</td>
</tr>
<tr>
<td>Unpersuasive</td>
<td>1 2 3 4 5 6 7</td>
<td>Persuasive</td>
</tr>
<tr>
<td>I would definitely not recommend that the PSA be published in a regional magazine</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

3. Please rate your assessment of the information contained in the PSA by circling the appropriate number on the following lines

- Not at all convincing
- Not at all credible
- Difficult to process
- Difficult to comprehend

| Not at all convincing | 1 2 3 4 5 6 7 | Very convincing |
| Not at all credible | 1 2 3 4 5 6 7 | Very credible |
| Difficult to process | 1 2 3 4 5 6 7 | Easy to process |
| Difficult to comprehend | 1 2 3 4 5 6 7 | Easy to comprehend |
4. Please indicate your level of agreement with each of the following statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I feel the need to engage in more eating healthy behaviors after reading the PSA</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>• I want to learn more about eating healthy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>• I want to gather more information about eating healthy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>• I want to change my behavior with respect to eating healthy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

5. Now we would like to ask you some general questions about obesity. For each of the following questions, could you tell us to what degree you agree or disagree?

1. Too much advertising for fast food on television is a substantial cause of obesity.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

2. Unsuccessful dieting is due to lack of effort by individuals.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

3. Unsuccessful dieting is due to too much unhealthy and fatty food in fast food restaurants.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

4. People who are overweight lack the willpower necessary to control their weight.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

5. In order to reduce obesity among young adults, we should eliminate fast food from our public schools.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

6. By restricting what one eats, one can lose weight.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
(7) The government should impose a snack taxes on unhealthy food and use the proceeds to support the production and distribution of nutritious foods.

1  2  3  4  5  6  7
Strongly Disagree Strongly Agree

(8) People will be most successful in dieting if they make healthy food choices.

1  2  3  4  5  6  7
Strongly Disagree Strongly Agree

6. Would you say that the PSA you’ve just seen focused more on the individual responsibility to solve the problem of obesity or the social responsibility to solve the problem of obesity? (Please circle a number below.)

Individual Responsibility 1-------2-------3-------4-------5-------6-------7 Social Responsibility

7. Finally, we have a few background questions.

What is your gender? (1) Male __________ (2) Female __________

What is your grade level?
(1) Freshman _______ (2) Sophomore ___________ (3) Junior __________
(4) Senior _______ (5) Other (please specify) __________

How do you describe your ethnic background?
(1) Caucasian _______ (2) African-American ______ (3) Asian________
(4) Hispanic _______ (5) Native American ______
(6) Other (please specify) __________

Have you completed this survey before?
1. Yes 2 No.

Thank you for your participation!
APPENDIX D
PRIMING PRETEST

(Individual Priming)

Section A.

Broadly speaking, social issues include poverty, high rates of crime, and lack of access to quality health care, as well as racism and racial segregation. These issues continue to exist in the United States despite the creation of one of the strongest economic systems in history.

Surveys of the public in a range of Western countries have shown a predominant belief in individual responsibility for causing these problems. However, there has been little research regarding what those individual causes are for specific issues. Here we are interested in knowing your opinion on them.

What do you think are the most important individual cause for each of the following social issues? Please write your answers on the lines provided below.

(1) Poverty

Individual Cause: ________________________________

(2) Violence

Individual Cause: ________________________________

(3) Binge Drinking

Individual Cause: ________________________________
Section B.

During the past 20 years, obesity has risen significantly in the United States. Here we want to know your opinion on this issue.

Please indicate on a 7 scale, how much do you agree or disagree with the following statements.

(1). The society (e.g. fast food marketers) is responsible for causing the obesity epidemic.

1 2 3 4 5 6 7
Strongly Disagree

(2). Obese individuals are responsible for causing the obesity epidemic.

1 2 3 4 5 6 7
Strongly Disagree

Section C.

This part is to get some information about yourself. Please mark the appropriate answer.

1. What is your gender? (1) Male (2) Female

2. What is your age? _______ years

3. What is your major? _______

4. What is your grade level?
   (1) Freshman (2) Sophomore (3) Junior
   (4) Senior (5) Other (please specify) _______

5. How do you describe your ethnic background?
   (1) Caucasian (2) African-American (3) Asian
   (4) Hispanic (5) Native American
   (6) Other (please specify) _______

This is the end of study.
Thank you for your time and cooperation!
(Social Priming)

Section A.

Broadly speaking, social issues include poverty, high rates of crime, and lack of access to quality health care, as well as racism and racial segregation. These issues continue to exist in the United States despite the creation of one of the strongest economic systems in history.

Surveys of the public in a range of Western countries have shown a predominant belief in social responsibility for causing these social problems. However, there has been little research regarding what those social causes are for specific issues. Here we are interested in knowing your opinion on them.

What do you think are the most important social cause for each of the following social issues? Please write your answers on the lines provided below.

(1) Poverty

Social Cause: ________________________________

(2) Violence

Social Cause: ________________________________

(3) Binge Drinking

Social Cause: ________________________________
Section B.
During the past 20 years, obesity has risen significantly in the United States. Here we want to know your opinion on this issue.

Please indicate on a 7 scale, how much do you agree or disagree with the following statements.

(1) The society (e.g. fast food marketers) is responsible for causing the obesity epidemic.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

(2) Obese individuals are responsible for causing the obesity epidemic.

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Section C.
This part is to get some information about yourself. Please mark the appropriate answer.

1. What is your gender?  (1) Male __________ (2) Female __________

2. What is your age? __________ years

3. What is your major? __________

4. What is your grade level?

(1) Freshman __________ (2) Sophomore __________ (3) Junior __________

(4) Senior __________ (5) Other (please specify) __________

5. How do you describe your ethnic background?

(1) Caucasian __________ (2) African-American __________ (3) Asian __________

(4) Hispanic __________ (5) Native American __________

(6) Other (please specify) __________

This is the end of study.
Thank you for your time and cooperation!
APPENDIX E
EXPERIMENT 2 QUESTIONNAIRE
(Individual Prime + Load Condition)

Welcome to Our Research Study!

You will be participating in two unrelated studies. The purpose of the first study is to examine college students’ perception of a series of social issues. The purpose of the second study is to evaluate a rough draft of a Public Service Announcement. Please read instructions carefully before you start answering the questions.

Please complete every question. It is very important that you do not skip any questions. Your careful consideration of each question will be very much appreciated in this important study.
Section A.

Broadly speaking, social issues include poverty, high rates of crime, and lack of access to quality health care, as well as racism and racial segregation. These issues continue to exist in the United States despite the creation of one of the strongest economic systems in history.

Surveys of the public in a range of Western countries have shown a predominant belief in individual responsibility for causing these problems. However, there has been little research regarding what those individual causes are for specific issues. Here we are interested in knowing your opinion on them.

What do you think are the most important individual cause for each of the following social issues? Please write your answers on the lines provided below.

(1) Poverty

Individual Cause: ____________________________________________

(2) Violence

Individual Cause: ____________________________________________

(3) Binge Drinking

Individual Cause: ____________________________________________
Section B.
This part is to get some information about yourself. Please mark the appropriate answer.

1. What is your gender?       (1) Male __________   (2) Female __________
2. What is your age?          __________      years
3. What is your major?        __________
4. What is your grade level?
   (1) Freshman __________      (2) Sophomore __________   (3) Junior __________
   (4) Senior __________       (5) Other (please specify) __________
5. How do you describe your ethnic background?
   (1) Caucasian __________   (2) African-American __________ (3) Asian __________
   (4) Hispanic __________    (5) Native American __________
   (6) Other (please specify) __________

This is the end of study 1.  
Thank you for your time and cooperation!
Study 2

In this study, you will be asked to evaluate a rough draft of a Public Service Announcement (PSA). After reading the PSA, you will be asked to complete a series of questions that will help us understand your opinion on it.

While reading the PSA and filling out the survey, please remember the following eight-digit numbers:

3-5-8-2-9-4-9-8

Please hold this number in memory and you will be required to report this number at the end of this task.

(Please do not look back at previous pages while you are answering the questions)

Please turn over to read the PSA.
In this section, we want your opinion about the PSA you’ve just seen. Please do not go to previous pages.

1. Based on the PSA you have read, how much do you agree or disagree with the following statements? Please indicate your opinion by circling an appropriate number.

- It aroused my attention
- It makes me think about obesity
- It makes me consider the harm of eating unhealthy food
- It makes me think about prevention of obesity
- It reminds me of the importance of eating healthy.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>It aroused my attention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It makes me think about obesity</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>It makes me consider the harm of eating unhealthy food</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>It makes me think about prevention of obesity</td>
<td></td>
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<td></td>
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<tr>
<td>It reminds me of the importance of eating healthy.</td>
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<td></td>
</tr>
</tbody>
</table>

2. Please indicate your overall evaluation of the PSA by circling the appropriate number on each of the following lines:

- Unfavorable 1 2 3 4 5 6 7 Favorable
- Uninformative 1 2 3 4 5 6 7 Informative
- Unpleasant 1 2 3 4 5 6 7 Pleasant
- Not useful 1 2 3 4 5 6 7 Useful
- Boring 1 2 3 4 5 6 7 Interesting
- Not impactful 1 2 3 4 5 6 7 Very impactful
- Unpersuasive 1 2 3 4 5 6 7 Persuasive
- I would definitely not recommend that the PSA be published in a regional magazine 1 2 3 4 5 6 7 I would definitely recommend that the PSA be published in a regional magazine
3. Please rate your assessment of the information contained in the PSA by circling the appropriate number on the following lines

<table>
<thead>
<tr>
<th>assessment</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all convincing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all credible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult to process</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult to comprehend</td>
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</tr>
</tbody>
</table>

4. Please indicate your level of agreement with each of the following statement.

<table>
<thead>
<tr>
<th>statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel the need to engage in more eating healthy behaviors after reading the PSA</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I want to learn more about eating healthy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I want to gather more information about eating healthy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I want to change my behavior with respect to eating healthy</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

5. Now we would like to ask you some general questions about obesity. To each of the following questions, could you tell us to what degree you agree or disagree?

(1). Too much advertising for fast food on television is a substantial cause of obesity.

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

(2). Unsuccessful dieting is due to lack of effort by individuals.

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

(3). Unsuccessful dieting is due to too much unhealthy and fatty food in fast food restaurants.

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

(4). People who are overweight lack the willpower necessary to control their weight.

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>
5. In order to reduce obesity among young adults, we should eliminate fast food from our public schools.

1  2  3  4  5  6  7
Strongly Disagree  Strongly Agree

6. By restricting what one eats, one can lose weight.

1  2  3  4  5  6  7
Strongly Disagree  Strongly Agree

7. The government should impose a snack taxes on unhealthy food and use the proceeds to support the production and distribution of nutritious foods.

1  2  3  4  5  6  7
Strongly Disagree  Strongly Agree

8. People will be most successful in dieting if they make healthy food choices.

1  2  3  4  5  6  7
Strongly Disagree  Strongly Agree

6. Would you say that the PSA focused more on the individual responsibility to solve the problem of obesity or the social responsibility to solve the problem of obesity? (Please circle a number below.)

Individual Responsibility  Social Responsibility
1--------2--------3--------4--------5--------6--------7

7. Please write down the eight-digit number you remembered (do not return to previous pages).

8. Please evaluate your experience while you were reading the PSA and answering questions.

- I was able to pay full attention to the PSA and following questions.

- It was easy for me to concentrate on the PSA and following questions.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4  5  6  7</td>
<td>1  2  3  4  5  6  7</td>
</tr>
</tbody>
</table>

Thank you for your participation in this study!
VITA

Ying Kong

EDUCATION

Ph. D. in Mass Communication, Penn State University, December 2007
M. A. in Mass Communication, Louisiana State University, 2003
B. S. in Urban and Regional Planning, Beijing Normal University, China, 1997

TEACHING EXPERIENCE

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PUBLICATION


CONFERRENCE PAPERS

