

TOO MUCH SUGAR? THE ROLE OF REGULATORY FOCUS, CONSIDERATION OF
FUTURE CONSEQUENCES, AND PROCESSING FLUENCY IN THE EFFECTS OF AD
FRAMING ON THE INTENTION TO CONTROL SUGAR INTAKE

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ABSTRACT

TOO MUCH SUGAR? THE ROLE OF REGULATORY FOCUS, CONSIDERATION OF FUTURE CONSEQUENCES, AND PROCESSING FLUENCY IN THE EFFECTS OF AD FRAMING ON THE INTENTION TO CONTROL SUGAR INTAKE

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Previous research has shown that in the United States, 30%–40% of healthcare expenditures are closely related to the excess consumption of sugar. The World Health Organization (WHO) is urging people to reduce the amount of sugar they eat. Thus, developing effective messages to persuade individuals to limit their sugar intake is urgent.

The present research was aimed at investigating the effectiveness of advertising on people's intention to lower sugar intake. Specifically, six types of ad framing were examined (gain vs. loss vs. neither gain nor loss framing $\times$ narrative vs. non-narrative framing). Moreover, the moderation roles of regulatory focus (promotion focus vs. prevention focus) and consideration of future consequences (CFC: high vs. low) between the relationship of ad framing and people's sugar intake intention were explored. In addition, processing fluency was tested as a mediator.

The results showed that narrative neither gain- nor loss-framed advertising was the least effective one among the six types of ad framing on people's behavioral intentions to limit sugar intake. However, there were no differences among the effects of the five other types of ad framing. Furthermore, in the context of persuading people to control sugar intake, gain framing was more effective than both loss and neither gain nor loss framing. Loss framing did not have a superior effect to neither gain nor loss framing. Non-narrative framing was more effective than narrative framing in leading people to have greater intentions to limit sugar intake. Regulatory

focus and CFC were two moderators for both gain vs. loss framing and narrative vs. non-narrative framing. In addition, by revealing an underlying mechanism of how audiences processed narrative vs. non-narrative framing via the mediator of processing fluency, the present research provided an explanation for why, in some contexts, narrative messages did not have superior effects to, or were even less effective than, non-narrative advertising. Contributions and implications are discussed.

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CHAPTER 1

INTRODUCTION

America has a sugar problem. This message has been addressed by health authorities for years (Painter, 2015). Research has shown that in the United States, 30%–40% of healthcare expenditures are closely related to the excess consumption of sugar (Null, 2014); one trillion dollars per year are spent on healthcare because of the national sugar addiction (Null, 2014). Several health consequences, including diabetes, obesity, heart diseases, and tooth decay, can be caused by excessive sugar consumption (Johnson et al., 2009).

In order to help Americans limit their sugar consumption, the Food and Drug Administration (FDA) proposed a new guideline in 2015 to update the Nutrition Facts labels on food packages, requiring indication of the percent daily value for added sugar (Painter, 2015). The World Health Organization (WHO) is urging people to reduce the amount of sugar they eat, suggesting restriction of added sugar to less than 5% of one's dietary intake (Branswell, 2014). Specifically, for adults, as few as 6 teaspoons (30 milliliters) of sugar a day are suggested—less than the amount sugar in one can of soda (Branswell, 2014). Children should eat at most 3 teaspoons of sugar a day (Branswell, 2014).

However, added sugar is included in too many available foods—everything from sweetened drinks to breakfast cereals, baked goods, and even sauces and condiments (Branswell, 2014). In addition to the abovementioned foods, people may also add sugar when they are cooking. This makes the control of sugar intake difficult. WHO suggests that the reformulation of products alone is not sufficient to reduce sugar consumption to the level required; rather,

people should change their eating behaviors (Branswell, 2014). Thus, developing effective messages to persuade individuals to limit their sugar intake is urgent.

According to the theory of planned behavior (Ajzen, 1991), people's actual behavior can be significantly predicted by their intentions to conduct that behavior. Therefore, this study aimed at investigating the effectiveness of advertising on people's intention to lower sugar intake. Specifically, six types of ad framing were examined in this study: gain-framed narrative ads, loss-framed narrative ads, neither gain- nor loss-framed narrative ads, gain-framed non-narrative ads, loss-framed non-narrative ads, and neither gain- nor loss-framed non-narrative ads.

Gain vs. loss frame is a common approach in health message design (e.g., van 't Riet, Ruiter, Smerecnik, & de Vries, 2010; Gallagher, Updegraff, Rothman, & Sims, 2011; Jung & Villegas, 2011; Covey, 2014). Gain-framed messages attempt to focus on the benefits obtained by adopting a recommended behavior, while loss-framed messages emphasize the negative consequences of not applying the behavior (Rothman & Salovey, 1997). A large amount of research in health communication has suggested that gain vs. loss frame can influence people's preferences of whether or not to adopt a health behavior.

However, meta-analyses (e.g., O'Keefe & Jensen, 2006, 2007, 2009, 2010; Gallagher & Updegraff, 2012) have shown that gain- and loss-framed messages do not have meaningful different effects on message persuasiveness. According to the results of meta-analyses, researchers have suggested that the studies of gain vs. loss framing should be focused on potential moderators that lead to meaningful framing differences (O'Keefe & Jensen, 2007; Latimer, Salovey, & Rothman, 2007; Covey, 2014). Therefore, the present research investigated the effectiveness of message framing via the possible moderating effects caused by regulatory focus and consideration of future consequences (CFC).

Moreover, most health-related research focuses on behaviors related to smoking, drinking, or fitness; little research investigates the impacts of gain vs. loss framing on changing behaviors regarding sugar intake. This study applied message framing in the advertising of limited sugar intake and examined the effects of gain vs. loss framing in this specific health context.

When designing ads, besides the common approach of gain vs. loss framing, they are usually addressed in either narrative or non-narrative formats. Narrative advertising typically tells stories to persuade (Stern, 1991). Non-narrative advertising, which is usually referred to as argument advertising, tends to persuade people by using rational arguments (Deighton, Romer, & McQueen, 1989). According to the transportation theory (Green, 1996; Green & Brock, 2000), consumers can be transported into the story and become immersed into the ad affectively when they are reading a narrative ad. This suggests that narrative advertising is often more effective than non-narrative advertising (Escalas, Moore, & Britton, 2004; Chang, 2009). Nevertheless, whether or not the persuasiveness of narrative vs. non-narrative advertising is influenced by people's regulatory focus and CFC has rarely been researched. One purpose of the current study was to fill this research gap.

Given the possible different effects of both gain- vs. loss-framed ads and narrative vs. non-narrative advertising, this study investigated all types of ad framing involved with the aforementioned ad design approaches (i.e., narrative loss-framed ads, narrative gain-framed ads, non-narrative loss-framed ads, and non-narrative gain-framed ads). Moreover, the effects of neutral framing (i.e., narrative neither gain- nor loss-framed ads, non-narrative neither gain- nor loss-framed ads) that only presented the neutral information about sugar but emphasized neither loss nor gain were also included in this study in order to fully examine the related ad framing.

Research has shown that message effectiveness in gain vs. loss framing can be moderated by people's regulatory focus (e.g., Lee & Aaker, 2004). According to regulatory focus theory (Higgins, 1997, 1999), there are two self-regulatory orientations often adopted by people: promotion focus and prevention focus. Promotion focus, which is based on aspirations and hopes, emphasizes whether or not there are gains (e.g., a student does extra credit in order to get a good grade in a course). Prevention focus, which is motivated by security and safety, emphasizes whether or not there are losses (e.g., a student fulfills all course requirements in order to keep from getting a bad grade in a course). Therefore, eager means (e.g., making sure things go right) are suggested for persuading promotion-focused individuals; vigilant means (e.g., making sure nothing goes wrong) are often used for prevention-focused individuals.

Research that investigated the relationship between regulatory focus and gain vs. loss framing (or, positive vs. negative framing) showed that positively framed promotion-focused messages were more effective for people with a promotion focus, while negatively framed prevention-focused messages were more persuasive for people with a prevention focus (e.g., Lee & Aaker, 2004; Zhao & Pechmann, 2007). This is most likely because people may experience regulatory fit when a message matches their regulatory focus orientation, which in turn leads them to "feel right" and then process the message more fluently (i.e., more easily) (Lee & Aaker, 2004; Vaughn, Childs, Maschinski, Niño, & Ellsworth, 2010). The enhanced processing fluency (i.e., the ease of processing the information) further results in better persuasiveness of the message (Lee & Aaker, 2004). However, how the effectiveness of a neutral message (i.e., neither gain nor loss framed) is affected by regulatory fit compared to messages with the other two frames (i.e., gain framed or loss framed) has rarely been explored.

Based on a similar theoretical explanation, Vaughn et al. (2010) also proposed that regulatory fit can influence narrative persuasion by increasing processing fluency, which in turn enhances people's transportation into the stories, and then results in stronger persuasiveness of the narratives. Nevertheless, there is not much literature to address whether or not fit with orientations has the same effects on the effectiveness of narrative versus non-narrative messages via influencing processing fluency.

This study aimed to fill the research gaps regarding the comparisons of regulatory focus's impact on message effectiveness through varied processing fluency among neutral-, gain-, and loss-framed messages, as well as between narrative and non-narrative messages. Therefore, this study examined the role of a mediated moderation relationship between regulatory focus and processing fluency in influencing the effectiveness of six types of ad framing in the context of promoting less sugar intake. In this way, the impacts of regulatory focus and processing fluency on the effectiveness of the abovementioned six types of ad framing were fully compared.

In addition, the moderation effect of CFC between the relationship of ad framing and people's sugar intake intention was also explored. People usually have individual differences in terms of how they consider future consequences when facing a decision. High CFC individuals consider future outcomes more while low CFC individuals are concerned more about present needs (Buhrau & Sujan, 2015). Moreover, people high in CFC are likely to pursue a desirable long-term outcome by sacrificing immediate benefits, whereas people low in CFC attempt to maximize immediate benefits without much consideration of the long-term consequences (O'Connor, Warttig, Conner, & Lawton, 2009). Since persuading people to consume less sugar is asking them to sacrifice immediate desire to achieve long-term benefits, the persuasiveness of the message in this context should be influenced by individual differences in high- vs. low-CFC

orientations. This study explored how CFC affects the persuasiveness of the ads advocating less sugar intake, and whether or not CFC moderates the effects of six types of ad framing differently.

The present research was expected to have the following contributions. First, the effectiveness of six types of ad framing across the combinations between three frames (i.e., gain, loss, and neither gain nor loss) and two ad forms (i.e., narrative vs. non-narrative) was examined in the context of persuading people to reduce their sugar intake. These six types of framing have not been compared in previous literature, especially in the health context regarding sugar intake persuasion. This study sought to fill this gap and provide a full understanding about the effectiveness of these six ad frames in the specific health context of sugar consumption. Second, few studies have investigated how the effects of these six types of ad framing are moderated by both regulatory focus and CFC. Through the examination of a developed integrated model, this research intended to enrich the literature in this area by evaluating the moderator roles of both regulatory focus and CFC in ad persuasion. Third, processing fluency was examined as a mediator in this study in order to explain the underlying mechanism of how the moderation effects of regulatory focus happen. Implications and suggestions to policy makers and ad professionals are provided accordingly.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL DEVELOPMENT

Message Framing

Frame. The concept of frame is rooted in the studies of communicative interaction (Oliver & Johnston, 2000). Bateson (1972) first put forth the notion of frame in 1954. He introduced a frame as a metacommunicative instrument (e.g., signals, signs, or cues that carry meaning) that influences people's interpretation of a message (Bateson, 1972). He suggested that a message defines a frame either implicitly or explicitly, regardless; in fact it provides aids or instructions to interpret the message within that frame.

After 20 years, with the sociological research of Goffman and his book titled *Frame Analysis* (1974), the notion of "frame" came to be widely acknowledged. According to Goffman (1974), frame is considered a "schemata of interpretation," which enables people to "locate, perceive, identify, and label" the occurrence around them (p. 21).

Since Goffman, a great deal of empirical research has been conducted to understand the role of frame in various areas. Meanwhile, specific frames are identified in different fields. For example, "audience frame" and "news frame" (or "media frame") are often discussed in media studies (Scheufele, 1999); "collective action frame" and "master frame" are extensively researched in social movement studies (Benford & Snow, 2000); in Severson and Coleman's (2015) study regarding climate change policy, they proposed three types of frames: "science frame," "morality frame," and "economic frame." Based on the large amount of research, it can be summarized that frames are mainly used to interpret ideas or events, to organize messages, and to guide actions (Okada, 2013).

Framing. Framing is the process of shaping and/or generating a frame (Okada, 2013). Chong and Druckman (2007) defined framing as “the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue” (p. 104). Two basic assumptions are shared in all framing theories: First, it is assumed that there are different ways to represent an idea or a phenomenon; second, theories assume that an entity is able to choose different points of an idea or a phenomenon to be highlighted or ignored (Okada, 2013).

Framing is closely tied to two other concepts: agenda setting and priming. Agenda setting refers to a function of mass media that attracts people’s attention to a certain issue (McCombs & Shaw, 1972). Framing can be called “second-level agenda setting” because it not only tells people what to think about (i.e., the main function of agenda setting), but it also goes a step further and tells people how to think about that issue (McCombs, 2004). Priming refers to “changes in the standards that people use to make political evaluations” (Iyengar & Kinder, 1987, p. 63). Priming is often considered to be an extension of agenda setting (Scheufele & Tewksbury, 2007). By making some matters more salient while ignoring others (agenda setting), mass media is able to influence “the standards by which governments, presidents, policies, and candidates for public office are judged” (priming) (Iyengar & Kinder, 1987, p. 63). In this sense, Scheufele (2000) suggested that studies examining priming effects usually take agenda setting as an independent variable, while taking priming effects as a dependent variable or an outcome of agenda setting.

Both agenda setting and priming are connected with attitude accessibility (Scheufele, 2000). Through agenda setting, the media uses its power to tell audiences what issues are important (e.g., by using headlines or by varying the amount of news coverage on a specific topic) (Scheufele & Tewksbury, 2007). Priming is a “psychological outcome of agenda-setting”

(Scheufele, 2000, p. 302), which is related to audiences' evaluations or judgments about something. For example, priming occurs when the message suggests to audiences that they should evaluate the mayor by using specific performances as benchmarks (Scheufele & Tewksbury, 2007).

In contrast, framing is significantly different from the aforementioned “accessibility-based models”—agenda setting and priming (Scheufele & Tewksbury, 2007, p. 11). Framing, which uses nuances in syntax and wording, influences how people understand an issue by invoking interpretive schemas that affect the interpretation of information (Scheufele, 2000). In other words, framing is “not what you say,” but “how you say it” (Luntz, 2007; Scheufele & Tewksbury, 2007, p. 9). Although agenda setting and priming appear quite often in the framing literature, this research focused on framing itself.

Chen (2015) identified various kinds of message framing, such as: gain framing vs. loss framing (e.g., Latimer et al., 2010), narrative evidence vs. statistics evidence (Kopfman, Smith, Ah Yun, & Hodges, 1998), intrinsic goal vs. extrinsic goal (e.g., Pelletier & Sharp, 2008), and internal attribution vs. external attribution regarding the causes of events (Niederdeppe, Bu, Borah, Kindig, & Robert, 2008). The present study focused on gain vs. loss framing, as well as framing of narrative vs. non-narrative, which are introduced in the following sections.

Gain vs. loss framing. Gain vs. loss framing has been investigated through a great deal of research over the past 30 years or so. In literature, it has been commonly suggested that a persuasive message can be framed in two ways: gain framing, which focuses on the positive results of engaging in a recommended behavior, or loss framing, which emphasizes the negative outcomes of not adopting a recommended behavior (Covey, 2014).

The earliest conceptualization of gain vs. loss framing can be traced from the framing postulate of prospect theory, which was proposed in Kahneman and Tversky's (1979) research in economics. According to prospect theory, human decision-making is affected by the message's presentation style. Specifically, people are more likely to prefer risky options (i.e., they are risk seeking) when a message emphasizes losses, but prefer safe or non-risky options (i.e., they are risk averse) when a message highlights gains (Tversky & Kahneman, 1981). Later, the term "gain vs. loss frame" showed up in some scholars' research. One of the earliest studies was conducted by Meyerowitz and Chaiken (1987). Meyerowitz and Chaiken (1987) examined the effects of gain vs. loss frame in a health context and found that a loss frame was more persuasive than a gain frame at encouraging women to do breast self-examinations. In 1988, Wilson, Purdon, and Wallston made a theoretical overview of message framing (gain, loss, and fear) in health communication and supported the idea that gain and loss frame really matter for patients health behaviors.

Over the years, the effects of gain and loss frame have been investigated within several domains, such as the domain of economic decision-making (e.g., Carnevale, 2008), the domain of political persuasion (e.g., Vraga, Carr, Nytes, & Shah, 2010), and the domain of advocating pro-environment actions (e.g., McKenzie-Mohr, 1994). Additionally, research regarding gain and loss frame in the health domain is even more extensive (e.g., Meyerowitz & Chaiken, 1987; Myers et al., 1991; Millar & Millar, 2000; Cox & Cox, 2001; Rothman, Bartels, Wlaschin, & Salovey, 2006).

Gain vs. loss framing on health issues. Health professionals often attempt to maximize the impact of a health message on people's attitudes and behaviors by framing the message in different ways (Rothman et al., 2006). Gain-framed health information stresses the benefits of

taking a health action, while loss-framed information emphasizes the costs of failing to engage in that action. It is necessary to note that a gain-framed message can stress the benefits by presenting either positive results that will happen or negative consequences that will not happen, whereas a loss-framed message can present either negative consequences that will happen or positive results that will not happen to address the costs (Rothman et al., 2006).

Rothman et al. (2006) suggested that, based on the conceptualization of prospect theory, the impact of a given frame on a behavior depends on whether the behavior is perceived as a risk-seeking or a risk-averse course of action. They further proposed that people consider a behavior as safe or risky depending on how they perceive the extent to which that behavior will cause an unpleasant outcome. For example, a detection behavior of getting a mammogram can be seen as risky (i.e., a risk-seeking behavior) because it is possible to discover breast cancer; a prevention behavior of using sunscreen is relatively safe or low risk (i.e., a risk-averse behavior) because the purpose is to prevent an unpleasant outcome of skin cancer and maintain current health.

Consistent with this viewpoint, Rothman et al. (2006) argued that loss framing is more persuasive in promoting disease detection behaviors that involve perceived risk of unpleasant outcomes, whereas gain framing is more persuasive in promoting prevention behaviors that have little risk of bad outcomes. This argument has been supported by a plethora of research (e.g., Meyerowitz & Chaiken, 1987; Myers et al., 1991; Linville, Fischer, & Fischhoff, 1993; Rothman, Salovey, Antone, Keough, & Martin, 1993; Banks et al., 1995; Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Millar & Millar, 2000; Cox & Cox, 2001; Schneider et al., 2001; Finney & Iannotti, 2002; Jones, Sinclair, & Courneya, 2003).

Since lower sugar intake can be considered a preventative behavior with little risk of bad consequences, gain framing may be more persuasive than loss framing in convincing people to adopt the recommendation to limit sugar intake. In the present study, a control condition of neither gain nor loss framing was added to further examine the effects of message framing; however, little literature provides information about the different effects among three types of framing (i.e., gain, loss, and neither gain nor loss in this study). Hence, the following hypothesis is proposed for testing and a research question is raised for exploring:

H1: Gain-framed ads lead to greater intention to limit sugar intake than loss-framed ads.

RQ1: Will ads that are neither gain nor loss framed lead to different intent to reduce sugar intake than ads that are gain and loss framed (i.e., will the effect of neutral framing on sugar-reduction intention be different than the effects of gain or loss framing)?

Exploring moderators of gain vs. loss framing. Although the findings of the gain vs. loss framing research regarding detection and prevention behaviors are fairly consistent, there are several studies that either showed no different effects between the gain and loss frames (e.g., Lalor & Hailey, 1989; Lauver & Rubin, 1990; Lerman et al., 1992) or identified some moderators of the framing effects (e.g., Schneider et al., 2001; Finney & Iannotti, 2002; Apanovitch, McCarthy, & Salovey, 2003).

Furthermore, meta-analyses (e.g., O’Keefe & Jensen, 2006, 2007, 2009, 2010; Gallagher & Updegraff, 2012) have demonstrated that there is no meaningful difference between the persuasiveness of gain- and loss-framed messages. Based on the results of meta-analyses, researchers have suggested that the foci of gain- vs. loss-framing research should be the investigation of potential moderators that lead to meaningful framing differences (O’Keefe & Jensen, 2007; Latimer et al., 2007; Covey, 2014).

Previous research has identified several moderators of gain and loss frames, for example, message color (Gerend & Sias, 2009), regulatory focus (Lee & Aaker, 2004), consideration of future consequences (O'Connor et al., 2009), and attitudinal ambivalence (Broemer, 2002). In the current study, the moderate effects of regulatory focus and consideration of future consequences on framing were specifically examined and are discussed later.

Narrative and Non-narrative Ad Framing

Narrative and non-narrative advertising has been researched in many previous studies; however, scant literature has been found using the terms “framing” or “frame” to describe these forms of advertising. Chen (2015) noted that “narrative evidence vs. statistics evidence” is one example of message framing. According to the framing discussion in the above section, in the present study, the researcher suggests that narrative and non-narrative forms of advertising are two types of ad framing because these forms are the means for professionals to influence consumers’ interpretations of advertising.

Definition of a narrative. A narrative was defined as “one or more episodes consisting of actors engaged in actions to achieve goals” and it usually involves a “sequence initiated by some events and actions result[ing] in outcome(s)” (Escalas, 1998, p. 273). Chronology and causality are two major structural features of narratives (Escalas, 1998; Polkinghorne, 1991). Chronology refers to narratives structured with a series of events in terms of temporal sequence: The events take place over time (Bruner, 1986, 1990; Escalas, 2004a). In narratives, time is arranged as episodes, which structure stories with a beginning, middle, and end (Escalas, 2004a). Causality indicates that narratives consist of a story’s elements that enable referencing through goal-directed action-outcome sequences (Stein & Albro, 1997; Escalas, 2004a).

Narrative and non-narrative advertising. Narrative account and argumentative reasoning are two distinct approaches in persuasion research (Deighton et al., 1989; Zheng, 2011). This distinction has been demonstrated in many disciplines (Zheng, 2011), such as psychology (Bruner, 1986), communication (Fisher, 1984), economics (McCloskey, 1985), theology (Goldberg, 1982) and history (White, 1981).

In the domain of advertising, Wells (1989) first put forward this distinction by noting that advertising has two basic ingredients—drama and lecture (Zheng, 2011). Accordingly, Boller and Olsen (1991) suggested that advertising can be presented in either a narrative or an argumentative form. Based on the distinction between these two advertising forms, some researchers started focusing on the studies regarding narrative advertising or non-narrative/argument advertising (e.g., Chang, 2008; 2009; Lien & Chen, 2013; Wirtz, Sar, & Anghelcev, 2014; Kim, 2015).

Narrative advertising has been defined as advertising that tells a story (Stern, 1991; Escalas, 1998). Chang (2009) noted that in previous literature, there were two types of narrative advertising: drama advertising (Deighton et al., 1989; Stern, 1994) and story advertising (Deighton et al., 1989). In drama advertising, the events unfold in front of the audience via plots and ad characters (Wells, 1989). In story advertising, there is a narrator alongside plots and characters (Deighton et al., 1989). Hence, the stories presented in narrative advertising can be either performed by actors or presented by narrators (Chang, 2009).

In contrast, non-narrative advertising can be understood as advertising without storytelling. This kind of advertising is usually called argument advertising. Argument advertising has no characters and plots; it conveys information via presenting lectures or logical arguments for a certain claim (Deighton et al., 1989). In literature, the terms “non-narrative

advertising” and “argument advertising” are exchangeable because they both indicate that the ads have no story but only arguments (e.g., Lien & Chen, 2013; Kim, 2015). In the current study, the researcher chooses to use the term “non-narrative advertising” in order to distinguish from “narrative advertising” by emphasizing the difference of presenting or not presenting a story between the two forms of advertising.

Processing of narrative and non-narrative advertising. Boller and Olson (1991) claimed that theoretical interpretations of advertising processing are affected by advertising forms. Deighton et al. (1989) put forward that advertising type influences how people process the advertisement and they suggested two mechanisms in ad persuasion. Specifically, narrative advertising, which attempts to use stories to convey subjective feelings, is usually processed by audiences empathically. Alternatively, argument advertising, which demonstrates objective appeals, tends to be processed evaluatively, with “opponent processes of counterargument and expression of belief determining the degree of persuasion” (Deighton et al., 1989, p. 341).

In a similar vein, Wells (1989) noted that audiences respond to narrative and lecture forms of advertising in two different states of mind. In essence, by adopting evidence, arguments, and exhortation, lectures present “secondhand abstractions, one step removed from life” (Wells, 1989, p. 15). This leads ad viewers to be more likely to perceive that the claims of advertising lectures are “imposed on them” (Wells, 1989, p. 15). By comparison, instead of directly delivering lectures, narrative advertising portrays stories that are experienced by characters to depict lessons. In this mode, audiences become “eavesdroppers,” “close-in observers” or “vicarious participants” in the narrative world (Wells, 1989, pp. 13, 14). Thus, audiences tend to perceive that the lessons learned from narrative advertising are voluntary and “mine” (Wells, 1989, p. 15).

Based upon ad viewers' different states of mind in processing narrative and lecture forms of advertising, two underlying persuasive mechanisms, transportation and elaboration, are revealed in narrative-based and non-narrative-based advertising separately (Zheng, 2011). These two underlying mechanisms can be comprehended via two distinct theoretical foundations: transportation theory (Green & Brock, 2000), and the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1981; Petty, Cacioppo, & Schumann, 1983).

Zheng (2011) noted that scholars started increasing their attention to a narrative form of advertising in the late 1980s and early 1990s (e.g., Wells, 1989; Deighton et al., 1989; Boller, 1990). Before that, the persuasion and information processing models, such as the ELM, seemed to be based on the assumption that an argumentative form is the only form of advertising (Zheng, 2011).

The ELM explains how people cognitively elaborate a message's arguments. It is a dual-process model that outlines two routes to persuasion: the central route and the peripheral route (Petty & Cacioppo, 1981). According to Petty and Cacioppo (1981), the central route to persuasion is featured by extensive elaboration of the message's arguments. This route is activated when the message recipients have both the ability and motivation to elaborate the claims in the message. When the central route is adopted, the argument's inherent cogency is a crucial factor of persuasion. By contrast, the peripheral route is featured by taking cognitive shortcuts and occurs when people lack the elaboration motivation or the ability to process the message's claims (Petty & Cacioppo, 1981, 1986a, 1986b). When the peripheral route is employed, heuristic principles or peripheral cues (e.g., length of the message claims, attractiveness of the images illustrating the message) are the key factors in changing people's attitudes. Cialdini, Petty, and Cacioppo (1981) indicated that persuasion attained via the central

route is more durable, more resistant to counterarguments, and more predicative for changes in beliefs.

The adoption of these two routes is influenced by elaboration motivation and ability (Petty, Heesacker, & Hughes, 1997). Personal involvement (i.e., personal relevance to the issue or the product) and need for cognition (NFC) (i.e., one's tendency to engage in thinking) are such motivations (Petty, Cacioppo, & Goldman, 1981; Cacioppo & Petty, 1982; Paek, Hove, Jeong, & Kim, 2011; Zheng, 2011). Individuals with high involvement tend to process centrally by attentively scrutinizing the message claims, while individuals with low involvement are inclined to process peripherally (Petty & Cacioppo, 1986b). Similarly, individuals who have high NFC are more likely to select the central route than people who are low in NFC (Cacioppo & Petty, 1982; Zheng, 2011). In addition, argument strength has been found to be an important factor in influencing high-involved individuals and those with high NFC (Petty et al., 1983; O'Keefe, 2002). Specifically, strong logical arguments are more persuasive for high-involved people, while for low-involved individuals, peripheral cues (e.g., source's attractiveness) are more effectual than strong arguments (Petty et al., 1983). Moreover, those with high NFC are more adept in discerning strong arguments and weak arguments (O'Keefe, 2002).

As for elaboration ability, it is influenced by prior knowledge (Cacioppo, Petty, & Sidera, 1982) and the presence of distraction (Petty & Brock, 1981). Background knowledge regarding the topic makes individuals more able to differentiate between strong arguments and weak ones, and thereby enables individuals to evaluate the arguments more thoroughly via the central route (Zheng, 2011), whereas lack of pertinent knowledge often causes lack of ability to assess the arguments centrally (O'Keefe, 2002). Additionally, the presence of distraction, such as noise,

also can cause individuals to be less able to evaluate the arguments carefully via the central route (Zheng, 2011).

Although the ELM is a dominant persuasion model in explaining rhetoric-based information processing and is also a popular model in advertising research, critiques note that it bears limited power in the realm outside of rhetorical persuasion (Zheng, 2011). In particular, it is inadequate to explain narrative-based information processing and belief change (Green & Brock, 2000; Zheng, 2011). As mentioned earlier, most prior advertising research that applied the ELM to explain advertising processing seemed to be based on the assumption that advertising only has one kind of form, the argumentative form (Zheng, 2011). Nevertheless, the fact is that large numbers of ads are designed in a narrative form, which actually employs a distinctive route to persuasion.

Actually, narratives' persuasiveness has been recognized in literature and has also been examined in advertising contexts for a long time (Zheng, 2011). However, a particular theory specifically applicable to narrative persuasion was lacking until Green and Brock proposed the transportation theory in 2000.

Prior to the proposition of transportation theory, research on narratives mainly considered that it is empathy that leads to narrative-based belief change. From the time of Aristotle's *Poetics* (Trans., Janko, 1987), literary scholars have pointed out that narrative exerts persuasion by bringing an audience to empathize with the characters in the story (Booth, 1961; Martin, 1986). In a narrative advertising setting, empathy can be comprehended as a dynamic process in which ad viewers project themselves imaginatively into the experiences of ad protagonists (Booth, 1961; Katz, 1963).

In 1996, Green put forward another construction, “transportation,” to explicate the processing of narrative persuasion. She suggested that the underlying mechanism of narrative-based belief change is established by transportation. Gerrig (1993) discussed the concept of transportation as being lost in the narrative or immersed into the story. Green (1996) further claimed that transportation could be activated when individuals are exposed to highly involved narratives.

Transportation into a narrative world has been defined by Green and Brock (2000) as “a distinct mental process, an integrative melding of attention, imagery, and feelings” (p. 701). According to transportation theory (Green & Brock, 2000), there are three consequences of transportation. First, parts of the real world become inaccessible to the audience in support of accepting the given narrative world. Second, transported individuals may experience strong motivations and emotions, even when they know the story is not real. Third, individuals become somewhat altered by the experience of transportation after returning from being transported.

Previous research asserted that people naturally tend to interpret or think about the world around them through stories (e.g., Bruner, 1990; Kerby, 1991). Escalas (2004a) demonstrated that mental simulation can prompt narrative transportation. Mental simulation refers to the imitative mental representation of a series of events (Taylor & Schneider, 1989), and it is usually in the form of narratives or stories (Fiske, 1993). When people simulate events, they often think about their own potential or actual behaviors, and create episodes (i.e., stories) in which they are the characters (Escalas, 2004a). In addition, the degree of transportation is also influenced by message attributes (e.g., the extent of adherence to narrative structure, and the level of artistic craftsmanship) and attributes of message recipients (e.g., imagery abilities, and hypnotic susceptibility) (Zheng, 2011).

In advertising, Escalas (2004a) demonstrated that transportation can stimulate positive affection and reduce critical thought, which leads to a more favorable ad attitude and brand evaluation. Escalas (2004b) found that in response to narrative advertising, narrative processing can enhance self-brand connections, which in turn results in positive brand attitudes and stronger behavioral intentions.

Based on transportation theory, research has also found that compared to non-narrative advertising, narrative advertising shows stronger persuasion power (e.g., Escalas, 2004b; Lien & Chen, 2013) because advertising in narrative form is able to get ad viewers affectively and cognitively involved in the ad and be hooked into the viewing process, which in turn leads consumers to generate more favorable ad attitude and product evaluation (Escalas et al., 2004; Chang, 2009, Lien & Chen, 2013). However, some scholars have pointed out that processing narrative advertising may demand more cognitive capacity than processing non-narrative ads (Peracchio & Meyers-Levy, 1997; Chang, 2009). Therefore, Chang (2009) argued that narrative advertising's superior effectiveness in getting an ad viewer emotionally and cognitively involved only occurs when the ad's content has not exhausted the viewer's cognitive capacities.

Narrative persuasion in the health domain. When it comes to the topic of health, narratives can be a public service announcement (advertising) or a telenovela (soap opera) (Green, 2006). A number of studies have been conducted to discuss narrative persuasion on health issues (e.g., Greene & Brinn, 2003; Green, 2006; Chang, 2008; Gray & Harrington, 2011).

Green (2006) put forth that transporting narratives are particularly useful for delivering cancer-related information because they provide role models for belief and behavior change and generate mental simulation (e.g., if people easily visualize themselves suffering from cancer, they may have stronger intention to prevent cancer). Transporting narratives can also reduce

counterarguments (e.g., people may avoid health educational information because they expect it to be boring or frightening, while stories can help with this situation) and then facilitate strong attitudes based on both emotion and cognition.

Chang (2008) conducted research to compare the effectiveness of narrative advertising and non-narrative advertising regarding the issue of mental illness literacy. She found that narrative advertising had superior effectiveness compared to non-narrative argumentative advertising in three perspectives. First, narrative advertising was more effective at getting participants in experiential immersion, which led to greater sympathy toward the people who were suffering from depression. Second, narrative advertising proved easier in involving participants in issue elaboration, resulting in stronger willingness to seek professional help. In addition, compared to argument advertising, participants rated narrative advertising higher in presenting vivid information, thereby increasing their perceived efficacy in being aware of family or friends suffering from depression. In another study regarding smoking cessation, Kim, Bigman, Leader, Lerman, and Cappella (2012) also found that narratives can enhance people's intentions to engage in the recommended behaviors. Their studies demonstrated that the participants who read narratives with an exemplar were more likely to have the intention to quit smoking than those who were exposed to the information without an exemplar.

Health messages in narrative and statistical forms have also been examined by scholars. For example, Greene and Brinn (2003) demonstrated that a narrative message was more persuasive in lowering participants' intentions to tan than a non-narrative message that only provided statistical evidence. In another study about fruit and vegetable consumption, Slater, Buller, Waters, Archibeque, and LeBlanc (2003) found that narrative messages were more convincing than statistical ones.

In spite of the fact that a great deal of research indicated that narratives are an effective means to convey health information, a recent meta-analysis conducted by Shen, Sheer, and Li (2015) showed that narrative messages promoting intervention do not work equally on all health issues. They found that narratives have significant effects on disease prevention and detection behaviors, but not on the cessation of addictive behaviors (e.g., drinking and smoking). They explained that getting rid of a harmful or risky behavior might be inherently challenging for individuals who are addicted, no matter the form of persuasion. Moreover, Shen et al. (2015) also found that narratives delivered by video or audio are more persuasive than narratives presented in print medium. In their analysis, the effect size for print-based narratives was actually not significant and it was also small. Since Shen et al.'s (2015) meta-analysis only included 25 studies, they suggested that more studies are needed, and called for additional research to examine whether or not print narratives are effective in persuasion. In particular, more narrative research is sorely needed in the area of unhealthy habitual behaviors, such as smoking and overeating, which are more likely to be addictive and cause urgent health problems (Shen et al., 2015).

Responding to the call advocated in the abovementioned recent meta-analysis (Shen et al., 2015), the current research investigated the narrative effects on one unhealthy habitual behavior, excess sugar consumption, via print advertising.

Significantly, some studies that examined the effects of narratives on calling for the cessation of addictive behaviors were missed in Shen et al.'s (2015) meta-analysis. For example, Terry-McElrath et al.'s (2005) study showed that personal testimonials have significant effects in antismoking messages. Sanders-Jackson (2014) also found that participants had stronger intentions to quit smoking when they had higher transportation into a narrative structure of

smoking-cessation texts. Additionally, a recent study conducted by Niederdeppe, Heley, and Barry (2015) showed that across three health issues related to addictive behaviors, including obesity and sugary drinks, cigarette smoking, and prescription painkiller addiction, narratives outperformed inoculation messages (i.e., traditional scripts consisting of forewarning and refuting anticipated arguments) in shaping support for health policies. Based on the findings of the abovementioned previous research, it is hypothesized that narrative advertising is more persuasive than non-narrative advertising in the context of controlling sugar intake. Thus, the following hypothesis is proposed for testing:

H2: Narrative-framed advertising leads people to have greater intent to limit sugar intake than non-narrative advertising.

Similar to gain and loss framing, scholars have pointed out that the effect of narrative persuasion is also moderated by regulatory focus (e.g., Vaughn et al., 2010). Furthermore, it has been suggested that processing fluency also has an impact on the effects of gain and loss framing, and plays an important role in narrative persuasion. In the following section, regulatory focus and processing fluency are discussed.

Regulatory Focus and Regulatory Fit

Regulatory focus theory. Before regulatory focus theory was put forth, Higgins (1987) first proposed a related theory, self-discrepancy theory, which suggests that people evaluate themselves by comparing actual self with ideal self or by comparing actual self with ought self. The former comparison stresses one's accomplishment and aspiration, while the latter comparison is concerned with one's duties and obligations (Higgins, 1987).

After self-discrepancy theory, regulatory focus theory was developed by Higgins in 1997. According to regulatory focus theory, individuals self-regulate their behaviors to pursue certain

goals according to their regulatory orientations. Higgins (1997) posited that there are two distinct self-regulatory orientations: promotion focus and prevention focus.

Individuals with promotion focus are likely to pursue goals by conducting actions that advance desired end states, while individuals with prevention focus are likely to achieve their goals by conducting actions that prevent undesired states (Higgins, 2002). The promotion orientation is associated with the fundamental needs of nurturance, such as aspirations, advancement, and accomplishments, while the prevention orientation is associated with the needs of security, such as safety, responsibilities, and protection (Higgins, 2002). Thus, promotion-focused people tend to approach pleasure and positive outcomes; prevention-focused people tend to avoid pain and negative outcomes (Higgins, 1997). Cesario, Higgins, and Scholer (2008) claimed that promotion focus and prevention focus are present in every individual to some degree because both nurturance and security are necessary survival needs. However, people may have a predominant focus due to chronic individual differences, and additionally, situational features can momentarily activate one focus or the other (Cesario et al., 2008).

Regulatory focus theory also posits that there are different goal-pursuit strategies for each system (Higgins, 2002). It distinguishes between eager means and vigilant means (Higgins, 2002; Cesario et al., 2008). Eager strategic means are associated with ensuring the presence of positive outcomes or against the absence of positive outcomes; therefore, this is a natural approach for promotion focus self-regulation, which concerns advancement and accomplishment (Higgins, 2002). In contrast, vigilance strategies ensure the absence of negative consequences or against the presence of negative consequences; accordingly, this is a natural means for prevention focus self-regulation, which concerns safety and responsibility (Higgins, 2002). This can be illustrated with an example of two students with different regulatory orientations. When they want to

achieve the same goal of getting a decent grade in a course, the student with a promotion-focus orientation may read extra materials beyond the required readings (i.e., an eager means) to attain a good score, whereas the student with a prevention-focus orientation may make sure to fulfill all course requirements (i.e., a vigilant means) to attain a decent grade.

Regulatory fit. Regulatory fit is a broad theory that is concerned with the relation between an individual's orientation to a goal and the means adopted to pursue that goal (Higgins, 2000; Cesario et al., 2008). People can pursue the same activity in terms of different orientations and by different means (Higgins, 2000). Higgins (2000) proposed that individuals experience a regulatory fit when the means they use to pursue a goal fit their regulatory orientation. Take the above example again; for the two students who have different orientations to pursue the same goal of attaining a decent course grade, reading nonassigned extra materials fits one's advancement orientation better than a safety orientation, whereas accomplishing all course requirements fits the other student's safety orientation better than an advancement orientation. In this sense, these two students achieve regulatory fit by choosing the appropriate means to fit their orientations.

Most existing research tested regulatory fit predictions by using regulatory focus theory as a vehicle (Cesario et al., 2008). Higgins (2000) argued that there is a natural fit between eager means (e.g., making sure everything goes right) and promotion-focus orientation; and there is a natural fit between vigilance means (e.g., making sure nothing goes wrong) and prevention-focus orientation. The value from fit is that regulatory fit experienced by a person can increase the value of what he/she is doing (Higgins, 2000).

Cesario et al. (2008) summarized that there are two main effects when people experience regulatory fit: First, people *feel right* about what they are doing during the process of goal pursuit;

second, the strength of their engagement in the activity of goal pursuit can be enhanced. They stressed that feeling right can be misattributed, but it is actually independent of a happy mood in the classic hedonic experiences (e.g., Higgins, Idson, Freitas, Spiegel, & Molden, 2003).

Scholars and practitioners have used regulatory fit to increase persuasion in various social influence situations (Cesario et al., 2008). For example, regulatory fit has been applied to the following topics: advertising for sunscreen and grape juice (Lee & Aaker, 2004); health issues such as vegetable and fruit consumption (Cesario, Grant, & Higgins, 2004; Spiegel, Grant-Pillow, & Higgins, 2004); consumer purchasing behaviors (Avnet & Higgins, 2003; Higgins et al., 2003); speech effectiveness (Cesario, 2006); driving tests among young people (Haddad & Delhomme, 2006); social policy (Cesario et al., 2004); and other topics.

Creating regulatory fit. Based upon the examination of 202 studies in a variety of topics over 13 years (1998–2010), a recent meta-analyzed study conducted by Grewal et al. (2011) found that there are various ways to create regulatory fit, and they categorized all those methods into five groups: (1) focus source (momentary vs. chronic); (2) how momentary focus is primed (self vs. situation-generated); (3) type of fit (outcome vs. process); (4) fit scope (integral vs. incidental), and (5) fit match (e.g., self-view, framing).

Source of regulatory fit: Regulatory fit, which is the fit between people's means to pursue goals and their regulatory focus, can be created by two sources: chronic and momentary (Grewal et al., 2011). These two sources are mainly associated with how regulatory focus is generated. Chronic source refers to individuals' natural tendency, while momentary source can be primed (Grewal et al., 2011).

According to Higgins (2005), people's regulatory focus can vary chronically according to their natural individual differences, or can be induced momentarily by experiments or other

situational factors. Grewal et al. (2011) suggested that when a study measures regulatory focus by using measurement scales, such as the self-strength guide task (e.g., Evans & Petty, 2003), the selves-questionnaire (e.g., Avnet & Higgins, 2003), the Lockwood scale (e.g., Zhao & Pechmann, 2007), or regulatory focus questionnaires (e.g., Hong & Lee, 2008), the study is considered to examine the regulatory focus from a chronic perspective. In this sense, the regulatory fit is caused by chronic sources.

Alternatively, people's focus also can be induced via situational factors, such as task instructions or context. For example, participants' promotion focus can be induced when they are asked to self generate a list about their hopes and aspirations, whereas their prevention focus can be induced when they are required to list their obligations and duties. In this context, regulatory fit is created by momentary sources (Grewal et al., 2011). Grewal et al. (2011) suggested that a chronic source of focus influences people's thoughts and behaviors more profoundly than momentary focus due to the fact that chronic focus is based on one's natural tendencies and experiences from childhood and over a lifetime.

How momentary focus is primed: Specifically, momentary sources can be categorized into two sets: self- and situation-generated sources. In other words, both self- and situation-generated momentary sources can be induced by regulatory focus and create regulatory fit (Grewal et al., 2011). Asking people to list their duties and responsibilities, or hopes and dreams, is an instance of how momentary focus is primed by self-generated sources (e.g., Lee, Keller, & Sternthal, 2010). An example of how momentary focus is primed by situation-generated sources is implementing a task by using a mouse to seek cheese (inducing promotion focus) or to escape an owl (trigger prevention focus) (Zhang & Mittal, 2007).

The regulatory fit effect created by self-generated sources may be stronger than when triggered by situation-generated sources because people possess rich self-knowledge and can easily access this knowledge (Markus, 1977; Mussweiler & Neumann, 2000; Grewal et al., 2011). Nevertheless, compared to situation-generated primes, self-generated primes may lead participants to be more aware that the sensation of *feeling right* is from the sources, and thereby attenuate the effect of fit (Cesario et al., 2004; Grewal et al., 2011).

Type of fit: Two types of fit (i.e., process fit and outcome fit) have been summarized by Grewal et al. (2011). Process fit can be created when the process of pursuing goals matches one's regulatory focus, while outcome fit is created when the outcome of the goal matches one's regulatory focus (Grewal et al., 2011). For example, when people are asked to provide an action plan ensuring that everything goes right or ensuring that nothing goes wrong, they would have process fit with their promotion focus or prevention focus (Freitas & Higgins, 2002). As for the outcome fit, for instance, individuals can reach this type of fit by matching their regulatory focus via considering the benefits gained from or risks avoided by performing a certain action (Lee & Aaker, 2004).

Fit scope: In terms of the form of manipulation, regulatory fit can be created in an integral way or an incidental way (Cesario et al., 2008). Integral fit is generated when “fit is induced by manipulating something integral to or within the actual persuasion situation” (Cesario et al., 2008, p. 450). Incidental fit is created when fit is “induced prior to, and completely independent of, the persuasive message itself” (Cesario et al., 2008, p. 450).

Therefore, the difference between these two kinds of fit is the time of manipulation of the fit (Tran, 2012). If manipulation is conducted during the time of the message being assessed, integral fit occurs, whereas if manipulation is conducted independent of or before the persuasive

message, incidental fit occurs (Tran, 2012). For the former one, an example is to evaluate attitudes toward an ad, which has been manipulated to create regulatory fit. As for the latter, an example can be an abovementioned case in which people evaluate the persuasive message after they implement a task that is used to manipulate regulatory fit (e.g., using a mouse to seek cheese, or escaping an owl).

Fit match: There are numerous ways to obtain fit match. People pursue goals by selecting preferred means that can make them feel right about the things they are doing and, meanwhile, enhance their engagement strength (Cesario et al., 2008). When a persuasive message is designed in a way that matches audiences' regulatory focus, the audiences will feel right about the conveyed information, and regulatory fit emerges (Cesario et al., 2004; Lee & Aaker, 2004). Grewal et al. (2011) summarized a list of ways that can produce fit match, including: framing (e.g., gain vs. loss) (Monga & Zhu, 2005), decision styles (e.g., attribute-based vs. alternative-based) (Mourali & Pons, 2009), presentation modes (e.g., simultaneous vs. sequential) (Wan, Hong, & Sternthal, 2009), strategies (e.g., eager vs. vigilant) (Freitas & Higgins, 2002), self-view (e.g., independent vs. interdependent) (Aaker & Lee, 2001), and attributes (e.g., hedonic vs. utilitarian) (Chernev, 2004).

Among the above means that can create regulatory fit by matching one's regulatory focus, framing is the main object in the present study. The relationship between ad framing and regulatory focus is specifically discussed next. Moreover, another concept, processing fluency, is introduced and its role in the aforementioned relationship is discussed in the next section.

The Influence of Regulatory Focus and Processing Fluency

Regulatory focus moderates gain vs. loss framing. According to the discussion regarding fit match (Grewal et al., 2011), gain-framed and loss-framed messages separately

match people's promotion regulatory focus and prevention focus, which in turn can create regulatory fit and lead people to feel right about the message. This feeling will be further transferred into the evaluation of the message and increase the message persuasiveness (Uskul, Sherman, & Fitzgibbon, 2009). Hence, from another perspective, regulatory focus moderates the persuasive effect of message framing. That is, gain- and loss-framed messages have different persuasiveness under different circumstances of regulatory focus.

In the previous research, which investigated the relationship between regulatory focus and message framing, regulatory focus is mainly operationalized in two ways (Lee & Aaker, 2004; Jeong & Yoon, 2014; Uskul et al., 2009; Cesario, Corker, & Jelinek, 2013). Whereas some researchers investigated the impact of regulatory focus on message effectiveness via manipulating regulatory focus within the message (e.g., Lee & Aaker, 2004; Jeong & Yoon, 2014), other researchers examined the effect of regulatory focus on message persuasiveness by using self-reported scales to measure people's regulatory orientation (e.g., Uskul et al., 2009; Cesario et al., 2013).

For example, Lee and Aaker (2004) manipulated regulatory focus within messages. Take their first experiment as an example: They asked participants to read an ad about grape juice. In the promotion focus condition, the advertising asserted that grape juice can create energy; in the prevention focus condition, the ad said that grape juice can prevent cancer and heart disease. For both promotion-focused and prevention-focused conditions, they framed two ads to either emphasize gains (or non-losses) or losses (or non-gains). Their experiment demonstrated that a gain-framed message was more effective when it was designed as promotion focused, and a loss-framed message was more persuasive when it was designed as prevention focused. Similarly, Jeong and Yoon (2014) manipulated regulatory focus within anti-piracy campaign messages. In

the promotion condition, the message said that the advertised software could offer the latest product features and improve PC performance; in the prevention condition, the message stated that the software could protect computers from viruses and other malicious threats. They also found that the message framed positively was more persuasive when it was promotion focused, whereas the message framed negatively was more persuasive when it addressed prevention concerns.

It is necessary to note that, unlike the above examples that manipulated regulatory focus in messages by addressing promotion and prevention concerns, there are studies that directly manipulated promotion focus and prevention focus in a similar way regarding designing gain and loss frames. For example, Kim (2006) used the terms promotion framed and prevention framed to describe manipulated anti-smoking ads. In this experiment, the promotion-framed ads stated the gains of non-smoking (involving the impact on the respiratory system, brain, breath, and teeth), while the prevention-framed ads stated that non-smoking would avoid losses (also involving the impact on the respiratory system, brain, breath, and teeth). A similar example can be seen in Kareklas, Carlson, and Muehling's (2012) research, which is about promotion-framed and prevention-framed environmental appeals in "green" advertising.

Besides manipulating regulatory focus within messages, measuring regulatory focus by using self-report scales is another common way to measure gain- and loss-framing effects. In this circumstance, researchers examine people's chronic regulatory focus, rather than primed regulatory focus. For example, Cesario et al. (2013) investigated how the effects of message framing hinge on individuals' chronic regulatory focus. They found that, to advertise a bottle of mouthwash, message recipients' chronic regulatory focus influenced the effect of framing. Pleasure framing (gain framed) was more effective for the promotion-focused participants,

whereas pain framing (loss framed) was more persuasive for the prevention-focused participants (Cesario et al., 2013). In a cross-cultural study, Uskul et al. (2009) also found that promotion-focused individuals were more likely to be persuaded by a gain-framed message, whereas individuals with prevention focus were more likely to be persuaded by a message with loss framing.

Regulatory focus affects narrative persuasion. Regulatory focus has also been found to influence the effects of narrative-framed messages. Vaughn et al. (2010) suggested that regulatory fit can be completely exterior to the content of narratives, but it can influence the extent of narrative engagement, transportation, and persuasiveness. When individuals' goal pursuit strategies sustain their regulatory focus, they will experience regulatory fit, which will further generate the feeling of rightness (Higgins, 2000). People tend to attribute this feeling to what they are evaluating (Vaughn, Hesse, Petkova, & Trudeau, 2009).

In a narrative context, when people are reading a story, the sensation of feeling right or feeling wrong that arises from regulatory fit or nonfit can be transferred to people's subsequent experiences in the narrative world. Feeling right from regulatory fit would lead people to perceive that the story is "right on" (Vaughn et al., 2009, p. 448). This desirable state is able to enhance people's engagement and transportation when they attribute the feeling of rightness to the enjoyableness of reading the story (Vaughn et al., 2009).

Vaughn et al. (2009) conducted two experiments to test their hypotheses, and the results supported their arguments. Compared to the participants who experienced regulatory nonfit, the individuals who experienced regulatory fit had more mental engagement with the narrative, stronger transportation into the story, and were more persuaded (Vaughn et al., 2009).

The mediator role of processing fluency. It should be noted that the moderating effects of regulatory focus on the persuasiveness of framing may be mediated by processing fluency. A great deal of research has examined the impact of fluency (Lee & Aaker, 2004). Processing fluency refers to the ease of processing a piece of information, and it is usually measured by subjective assessment of ease/difficulty of processing or by reaction time (Grewal et al., 2010).

Lee and Aaker (2004) summarized that research has been using various stimuli across a variety of settings to promote processing fluency, such as prior exposure (e.g., Mandler, Nakamura, & Van Zandt, 1987; Seamon et al., 1995; Lee, 2001), expectancy (e.g., Whittlesea, 1993), or enhanced visual clarity (e.g., Reber, Winkielman, & Schwarz, 1998). It also has been suggested that regulatory fit is able to enhance process fluency (Lee & Aaker, 2004; Lee et al., 2010; Vaughn et al., 2010). This is because it is easier for people to process a message that fits their regulatory focus compared to a message that does not (Vaughn et al., 2010). It also can be explained as when the information is consistent rather than inconsistent with the way people naturally think when they face issues involving both positive and negative outcomes, the information might be easier to process (Lee & Aaker, 2004).

It has been suggested that processing fluency results in enhanced affective judgment (Lee & Aaker, 2004). People may have more favorable attitudes toward a message when they can process that message fluently (Labroo & Lee, 2006). Once processing fluency is enhanced, people will evaluate the message more positively, so that it will be much easier to persuade them (Lee & Aaker, 2004; Vaughn et al., 2010).

Based on the above discussion, gain and loss framing separately fits people's promotion- and prevention-focused orientation. Compared to regulatory nonfit, the regulatory fit may

enhance processing fluency, and further increase the message persuasiveness. Thus, in the context of persuading people to lower their sugar intake, the following hypotheses are generated:

H3a: For promotion-focused individuals, gain-framed ads lead to greater processing fluency (**H3a1**) and intentions to limit sugar intake (**H3a2**) than loss-framed ads.

H3b: For prevention-focused individuals, loss-framed ads lead to greater processing fluency (**H3b1**) and intentions to limit sugar intake (**H3b2**) than gain-framed ads.

H4: Processing fluency mediates the interaction effects between ads' gain vs. loss framing and individuals' regulatory focus on intentions to limit sugar intake.

Since there is no literature comparing the effects of regulatory fit and processing fluency on all three types of framing (gain, loss, neither gain nor loss), the related research question are proposed to compare these effects. Moreover, although there is literature suggesting that regulatory focus can influence narrative effects when there is a regulatory fit, whether or not people's regulatory focus has the same effect on the effectiveness of narrative versus non-narrative messages on individuals' intentions to limit sugar intake via influencing processing fluency is still unclear. Therefore, research questions are proposed as follows and are explored in the present study:

RQ2: Does regulatory focus moderate three types of framing (gain, loss, neither gain nor loss) differently via processing fluency in changing people's intention to limit sugar intake?

RQ3: Does individuals' regulatory focus have the same impact on the effectiveness of narrative versus non-narrative messages on their intentions to limit sugar intake via influencing processing fluency?

The Effects of Consideration of Future Consequences

Consideration of future consequences (CFC). CFC is considered to be an individual difference and has been defined as “the extent to which individuals consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes” (Strathman, Gleicher, Boninger, & Edwards, 1994, p. 743). In other words, individuals differ in the degree of consideration about immediate needs and distant future consequences when making a decision (Buhrau & Sujan, 2015). High-CFC-oriented individuals tend to consider a behavior’s or an event’s future consequences, whereas low-CFC individuals are inclined to consider their present needs (Buhrau & Sujan, 2015). In extreme cases, high-CFC people may not think about immediate implications, no matter positive or negative they are; while low-CFC people may not think about the future outcomes of their current behaviors (Buhrau & Sujan, 2015).

Research has also suggested that low-CFC people are poor at self-regulation, whereas high-CFC individuals are better at regulating themselves (Buhrau & Sujan, 2015). Buhrau and Sujan (2015) claimed that the differences in self-regulation between high- and low-CFC individuals are dependent on both their motivations and abilities. For example, compared to low-CFC individuals, studies have shown that people with high-CFC orientation tend to eat healthy and undertake more physical activity (e.g., Luszczynska, Gibbons, Piko, & Tekozel, 2004), engage in lower cigarette use and alcohol intake (e.g., Strathman et al., 1994; Adams & Nettle, 2009), use a condom (e.g., Dorr, Krueckeberg, Strathman, & Wood, 1999; Appleby et al., 2005), and get tested for diabetes (e.g., Orbell & Hagger, 2006).

Many studies have examined message persuasiveness by connecting temporal framing of the message with people’s CFC orientations (e.g., Strathman et al., 1994; Orbell, Perugini, &

Rakow, 2004; Orbell & Hagger, 2006; Kees, 2011). Temporal framing refers to using a specific time reference to present a message (Kees, 2011). Temporal framing is usually operationalized in time units (e.g., per day vs. per year) or presented by stressing short-term versus long-term consequences of a behavior (Zhao, Nan, Iles, & Yang, 2015). It has been found that individuals with low CFC are more likely to be persuaded when the benefits are framed as immediate and the negative consequences are framed as distant in the future, while the opposite is true for individuals with high CFC. In the present study, temporal framing was not the focus. Rather, the effects of CFC on gain vs. loss framing were examined.

CFC and gain vs. loss framing. Prior research has suggested that CFC can moderate the effects of gain and loss framing (Chen, 2015). For example, O'Connor et al. (2009) demonstrated that high-CFC individuals are more responsive to a message addressing the downside of not testing blood pressure, because these individuals attempt to make sure of their current health status when they are facing an uncertain outcome. In contrast, low-CFC individuals are more responsive to a message addressing the upside of testing blood pressure (O'Connor et al., 2009). O'Connor et al. (2009) explained that this may be because low-CFC individuals perceive themselves as being at low risk for hypertension.

However, it may not always be the case that loss framing works better for high-CFC people and gain framing works better for low-CFC people. Joireman, Shaffer, Balliet, and Strathman (2012) argued that future-oriented individuals (high CFC) have a tendency to adopt promotion orientation and alter present status in order to pursue better but potentially uncertain future outcomes (i.e., pursue gains), while immediate-oriented individuals (low CFC) tend to adopt prevention orientation and avoid immediate losses (i.e., prevent losses). Nevertheless, Joireman et al. (2012) did not use their argument to test whether under a certain situation, gain

framing could work better for high-CFC people and loss framing could better persuade low-CFC people.

There are limited studies that explain how CFC moderates the effects of gain vs. loss framing specifically, although it has been found there is an interaction effect between them. According to the inconsistent arguments discussed above, the effects of CFC on gain and loss framing may depend on different contexts and issues. More studies should be done in this area.

Persuading people to lower their sugar intake is different from the issue examined by O'Connor et al. (2009) (i.e., advocating blood pressure testing), in that lowering sugar intake is not a detection behavior that has the risk of discovering negative outcomes; rather, it is a prevention behavior that will lead to positive results. Therefore, the moderating effects of CFC in the present study may be different from the moderating effects of CFC found by O'Connor et al. (2009).

For many people, lowering sugar intake may take immediate effort (e.g., control self) and sacrifice of the immediate pleasure (e.g., suppress desires) to obtain possible but uncertain future benefits, such as weight loss. Hence, high-CFC individuals (i.e., those who tend to consider future consequences rather than immediate needs) prefer the choice where gains will be obtained in the future and losses are immediate. It may be more in their nature to adopt the recommendation of lower sugar intake than those with low CFC. Furthermore, according to Joireman et al. (2012), high-CFC individuals tend to adopt promotion orientation to pursue gains, while low-CFC individuals tend to adopt prevention orientation to avoid losses. Therefore, it could be posited that individuals who have higher CFC may be more persuaded by gain-framed ads, while individuals who have lower CFC may be more persuaded by loss-framed ads. The following hypotheses are proposed:

H5a: Individuals with higher CFC have greater intentions to limit sugar intake than individuals with lower CFC.

H5b: Gain-framed ads lead to greater intentions to limit sugar intake for individuals with higher CFC.

H5c: Loss-framed ads lead to greater intentions to limit sugar intake for individuals with lower CFC.

CFC and narratives vs. non-narratives. No research has been done to investigate the relationship between CFC and the effectiveness of messages framed by narratives versus non-narratives. However, a recent study conducted by Kim and Nan (2016) may indirectly shed light on this area. Kim and Nan (2016) demonstrated that a message's persuasiveness can be enhanced when a present-oriented message is presented in a narrative frame, or when a future-oriented message is framed in a non-narrative format.

Kim and Nan's (2016) study was based upon construal level theory (CLT; Trope & Liberman, 2000). CLT suggests that individuals generate different mental representations about an event based on the occurrence of the event in the distant future or near future (Trope & Liberman, 2000; Kim & Nan, 2016). According to CLT, the more distant an event will happen in terms of time, the more abstractly an individual will think about it. Specifically, distant events are concerned with high-level construals and abstract mental representations (e.g., a vacation in 5 years may only lead people to imagine relaxation), while immediate events are concerned with low-level construals and concrete mental representations (e.g., a vacation next week will lead people to make specific travel plans).

Kim and Nan (2016) proposed that since narratives involve concrete characters and events, they should be associated with low-level construals; whereas non-narratives are usually

presented by statistical information or didactic arguments, and thus should be associated with high-level construals. The match of narrative versus non-narrative format and the construal level of temporal frames have been shown to increase message persuasiveness (Kim & Nan, 2016).

Drawn from theoretical conceptualization of Kim and Nan's (2016) research, it can be proposed that individuals with low CFC may tend to represent events more concretely at a low-construal level because they are inclined to consider immediate needs rather than future consequences; whereas high-CFC individuals may tend to represent events more abstractly at a high-construal level since they are inclined to consider future consequences rather than immediate needs. Therefore, according to the construal level associated with narratives (low-level construals) vs. non-narratives (high-level construals), the match of construal levels between low CFC and narrative, or between high CFC and non-narrative, will enhance message persuasiveness. The following hypotheses can be generated:

H6a: Narrative-framed ads lead to greater intentions to limit sugar intake for individuals with lower CFC than for those with higher CFC.

H6b: Non-narrative-framed ads lead to greater intentions to limit sugar intake for individuals with lower CFC than for those with higher CFC.

In addition, the persuasiveness of all six types of ad framing on limiting sugar intake is compared. The following research question is proposed:

RQ4: Which of the following six types of ad framing (i.e., gain-framed narrative ads, loss-framed narrative ads, neither gain- nor loss-framed narrative ads, gain-framed non-narrative ads, loss-framed non-narrative ads, and neither gain- nor loss-framed non-narrative ads) lead to individuals' greatest intentions to limit sugar intake?

Based on all the hypotheses and research questions, a hypothesized model is also proposed and tested in the present study (see Figure 1).

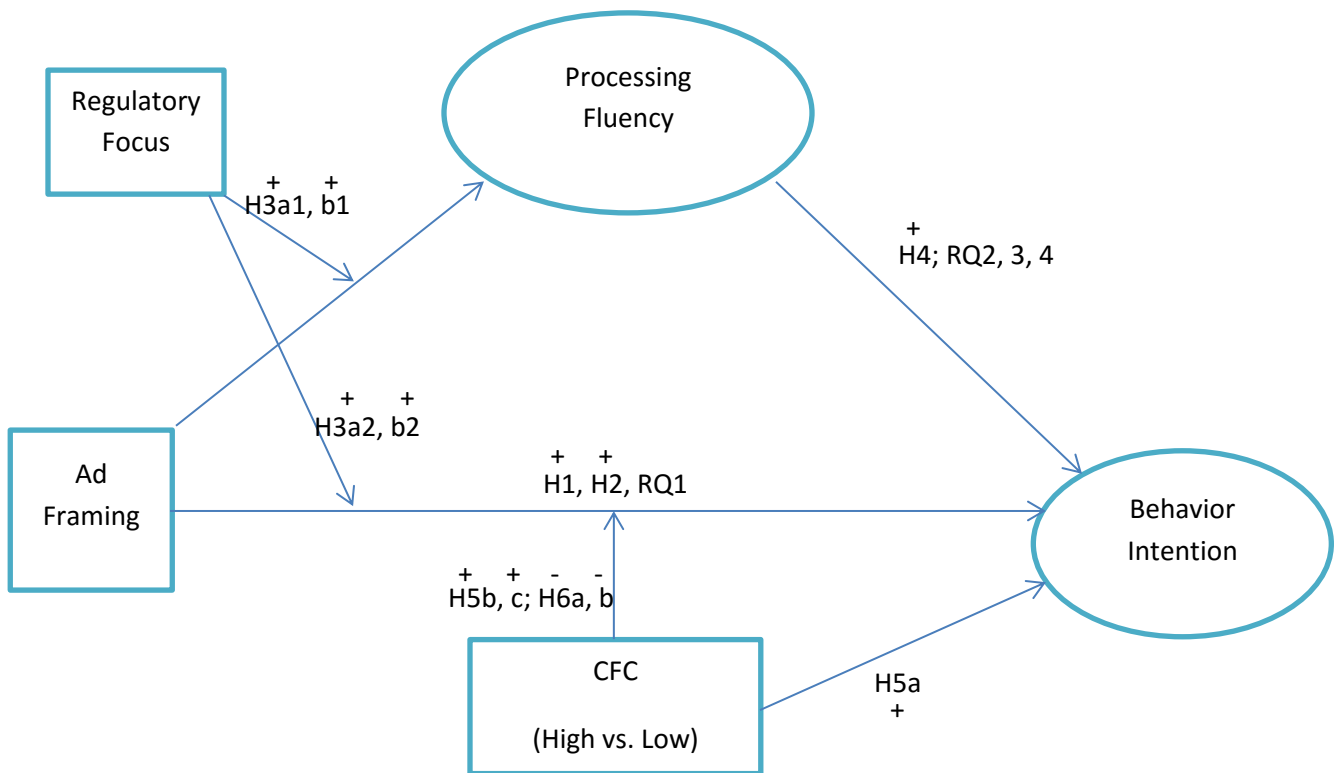


Figure 1. Hypothesized Model

Note: Ad Framing (i.e., 1. narrative gain framing, 2. narrative loss framing, 3. non-narrative gain framing, 4. non-narrative loss framing, 5. narrative neither gain nor loss framing, 6. non-narrative neither gain nor loss framing)

CHAPTER 3

METHOD

This study employed a two (narrative vs. non-narrative framing) $\times$ three (gain vs. loss vs. neither gain nor loss framing) between-subjects online experiment design.

Participants

A total of 1,104 participants were paid and recruited through Amazon Mechanical Turk (MTurk), an online recruiting system which can reach people of different ages, occupations, and locations. Among the 1,104 participants, 559 (50%) were male and 568 (50%) were female. Their ages ranged from 18 to 74 with a mean age of 36.26 ($SD = 12.72$). Most of them were white (70%). More than half of them (56%) were employed. Other occupations included self-employed (19%), students (11%), homemakers (6%), unemployed (5%), retired (3%), and military or others (1%). Their highest levels of education were: some kind of college (71%), master degree (15%), high school (11%), doctoral degree (2%), professional degree (2%), and less than high school (1%).

Procedures

The experiment contained a presentation of stimuli and a questionnaire via Qualtrics, an online survey website. After the participants agreed to participate in this study, they were directed to an online survey. The participants were randomly assigned into one of the six experimental conditions through a randomized block function embedded in the Qualtrics software. They first answered several sets of questions regarding their sugar-eating habits, risk perceptions of high sugar intake, their regulatory focus, and CFC. They then viewed an ad and

filled out a corresponding questionnaire with regard to the processing fluency of viewing the ads, their behavioral intention to lower sugar intake, and demographic information.

A pretest was conducted before formally starting data collection, in order to make sure the stimuli were created appropriately. Meanwhile, all measures were also pretested. The subjects of the pretest were 84 college students recruited from a large Midwest university via the SONA online recruiting system. They participated in this pretest in exchange for course credit. Their average age was 22. The majority of the participants were female (61%) and white (67%). After the students agreed to participate in the pretest, they were directed to view one of the six ads first, and then rated how they agreed with the statements in the manipulation checks. They also rated all the scales that were used in this study.

Stimuli

Six ads were created for six experimental conditions (i.e., narrative gain framing, narrative loss framing, non-narrative gain framing, non-narrative loss framing, narrative neither gain nor loss framing, and non-narrative neither gain nor loss framing) (see Appendix A).

All ads consisted of images and text. In order to control confounds, the images were the same across all conditions, which presented a background of candies, cookies, beverages, and other sweet snacks. All background images were drawn from existing online materials, such as images shown in the latest news. Additionally, there was a title “Americans consume 156 pounds added sugar each year on average! Imagine: 31 five-pound bags for each of us!” placed on the upper right corner of the ads.

The main ad text varied across conditions. However, all text for the different conditions was created to be similar in length; the range in word count was from 212 to 220. In the narrative

conditions, the ads told a personal experience story in the first person. In the non-narrative conditions, the ads presented argumentative lectures with some scientific statistics.

The ads in the gain-framing conditions addressed the benefits of lowering sugar intake (e.g., lose weight, look younger, improve health), while the ads in the loss-framing conditions stressed the negative consequences of continuing a high-sugar diet (e.g., gain weight, look older, get diseases). In the control conditions of neither gain nor loss framing, the ads just kept neutral statements: The neither gain- nor loss-framed narrative ad related a personal story that a high-sugar diet brought neither benefits nor negative consequences, but the narrator also explained that this was because she kept a comprehensive exercise regimen to burn the extra calories; the neither gain- nor loss-framed non-narrative ad presented the neutral facts that Americans eat too much sugar and stated that burning that many extra calories requires a large amount of exercise. Both ads in the neutral conditions exerted persuasion by emphasizing that if one could not guarantee enough exercise, then he/she should reduce sugar intake.

Manipulation Check

Manipulation checks were conducted in order to make sure the stimuli were appropriate. The manipulation checks were all 7-point Likert scales that asked the participants to rate the statements from strongly disagree to strongly agree.

For the ads with gain vs. loss vs. neither gain nor loss framing, participants rated the extent of their agreement regarding three statements: “The ad stresses the benefits of lowering sugar intake,” “The ad stresses the bad consequences of continuing a high-sugar diet,” and “The ad stresses neither the benefits of lowering sugar intake, nor the bad consequences of a high-sugar diet.”

For the ads with narrative vs. non-narrative framing, participants rated the extent of their agreement regarding two statements: “The ad mainly tells a personal experience story” and “The ad mainly provides an argumentative lecture.”

Results of manipulation check in the pretest. The pretest showed that the stimuli were appropriate. A one-way analysis of variance (ANOVA) with post-hoc Tukey HSD test was conducted to check the manipulation of gain, loss, and neither gain nor loss framing.

The results showed that the participants in the gain-framed advertising conditions ($M = 5.43$, $SD = 1.23$) agreed that the ad stressed the benefits of lowering sugar intake more than the participants who were in the loss-framed ($M = 3.89$, $SD = 1.85$) and neither gain- nor loss-framed advertising conditions ($M = 3.96$, $SD = 1.90$), $F(2, 81) = 7.39$, $p < .01$. The participants in the loss-framed advertising conditions ($M = 5.86$, $SD = 1.53$) agreed that the ad stressed the bad consequences of continuing a high-sugar diet more than the participants who were in the gain-framed ($M = 4.50$, $SD = 1.64$) and neither gain- nor loss-framed advertising conditions ($M = 4.68$, $SD = 1.89$), $F(2, 81) = 5.30$, $p < .01$. The participants in the neither gain- nor loss-framed advertising conditions ($M = 4.07$, $SD = 1.92$) agreed that the ad stressed neither the benefits of lowering sugar intake nor the bad consequences of a high-sugar diet more than the participants who were in the gain-framed ($M = 3.00$, $SD = 1.52$) and loss-framed advertising conditions ($M = 2.11$, $SD = 1.32$), $F(2, 80) = 10.42$, $p < .001$.

As for the narrative vs. non-narrative framing, the results of one-way ANOVA showed that the participants in the narrative advertising conditions ($M = 5.02$, $SD = 1.69$) agreed that the ad mainly told a personal experience story more than the participants who were in the non-narrative advertising conditions ($M = 3.73$, $SD = 2.21$), $F(1, 81) = 8.96$, $p < .01$. And the participants in the non-narrative advertising conditions ($M = 4.59$, $SD = 1.96$) agreed that the ad

mainly provided an argumentative lecture more than the participants who were in the narrative advertising conditions ($M = 3.81$, $SD = 1.52$), $F(1, 81) = 4.04$, $p < .05$.

Results of manipulation check in the main experiment. Manipulation checks were conducted once again with the final dataset, in order to make sure the stimuli for all experimental conditions also worked for the sample in the main experiment. The results of one-way ANOVA with post-hoc Tukey HSD test showed that the participants in the gain-framed advertising conditions ($M = 6.37$, $SD = 1.03$) agreed that the ad stressed the benefits of lowering sugar intake more than the participants who were in the loss-framed ($M = 4.42$, $SD = 2.12$) and neither gain- nor loss-framed advertising conditions ($M = 3.70$, $SD = 1.88$), $F(2, 1098) = 230.67$, $p < .001$. The participants in the loss-framed advertising conditions ($M = 6.40$, $SD = .98$) agreed that the ad stressed the bad consequences of continuing a high-sugar diet more than the participants who were in the gain-framed ($M = 5.34$, $SD = 1.64$) and neither gain- nor loss-framed advertising conditions ($M = 3.81$, $SD = 1.90$), $F(2, 1100) = 258.56$, $p < .001$. The participants in the neither gain- nor loss-framed advertising conditions ($M = 4.40$, $SD = 1.95$) agreed that the ad stressed neither the benefits of lowering sugar intake nor the negative consequences of a high-sugar diet more than the participants who were in the gain-framed ($M = 2.06$, $SD = 1.52$) and loss-framed advertising conditions ($M = 2.20$, $SD = 1.59$), $F(2, 1098) = 217.90$, $p < .001$.

The results of one-way ANOVA showed that the participants in the narrative advertising conditions ($M = 6.16$, $SD = 1.03$) agreed that the ad mainly told a personal experience story more than the participants who were in the non-narrative advertising conditions ($M = 1.98$, $SD = 1.36$), $F(1, 1100) = 3311.06$, $p < .001$. The participants in the non-narrative advertising conditions ($M = 5.32$, $SD = 1.61$) agreed that the ad mainly provided an argumentative lecture more than the

participants who were in the narrative advertising conditions ($M = 3.02$, $SD = 1.68$), $F(1, 1100) = 542.16$, $p < .001$. Thus, the stimuli were satisfactory.

Measures

The experiment measured four variables that were used to test the hypotheses and hypothesized model: regulatory focus, CFC, processing fluency, and behavioral intention. Since people's sugar-intake behaviors are directly related to their sugar-eating habits—"habit" is defined as "a usual way of behaving" in the Merriam-Webster Dictionary—a control variable of sugar-eating habits was taken as a covariate in the analyses in order to control for the possible influences of peoples' eating habits with regard to sugar on their behavioral intentions. Additionally, according to the theories on risk perception (e.g., Wildavsky & Dake, 1990), people may be more likely to control their sugar intake if they perceive that high sugar intake is risky or dangerous to their life; therefore, in order to control for its possible influences on people's intentions to limit sugar consumption, another control variable, risk perception about high sugar intake, was also taken as a covariate in the analyses.

Regulatory focus was assessed by a regulatory focus scale adapted from Lockwood, Jordan, and Kunda (2002). Participants rated a 9-point bipolar scale (1=not at all true of me, 9=very true of me), which consisted of a 7-item promotion focus subscale (e.g., "I frequently imagine how I will achieve my hopes and aspirations," "I often think about the person I would ideally like to be in the future") and a 7-item prevention focus subscale (e.g., "In general, I am focused on preventing negative events in my life," "I am more oriented toward preventing losses than I am toward achieving gains").

Lockwood et al.'s (2002) original regulatory focus scale consisted of 18 items. The Cronbach's alpha values of the original subscales of promotion and prevention were .81 and .75.

Four items in the original 18-item scales (i.e., “I often worry that I will fail to accomplish my academic goals,” “I often think about how I will achieve academic success,” “My major goal in school right now is to achieve my academic ambitions,” and “My major goal in school right now is to avoid becoming an academic failure”) were removed because the sample of the present study was not limited to a student sample (see Appendix B).

Participants’ regulatory orientations were determined by comparing their average ratings on the items of the two subscales (Hong & Lee, 2008). If a participant’s average rating of the prevention focus subscale was higher than his/her average rating of the promotion focus subscale, he/she was considered to be a prevention-focused individual. If a participant’s average rating of the promotion focus subscale was higher than his/her average rating of the prevention focus subscale, he/she was considered to be a promotion-focused individual.

CFC was measured by a 12-item CFC scale drawn from Strathman et al. (1994). Participants were asked to rate a 7-point scale (1=strongly disagree, 7=strongly agree) to indicate how they agreed with the statements, such as “I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes,” “My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my action,” and “I consider how things might be in the future, and try to influence those things with my day to day behavior.” (see Appendix B). In the present study, CFC was treated as a continuous variable. Higher scores indicated greater consideration of future consequences. The Cronbach’s alphas of the original scale in Strathman et al.’s (1994) studies for four samples were .80 and above (.82, .86, .81).

Processing fluency was measured by a 7-point scale (1=strongly disagree, 9=strongly agree) by consulting Lee et al. (2010). Participants rated two statements to indicate their perceived ease of processing the message information: “It is easy to process the information

presented in the ad,” and “It is difficult to understand what the ad presented.” Higher scores indicated greater processing fluency. The Cronbach’s alpha value of the processing fluency scale in Lee et al.’s (2010) study was .73.

Behavioral intention was measured by three items adapted from Kees (2011). Participants rated how likely they would perform the following actions on a 7-point bipolar scale (1=not likely at all, 7=very likely): “I will reduce my daily sugar intake,” “I will drink fewer sweet beverages,” and “I will eat less sweet food.” Higher scores indicated stronger intention to lower sugar intake. The Cronbach’s alpha value of the behavioral intention scale in Kees’s (2011) study was .96.

The habit of eating sugar was measured by asking participants to indicate their agreement (7-point scale, 1=strongly disagree, 7=strongly agree) regarding the following eight self-created statements: “I am a sugar lover,” “I love sweets,” “I eat sweet food every day,” “I often drink sweet beverages,” “I don’t think sweet food is a necessity in my diet” (reversed item), “I don’t buy soda” (reversed item), “I usually consume a high-sugar diet,” and “I think my diet has little sugar” (reversed item). Higher scores indicated higher sugar consumption.

After consulting the measures of risk perception in other research domains, such as environmental research (Leiserowitz, 2006), financial and social decision-making (Weber, Blais, & Betz, 2002), and driving behaviors (Ulleberg & Rundmo, 2003), risk perception about high sugar intake was measured by asking participants to rate the following seven self-created statements (7-point scale, 1=not likely at all, 7=very likely) to indicate how likely they perceived they would face the risks associated with high sugar intake: “I will not have any health problem because of eating sweets” (reversed item), “I will be sick,” “I will gain weight,” “I will look

older,” “Sugar will not affect my body” (reversed item), “I will not have a good figure,” and “I will be unhealthy.” Higher scores indicated higher risk perception regarding high sugar intake.

Pretest the measures. The internal consistencies of all measures were also pretested. For the measures of sugar-eating habits, two items (i.e., “I am a sugar lover” and “I love sweets”) were highly correlated (Pearson Correlation > .90, $p < .001$), which indicated that one of them could be eliminated as an unnecessary and redundant question. After removing a redundant item (“I am a sugar lover”), seven items remained in the scale of sugar-eating habits and the internal consistencies among them were good ($\alpha = .81$). Moreover, good internal consistencies were also shown for the scale of risk perception about high sugar intake ($\alpha = .84$), both subscales of regulatory focus (promotion focus subscale: $\alpha = .93$; prevention focus subscale: $\alpha = .80$), and the scale of behavior intention ($\alpha = .90$). In addition, the results of the pretest showed that the measures of CFC ($\alpha = .72$) and processing fluency ($\alpha = .72$) had acceptable reliabilities.

Reliability of the measures in the main experiment. Reliability analyses were conducted to assess the internal consistencies of all measures in the main experiment. The measures and their Cronbach’s alpha values were as follows: regulatory focus (promotion focus subscale: $\alpha = .90$; prevention focus subscale: $\alpha = .80$), CFC ($\alpha = .80$), processing fluency ($\alpha = .84$), behavior intention ($\alpha = .93$), sugar-eating habits ($\alpha = .86$), and risk perception about high sugar intake ($\alpha = .88$). Therefore, the results showed that all measures were reliable. (Appendix B shows all measures and their Cronbach’s alpha values in the main experiment.)

Analytic Strategy

The software SPSS 22 (IBM Corp., 2013), PROCESS v2.12 for SPSS (Hayes, 2014), and Mplus 7 (Muthén & Muthén, 2012) were used for data analysis. The independent variable was ad framing (six types of ad framing in total). The dependent variable was behavioral intention to

lower sugar intake. Two variables, regulatory focus and CFC, were tested as moderators. Processing fluency was tested as a mediator. Two control variables (i.e., sugar-eating habits, and risk perception about high sugar intake) were treated as covariates in the analyses.

First, ANOVA were employed by using SPSS to analyze all the hypotheses and the research questions that involved the categorical predictors (i.e., ad framing, regulatory focus), but without involving the mediator. Second, regression analyses were employed by using SPSS to analyze the hypotheses involved with the predictor of CFC, which was treated as a continuous variable. Third, moderated mediation analysis was employed by using PROCESS in SPSS to analyze the hypotheses and the research questions that involved testing the moderated mediation relationships among the variables. Finally, Structural Equation Modeling (SEM) was performed by using Mplus to evaluate the model with all variables.

CHAPTER 4

RESULTS

Results of ANOVA and Regression Analysis

Hypothesis 1 and Research Question 1: The effects of gain vs. loss vs. neither gain nor loss framing on behavior intention. Hypothesis 1 predicted that gain-framed ads would lead to greater intention to limit sugar intake than loss-framed ads. Research Question 1 asked that whether or not neither gain- nor loss-framed ads would lead to different sugar reducing intention from the gain- and loss-framed ads. An ANOVA with post-hoc Tukey HSD test was used to analyze both Hypothesis 1 and Research Question 1.

The results showed that there was a statistically significant effect of ad framing (gain vs. loss vs. neither gain nor loss) on people's intentions to limit sugar intake, $F(2, 1089) = 11.22$, $p < .001$, partial $\eta^2 = .02$. The results of the post-hoc Tukey HSD test showed that there was no significant difference between the effects of gain framing ($M = 4.92$, $SD = 1.64$) and loss framing ($M = 4.85$, $SD = 1.58$), which indicated the data were inconsistent with Hypothesis 1. However, there were significant differences between the effects of gain framing ($M = 4.92$, $SD = 1.64$) and neither gain nor loss framing ($M = 4.47$, $SD = 1.60$), as well as between the effects of loss framing ($M = 4.85$, $SD = 1.58$) and neither gain nor loss framing ($M = 4.47$, $SD = 1.60$). Therefore, both gain framing and loss framing were more effective than neither gain nor loss framing in leading people to have stronger intentions to limit sugar intake, but there were no differences between the effects of gain and loss framing (see Table 1 and Figure 2).

Table 1. Means and Standard Deviations of Behavioral Intention among Gain-, Loss-, vs. Neither Gain- nor Loss-Framed Conditions

	<i>N</i>	<i>Mean (SD)</i>	<i>F-value</i>	Partial η^2
Total	1094	4.75 (1.62)	11.22***	.02
Gain framing	365	4.92 (1.64)		
Loss framing	368	4.85 (1.58)		
Neither gain nor loss framing	361	4.47 (1.60)		

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$

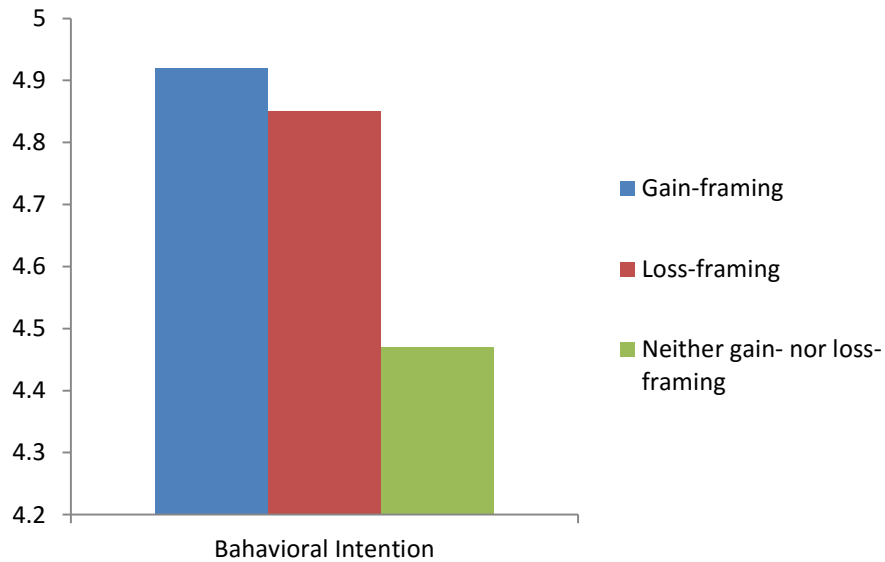


Figure 2. The Effects of Ad Framing (Gain vs. Loss vs. Neither Gain nor Loss) on Behavioral Intention

Hypothesis 2: The effects of narrative vs. non-narrative framing on behavioral intention. Hypothesis 2 predicted that narrative-framed advertising would lead people to have greater intentions to limit sugar intake than non-narrative advertising (see Table 2). The results of ANOVA showed that there was a statistically significant effect of ad framing (narrative vs. non-narrative) on people's intentions to limit sugar intake, $F(1, 1090) = 15.46, p < .001$, partial $\eta^2 = .02$. However, the result was opposite to Hypothesis 2. That is, non-narrative advertising ($M = 4.94, SD = 1.56$) led people to have greater intentions to limit sugar intake than narrative advertising ($M = 4.55, SD = 1.66$) (see Figure 3).

Table 2. Means and Standard Deviations of Behavioral Intention between the Conditions with Narrative vs. Non-narrative Framing

	<i>N</i>	<i>Mean (SD)</i>	<i>F-value</i>	Partial η^2
Total	1094	4.75 (1.62)	15.46***	.02
Narrative Framing	539	4.55 (1.66)		
Non-narrative Framing	555	4.94 (1.56)		

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$

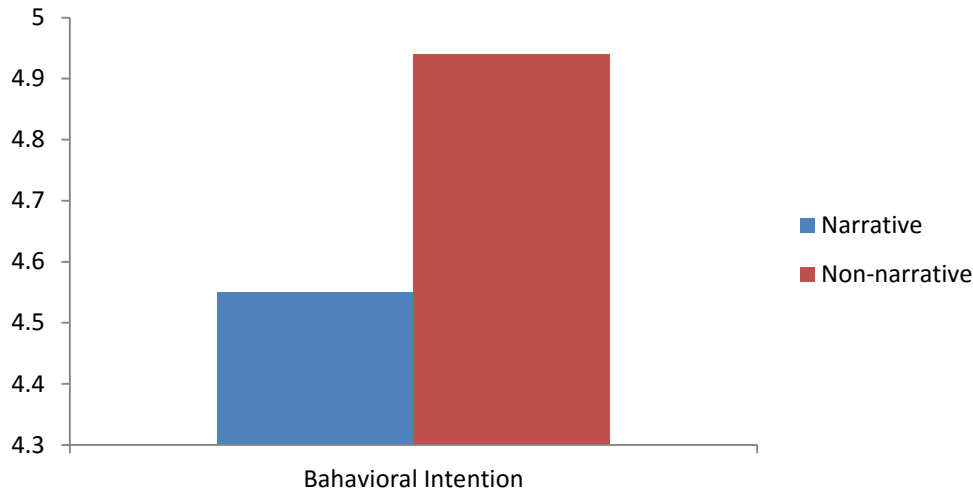


Figure 3. The Effects of Ad Framing (Narrative vs. Non-narrative) on Behavioral Intention

Hypothesis 3: The moderating effects of regulatory focus on gain vs. loss framing.

Hypothesis 3 proposed that regulatory focus would moderate the effects of gain vs. loss framing on people's processing fluency and behavior intentions. Specifically, for promotion-focused individuals, gain-framed ads would lead to greater processing fluency (H3a1) and intentions to limit sugar intake (H3a2) than loss-framed ads; for prevention-focused individuals, loss-framed ads would lead to greater processing fluency (H3b1) and intentions to limit sugar intake (H3b2) than gain-framed ads. Univariate analysis was conducted for these hypotheses. The results showed that regulatory focus moderated the effects of gain vs. loss framing on behavior intention but not on processing fluency (see Table 3).

The main effect of regulatory focus on processing fluency was statistically significant, $F(1, 732) = 11.12, p < .01$, partial $\eta^2 = .02$. Promotion-focused individuals ($M = 8.03, SD = 1.40$) had greater processing fluency than prevention-focused individuals ($M = 7.56, SD = 1.79$). The main effect of gain ($M = 7.84, SD = 1.66$) vs. loss framing ($M = 7.98, SD = 1.36$) was not significant, $F(1, 732) = 1.12, p = .29$, partial $\eta^2 = .00$. The interaction effect of regulatory focus

and gain vs. loss framing on processing fluency was also not significant, $F(1, 732) = .06, p = .81$, partial $\eta^2 = .00$. Thus, the data were inconsistent with Hypothesis 3a1 and Hypothesis 3b1. That is, gain and loss framed ads did not have any different effects on changing processing fluency for prevention-focused individuals or promotion-focused individuals.

The main effect of regulatory focus on behavioral intentions was statistically significant, $F(1, 727) = 13.70, p < .001, \eta^2 = .02$. Promotion-focused individuals ($M = 5.01, SD = 1.57$) had greater behavioral intentions to limiting sugar intake than prevention-focused individuals ($M = 4.48, SD = 1.68$). The main effect of gain ($M = 4.92, SD = 1.64$) vs. loss framing ($M = 4.85, SD = 1.58$) was not significant, $F(1, 727) = .53, p = .47$, partial $\eta^2 = .00$. Nevertheless, there was a statistically significant interaction effect between regulatory focus and gain vs. loss framing on behavior intention, $F(1, 727) = 7.89, p < .01$, partial $\eta^2 = .01$. That is, for promotion-focused individuals, gain-framed ads ($M = 5.14, SD = 1.52$) led to greater intentions to limit sugar intake than loss-framed ads ($M = 4.89, SD = 1.60$); for prevention-focused individuals, loss-framed ads ($M = 4.69, SD = 1.51$) led to greater intentions to limit sugar intake than gain-framed ads ($M = 4.31, SD = 1.81$). Therefore, the data were consistent with Hypothesis 3a2 and Hypothesis 3b2 (see Figure 4).

Table 3. Means and Standard Deviations of Behavioral Intention and Processing Fluency in the Conditions of Ad Framing (Gain vs. Loss) × Regulatory Focus

	Gain Framing		Loss Framing	
	Prevention-Focus	Promotion-Focus	Prevention-Focus	Promotion-Focus
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>
Processing Fluency	7.49 (2.00)	7.79 (1.50)	7.65 (1.51)	8.08 (1.30)
Behavioral Intention	4.31 (1.81)	5.14 (5.12)	4.69 (1.51)	4.89 (1.60)

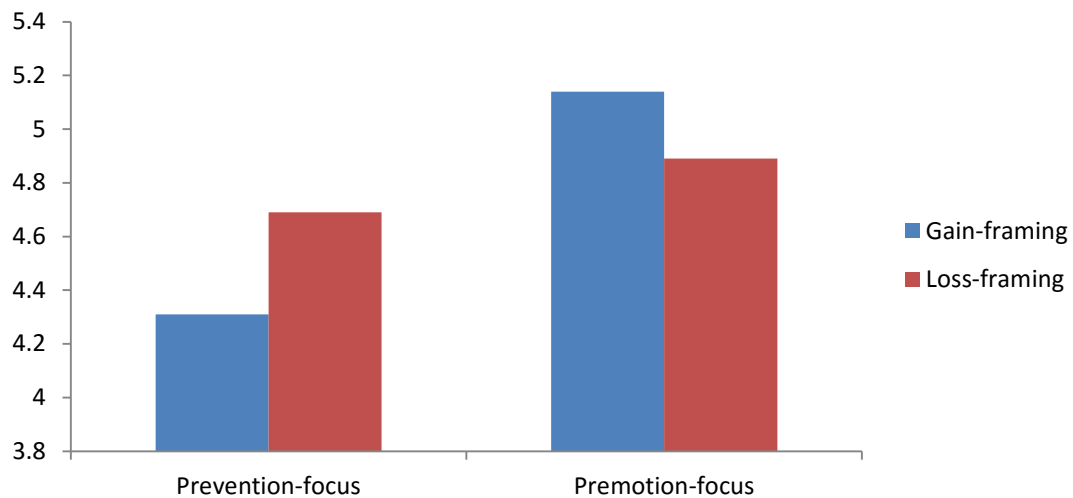


Figure 4. Interaction Effects of Ad Framing (Gain vs. Loss) and Regulatory Focus on Behavioral Intention

Hypothesis 4 and Research Questions 2 and 3: The moderated mediation effects via the mediator of processing fluency. Hypothesis 4 predicted that processing fluency would mediate the interaction effects between ads' gain vs. loss framing and the individuals' regulatory focus on intentions to limit sugar intake. Research Question 2 asked whether regulatory focus would moderate three types of framing (gain, loss, neither gain nor loss) differently via processing fluency in changing people's intentions to limit sugar intake. Research Question 3 asked whether or not an individual's regulatory focus has the same impacts on the effectiveness of narrative versus non-narrative messages on an individual's intention to limit sugar intake via influencing processing fluency.

To test Hypothesis 4 and Research Questions 2 and 3, several moderated mediation models were evaluated by using the software PROCESS v2.12 (Hayes, 2014) in SPSS 22. PROCESS model 8 was selected for each model analysis. For testing indirect effects, the confidence intervals were bias-corrected based on bootstrap samples of 5,000 (Preacher, Rucker, & Hayes, 2007). Following the structure of PROCESS model 8, in each model analysis, ad framing was entered as independent variable, behavior intention was entered as dependent variable, regulatory focus was entered as the moderator, processing fluency was entered as the mediator, and sugar-eating habits and risk perception about sugar intake were controlled as covariates.

Since the results of Hypotheses 3a1 and 3b1 had already shown that there was no interaction effect between regulatory focus and gain vs. loss framing on processing fluency, which indicated processing fluency did not mediate the interaction effects between ads' gain vs. loss framing and individuals' regulatory focus on intentions to limit sugar intake; therefore,

Hypothesis 4 should be rejected directly. The results of a moderated mediation model also confirmed this conclusion.

In this model, ad framing (gain vs. loss) was entered as an independent variable. The model fit the data, $R^2 = .02$, $F(6, 726) = 16.72$, $p < .001$. A bias-corrected bootstrap confidence interval for the indirect effect of the interaction between ad framing (gain vs. loss) and regulatory focus on behavioral intentions through processing fluency based on 5,000 bootstrap samples was neither above zero nor below zero (LLCI-ULCI = $-.07 - .12$), indicating that processing fluency was not a mediator between the interaction effect of ad framing (gain vs. loss) and regulatory focus on behavioral intentions. Thus, it was confirmed that the data were not consistent with Hypothesis 4.

Research Question 2 was analyzed by another two moderated mediation models, besides the abovementioned moderated mediation model with the independent variable of ad framing (gain vs. loss). In order to test whether regulatory focus would moderate three types of framing (gain, loss, neither gain nor loss) differently via processing fluency in changing people's intentions to limit sugar intake, ad framing with gain vs. neither gain nor loss and ad framing with loss vs. neither gain nor loss were separately entered as the independent variable in these two models. The results showed that the first model fit the data, $R^2 = .19$, $F(6, 719) = 28.91$, $p < .001$. A bias-corrected bootstrap confidence interval for the indirect effect of the interaction between regulatory focus and ad framing (gain vs. neither gain nor loss) on behavioral intentions through processing fluency was neither above zero nor below zero (LLCI-ULCI = $-.02 - .07$), indicating that there was no moderated mediation in the abovementioned relationship.

When ad framing (loss vs. neither gain nor loss) was entered as independent variable, the model also fit the data, $R^2 = .02$, $F(6, 722) = 25.17$, $p < .001$. A bias-corrected bootstrap

confidence interval for the indirect effect of the interaction between regulatory focus and ad framing (loss vs. neither gain nor loss) on behavioral intentions through processing fluency was neither above zero nor below zero (LLCI-ULCI = -.05 - .09), indicating that there was no moderated mediation in the abovementioned relationship.

Therefore, the results of Research Question 2 showed that in general regulatory focus did not moderate three types of framing (gain, loss, neither gain nor loss) differently via processing fluency in changing people's intention to limit sugar intake, since processing fluency did not significantly mediate the interaction effects between regulatory focus and ad framing (gain, loss, neither gain nor loss) on behavioral intentions.

Research Question 3 was also analyzed by a moderated mediation model, in which ad framing (narrative vs. non-narrative) was entered as the independent variable. The results showed that the model fit the data, $R^2 = .16$, $F(6, 1087) = 34.77$, $p < .001$. A bias-corrected bootstrap confidence interval for the indirect effect of the interaction between regulatory focus and ad framing (narrative vs. non-narrative) on behavioral intentions through processing fluency was neither above zero nor below zero (LLCI-ULCI = -.03 - .12), indicating that there was no moderated mediation in the abovementioned relationship. However, conditional indirect effects of ad framing (narrative vs. non-narrative) on behavioral intentions at values of the moderator regulatory focus showed that: for prevention-focused individuals, processing fluency did not mediate the effect of ad framing on their behavioral intentions ($ab = .01$, LLCI-ULCI = -.05 - .08); but for promotion-focused individuals, processing fluency mediated the effect of ad framing on their behavioral intentions ($ab = -.03$, LLCI-ULCI = -.07 - (-.001)). This indicated that ad framing (narrative vs. non-narrative) did not affect prevention-focused individuals' behavioral intentions through processing fluency, but it did affect promotion-focused individuals'

behavioral intentions through processing fluency. For promotion-focused individuals, non-narrative framing led to greater intention to limit sugar intake through processing fluency than narrative framing.

Hypotheses 5 and 6: The main effect and moderating effects of CFC. Hypothesis 5a predicted that the individuals with higher CFC would have greater intentions to limit sugar intake than the individuals with lower CFC. Hypotheses 5b and 5c predicted that there would be an interaction effect between CFC and ad framing (gain vs. loss) on behavioral intentions. Hypotheses 6a and 6b predicted that there would be an interaction effect between CFC and ad framing (narrative vs. non-narrative) on behavioral intentions.

Since CFC was taken as a continuous variable in this study, a regression analysis was used to test all these hypotheses. The continuous variables were mean-centered before they were entered as a predictor. The results showed that the model fit, $adj. R^2 = .08$, $F(7, 725) = 9.89$, $p < .001$. The individuals with higher CFC have greater intentions to limit sugar intake than the individuals with lower CFC, $\beta = .12$, $p < .05$. Thus, the data were consistent with Hypothesis 5a.

There was no significant interaction effect between CFC and ad framing (gain vs. loss) on behavioral intentions, $\beta = .04$, $p = .44$. That is, CFC did not moderate the effects of gain vs. loss framing on behavioral intention to limit sugar intake. Therefore, the data were not consistent with Hypotheses 5b and 5c.

However, the results showed that there was a significant interaction effect between CFC and ad framing (narrative vs. non-narrative) on behavioral intentions, $\beta = -.12$, $p < .05$. That is, CFC moderated the effects of narrative vs. non-narrative framing on behavioral intention to limit sugar intake. Specifically, narrative-framed ads led to greater intentions to limit sugar intake for the individuals with lower CFC than for those with higher CFC; non-narrative-framed ads led to

greater intentions to limit sugar intake for the individuals with lower CFC than for those with higher CFC. Therefore, the data were consistent with Hypotheses and 6a and 6b (see Table 4).

Table 4. Main and Interaction Effects of CFC and Ad Framing (Gain vs. Loss, and Narrative vs. Non-narrative) on Behavioral Intention

	<i>B</i>	<i>SE B</i>	β
CFC	.24	.12	.12**
Gain vs. Loss framing	.09	.11	.03
Narrative vs. Non-narrative	-.20	.12	-.07*
CFC $\times$ Gain vs. loss framing	.11	.14	.04
CFC $\times$ Narrative vs. Non-narrative	-.33	.14	-.12**
Sugar-Eating Habits	-.22	.05	-.18***
Risk Perception about High Sugar Intake	.27	.04	.19***

Notes: 1. *adj. R*² = .08, *F* (7, 725) = 9.89, *p* < .001.

2. **p* < .10, ***p* < .05, ****p* < .001

Research Question 4: The effects of six types of ad framing. Research Question 4 asked which of the following six types of ad framing (i.e., gain-framed narrative ads, loss-framed narrative ads, neither gain- nor loss-framed narrative ads, gain-framed non-narrative ads, loss-framed non-narrative ads, and neither gain- nor loss-framed non-narrative ads) leads to individuals' greatest intentions to limit sugar intake. To better assess the different effects among these six types of ad framing, all other tested variables were controlled as covariates in order to eliminate the influences of those variables.

The results of ANOVA showed that there was a significant difference among the effects of the six types of ad framing on people's behavioral intentions to limit sugar intake, $F(5, 1072) = 10.08, p < .001$, partial $\eta^2 = .05$. Neither gain- nor loss-framed narrative ads were found to be the least effective in leading people's behavioral intentions to limit sugar intake, $M = 4.04, SD = 1.69, p < .001$, partial $\eta^2 = .02$. However, the other five types of ads did not affect people's behavioral intentions differently from each other (see Table 5).

Table 5. Means, Mean Differences, and Standard Deviations of Behavioral Intention across Six Types of Ad Framing Experimental Conditions

	Condition1	Condition2	Condition3	Condition4	Condition5	Condition6
Condition1	4.76 (.11)					
Condition2	.04 (.16)	4.79 (.11)				
Condition3	.41 (.16)	.37 (.15)	5.16 (.11)			
Condition4	.11 (.15)	.08 (.15)	-.29 (.15)	4.87 (.11)		
Condition5	-.60 (.16)*	-.64 (.16)*	-1.01(.16)*	-.72 (.16)*	4.15 (.11)	
Condition6	.02 (.16)	-.02 (.16)	-.39 (.15)	-.10 (.16)	.62 (.16)*	4.77 (.11)

Notes: 1. Condition1-6: 1. Narrative Gain framing; 2. Narrative Loss framing; 3. Non-narrative Gain framing; 4. Non-narrative Loss framing; 5. Narrative Neither Gain nor Loss framing; 6. Non-narrative Neither Gain nor Loss framing

2. * $p < .10$, ** $p < .05$, *** $p < .001$

Results of SEM

To test the full model, in which all variables were included, SEM was employed by using Mplus 7 (Muthén & Muthén, 2012). Since ad framing (gain vs. loss vs. neither gain nor loss) was a variable that had three categories, it was dummy coded into three variables in order to avoid having the analysis treat it as a continuous variable. Gain framing was selected to be the reference group, so that the results could show the difference between gain and loss framing, as well as the difference between gain and neither gain nor loss framing. To compare the difference between loss framing and neither gain nor loss framing, neither gain nor loss framing was chosen as the reference group for the analysis. Asymmetric bootstraps with 5,000 bootstrap replicates were also employed to test the indirect effect (Preacher, Rucker, & Hayes, 2007). The results showed that the model fit the data. $\chi^2(66) = 3066.459$, $p < .001$; CFI = .984; TLI = .972; RMSEA = .034 (see Figure 5, 6, 7, 8).

However, considering all possible influences by including all variables in one SEM model, some results were different from the results of ANOVA and regression analysis.

The effects of ad framing (gain vs. loss vs. neither gain nor loss). The results of the direct effects of ad framing (gain vs. loss vs. neither gain nor loss) on behavioral intention showed that gain framing is significantly more effective than loss framing in leading to greater intention to limit sugar intake, $B = -.45$, $\gamma = -.14$, $p < .01$. Therefore, this result was different from the result of ANOVA. That is, the data were consistent with Hypothesis 1.

Moreover, gain framing is also significantly more effective than neither gain nor loss framing in changing behavioral intention, $B = -.51$, $\gamma = -.15$, $p < .001$. However, there were no significantly different effects between loss framing and neither gain nor loss framing on behavioral intention, $B = .06$, $\gamma = .02$, $p = .70$.

The effects of ad framing (narrative vs. non-narrative). The results of the direct effects of ad framing (narrative vs. non-narrative) on behavioral intention showed that non-narrative framing is significantly more effective than narrative framing in leading to greater intention to limit sugar intake, $B = -.72$, $\gamma = -.23$, $p < .001$. This result was consistent with the results of ANOVA. That is, the data were opposite to Hypothesis 2.

The moderating effects of regulatory focus. The results showed that regulatory focus had a significant effect on processing fluency, $B = -.56$, $\gamma = -.15$, $p < .05$. Promotion-focused individuals had greater processing fluency than prevention-focused individuals. But there was no significant interaction effect between ad framing (gain vs. loss) and individuals' regulatory focus (prevention vs. promotion) on processing fluency, $B = .00$, $\gamma = .00$, $p = .989$. The results were consistent with the results of ANOVA, which showed that the data were not consistent with Hypotheses 3a1 and 3b1.

The results also showed that regulatory focus had a significantly direct effect on behavioral intention to limit sugar intake, $B = -1.11$, $\gamma = -.30$, $p < .001$. Promotion-focused individuals had greater intention to limit sugar intake than prevention-focused individuals. Moreover, there was a significant interaction effect between ad framing (gain vs. loss) and individuals' regulatory focus (prevention vs. promotion) on behavioral intention, $B = .72$, $\gamma = .12$, $p < .01$. Specifically, for promotion-focused individuals, gain framing was more effective to lead to greater intentions to limit sugar intake than loss framing; for prevention-focused individuals, loss framing was more effective than gain framing. These results were consistent with the results of ANOVA, which showed that Hypotheses 3a2 and 3b2 were supported.

In addition, it was found that regulatory focus also moderated the effects of ad framing (narrative vs. non-narrative) on behavioral intention, $B = .59$, $\gamma = .12$, $p < .01$. Specifically, for

promotion-focused individuals, non-narrative framing was more effective in leading to greater intentions to limit sugar intake than narrative framing; for prevention-focused individuals, narrative framing was more effective than non-narrative framing. However, this interaction effect was also not significant on processing fluency, $B = .25$, $\gamma = .05$, $p = .29$.

The moderated mediation. The above results of Hypotheses 3a1, 3b1, 3a2, and 3b2 showed that there was an interaction effect between ad framing (gain vs. loss) and regulatory focus on behavioral intention, but not on processing fluency, which indicated that ad processing fluency did not mediate the interaction effect between ad framing (gain vs. loss) and regulatory focus on behavioral intention. The indirect effect of this interaction on behavioral intention through processing fluency was also not significant ($B = .00$, $\gamma = .00$, $p = .99$), which confirmed that the data were not consistent with Hypothesis 4.

Moreover, the interaction effects between other types of ad framing and regulatory focus on behavioral intention were also not significantly mediated by processing fluency. That is, there were no moderated mediation effects among ad framing, regulatory focus, and processing fluency on behavioral intention.

The moderating effects of CFC. The results showed that there was no significant effect of CFC on behavioral intention ($B = .15$, $\gamma = .08$, $p = .26$), which was inconsistent with the result of regression analysis. Hence, the data were not consistent with Hypothesis 5a.

Moreover, there was also no significant interaction effect between ad framing (gain vs. loss) and CFC on behavioral intention, $B = -.02$, $\gamma = -.01$, $p = .90$. This result was consistent with the result of regression analysis. Thus, the data were not consistent with Hypotheses 5b and 5c.

However, it was found that CFC moderated the effects of ad framing (narrative vs. non-narrative) on behavioral intention to limit sugar intake, $B = -.24$, $\gamma = -.10$, $p < .05$. Specifically,

narrative framing was more effective for individuals with lower CFC to have greater intentions of limiting sugar intake; non-narrative framing was more effective for individuals with higher CFC to have greater intentions of limiting sugar intake. This result was consistent with the result of regression analysis. And the data were consistent with Hypotheses 6a and 6b.

The mediating effect of processing fluency. The results showed an additional finding that processing fluency mediated the effects of ad framing (narrative vs. non-narrative) on behavioral intention to limit sugar intake. Specifically, non-narrative framing led to greater processing fluency than narrative framing ($B = -.68$, $\gamma = -.21$, $p < .05$), and thereby had a greater total effect on behavioral intention to limit sugar intake than narrative framing ($B = -.80$, $\gamma = -.26$, $p < .001$). Processing fluency also significantly affected behavioral intention, $B = .12$, $\beta = .12$, $p < .001$. Greater processing fluency led to greater intention to limit sugar intake. Moreover, there was a significant indirect effect of ad framing (narrative vs. non-narrative) on behavioral intention through processing fluency ($B = -.10$, $\gamma = -.03$, $p < .01$), indicating that processing fluency was a significant mediator between the effects of ad framing (narrative vs. non-narrative) on people's intentions to limit sugar intake.

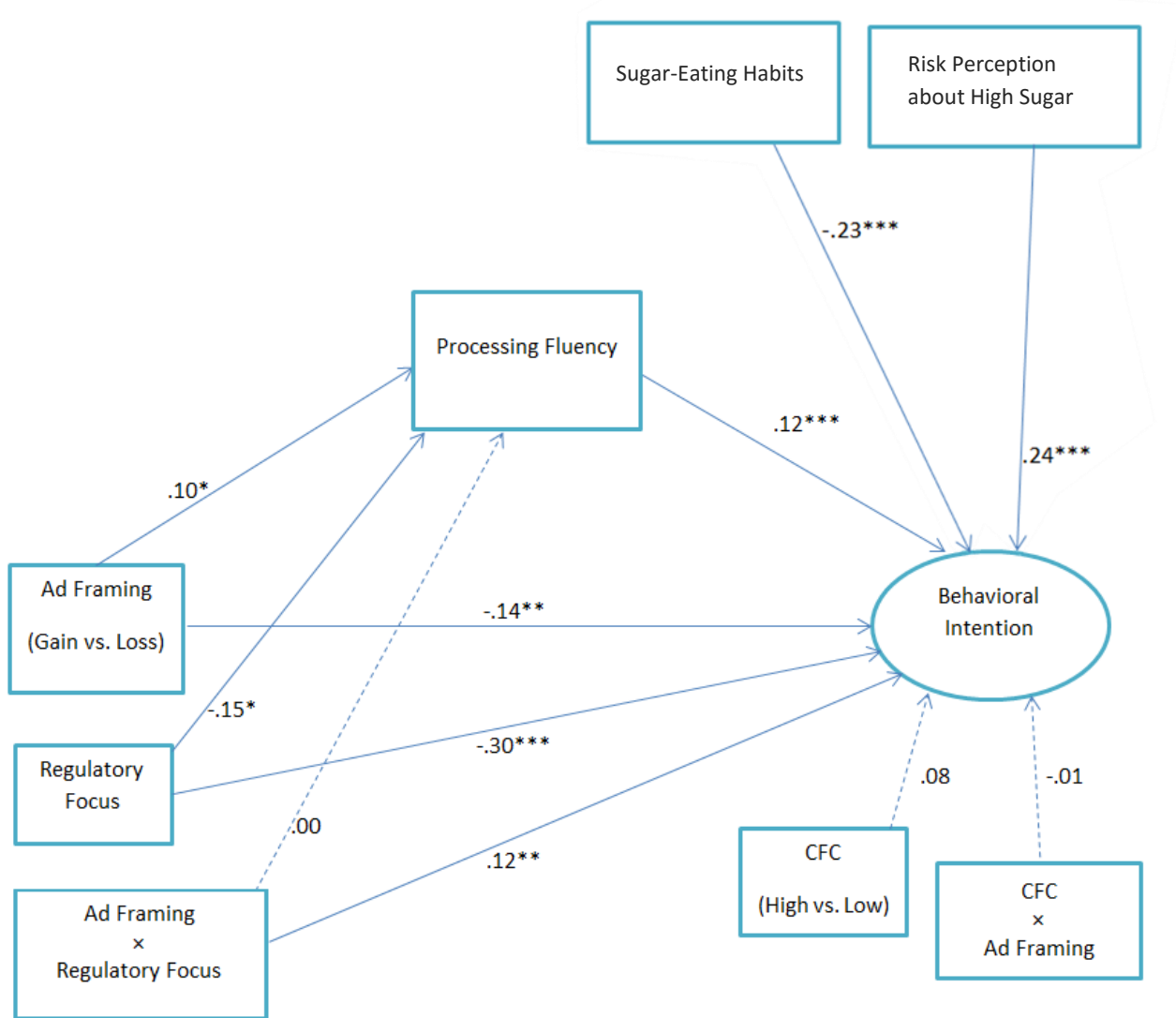


Figure 5. Final Model (Ad Framing: Gain vs. Loss)

Note:

1. $\chi^2 (66) = 3066.459, p < .001$; CFI = .984; TLI = .972; RMSEA = .034
2. The model was evaluated by using gain framing as the reference group
3. * $p < .05$, ** $p < .01$, *** $p < .001$
4. Dotted line indicates the effect is not statistically significant at 95% level of confidence.
5. The indirect effect of ad framing (gain vs. loss) on behavioral intention through processing fluency is .04, $p = .07$.

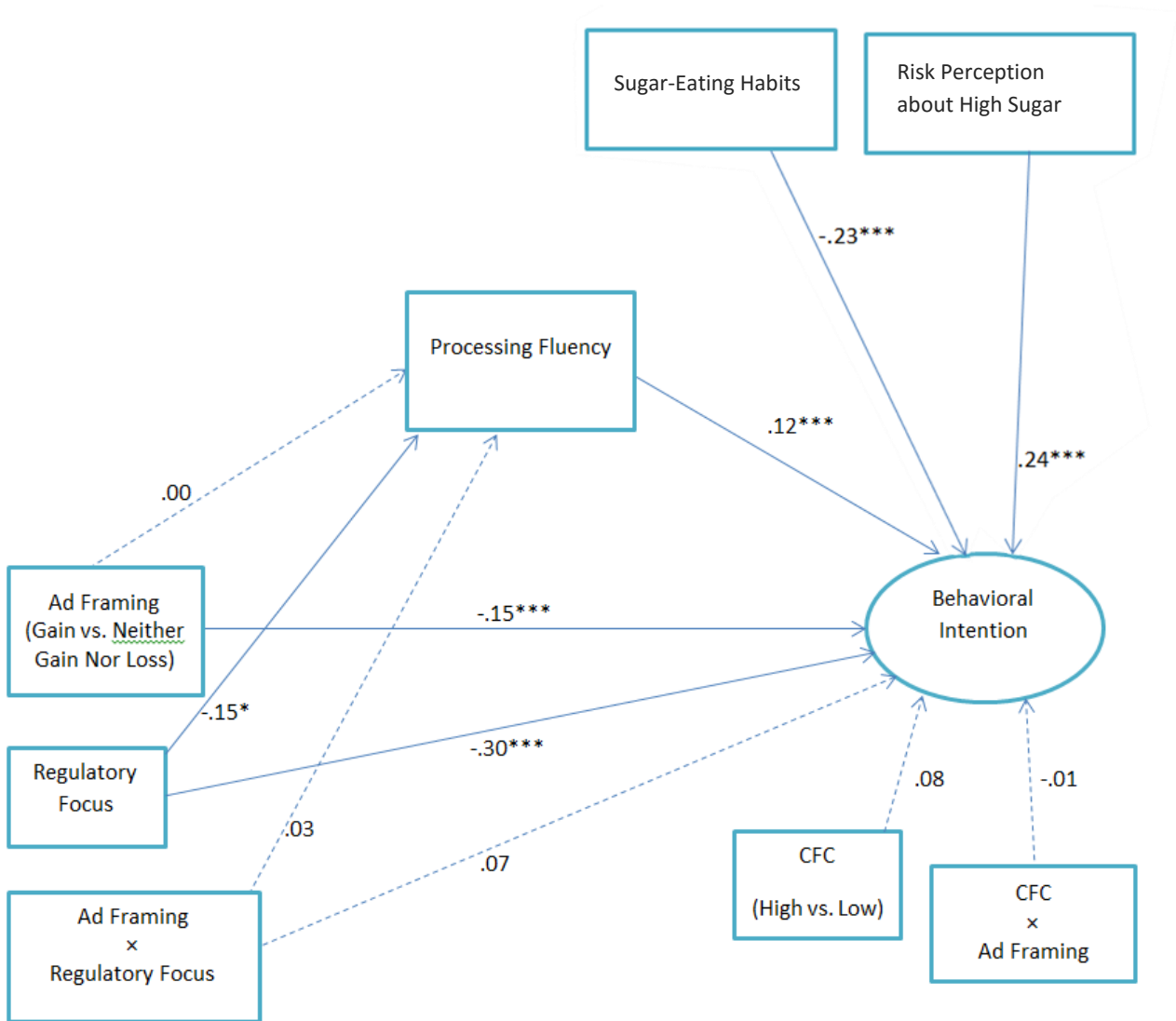


Figure 6. Final Model (Ad Framing: Gain vs. Neither Gain Nor Loss)

Note:

1. $\chi^2 (66) = 3066.459, p < .001$; CFI = .984; TLI = .972; RMSEA = .034
2. The model was evaluated by using gain framing as the reference group
3. * indicates $p < .05$, ** indicates $p < .01$, *** indicates $p < .001$
4. Dotted line indicates the effect is not statistically significant at 95% level of confidence.
5. The indirect effect of ad framing (gain vs. neither gain nor loss) on behavioral intention through processing fluency is .00, n.s.

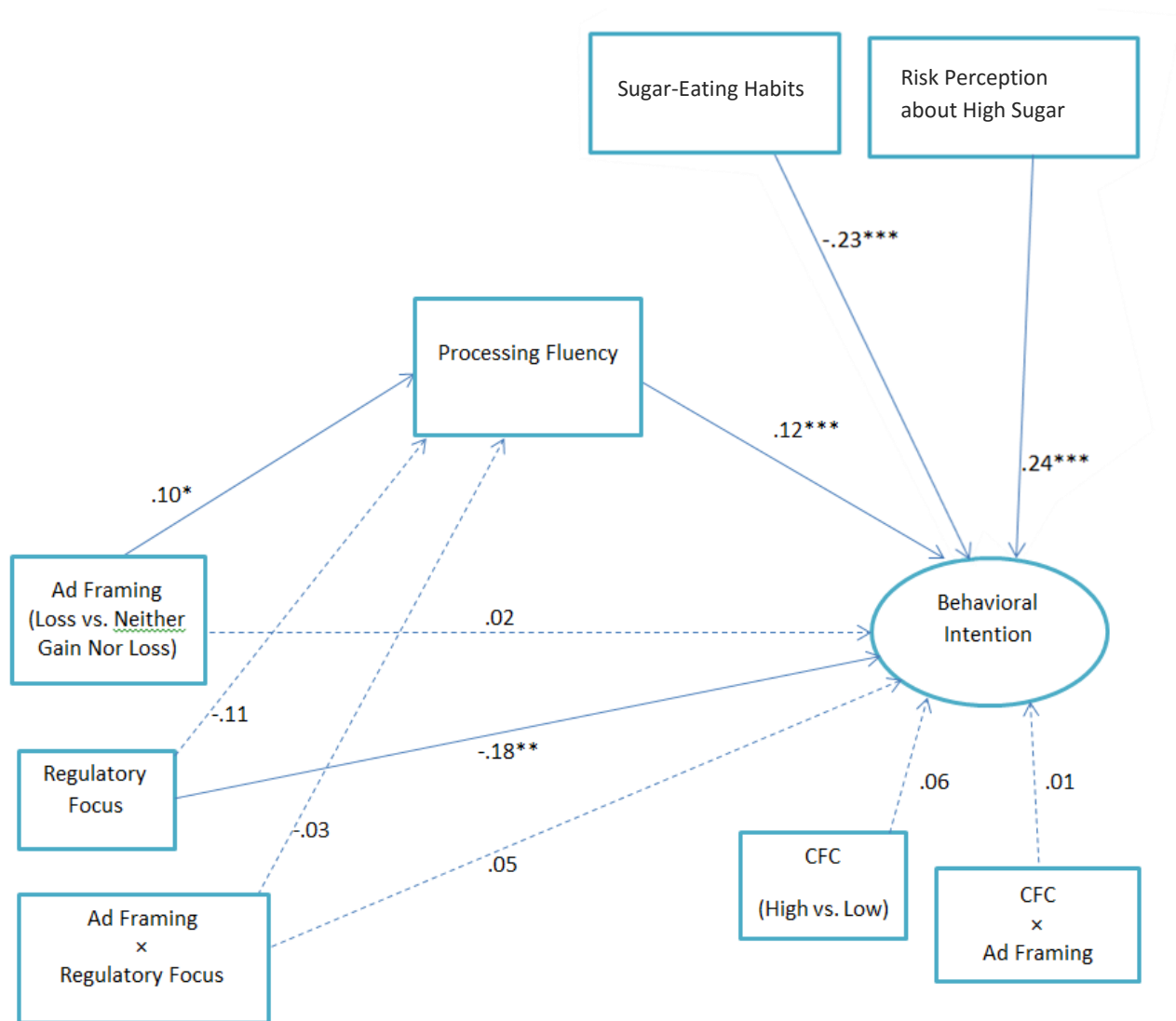


Figure 7. Final Model (Ad Framing: Loss vs. Neither Gain Nor Loss)

Note:

1. $\chi^2 (66) = 3066.459, p < .001$; CFI = .984; TLI = .972; RMSEA = .034
2. The model was evaluated by using neither gain nor loss framing as the reference group
3. * $p < .05$, ** $p < .01$, *** $p < .001$
4. Dotted line indicates the effect is not statistically significant at 95% level of confidence.
5. The indirect effect of ad framing (loss vs. neither gain nor loss) on behavioral intention through processing fluency is .04, $p = .07$.

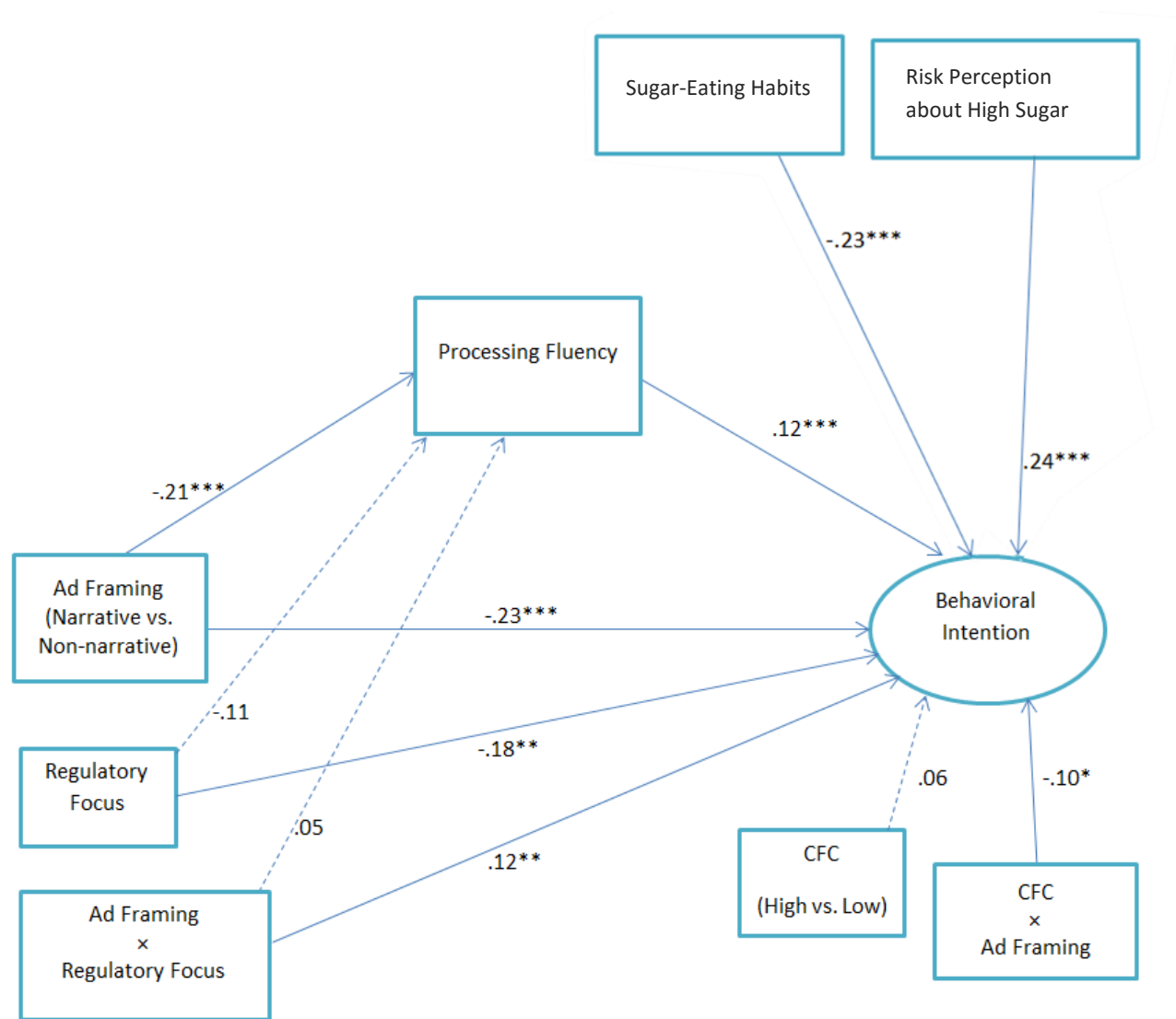


Figure 8. Final Model (Ad Framing: Narrative vs. Non-Narrative)

Note:

1. $\chi^2 (66) = 3066.459, p < .001$; CFI = .984; TLI = .972; RMSEA = .034
2. The model was evaluated by using neither gain nor loss framing as the reference group
3. * $p < .05$, ** $p < .01$, *** $p < .001$
4. Dotted line indicates the effect is not statistically significant at 95% level of confidence.
5. The indirect effect of ad framing (narrative vs. non-narrative) on behavioral intention through processing fluency is $-.03, p < .01$

CHAPTER 5

DISCUSSION

The purpose of this study was to investigate the effectiveness of advertising on people's intentions to control sugar intake. Specifically, six types of ad framing were examined: narrative gain framing, narrative loss framing, narrative neither gain nor loss framing, non-narrative gain framing, non-narrative loss framing, and non-narrative neither gain nor loss framing. Moreover, the moderation roles of individuals' regulatory focus (promotion focus vs. prevention focus) and CFC (high vs. low) between the relationship of ad framing and people's sugar intake intentions were explored. In addition, processing fluency was tested as a mediator.

The findings showed that there was a significant difference among the effects of these six types of ad framing on people's behavioral intentions to limit sugar intake. However, only the effect of narrative neither gain nor loss framing was significantly different from the effects of the other five types of ad framing, whereas there were no differences among the effects of the five other types of ad framing. The narrative neither gain- nor loss-framed ad was the least effective ad in leading people to have greater intentions to limit their sugar intake.

More detailed findings about the effects of ad framing and the relationships among all tested variables are discussed in the following sections.

The Direct Effects of Gain vs. Loss vs. Neither Gain Nor Loss Framing

By considering the influences of all tested variables in a whole SEM model, it was found that gain framing was more effective than loss framing in leading people to have greater intentions to limit sugar intake, which was consistent with Hypothesis 1. This finding can be explained according to the literature.

In the health domain, research has shown that gain framing is more persuasive in promoting a preventative behavior (e.g., using sunscreen) that is relatively safe and low risk; whereas loss framing is more effective in promoting a detection behavior (e.g., performing a breast cancer self-examination) that is seen as risky because it may discover bad results (Rothman et al., 2006). Since limiting sugar intake is aimed at preventing undesirable problems in order to have better health, it can be considered as a preventative behavior with relatively safe and low-risk outcomes. Therefore, a gain-framed ad that described the benefits of lowering sugar intake was more persuasive than a loss-framed ad in leading people to adopt this behavior. This may be because people wanted to picture more positive prospects rather than to stuff their minds full of negative things when they were thinking about whether to adopt a behavior that promoted positive outcomes.

Gain framing was also found to be more persuasive than neither gain nor loss framing in changing peoples' intentions to limit sugar intake. However, there was no significant difference between the effects of loss framing and neither gain nor loss framing. These findings suggest that ad framing (gain vs. loss vs. neither gain nor loss) matters in leading people to have greater intentions to adopt the recommended behavior of limiting sugar intake; gain framing is superior to both loss framing and neither gain nor loss framing, whereas loss framing and neither gain nor loss framing do not appear to affect people's behavioral intentions differently.

Similarly, the positive reaction toward gain-framed ads may be because people do not want to be told not to eat sugar: Many people may find it pleasant to consume sweets and foods with sugar, and limiting sugar intake is a prevention behavior that asks people to give up some kind of pleasure in order to pursue other desirable outcomes. Therefore, using a positive blueprint to persuade them to pursue desirable outcomes may be more effective than using

negative illustrations to scare them into giving up their current pleasure. Moreover, using negative illustrations to scare people does not have any better persuasive effects than a neutral message without stressing positive or negative outcomes related to this prevention behavior.

The findings of SEM were not the same as the results of ANOVA. One reason should be that other tested variables (e.g., regulatory focus, CFC) were not included in ANOVA, so the results of ANOVA did not take those variables' influences into consideration.

Comparing the results of ANOVA with the results of SEM, one finding was actually consistent with the findings of meta-analyses in the previous literature (e.g., O'Keefe & Jensen, 2006, 2007, 2009, 2010). The results of ANOVA showed that without considering the influences of the variables such as regulatory focus, there was no significant difference between the effects of gain vs. loss framing, although both gain and loss framing had superior effects to neither gain nor loss framing. The results of ANOVA were consistent with some previous research that did not find differences between gain and loss frames (e.g., Lalor & Hailey, 1989; Lauver & Rubin, 1990; Lerman et al., 1992). However, in taking the moderators' influences into consideration, gain and loss framing found different effects on people's behavioral intentions. This supported the previous researchers' arguments that the foci of gain vs. loss framing research should be the investigations of potential moderators that lead to meaningful framing differences (O'Keefe & Jensen, 2007; Latimer et al., 2007; Covey, 2014).

The Direct Effects of Narrative vs. Non-narrative Framing

Non-narrative framing was found to be more effective than narrative framing in leading people to have greater intentions to limit sugar intake, which was an opposite result to Hypothesis 2. Based on previous research that demonstrated narratives were an effective means to convey health information (e.g., Terry-McElrath et al., 2005; Green, 2006; Chang, 2008; Kim

et al., 2012; Sanders-Jackson, 2014; Niederdeppe et al., 2015) and research that found narratives had superior effectiveness compared to non-narrative messages (e.g., Greene & Brinn, 2003; Slater et al., 2003; Chang, 2008), Hypothesis 2 predicted that narrative framing would be more effective than non-narrative framing in leading people to have greater behavioral intentions to control sugar intake. Two reasons may explain why the results were opposite to this hypothesis.

First, previous researchers pointed out that it may demand more cognitive capacity to process narrative ads than non-narrative ads (Peracchio & Meyers-Levy, 1997; Chang, 2009). Chang (2009) argued that narrative advertising's superior effectiveness in getting people emotionally and cognitively involved only occurs when the ad's content has not exhausted the viewer's cognitive capacities. Therefore, the fact that this study did not find a superior effect of narrative framing over non-narrative framing is probably because the narrative ads demanded more cognitive capacity; this may have caused some participants to have difficulty processing the ads, so they were less persuaded by the narrative-framed ads.

The second reason may be the moderating effects of the participants' regulatory focus. It was unexpected to find that in the current sample, 848 out of 1,104 participants rated the promotion-focused subscale higher than the prevention-focused subscale. That is, among the 1,104 participants, 76.8% of them were promotion-focused people, while only 23.2% of them (i.e., 256 participants) were prevention-focused people. The results showed that regulatory focus moderated the effects of ad framing (narrative vs. non-narrative) on behavioral intention: Narrative framing was more effective for the prevention-focused individuals; non-narrative framing was more effective for the promotion-focused individuals. Since the majority of the current participants were promotion-focused individuals, this may have caused the overall

evaluation on the effectiveness of non-narrative advertising to be higher than the evaluation on the effectiveness of narrative advertising.

The moderating effects of regulatory focus on the effectiveness of ad framing are discussed more in the following section.

The Direct and Moderating Effects of Regulatory Focus

It was found that people's regulatory focus had a significant direct effect on their behavioral intentions to limit sugar intake. Promotion-focused individuals had greater intentions to lower sugar intake than prevention-focused individuals. Regulatory focus theory may provide some explanations for this result. According to regulatory focus theory (Higgins, 1997), people self-regulate their behaviors to pursue certain goals according to their regulatory orientations. Promotion-focused people tend to seek pleasure and positive outcomes, and their goal pursuit is associated with advancement, aspirations, and hope (ideals); prevention-focused people tend to avoid pain and negative outcomes, and their goal pursuit is associated with safety, duties, and obligations (oughts) (Higgins, 1997; Higgins, 2002; Cesario et al., 2004). For members of the general population who do not currently have serious health problems, controlling sugar intake may just be a behavior associated with a hope for a possible positive outcome, but not a behavior that they perceive as an obligation or duty that they must do in order to be safe. Therefore, the behavior of controlling sugar intake in nature may "fit" the promotion orientation better than the prevention orientation. Thus, with the experience of regulatory fit, the promotion-focused individuals would be more likely to adopt this recommended behavior than prevention-focused individuals.

Despite prevention-focused individuals tending to have less intention to reduce sugar intake than promotion-focused individuals, the framing of ads can influence their level of

intention. This study found that there was a significant interaction effect between ad framing (gain vs. loss) and regulatory focus on people's behavioral intentions. Gain framing was more effective in leading promotion-focused individuals to have greater intentions to limit sugar intake than loss framing, while loss framing was more effective in leading prevention-focused individuals to have greater behavioral intentions than gain framing. This finding showed that regulatory focus was a moderator in the effects of ad framing (gain vs. loss) on behavioral intention, which is consistent with Hypotheses 3a2 and 3b2, and consistent with the previous literature (e.g., Lee & Aaker, 2004; Uskul et al., 2009; Cesario et al., 2013).

Regulatory focus theory suggests that different goal-pursuit strategies match different regulatory orientations (Higgins, 2002). People will feel right when a persuasive message is designed in a way that matches their regulatory focus (Cesario et al., 2004; Lee & Aaker, 2004). In this situation, regulatory fit will emerge and people will be more likely to be persuaded by the message (Cesario et al., 2004; Lee & Aaker, 2004). Gain vs. loss framing has been listed as a means to create regulatory fit (Grewal et al., 2011). The above results also suggest that gain-framed and loss-framed ads separately match people's promotion regulatory focus and prevention focus, which in turn create regulatory fit and lead people to feel right about the message. Consequently, gain-framed ads are more persuasive for promotion-focused people, and loss-framed ads are more persuasive for prevention-focused individuals.

Regulatory focus was also found to be a moderator in the effects of ad framing (narrative vs. non-narrative). As the last section noted: Narrative advertising is more effective for prevention-focused individuals; non-narrative advertising is more effective for promotion-focused individuals. Although Vaughn et al. (2010) suggested that in the narrative context, the effects of narratives can be enhanced if audience members experience regulatory fit when they

are reading a story, little research was found to investigate whether regulatory focus can influence the effects of narrative and non-narrative messages differently. The present research answered this question and showed that regulatory focus did affect the effectiveness of these two types of messages differently.

To understand the reason underlying this finding, two other findings in this research need to be referenced. The results showed that promotion-focused people were more likely to have greater intention to reduce sugar intake than prevention-focused people. It was also found that processing fluency played a mediating role in the effects of ad framing (narrative vs. non-narrative) on promotion-focused individuals' behavioral intentions: Through greater processing fluency, promotion-focused individuals were more persuaded by non-narrative framing than by narrative framing. Nonetheless, prevention-focused individuals' behavioral intentions were not influenced by ad framing through processing fluency.

These findings may suggest that for the prevention-focused people who were less likely to adopt the recommended behavior, non-narrative ads that featured arguments about how high sugar intake is bad or how controlling sugar intake is good were less persuasive, probably because they thought this kind of information was cliché. On the other hand, narrative ads were able to lead them to become immersed into stories and have stronger transportation into others' good or bad experiences related to sugar consumption, and thereby be more persuaded.

In contrast, the promotion-focused people, who were more likely to adopt the recommended behavior, may have been persuaded by non-narrative advertising better since this advertising was easier to process. To this group of people, reading about the experiences of others may not have been necessary; an easy-to-process message was most likely more effective in increasing their intentions to adopt the recommended behavior.

However, this explanation is specifically for the case of limiting sugar intake behavior. More research should be done to examine whether the moderation effects of regulatory focus on ad framing (narrative vs. non-narrative) are consistent for other behaviors.

The results showed that regulatory focus did not moderate the effects of ad framing (gain vs. loss, and narrative vs. non-narrative) on processing fluency. This may be because all the experimental messages about sugar intake were relatively easy to process, so that most of the participants were able to process the ads without difficulty, regardless of their regulatory focus. The data showed that on the 9-point processing fluency scale (higher points indicated greater processing fluency), the average rating was 7.92 ($SD = 1.51$), with a median of 8.50 and a mode of 9. Therefore, future research should be conducted to examine this moderation effect on processing fluency by using the stimuli with more varied difficulties.

The Direct and Mediating Effects of Processing Fluency

Processing fluency was found to have a significant effect on behavioral intention. Greater processing fluency led to a greater behavioral intention to limit sugar intake. This finding suggests that advertising's effectiveness on behavioral intention can be enhanced when the message is easier for the audience to process.

A mediating role of processing fluency in the effects of ad framing (narrative vs. non-narrative) on behavioral intention was also found. Specifically, non-narrative framing led to greater processing fluency than narrative framing, and thereby resulted in greater behavioral intention to limit sugar intake. As mentioned above, to some extent, this finding revealed the underlying mechanism as to why the results showed that non-narrative advertising led people to generate stronger intentions to limit sugar intake: People processed non-narrative advertising more fluently, which in turn caused them to be more persuaded by the advertising.

This confirmed the findings in previous literature that processing narrative advertising may demand more cognitive capacity than processing non-narrative ads (Peracchio & Meyers-Levy, 1997; Chang, 2009). Perhaps it is because in order to exert persuasion to adopt a health behavior, non-narrative framing that only features arguments about facts is more straightforward. People may not need complicated cognitive elaboration to process this information, especially information about sugar intake which is somewhat familiar. In contrast, narrative framing that features personal stories, although it might be more attractive to read, requires more a complicated information-processing mechanism. Processing a narrative involves both cognitive and affective input (Escalas et al., 2004). People need to put effort into transportation, which involves “attention, imagery, and feelings” (Green & Brock, 2000, p. 701); especially when others’ personal stories may be not familiar to the audience. Therefore, it may cause a narrative to be more difficult to process than a non-narrative, which in turn leads it to be less persuasive.

However, the effects of narrative versus non-narrative framing may depend on the context. The explanation above, which suggests that narratives demand more cognitive resources and are processed less fluently than non-narratives, is specifically for the case of promoting less sugar intake, a recommended health behavior that is relatively familiar to people and easy to understand. But for other cases that require more complicated and unfamiliar logical arguments, using a personal story instead to illustrate them might be much easier to comprehend. Hence, more research should be conducted to test whether or not narratives would be processed less fluently than non-narratives in other contexts.

However, no moderated mediation effects were found among ad framing, regulatory focus, and processing fluency on behavioral intention. The results of this study indicated that the interaction effects between ad framing and regulatory focus were directly exerted on behavioral

intention without passing by changing processing fluency. As discussed above, one important reason could be the experimental stimuli, which had been generally processed by the participants fluently, no matter how their regulatory focus moderated the effects of ad framing. Therefore, more research with improved stimuli should be conducted to examine whether there are really no moderated mediation relationships among these variables.

The Direct and Moderating Effects of CFC

The result of regression analysis was consistent with Hypothesis 5a, which showed that CFC had a significant effect on behavioral intention to limit sugar intake. Specifically, individuals with higher CFC had greater intention to limit sugar intake than individuals with lower CFC. One reason is that for many people, limiting sugar intake takes immediate effort (e.g., self control) and sacrifice of immediate pleasure (e.g., suppression of desires) to obtain possible but uncertain future benefits, such as weight loss. Therefore, individuals who tend to consider future consequences more than immediate needs may be more likely to adopt this recommended behavior to sacrifice immediate pleasure in order to reap future benefits. In contrast, individuals who give less consideration to future consequences may not want to give up immediate pleasures to pursue those uncertain future benefits. Another reason is that high-CFC people have been found to be better at regulating themselves than low-CFC individuals (Buhrau & Sujan, 2015), which also suggests that individuals with higher CFC might be more naturally inclined to control their sugar intake than individuals with lower CFC.

However, this result was not consistent with the results of SEM, which showed that there was no significant effect of CFC on people's intention to limit sugar intake. Thus, Hypothesis 5a was not supported according to the results of SEM. This difference may also have been due to the fact that other variables, such as regulatory focus and processing fluency, were not entered

into the regression analysis, so the influences of those variables were not taken into consideration. In this situation, the effect size of CFC on behavioral intention was .12. Nonetheless, when taking the possible effects of all tested variables into consideration, the effect of CFC ($\gamma = .08$) on behavioral intention to limit sugar intake could not compete with the effects of other variables (e.g., regulatory focus: $\gamma = -.30$; processing fluency: $\gamma = .12$). Therefore, the effects of CFC on behavioral intention turned out to be non-significant.

Based on previous research, which suggested that CFC can moderate the effects of gain and loss framing (O'Connor et al., 2009; Joireman et al., 2012; Chen, 2015), Hypotheses 5b and 5c were proposed to examine this interaction between CFC and ad framing (gain vs. loss). However, no such interaction effect was found. Although O'Connor et al. (2009) demonstrated that high-CFC people were more responsive to a loss-framed message about not having blood pressure tested, while low-CFC individuals were more responsive to a gain-framed message about testing blood pressure; and Joireman et al. (2012) argued that high-CFC people tend to pursue gains, while low-CFC people tend to prevent losses, limited research has been found to investigate the interaction between CFC and message framing (gain vs. loss). The inconsistent results and arguments may suggest that the effects of CFC on message framing (gain vs. loss) may depend on different issues or contexts. More research should be done in this area.

It was found, however, that there was an interaction effect between CFC and ad framing (narrative vs. non-narrative) on behavioral intention to limit sugar intake. Specifically, narrative framing was more effective for individuals with lower CFC, while non-narrative framing was more effective for individuals with higher CFC. This result was consistent with Hypotheses 6a and 6b.

No previous research was found to investigate the interaction effects between CFC and ad framing (narrative vs. non-narrative). These two hypotheses were proposed in light of a recent study conducted by Kim and Nan (2016), which suggested that narratives involved with concrete characters should be associated with low-level construals, which are related to the near future; non-narratives that present arguments or statistical information should be associated with high-level construals, which are related to the distant future. The match of the format (narrative vs. non-narrative) and the construal level of temporal frames (low vs. high) was shown to increase message persuasiveness (Kim & Nan, 2016).

The findings of the present research were consistent with this theoretical conceptualization. That is, narratives may be more effective for individuals with low CFC because these people tend to represent events more concretely at a low-construal level since they are inclined to consider more immediate needs. In contrast, non-narratives are more effective for high-CFC individuals because they tend to represent events more abstractly at a high-construal level since they are more inclined to consider future consequences. This finding may suggest that a match of construal levels between low CFC and narrative, or between high CFC and non-narrative will enhance message persuasiveness.

Contributions and Implications

Given that a lot of health problems in the United States are closely related to an excess of sugar consumption, this research aimed to examine the effectiveness of ad framing on persuading people to limit sugar intake. More importantly, this research investigated how the characteristics of the message recipients would influence the persuasiveness of the advertising. The present research has several theoretical contributions as well as practical implications.

First, this research enriches the literature of gain vs. loss message framing. The effects of message framing (gain vs. loss) have been researched for decades, and inconsistent results have been found. Based on the results of several meta-analytical studies, some researchers argued that it might be meaningless to discuss the effects of gain vs. loss framing without considering the potential moderators (O’Keefe & Jensen, 2007; Latimer et al., 2007; Covey, 2014). The findings of the present research supported their arguments to some extent. The different results of ANOVA and SEM showed that moderators mattered. There was no difference between the effects of gain and loss frames if the moderating influences were not taken into consideration. However, when considering the influences of moderators, gain framing was found to be more effective than loss framing in the specific health context of advocating for controlled sugar intake.

Moreover, this study added a control condition (neither gain nor loss framing) to further explore the effects of ad framing, which little previous research did. It was found that to promote a health behavior of limiting sugar intake, gain framing was more persuasive than both loss framing and neither gain nor loss framing, whereas loss framing did not have any better effect than neutral framing.

These findings insinuate that to persuade the general population (i.e., without knowing their regulatory orientation and their considerations of future consequences) to control sugar intake, gain-framed advertising would be the best choice. Instead of always stressing the bad consequences of high sugar consumption to scare people, health professionals should design some positive-framed messages that stress the benefits of lowering sugar intake to stimulate people’s stronger desires to control their sugar consumption.

Second, this research revealed an underlying mechanism of how narrative framing and non-narrative framing exert different persuasiveness on people’s behavioral intentions to lower

sugar intake. Inconsistent with some previous research that demonstrated narratives had superior effects to non-narratives (e.g., Greene & Brinn, 2003; Slater et al., 2003; Chang, 2008), the present research found that in the specific context of promoting the control of sugar intake, non-narrative advertising was more effective than narrative advertising. By testing the mediating effects of processing fluency, it was revealed that non-narrative framing was processed by people more fluently than narrative framing, and thereby led to better persuasiveness.

No previous research was found to examine whether processing fluency performs a significant role as a mediator influencing the effectiveness of narratives versus non-narratives, although a couple of researchers suggested that narratives may demand more cognitive capacity (e.g., Peracchio & Meyers-Levy, 1997; Chang, 2009). Therefore, this finding provided one explanation of why in some contexts narrative messages do not have superior effects to, or are even less effective than, non-narrative advertising by discovering an underlying mechanism of how audiences process these two types of information.

Hence, in the context of promoting the control of sugar intake, health professionals would be best to use mainly non-narrative messages, which consist of straightforward arguments, statistics, and facts, to make the persuasion. Narratives could be used as a supplemental means to persuade people to reduce their sugar intake. Moreover, this finding implicates that if a narrative is used to exert persuasion, making a story easy to process may enhance the effectiveness of the narrative advertising.

Third, the present research filled a research gap by investigating the moderator role of regulatory focus in the effects of narrative vs. non-narrative framing. The findings of this research not only confirmed the previous literature, which suggested that regulatory focus moderates the effects of gain vs. loss framing, but also discovered that the effects of ad framing

(narrative vs. non-narrative) were also moderated by regulatory focus. This was a research gap that had never been investigated before.

The findings implicate that the persuasiveness of messages with different framing may be dissimilar for individuals with different regulatory orientations. Finding a way to know the message recipient's regulatory focus and then presenting messages tailored to that regulatory orientation should persuade the recipient to control sugar intake more effectively.

It should be relatively easy to figure out individuals' regulatory orientations in cases where the individuals have already started resorting to help from health professionals. For example, hospitals or other health agencies could let patients with obesity or high blood sugar complete a survey to get to know their regulatory focus. After that, the health professionals can apply different strategies to help the patients control their sugar intake. Specifically, for promotion-focused people, gain framing and non-narrative messages could be considered more often to make the persuasion; for prevention-focused people, loss framing and narrative messages could be used more often to persuade them.

Fourth, another research gap concerning whether CFC can influence the effects of narratives vs. non-narratives has been also filled by this research. No previous research was found to investigate the interaction effects between CFC and ad framing (narrative vs. non-narrative). The present research explored this relationship and found that CFC was also a significant moderator in the effects of ad framing (narrative vs. non-narrative).

The findings indicate that the persuasiveness of advertising can be enhanced if presenting a narrative to low-CFC individuals or showing a non-narrative to high-CFC individuals. Similarly, hospitals or other health agencies can have patients who have sugar-related health problems complete a survey to know whether they are high- or low-CFC individuals, and then

further design specific health messages to target these patients according to their CFC. That is, in order to be more persuasive, narrative messages could be used more often for lower CFC people, while non-narrative messages could be used more often for higher CFC people.

In addition, this study found a significant direct effect of processing fluency on behavioral intention. This finding implies that, for all kinds of ads, especially in the healthcare area, making them easy to process may be worth a try in order to enhance their effectiveness.

Finally, by evaluating a model including all tested variables, this research enriches the literature by providing more clear explanations of the relationships among the variables. As discussed above, the findings showed that the effects of ad framing (gain vs. loss vs. neither gain nor loss) would change if the moderators' influences were taken into consideration. In addition, with the influences from other variables, the effects of CFC would be reduced. Although CFC moderates the effects of ad framing, with the impact of regulatory focus, CFC's main effect on people's behavioral intentions would become insignificant.

Limitations and Future Research

The present research also has some limitations, which can be improved in future research. First, even though the sample size was 1,104, it was unexpected to find that most participants were promotion-focused people. This may have greatly influenced the results, and may have caused the inability to find significant moderated mediation effects, since prevention-focused participants totaled only 256 and were distributed into six experimental conditions, making the sample for moderated mediation analysis even smaller. Moreover, since the study found that promotion-focused individuals were more persuaded by non-narrative framing, while prevention-focused individuals were more persuaded by narrative framing, the uneven number of prevention- vs. promotion-focused people may have influenced the main effect of ad framing

(narrative vs. non-narrative). Future research, with an improved sample, could be conducted to test whether the same results can be found.

It should be pointed out that uneven numbers of promotion- vs. prevention-focused individuals were also found in Lockwood et al.'s (2002) relatively large sample. Lockwood et al. (2002) reported that 73% of their 704 participants tended to be promotion-focused people, which was similar to the percentage (76.8%) of promotion-focused participants in the present study. In future research, it may be interesting to pay attention to the proportion of prevention- vs. promotion-focused individuals, especially for studies with large samples or studies using probability sampling methods. If it is true that there are more promotion-focused individuals in the population as a whole, then according to the population structure, many advertising strategies might be able to be designed more effectively to influence the mass.

Second, the stimuli of the present research were found to be easy to process. Most people rated the highest score 9 on the scale of processing fluency to indicate that they strongly agreed the ads were easy to process. The average rating was 7.92. The easy stimuli caused little variation of the processing fluency variable. That is, no matter the experimental conditions, the participants all processed ads fluently. This may also be one of the reasons why no moderated mediation relationships were found, since the effects of ad framing on the proposed mediator directly failed. It resulted in ad framing exerting effects on people's behavioral intentions directly without passing by changing their processing fluency. Hence, future research should test the mediating effects of processing fluency by using stimuli that can be processed by people at different fluency levels.

Third, this research did not ask participants about their current health, such as whether they had high blood sugar or diabetes. Future research could take people's current health

conditions into consideration, since these variables may also affect their intentions to reduce sugar intake.

Fourth, although some variables had significant effects on behavioral intention, the effect sizes were relatively small (see Appendix C). Future research could explore other factors that may influence people's intentions to limit sugar intake. For example, the effects of ad framing conveyed via different media may be different. The current research examined the effects of framing presented by print advertising. Shen et al.'s (2015) meta-analytic study showed that narrative advertising delivered via video or audio were more effective than print-based narratives. Therefore, a future study could add the variable of media type into the model to further explore the effectiveness of ad framing.

Fifth, previous research suggested that people's socioeconomic status (SES) may affect the persuasiveness of narratives (e.g., Uccelli & Páez, 2007; SHiro, 2004). But the current research did not ask people's income. During the analyses stage in conducting the present study, age, occupation, and education level were also put into the model as covariates to see whether or not they would have any influence on ad framing. No effects were found. Despite this result, SES should be measured and added into the model to test whether or not SES can influence the effects of ad framing.

Sixth, future research can consider whether to turn on the "timing" function of Qualtrics, so that it can record the processing time that participants spend on reading the stimuli. The amount of time spent on the stimuli may reflect how fluently participants process the message. The data on their actual processing time can be compared with their self-reported processing fluency to further test the model.

There is another type of framing, mixed framing (Rodriguez, Gambino, Butow, Hagerty, & Arnold, 2008), that was not included in the present research. Future research can include mixed framing, which consists of both negative and positive information, to compare the different effects among gain vs. loss vs. neither gain nor loss vs. mixed framing.

Additionally, future research can examine the effects of other types of regulatory focus. The present research focused on chronic regulatory focus, which is the natural differences between individuals (Higgins, 2005). The hypotheses regarding the effects of regulatory focus in this study were based mainly on regulatory fit theory. Previous research suggested that people may feel right about what they are doing if they experienced a regulatory fit, which in turn can enhance their engagement in a goal-pursuit activity (Cesario et al., 2008). Therefore, the present research tried to find out how ad framing's effects can be moderated by regulatory focus, in order to provide information on how to tailor advertising to fit the audience's regulatory focus and thereby enhance the advertising's persuasiveness.

Nonetheless, oftentimes audiences' chronic regulatory focus may be unknown unless they are surveyed in advance. Therefore, determining how to create regulatory fit under the circumstances without knowing people's chronic regulatory focus is a key problem. It has been suggested that people may also have momentary regulatory focus, which can be generated according to the situation (e.g., Lee et al., 2010; Zhang & Mittal, 2007). Hence, in order to have more practical implications, more research can be done to examine the moderating effects of momentary regulatory focus on these six types of ad framing.

Finally, little research was found to investigate how CFC influences the effects of message framing (gain vs. loss). Moreover, the existing findings and arguments in this area are mixed and inconsistent. O'Connor et al. (2009) demonstrated that for a persuasive message

regarding a blood pressure test, loss framing was more effective for high-CFC people, while gain framing was more effective for low-CFC people. In contrast, Joireman et al. (2012) proposed the opposite argument: High-CFC people tend to pursue gains, while low-CFC people tend to prevent losses. However, in the context of recommending the control of sugar intake, the present research did not find any significant moderating effects of CFC on gain vs. loss framing at all. The inconsistent findings and arguments indicate that perhaps the effects of CFC on message framing (gain vs. loss) depend on different issues or contexts. Future research can explore more in this area.

APPENDICES

APPENDIX A. STIMULI

1. Narrative Gain Framing



Americans consume 156 pounds
added sugar each year on average!
Imagine: 31 five-pound bags for each of us!

I am living proof of the amazing benefits of reducing sugar intake.

For years I became sicker and sicker and no one knew why. I visited multiple doctors and spent thousands seeking help. It was New Year's Day, 2014, and I was so desperate to do anything that I started a diet recommended for my Mitral Valve Prolapse – a LOW/NO SUGAR diet.

As a junk food addict, I was hesitant, but thank God I did this. I cut sugar out of my life, only ate Whole Grains (as white breads break down to sugar faster), no sodas, no candy, no fast food. It wasn't easy, but all in a short time I went from feeling "death" nearby to losing 40 pounds

(without even exercising) and feeling fantastic! I began feeling a difference in only three weeks, then by six months I could literally feel my body healing and fixing itself. Now, I look younger and feel healthier and happier. I've never been one to "have a mission" or whatever, but now I feel the need to encourage everyone to cut sugar!!

So yeah, I just wanted to share my experience. Hopefully others will be helped and encouraged to drop sugar as well. Cutting sugar definitely improves your health and makes you feel and look better!



Figure 9. Narrative Gain-Framed Ad

2. Narrative Loss Framing



Americans consume 156 pounds
added sugar each year on average!
Imagine: 31 five-pound bags for each of us!

I have been experiencing bad complications caused by sugar addiction. Now I am really sick and have to stay in the hospital for treatment.

I crave sweets. Although I feel much better when eating healthy food, I have a weakness for sweet beverages and baked sugar goods like donuts and cake. Three cans of soda are common in my daily life. When I drink coffee, I add lots of sugar. Like most, if I eat one cookie I want 10... then eat 15! I know I'm going to feel really ill after but I eat it anyway thinking, "I won't feel too sick this time and this is really good!"

My weight is increasing and I look older than my age.

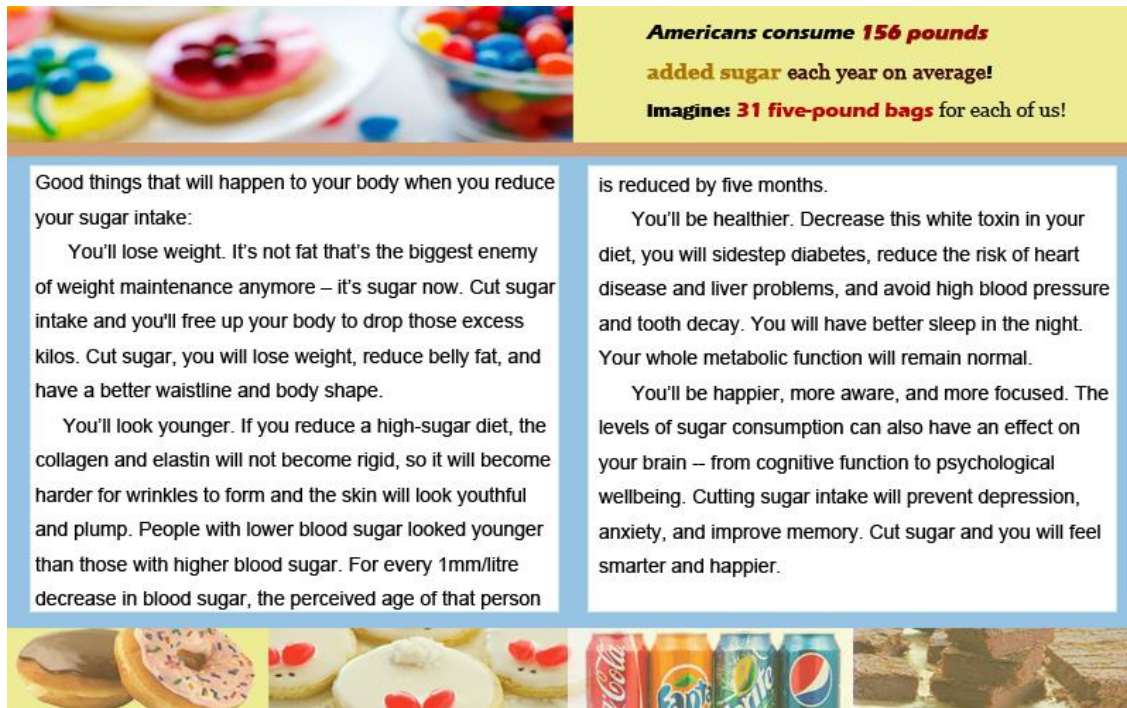
Finally, last year, after a couple bad incidents of dizzy spells, passing out and throwing up, I was tested for diabetes. It turns out I'm hyperglycemic and have metabolic dysfunction. My heart and liver have started having problems. I often get nauseous and my heart can suddenly start beating faster. I feel sad and cannot focus on work. Yikes!

I just wanted to share my experiences and recommend limiting your sugar intake. Continuing a high sugar diet has serious effects on your future health and makes you feel and look worse!



Figure 10. Narrative Loss-Framed Ad

3. Non-narrative Gain Framing



Americans consume 156 pounds added sugar each year on average!
Imagine: 31 five-pound bags for each of us!

Good things that will happen to your body when you reduce your sugar intake:

You'll lose weight. It's not fat that's the biggest enemy of weight maintenance anymore – it's sugar now. Cut sugar intake and you'll free up your body to drop those excess kilos. Cut sugar, you will lose weight, reduce belly fat, and have a better waistline and body shape.

You'll look younger. If you reduce a high-sugar diet, the collagen and elastin will not become rigid, so it will become harder for wrinkles to form and the skin will look youthful and plump. People with lower blood sugar looked younger than those with higher blood sugar. For every 1mm/litre decrease in blood sugar, the perceived age of that person is reduced by five months.

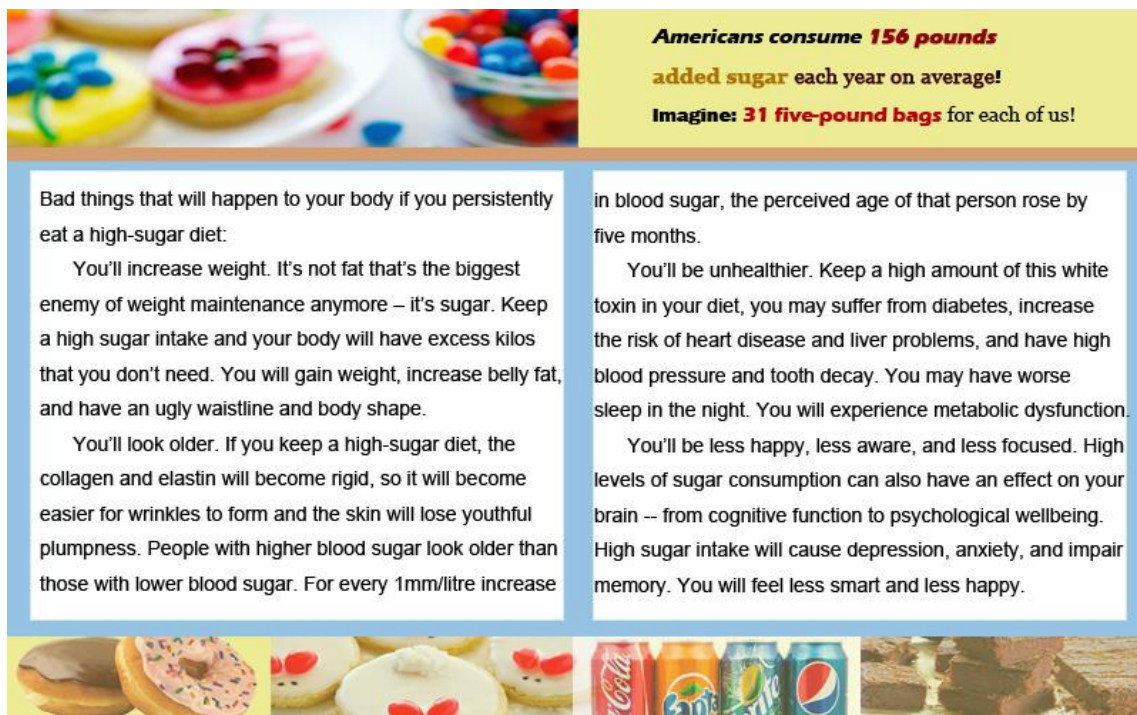
You'll be healthier. Decrease this white toxin in your diet, you will sidestep diabetes, reduce the risk of heart disease and liver problems, and avoid high blood pressure and tooth decay. You will have better sleep in the night. Your whole metabolic function will remain normal.

You'll be happier, more aware, and more focused. The levels of sugar consumption can also have an effect on your brain – from cognitive function to psychological wellbeing. Cutting sugar intake will prevent depression, anxiety, and improve memory. Cut sugar and you will feel smarter and happier.

The advertisement features a yellow header with a bowl of colorful candies. The main body has a light blue background with two columns of text. The bottom section shows images of donuts, cookies, and soda cans.

Figure 11. Non-narrative Gain-Framed Ad

4. Non-narrative Loss Framing



Americans consume 156 pounds added sugar each year on average!
Imagine: 31 five-pound bags for each of us!

Bad things that will happen to your body if you persistently eat a high-sugar diet:

You'll increase weight. It's not fat that's the biggest enemy of weight maintenance anymore – it's sugar. Keep a high sugar intake and your body will have excess kilos that you don't need. You will gain weight, increase belly fat, and have an ugly waistline and body shape.

You'll look older. If you keep a high-sugar diet, the collagen and elastin will become rigid, so it will become easier for wrinkles to form and the skin will lose youthful plumpness. People with higher blood sugar look older than those with lower blood sugar. For every 1mm/litre increase in blood sugar, the perceived age of that person rose by five months.

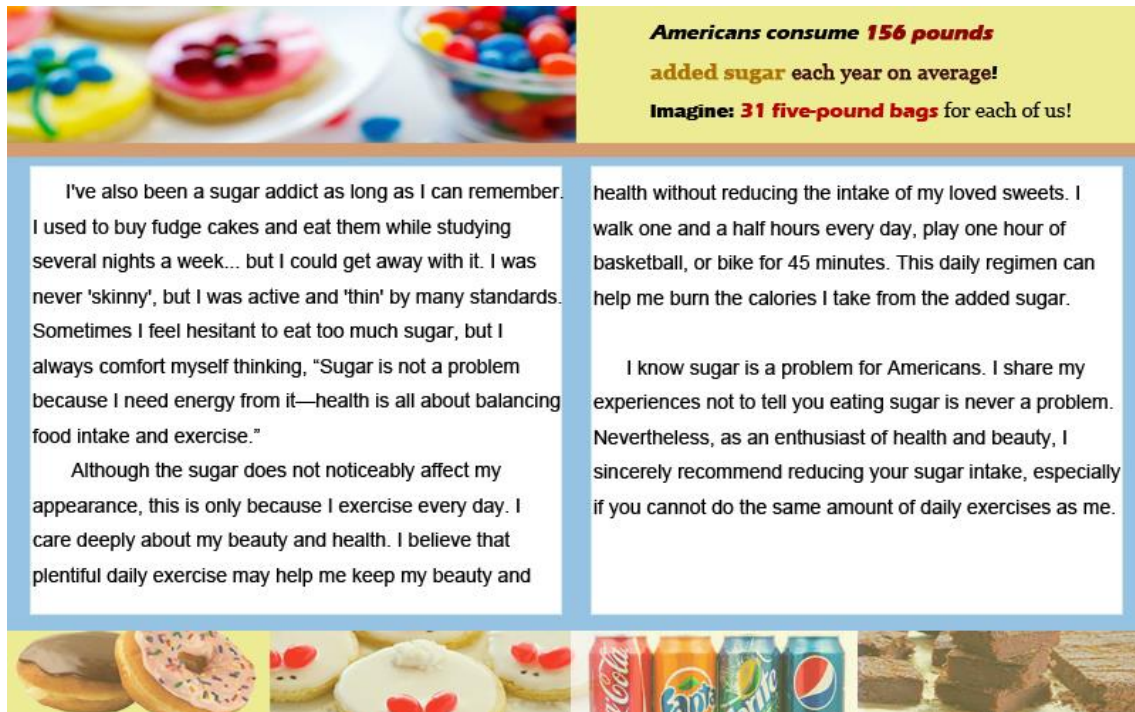
You'll be unhealthier. Keep a high amount of this white toxin in your diet, you may suffer from diabetes, increase the risk of heart disease and liver problems, and have high blood pressure and tooth decay. You may have worse sleep in the night. You will experience metabolic dysfunction.

You'll be less happy, less aware, and less focused. High levels of sugar consumption can also have an effect on your brain – from cognitive function to psychological wellbeing. High sugar intake will cause depression, anxiety, and impair memory. You will feel less smart and less happy.

The advertisement features a yellow header with a bowl of colorful candies. The main body has a light blue background with two columns of text. The bottom section shows images of donuts, cookies, and soda cans.

Figure 12. Non-narrative Loss-Framed Ad

5. Narrative Neither Gain nor Loss Framing



Americans consume 156 pounds added sugar each year on average!
Imagine: 31 five-pound bags for each of us!

I've also been a sugar addict as long as I can remember. I used to buy fudge cakes and eat them while studying several nights a week... but I could get away with it. I was never 'skinny', but I was active and 'thin' by many standards. Sometimes I feel hesitant to eat too much sugar, but I always comfort myself thinking, "Sugar is not a problem because I need energy from it—health is all about balancing food intake and exercise."

Although the sugar does not noticeably affect my appearance, this is only because I exercise every day. I care deeply about my beauty and health. I believe that plentiful daily exercise may help me keep my beauty and

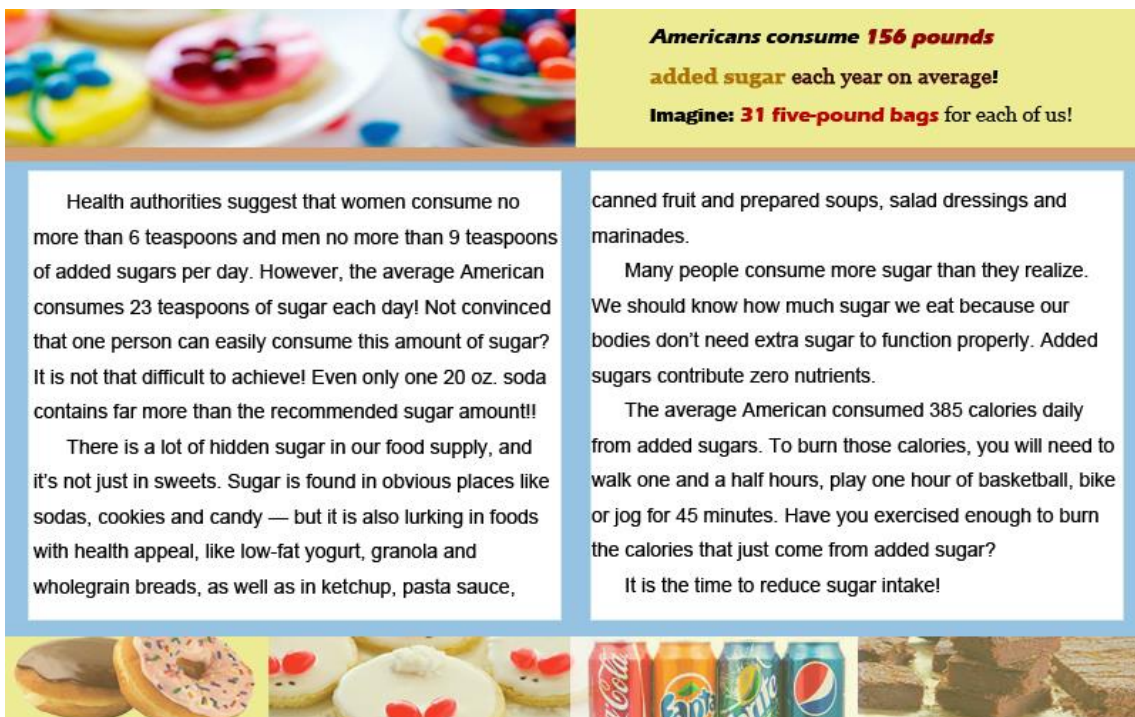
health without reducing the intake of my loved sweets. I walk one and a half hours every day, play one hour of basketball, or bike for 45 minutes. This daily regimen can help me burn the calories I take from the added sugar.

I know sugar is a problem for Americans. I share my experiences not to tell you eating sugar is never a problem. Nevertheless, as an enthusiast of health and beauty, I sincerely recommend reducing your sugar intake, especially if you cannot do the same amount of daily exercises as me.



Figure 13. Narrative Neither Gain- nor Loss-Framed Ad

6. Non-narrative Neither Gain nor Loss Framing



Americans consume 156 pounds added sugar each year on average!
Imagine: 31 five-pound bags for each of us!

Health authorities suggest that women consume no more than 6 teaspoons and men no more than 9 teaspoons of added sugars per day. However, the average American consumes 23 teaspoons of sugar each day! Not convinced that one person can easily consume this amount of sugar? It is not that difficult to achieve! Even only one 20 oz. soda contains far more than the recommended sugar amount!!

There is a lot of hidden sugar in our food supply, and it's not just in sweets. Sugar is found in obvious places like sodas, cookies and candy — but it is also lurking in foods with health appeal, like low-fat yogurt, granola and wholegrain breads, as well as in ketchup, pasta sauce,

canned fruit and prepared soups, salad dressings and marinades.

Many people consume more sugar than they realize. We should know how much sugar we eat because our bodies don't need extra sugar to function properly. Added sugars contribute zero nutrients.

The average American consumed 385 calories daily from added sugars. To burn those calories, you will need to walk one and a half hours, play one hour of basketball, bike or jog for 45 minutes. Have you exercised enough to burn the calories that just come from added sugar?

It is the time to reduce sugar intake!



Figure 14. Non-narrative Neither Gain- nor Loss-Framed Ad

APPENDIX B. MEASURES

1. Sugar-Eating Habits

Please rate the following scale (1=strongly disagree, 7=strongly agree) to indicate how you agree with the statements.

- 1) I love sweets.
- 2) I eat sweet food every day.
- 3) I often drink sweet beverages.
- 4) I don't think sweet food is a necessity in my diet.
- 5) I don't buy soda.
- 6) I usually consume a high-sugar diet.
- 7) I think my diet has little sugar.

2. Risk Perception about High Sugar Intake

Please rate the following statements to indicate how likely you will face the listed problems because of sugar intake. (1=not likely at all, 7=very likely)

- 1) I will not have any health problems because of eating sweets.
- 2) I will be sick.
- 3) I will gain weight.
- 4) I will look older.
- 5) Sugar will not affect my body.
- 6) I will not have a good figure.
- 7) I will be unhealthy.

3. Regulatory Focus

Please rate the following statements to describe yourself. (1=not at all true of me, 9=very true of me)

- 1). Primarily, I am focused on preventing negative events in my life.
- 2). I am anxious that I will fall short of my responsibilities and obligations.
- 3). I frequently imagine how I will achieve my hopes and aspirations.
- 4). I often think about the person I am afraid I might become in the future.
- 5). I often think about the person I would ideally like to be in the future.
- 6). I typically focus on the success I hope to achieve in the future.
- 7). I often imagine myself experiencing bad things that I fear might happen to me.
- 8). I frequently think about how I can prevent failures in my life.
- 9). I am more oriented toward preventing losses than I am toward achieving gains.
- 10). I see myself as someone who is primarily striving to reach my “ideal self”—to fulfill my hopes, wishes, and aspirations.
- 11). I see myself as someone who is primarily striving to become the self I “ought” to be—to fulfill my duties, responsibilities, and obligations.
- 12). In general, I am focused on achieving positive outcomes in my life.
- 13). I often imagine myself experiencing good things that I hope will happen to me.
- 14). Overall, I am more oriented toward achieving success than preventing failure.

4. Consideration of Future Consequences

Please rate the following scale (1=strongly disagree, 7=strongly agree) to indicate how you agree with the statements.

1). I consider how things might be in the future, and try to influence those things with my day to day behavior.

2). Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.

3). I only act to satisfy immediate concerns, figuring the future will take care of itself.

4). My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.

5). My convenience is a big factor in the decisions I make or the actions I take.

6). I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.

7). I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.

8). I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.

9). I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.

10). I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.

11). I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.

12). Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes.

5. Processing Fluency

Please rate the following scale (1=strongly disagree, 7=strongly agree) to indicate how you agree with the statements.

- 1) It is easy to process the information presented in the ad.
- 2) It is difficult to understand what the ad presented.

6. Behavioral Intention

Please rate how likely you will perform the following actions (1=not likely at all, 7=very likely).

- 1) I will reduce my daily sugar intake.
- 2) I will drink less sweet beverages.
- 3) I will eat less sweet food.

APPENDIX C. TABLE OF RESULTS COMPARISON

Table 6. Results of ANOVA and Regression vs. Results of SEM

	Behavioral Intention				
	Results of ANOVA & Regression			Results of SEM	
	<i>F-value</i>	β	Partial η^2	Coefficient	Partial η^2
Six Types of Ad Framing	10.08***		.05		
Gain vs. Loss vs. Neither Gain nor Loss Framing	11.22***		.02		
Gain vs. Loss Framing	.03		.00	-.14**	.02
Gain vs. Neither Gain nor Loss Framing	22.27***		.04	-.15***	.02
Loss vs. Neither Gain nor Loss Framing	14.87***		.02	.02	.00
Narrative vs. Non-narrative	15.46***		.02	-.23***	.05
Regulatory Focus	11.12**		.02	-.30***	.09
Gain vs. Loss Framing $\times$ Regulatory Focus	.06		.00	.12**	.01
Narrative vs. Non-narrative $\times$ Regulatory Focus	7.89**		.01	.12**	.01
CFC		.12**	.01	.06	.00
Gain vs. Loss Framing $\times$ CFC		.04	.00	-.01	.00
Narrative vs. Non-narrative $\times$ CFC		-.12**	.01	-.10*	.01
Processing Fluency		.11**	.01	.12***	.01
Sugar-Eating Habits		-.18***	.03	-.23***	.05
Risk Perception about High Sugar Intake		.19***	.04	.24***	.06

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$

APPENDIX D. TABLE OF CORRELATIONS

Table 7. Correlations among All Variables

	1	2	3	4	5	6	7	8	9
1. Six Types of Ad Framing									
2. Gain vs. Loss vs. Neither Gain nor Loss	.83**								
3. Narrative vs. Non-narrative	-.49**	.00							
4. Regulatory Focus	-.03	-.04	-.01						
5. Processing Fluency	-.10**	-.10**	-.04	-.10**					
6. CFC	.01	.03	.01	-.20**	.20**				
7. Behavioral Intention	-.06	-.11**	-.12**	-.12**	.18**	.08*			
8. Sugar-Eating Habits	-.03	-.03	.02	.00	-.04	-.24**	-.23**		
9. Risk Perception about High Sugar Intake	.03	.02	-.02	.09**	.00	-.07*	.23**	.01	

Notes: * $p < .05$, ** $p < .01$.

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