



Full length article

## Stress and food choices: Examining gender differences and the time horizon framing effect

DongHee Kim<sup>a</sup>, SooCheong (Shawn) Jang<sup>b,\*</sup><sup>a</sup> Wilson School of Hospitality and Resort Management, University of Memphis, 3700 Central Avenue, Suite 140 E, Memphis, TN 38152, USA<sup>b</sup> School of Hospitality and Tourism Management, Purdue University, Marriott Hall, Room 245, 900 W. State Street, West Lafayette, IN 47907, USA

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## ABSTRACT

The number of people facing daily stress is on the rise in the United States. Further, there is increasing evidence of stress induced obesity and other food-related health risks. This study tested the effects of self-reported stress on choosing indulgent and healthy food options in the context of menu promotions at restaurants. The study proposed that time horizon message framing (expansive vs. limited) on restaurant menus influences the effectiveness of advertising messages aimed at preventing unhealthy food choices and promoting healthy choices. Further, this study examined gender differences in stress induced eating. The current findings shed new light on time horizon message framing, which encourages stressed consumers to make healthy choices. The results showed that food choices can be altered using time horizon messages. That is, stressed individuals tend to choose healthier options when the message is framed in terms of expansive time and more indulgent food than when the message is focused on a limited time frame. Restaurant managers are advised to establish creative marketing strategies to spur interest in healthy menu items and emphasize the benefits of healthy food items.

## 1. Introduction

Stress is a part of modern life, and an increasing amount of evidence indicates that this stress contributes to mindless eating. A recent national survey found that nearly 50% of people report feeling more stress now than five years ago, while 38% report overeating or eating unhealthy food to cope (American Psychological Association, 2014). Repeated stress-induced eating is worrisome because the U.S. is in the middle of a stress epidemic (Wansink, 2007; Albers, 2012). Stress-related unhealthy eating behaviors are highly problematic due to the increasing prevalence of overweight and obese individuals in the U.S. (Flegal et al., 2010). Despite the above mentioned prevalence of stress-induced health related risks, researchers have paid little attention to how stress affects consumers' eating behaviors in the context of restaurant management. The primary goal of this study was to examine whether stress affects consumers' indulgent and healthy food choices at restaurants. Specifically, we examined gender differences in how stress triggers food choices because men and women vary considerably in terms of regulating emotions (Matud, 2004). The current research also aims to find an effective way to promote healthy menu options and decrease unhealthy menu options in restaurants.

Previous research on stress-related eating behaviors focused on amounts and types of food (e.g., Greeno and Wing, 1994; Groesz et al.,

2012). For example, recent findings suggested that stress is associated with unhealthy eating behaviors that result in an increase in fat intake and a decrease in fiber, fruit, and vegetable intake (Rutters et al., 2009; O'Connor et al., 2008). These are serious public health concerns in the U.S. However, this approach ignored the growing body of evidence showing that gender differences in food choices are critical for understanding stress-outcome processes (Heiman and Lowengart, 2014). Instead of assuming that stress affects men and women's food choices in the same way, thus this study delved further into the gendered differences of stress-induced eating behaviors.

As the global obesity epidemic continues to spread, the Centers for Disease Control and Prevention (CDC) announced that obesity is one of the leading preventable risk factors for premature mortality in the U.S. (CDC, 2004). Given the severity of the global obesity epidemic, public policy makers and marketers have committed to developing prevention strategies. Poor eating behaviors are an important target because they are cited as a direct cause of obesity. Accordingly, the U.S. government spends approximately \$500 million every year supporting educational campaigns aimed at promoting healthy eating and related lifestyle behaviors (USDA, 2005). Despite the best efforts of the federal government to achieve these health related goals, obesity rates continue to rise (Kees et al., 2010).

The World Health Organization (WHO) argued that a key

\* Corresponding author.

E-mail addresses: [dkim5@memphis.edu](mailto:dkim5@memphis.edu) (D. Kim), [jang12@purdue.edu](mailto:jang12@purdue.edu) (S.S. Jang).

contributor to poor eating habits and the obesity epidemic is food industry marketing (World Health Organization, 2003). In fact, the food industry is among the biggest advertisers in the U.S. media market (Bedard, 2008). A lifetime of exposure to industry marketing messages promotes certain food choices and lifestyles (Story et al., 2002). Therefore, food industry marketers should respond to the swelling public discourse on the importance of healthy eating to combat obesity, as well as increasing consumer demand for healthy food (Dooley et al., 2010; Peattie and Peattie, 2009). In particular, it is important to understand what types of health communication effectively persuade stressed individuals to adopt healthier eating behaviors (Wymer, 2010).

The current research aimed to explore changes in eating behaviors associated with stress, specifically the impact of stress on eating behavior outcomes (indulgent vs. healthy food choices). Poor dietary decisions in response to stress are associated with 'mindless eating,' which is not driven by hunger or nutritional needs but instead by external cues such as situational or environmental factors (Wansink, 2007). In other words, it is possible to change food choices by altering external and situational cues (Wansink 2007). Accordingly, this study proposed that research on making food related behaviors healthier should focus on time horizon related messages, as well as the influence of self-control and decision-making.

According to socioemotional selectivity theory (SST), individuals' motivations and behaviors change based on their future time perspective (FTP). Specifically, SST suggests that the relative importance of a set of social motives changes as a function of an individual's time perspective (Carstensen, 1992; Fung et al., 2005). For example, some people are able to foresee the future implications of their present behavior. They understand how their present task-engagement is meaningfully related to desired future goals and how their present behavior serves the attainment of those future goals. Other people would rather live in the present; they do not anticipate the future consequences of their present activities as strongly. The degree to which people are able to look into the future, and thus foresee the usefulness of their present behavior, differs from one person to another. In general, people tend to assess time as either limited or expansive (Carstensen, 1992). When time is viewed as limited, people tend to be present-oriented and try to find satisfaction in the moment. In contrast, when time is viewed as expansive, people tend to be future-oriented and pay more attention to planning for the future (Carstensen et al., 1999).

Thus, manipulated time horizon perceptions could in part account for consumers' decision making. For example, people may be more willing to make unhealthy food choices when they have a limited perception of time and pay little attention to the future. However, people may seek healthy choices when they perceive time as expansive. Thus, another goal of this study was to examine the role of time horizon manipulation on the effectiveness of healthy/unhealthy food advertisement message framing. This research evaluated the persuasiveness of message frames and offered recommendations to implement healthy dietary advertising, including possible target audiences.

Thus, the specific objectives of this study were (1) to examine the effects of stress on food choices, (2) to investigate whether stress-induced food choices significantly differ by gender, and (3) to determine whether time horizon messages moderate the effects of stress on food choices.

## 2. Theoretical framework and hypotheses

### 2.1. Stress and food choices

Self-reported stress levels have increased over time (Cohen and Janicki-deverts, 2012). Stress typically refers to an internal or external event that disturbs an individual's ability to maintain internal stability (Lazarus and Folkman, 1984). While stress can have an influence on people's food choices, only a few studies have examined how stressful events affect individuals' self-regulation, which can influence the types

of choices they make. For instance, when people undergo stress they are more likely to engage in risk taking behaviors (Hockey et al., 2000), change their consumption lifestyle (Mathur et al., 2003), impulsively buy unintended products (Weinberg and Gottwald, 1982), and are more willing to pay (Maier and Wilken, 2014). People experiencing stress have also been shown to make unhealthy choices in their personal lives (e.g., drinking more alcohol or smoking more) (Uhart and Wand, 2009). This growing interest in stress has also affected business and public policy; researchers have begun to explore how to persuade individuals to make better lifestyle choices. The current study examined whether consumers' stress levels result in altered eating behaviors.

According to self-regulation theory, when people are stressed they are motivated to cope with behavioral demands in order to manage mood-regulation (Baumeister and Heatherton, 1996). Therefore, stress triggers a variety of coping strategies, and eating is a common one (Groesz et al., 2012). It has been widely reported that psychological stress and food consumption are related (Greeno and Wing, 1994; Lattimore, 2001). Stress is implicated in overeating and poor eating choices. When individuals are highly stressed they tend to binge eat (Gluck, 2006) and consume foods with more fat (Grunberg and Straub, 1992). Further, the frequency of exercising tends to decrease (Ng and Jeffery, 2003). These are all distressing risk factors associated with obesity. Consumers tend to prefer high fat or sweet foods in response to stress (Grunberg and Straub, 1992). But beyond this, little is known about the mechanisms that determine how stress affects both indulgent and healthy food choices. Indulgent behavior refers to making a tradeoff between long-term benefits and short-term gratification. For example, people experiencing greater stress are more prone to eat unhealthy (vs. healthy) food to repair their mood, even though they know that sacrificing taste will make them healthier in the long run (Baumeister et al., 2005). Thus, we proposed that a high level of stress leads to unhealthy dietary habits because such distress depletes self-regulatory resources. If this is accurate, higher levels of stress will deplete self-regulatory resources to a greater extent and lead to more unhealthy consumption. Hence, we hypothesized that high levels of daily stress may encourage consumers to eat in an impulsive way that reduces healthy eating behaviors.

**H1 (a).** *Consumers with higher levels of stress have higher intentions to choose indulgent food options (chocolate cake) compared with consumers with lower levels of stress.*

**H1 (b).** *Consumers with higher levels of stress have lower intentions to choose healthy food options (salad) compared with consumers with lower levels of stress.*

### 2.2. Gender differences in stress-induced eating behaviors

In addition to stress, gender has been shown to influence food choices (Heiman and Lowengart, 2013). A vast amount of literature documents that men and women express and regulate their emotions in considerably different ways (Brody, 1993; Matud, 2004). For instance, women tend to focus and rely more on negative emotions to make decisions and inform their behavior. In contrast, men tend to distract themselves from negative emotional experiences and focus instead on positive emotions (Dube and Morgan, 1996). Therefore, how men and women cope with stress may differ (Miller and Kirsch, 1987; Matud, 2004), which would affect whether and how stress triggers food consumption. Thus, this research aimed to deepen our understanding of the phenomena of stress and food choices by focusing on differences in the decision-making processes of men and women.

Women reportedly use more emotion-regulation strategies than men, have a greater ability to regulate their emotions and tend to do so in different ways. For instance, women tend to use strategies that modify their emotion-focused coping responses, while men tend to deal with stress using problem-focused coping (Miller and Kirsch, 1987).

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