

Eating Their Feelings: Examining Emotional Eating in At-Risk Groups in the United States

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Abstract Emotional eating affects many individuals and can lead to food overconsumption. The present research provides a theoretical foundation for examining the influence of food advertising, social norms, and related mediating influences on emotional eating. Insight offered through interviews with emotional eaters and an emotional eating conceptual model demonstrate that emotional eating is heavily influenced by food advertising, which can incite desire and ruminative thoughts about food. Additionally, emotional eaters may enlist prefactuals in the form of hedonic rationalizations to justify unhealthy eating behavior. Evidence from this research also suggests that individuals who emotionally eat may be doing so because such behavior has been learned. Finally, despite regulatory and policy efforts to create more informed consumers by providing nutrient content information on labels and packaging, emotional eaters possess little motivation to process this information. Implications for public policy and social marketing initiatives are discussed.

Keywords Emotional eating · Overconsumption · Obesity · Social marketing

Whenever I am passionate—say I am angry or really sad, I eat ice cream. I'll sit there and just eat...and then I start to calm down almost instantly. I don't know what is in it, but I just calm down (Shasha).

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Unhealthy eating behavior has become almost commonplace as consumers indulge in meals high in fat, consume larger portion sizes, and dine outside of the home more frequently (Grier et al. 2007; Seiders and Petty 2004). A by-product of such behavior is the high rates of overweight and obese individuals. Approximately 32% of US adults aged 20 and older are obese (Ogden et al. 2006), and obesity is linked to approximately 300,000 deaths a year in the USA (Peeters et al. 2003). However, obesity is not just a problem in the USA. It is an epidemic that is now threatening many nations throughout the world. There are approximately 475 million obese adults globally, and close to a billion people are overweight (International Association for the Study of Obesity 2010). The health problem of elevated body mass poses a major risk factor for premature mortality, cardiovascular disease, type-2 diabetes, and hypertension (Manson and Bassuk 2003). Additionally, overweight and obesity and related diseases undermine quality of life and lead to greater health care costs.

In the USA alone, consumers spend approximately \$23 billion a year on diet and weight loss products (Thomaselli 2007), yet obesity continues to be a major health concern. A successful characteristic necessary for weight loss is the ability to exercise self-control. Those who are overweight or obese are often deemed to be in their present condition because of an inability to exercise control over their eating behavior. However, situational influences such as allaying emotional distress can motivate individuals to engage in eating activities to achieve short-term gratification. Eating linked to an individual's emotional state, characterized as "emotional eating," can lead to overconsumption and can jeopardize attempts at losing weight (Arnou et al. 1995).

Emotional eating affects many individuals (Martin 2001). It can be likened to an "invisible plague," as many who binge eat based on their emotional state do not seek help for their eating problems. At the same time, there is debate as to whether food marketing may be to blame for the motivation and reinforcement of unhealthy eating patterns. If this is so, this would certainly perpetuate the potentially destructive eating tendencies of emotional eaters.

Many initiatives and campaigns have been launched to change consumer eating habits (Eldridge et al. 1998; Goldberg and Gunasti 2007; Scharff 2009). However, past and current efforts to persuade consumers to eat healthier have focused a great deal on the provision of objective information (e.g., nutrient content). This research contributes to the existing literature by suggesting that policy initiatives and social marketing programs consider the role that psychological and social factors play in food-related consumption. Previous research has used goal orientation to explain self-control in eating behavior and dieting; however, more immediate goals of regulating emotions may impact long-term goals of weight loss and maintenance. Understanding food overconsumption as it is linked to emotional eating behavior and the subsequent psychological and social processes that drive such behavior are paramount to finding solutions in reducing such behavior.

In this research, we examine factors that contribute to emotional eating, including underlying mechanisms and related outcomes. The focus of the present research is on women, as research suggests that women are more likely to use eating to numb, distract, and soothe emotions (Synovate 2009; Tabor 2006). Moreover, approximately two thirds of US adult women are overweight and of this group, one third are obese (Davis et al. 2009; Flegal et al. 2002). Additionally, women may model these behaviors, either implicitly or explicitly, for their children.

First, an exploratory assessment of how food is used to manage emotions was conducted by interviewing those who self-reported as emotional eaters. Secondly, the insight offered from these individuals, in conjunction with prior literature, provided the basis for the

development of a conceptual model that helps explain emotional eating behavior. The model delineates two key factors that drive emotional eating behavior, namely food advertising and social norms. We also identify underlying mediators and outcomes of emotional eating and then develop and test hypotheses regarding these relationships using a survey. Results are discussed in terms of their implications for the development of policy and social marketing initiatives targeted at reducing emotional eating and overconsumption.

Background

Affect Regulation and Emotional Eating

Affect regulation theory suggests that individuals take action to either maintain or change the experience of an affective state (Gross 1998). Hedonic accounts indicate that people would rather feel good than bad (Clark and Isen 1982; Isen 1984). Subsequently, negative emotions are the emotions most commonly regulated, with individuals making proactive attempts to “down-regulate,” or minimize negative experiential states (Andrade 2005; Morris and Reilly 1987; Gross et al. 2006; Fredrickson et al. 2000). A common feature of behavioral approaches to manage affect and emotions is the frequent use of self-reward.

Emotional eating is premised on the use of self-reward. It has been defined as eating in response to a range of negative emotions including anxiety, depression, anger, and loneliness to decrease negative affect and subsequently increase positive affect (Van Strien et al. 1986; Martin 2001, Bohon et al. 2009). Research has shown that emotional eating is related to reliance on emotion-oriented coping and avoidance distraction in both women with eating disorders and relatively healthy women (Spoor 2007). Specifically, food is used for nurturing and excitement. Moreover, emotional eaters are more likely to indulge in foods high in fat and calories (Martin 2001). For example, Bohon et al. (2009) found that self-reported emotional eaters showed greater activation in the parahippocampal gyrus and anterior cingulate (part of the brain’s reward system) in response to the anticipated receipt of a milkshake as well as greater activation in the reward region in receipt of a milkshake during a negative relative to a neutral mood. Nonemotional eaters, however, showed decreased activation in the brain’s reward region during negative and neutral moods. Further, van Strien (2000) found that emotional eating was a high predictor of ice cream consumption in women without eating disorders.

Emotional eating has become a growing concern with the rising rates of obesity (Flegal et al. 2002; Spoor 2007). Limited prior research has examined key factors related to emotional eating. There is debate as to whether external forces, including market-dominated sources, such as food advertising as well as social norms help to further perpetuate the potentially destructive tendencies of emotional eaters. The present research provides a theoretical foundation as well as a model that examines the impact of food advertising, social norms as well as mediating influences on emotional eating. The model is empirically tested. Based on findings from the model, we highlight implications that may potentially provide direction for social marketing efforts in combating emotional eating and overconsumption.

Conceptual Framework and Hypotheses

The following conceptual framework is derived from a critical review of theoretical concepts from the behavioral literatures as well as from the interviews of five individuals

who self-reported as emotional eaters (aliases were assigned, see Table 1). All individuals interviewed had a body mass index of 25 and over. Each interview lasted approximately 45 minutes and was taped and transcribed. The following framework demonstrates the internal and external factors, as well as the relative outcomes of emotional eating.

Food Advertising

I am in a bad mood and watching television. I see the pizza on TV. It looks delicious. All you have to do is pick up the phone and call. You don't even have to leave your house (Barbara).

If I am channel surfing and I see an advertisement for food, it usually catches my attention. I don't try and pay attention to it, but it catches my attention. Even driving by a billboard gets me—and McDonald's...McDonald's does such a great job with advertising. Their advertising touches people. I start thinking about having some of those fries from McDonald's all day (Storm).

Expenditures on food advertising account for as much as \$7 billion annually in the USA (Bradley 2008). Research shows that food advertisements are significantly associated with unhealthy food consumption decisions (Mohr et al. 2007) and that exposure to food advertisements can influence viewers' food choices toward unhealthy foods containing higher fat content (French et al. 2001). Critics blame the plethora of food advertising for part of America's obesity problem since research suggests that food advertising may serve as an external cue that makes food salient, and thus, incites consumption (Desrochers and Holt 2007; Harris et al. 2009). Many food advertisements also contain emotional appeals that promote snacking, fun, happiness, and excitement (Wicks et al. 2009). These tempting external cues can activate a desire for food items and increase consumption (Fedoroff et al. 2003).

Emotional eaters may especially be susceptible to advertising for hedonic or indulgent food items and may be more likely to consume these foods to reduce negative feelings (Martin 2001). In the present research, we define hedonic foods as those food items which are high in fat and sugar that individuals especially consume for pleasure (e.g., chocolate, chips, pizza, fried foods, and desserts). Many of the emotional eaters interviewed expressed an attribution bias towards food advertisements. They felt food advertisements were especially provocative and stimulating, and ignited desire for the cued food, much of which was hedonic in nature. Subsequently, the following is proposed (see Fig. 1):

H1a: Attitude toward advertising for hedonic foods is positively related to desire for hedonic food items.

Table 1 Emotional eating interviewees ($N=5$)

Name (alias)	Age	Ethnicity/race	Employment	Marital status	Place of residence
Margaret	44	African American	Manager	Divorced	New Orleans, LA
Storm	28	Asian American	Hairstylist	Married	Nashville, TN
Sasha	25	Asian American	Retail	Single	New Orleans, LA
Virginia	35	Latino American	Purchasing Manager	Divorced	Austin, TX
Barbara	46	African American	Health Care Professional	Single	Indianapolis, IN

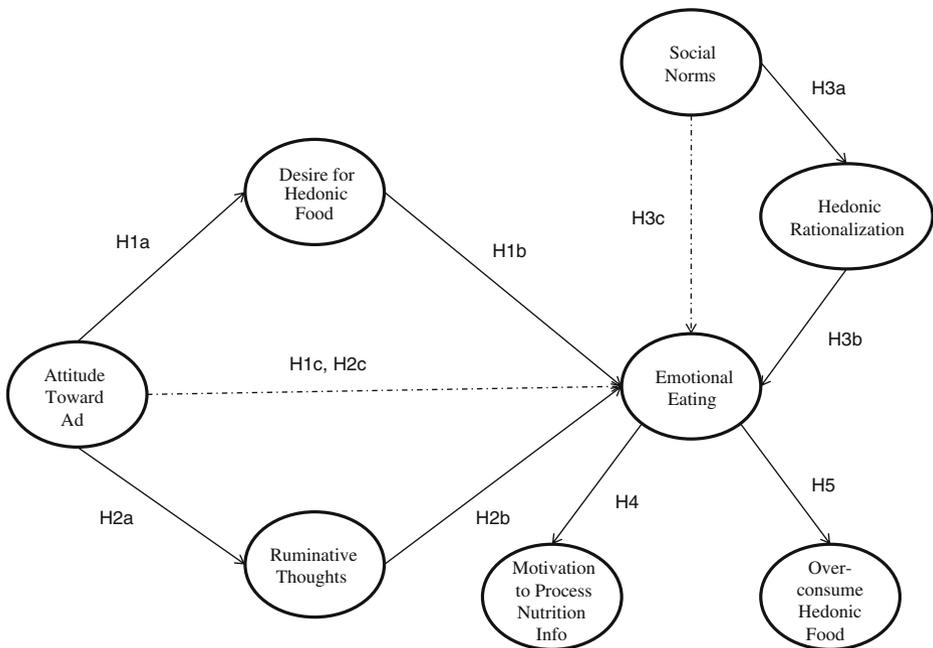


Fig. 1 Emotional eating model

H1b: There is a positive relationship between desire for hedonic food and emotional eating.

H1c: Desire for hedonic food mediates the relationship between attitudes toward advertising for hedonic foods and emotional eating.

Rumination

When individuals are captivated and attentive to advertising stimuli, ad recall increases (Mehta and Pruvis 2006). The constant advertising of unhealthy foods could possibly stimulate sensory processes and desires that eventually lead to food consumption (Gearhardt et al. 2009). Emotional eaters that were interviewed indicated that a persuasive advertisement had the ability to provoke frequent ruminations, or repetitive thoughts, about a particular food item being promoted.

In the behavioral literature, the term rumination is characterized by a propensity to focus in a recurring manner on feelings and think about them in a passive manner (Nolen-Hoeksema and Morrow 1991; Martin and Tesser 1996). Research suggests that women are more likely than men to engage in rumination (Nolen-Hoeksema and Morrow 1991). Many of the emotional eaters expressed that often they had issues resolving negative feelings, but would use food as a solution to numbing or distracting them from these negative emotions. In many instances, they began to express ruminative thoughts about potential food consumption experiences.

If it [food commercial] is on television, then I think about it, and I think I'd like to have that, I am going to get some of that (Barbara).

Consequently, it is proposed that advertising has the ability to promote ruminative thoughts about food in emotional eaters. This segment may already face challenges with confronting and coping with negative feelings, and thus, use food consumption as a short-term resolution to allay negative subjective states. Hence, the following is proposed:

- H2a: Attitudes toward advertising for hedonic foods are positively related to ruminative thoughts about food.
- H2b: Ruminative thoughts about food are positively related to emotional eating.
- H2c: Ruminative thoughts about food mediate the relationship between attitudes toward advertising for hedonic foods and emotional eating.

Social Norms

Social norms can play a crucial role in eating behavior (Bekker et al. 2004; Grier et al. 2007). Social norms are the beliefs about behavior that reflect the perceived social pressure to perform or not perform a behavior (Fishbein and Ajzen 1975). A favorable norm toward a behavior increases the probability that an individual will perform a behavior. Social expectations toward food consumption have changed over the years and in many ways have encouraged people to eat more due to easy access to large amounts of high-calorie foods.

More often than not, the emotional eaters that were interviewed expressed that those who were significant to them—family and friends—often engaged in similar eating behavior, which included consuming high carbohydrate and high-calorie foods. This behavior was socially normative and helped facilitate the frequent consumption of hedonic foods.

I come from a big family and when we get together we always have lots of food. We love to cook. Who could resist the homemade tortillas, the fajitas on the grill—even if you are not hungry, you just continue to eat (Virginia).

Hedonic Rationalizations

Studies suggest that emotional eating may in fact be a part of early consumer socialization (D'Arrigo 2007; Brown et al. 2009). For example, children are often rewarded with treats like cake and candy to allay negative affect when minor incidents occur (e.g., scraping a knee). Hence, once these children become adults, they may grow accustomed to having a food-related treat to help them cope with negative situations. Research shows that those individuals that report being frequently offered food to comfort themselves when upset as children were two-and-a half times more likely to admit to frequent emotional eating as young adults (Brown et al. 2009).

Many of the emotional eaters that were interviewed indicated that it was not uncommon for them to engage in prefactual thinking (Gleicher et al. 1995), or an active evaluation of the consequences of their actions, in the form of hedonic rationalizations before consuming a hedonic food item. Hedonic rationalizations (Moore and Bovell 2008) are a form of prefactual thinking that people use to justify conceding to a temptation or a consumption experience. For example, one of the emotional eating interviewees would often rationalize with herself about having indulgent hedonic foods:

This ice cream looks so good. I think I should let myself have the ice cream. It has been a tough day, I deserve it. I should treat myself (Storm).

If I'm really sad...my body craves chips. My body craves salt. I need to have salt (Margaret).

Those individuals that have been socialized in environments where food is used as comfort may be more likely to engage in hedonic rationalizations for indulgent food items and consequently more likely to engage in emotional eating. In accordance, the following is predicted:

H3a: Social norms are positively related to hedonic rationalizations.

H3b: Hedonic rationalizations are positively related to emotional eating.

H3c: Hedonic rationalizations mediate the relationship between social norms and emotional eating.

Emotional Eating Outcomes

Motivation to Process Nutrition Information

Food marketers are federally mandated to provide nutrition information on packaged goods (FDA 2009). A number of studies have examined the effects of the provision of nutrition information, health claims, and the manner in which this information is presented on consumer behavior (Burton and Creyer 2004; Keller et al. 1997; Kemp et al. 2007; Viswanathan et al. 2009). Specifically, a consumers' level of motivation to process the nutrition information on packages can influence their evaluative and choice processes. More motivated consumers are often willing to spend greater time processing and elaborating on information on food labels and packages. Additionally, this greater attention and processing of nutrient information has extended to product purchase and evaluations (Howlett et al. 2008). Many of the emotional eaters interviewed simply expressed a desire to remain oblivious to the nutrient content levels of foods and subsequently exhibited low levels of motivation to process nutrition information.

If I want it and I think it is going to make me feel better, I don't want to know how many calories and fat are in it (Barbara).

The drive to regulate emotional distress took precedence over any form of health interest. Consequently, the following is proposed.

H4: There is a negative relationship between emotional eating and motivation to process nutrition information.

Overconsumption

I think I eat more when I'm sad. I eat smaller amounts of food when I am not sad (Barbara).

Emotional eating is characterized by episodes of binge eating, grazing, and/or eating when not hungry to soothe feelings (eating disorders anonymous.org 2009). Emotional eaters are often stimulated by high-sugar and high-fat foods. Research suggests that meals eaten in positive and negative moods are larger than meals eaten in neutral moods (Patel and Schlundt 2001). Additionally, eating when in negative affective states can occur with

great speed (D'Arrigo 2007), particularly as people eat for reasons other than physiological hunger (Obesity and Week 2006). Hence, it is proposed that emotional eaters engage in excessive eating behavior to cope with negative emotions.

H5: There is a positive relationship between emotional eating and overconsumption.

Methodology

In order to test the hypotheses, a survey available in both a web-based as well as pen and paper format was administered to 168 women located in various cities throughout the USA. Participants were garnered through neighborhood community centers, churches, and through email solicitation. The convenience sample included individuals that ranged in age from 18 to 75. The mean age was 35. Respondents were ethnically diverse. Thirty-two percent of participants were European American/Caucasian, 50% were African American, 9% were Asian American, 3% were Hispanic, 3% were Native American, and 3% reported "Other."¹ Although not representative of the US population, the ethnic diversity of the sample more closely resembles disparities in obesity. Statistics show that there is a higher prevalence of obesity among African Americans, Latinos, American Indians, and Pacific Islanders than Caucasians in the USA (Davis et al. 2009; Ogden et al. 2006; U.S. Department of Health and Human Services 2000).

Measures

We designed and adapted existing scales to measure the constructs of interest in this research. All measures appear in the [Appendix](#) and were measured on a 7-point scale. Items for hedonic rationalizations were adapted from Moore and Bovell (2008). Hedonic rationalizations were measured using three items. Motivation to process nutrition information was also measured using three items (Keller et al. 1997). Additionally, we adapted items to measure social norms from those used in previous research (Bagozzi et al. 2000; Fishbein and Ajzen 1975). All other measures, including attitude toward advertising for hedonic foods, ruminative thoughts, desire for hedonic foods, emotional eating behavior, and overconsumption were developed for this research (see [Appendix](#)). These measures were subjected to confirmatory analysis and achieved appropriate construct validity.

Results

The data was subjected to structural equation analysis in AMOS 17.0 using the maximum likelihood estimation method. As recommended by Anderson and Gerbing (1998), a two-step procedure was used to first assess the model for construct and discriminant validity and then to test hypotheses in the structural model.

¹ US Census (2009) Ethnic Minority Profile Estimates: African American = 13.5%, Hispanic = 15%, Asian American = 5%, and Native American = 1.5%

Measurement Model

The measurement model exhibited adequate fit χ^2 (332.39), p value (0.00), CFI (0.96), NFI (0.91), IFI (0.96), RMSEA (0.06), and PCLOSE (0.000). To test for convergent validity, factor loadings, along with the average variance extracted, were calculated for each latent variable. To improve model fit, two items were eliminated—one from social norms to the other was from motivation to process nutrition information (see [Appendix](#)). After these items had been removed, standardized factor loadings exceeded the 0.6 threshold (Hair et al. 2006). Additionally, as seen in [Table 2](#), the average variance extracted for each construct (ranged from 0.60 to 0.92) exceeded the recommended rule of thumb of 0.5 (Hair et al. 2006).

In order to assess discriminant validity, the Fornell and Larcker (1981) was performed. Discriminant validity is demonstrated when the average variance extracted for a construct is greater than the squared correlations between that construct and other constructs in the model. As demonstrated in [Table 2](#), the average variances extracted between each construct is greater than the squared multiple correlations for each construct pairing. Reliabilities were also assessed for each construct to ensure that each exhibited internal consistency (see [Appendix](#)). All measures (ranged from 0.78 to 0.96) exemplified acceptable reliability (Nunnally and Bernstein 1994). The results from the structural model follow.

Structural Model

After attaining a validated measurement model, the structural model and hypotheses were evaluated. The emotional eating structural model (see [Fig. 1](#)) exhibited good model fit: χ^2 (505.83), p value (0.000), CFI (0.91), NFI (0.86), IFI (0.91), RMSEA (0.09), and PCLOSE (0.000). Hypotheses 1 through 5 proposed both direct and mediational effects between latent variables and the primary dependent variables of interest.² The direct effects are shown in [Table 3](#), while the mediational effects are described in the text.

Attitude Toward the Ad, Desire, and Emotional Eating H1a and H1b specify direct effects, while H1c predicts a mediational effect. The results of these direct effects are presented in [Table 3](#). H1a predicted that attitude toward advertising for hedonic foods would be positively related to desire for hedonic food items. H1a was supported ($\beta=0.426$; S.E.=0.148; $p<0.05$). This indicates that the more favorable the attitudinal response to the advertisement for hedonic foods, the greater the desire for hedonic food items. Moreover, H1b proposed that the desire for hedonic foods would be positively related to emotional eating. This hypothesis was also validated ($\beta=0.225$; S.E.=0.087; $p<0.05$), revealing that greater desire for hedonic foods is correlated with emotional eating behaviors. H1c predicted that desire for hedonic food would mediate the relationship between attitudes toward advertising for hedonic foods and emotional eating. Following Baron and Kenny's (1986) procedure for testing mediation, the existence of a mediating effect is present when (1) attitudes towards advertising is significantly related to desire for hedonic foods, (2) desire for hedonic foods is significantly related to emotional eating, and (3) the relationship

² To ensure that there were no "city effects," given that our sample was obtained from residents from multiple cities, place of residence was modeled as a covariate. There were no significant effects; hence, place of residence is not included in the model.

Table 2 Average variance extracted (in bold) and squared correlations

	Emotional eating	Attitude toward advertising	Desire	Rumination	Social norms	Hedonic rationalization	Motivation to process nutrition Info	Overconsumption
Emotional eating	0.92							
Attitude toward advertising	0.03	0.6						
Desire	0.13	0.05	0.92					
Rumination	0.13	0.01	0.27	0.72				
Social norms	0.02	0.01	0.01	0.02	0.85			
Hedonic rationalization	0.09	0.04	0.13	0.05	0.05	0.6		
Motivation to process nutrition Info	0.04	0.13	0.05	0.01	0.00	0.13	0.8	
Overconsumption	0.19	0.07	0.15	0.07	0.001	0.16	0.15	0.82

Table 3 Test of hypotheses

Hypotheses	Unstandardized coefficient	Standardized coefficient	Standard error	Critical ratio	<i>p</i> value
H1a: Attitude Toward Advertising → Desire for Hedonic Foods	0.426	0.247	0.148	2.879	<i>p</i> <0.05
H1b: Desire for Hedonic Foods → Emotional Eating	0.225	0.198	0.087	2.588	<i>p</i> <0.05
H1c: Attitude Toward Advertising → Emotional Eating	0.029	0.051	0.162	0.181	<i>p</i> >0.05
H2a: Attitude Toward Advertising → Ruminative Thoughts	0.460	0.283	0.149	3.085	<i>p</i> <0.05
H2b: Ruminative Thoughts → Emotional Eating	0.298	0.247	0.099	3.002	<i>p</i> <0.05
H2c: Attitude Toward Advertising → Emotional Eating	0.029	0.015	0.162	0.181	<i>p</i> >0.05
H3a: Social Norms → Hedonic Rationalization	0.170	0.221	0.062	2.722	<i>p</i> <0.05
H3b: Hedonic Rationalization → Emotional Eating	0.306	0.205	0.125	2.456	<i>p</i> <0.05
H3c: Social Norms → Emotional Eating	0.061	0.053	0.080	0.764	<i>p</i> >0.05
H4: Emotional Eating → Motivation to Process Nutrition Info	-0.210	-0.191	0.087	-2.403	<i>p</i> <0.05
H5: Emotional Eating → Overconsumption	0.426	0.435	0.073	5.857	<i>p</i> <0.001

between attitude toward advertising and emotional eating is not significant (Kenny et al. 1998). Mediation was confirmed for H1c. Desire for hedonic foods fully mediates the relationship between attitudes toward advertising for hedonic foods and emotional eating since the path between attitude toward advertising and emotional eating is insignificant ($\beta_3=0.029$, S.E.=0.162, $p>0.05$). Further, mediation is also corroborated by the Sobel test statistic ($z=1.96$, $p<0.05$).

Rumination H2a–H2c denote direct effects and mediational effects. H2a proposed that attitude toward advertising for hedonic foods would be positively related to ruminative thoughts about food. H2a was confirmed ($\beta=0.460$; S.E.=0.149; $p<0.05$) revealing that more favorable attitude toward the advertisement is related to increased ruminative thoughts about food. Further, H2b predicted that ruminative thoughts about food would be positively related to emotional eating. The results support the H2b prediction ($\beta=0.298$; S.E.=0.10; $p<0.05$) which indicates that more ruminative thoughts about food are associated with increased emotional eating. Also predicted in H2c, ruminative thoughts about food would mediate the relationship between attitudes toward advertising for hedonic foods and emotional eating. Results confirm the full mediation of rumination due to the non-significant path between attitude toward advertising for hedonic foods and emotional eating ($\beta_3=0.029$, S.E.=0.162, $p>0.05$). The Sobel test confirms full mediation ($z=2.14$, $p<0.05$).

Social Norms H3a–H3c specify both direct and mediational effects. H3a predicted that social norms would be positively related to hedonic rationalizations. Results corroborate this prediction ($\beta=0.571$; S.E.=0.046; $p<0.001$). This shows that social norms are linked to hedonic rationalization. Correspondingly, H3b proposed hedonic rationalizations would be positively related to emotional eating and results confirm this prediction ($\beta=0.306$; S.E.=0.125; $p<0.05$). This result indicates that greater hedonic rationalizations are correlated with emotional eating. H3c predicted that hedonic rationalization would mediate the relationship between social norms and emotional eating. In assessing mediation, hedonic rationalization fully mediates the relationship between social norms and emotional eating ($\beta=0.061$, S.E.=0.080, $p>0.05$.) Full mediation is supported by the Sobel test ($z=2.40$, $p<0.05$).

Motivation to Process Nutrition Information H4 proposed that there would be a negative relationship between emotional eating and motivation to process nutrition information. This prediction is supported ($\beta=-0.210$; S.E.=0.087; $p<0.05$), and therefore, indicates that an increase in emotional eating is inversely correlated with the motivation to process nutrition information.

Overconsumption H5 predicted that there would be a positive, direct relationship between emotional eating and overconsumption. H5 is supported ($\beta=0.426$; S.E.=0.073; $p<0.001$), thus revealing that an increase in emotional eating is linked to overconsumption.³

General Discussion

Summary of Results

The present research examined both the internal and external processes that underlie emotional eating. Individuals attempt to influence the emotions they have, when they have them, and how they express their emotions (Gross et al. 2006). Negative emotions are the emotions most commonly regulated with individuals making proactive attempts to “down-regulate” or minimize negative experiential states. Findings from our tests of the emotional eating conceptual model demonstrate that emotional eating is heavily influenced by food advertising, which can incite desire and ruminative thoughts about food. Further, eating behavior is highly subjected to social norms. Norms can increase the likelihood of an individual engaging in a certain behavior. Social expectations toward food consumption have evolved over the years and with the increasing availability of foods, particularly high-calorie foods, overconsumption becomes an even greater concern. Evidence from this research also suggests that individuals who emotionally eat may be doing so because others are socially facilitating such behavior. Finally, despite regulatory and policy efforts to create more informed consumers by providing nutrient content

³ Although not a part of our conceptual model, an individual’s satisfaction with their weight (higher values indicating more satisfaction) was negatively related to emotional eating behavior ($r=-0.19$, $p<0.01$) and overconsumption ($r=-.26$, $p<0.01$).

information on labels and packaging, emotional eaters possess little motivation to process this information.

Implications of Findings

Emotional eating affects a number of individuals and may be among the many contributors to the observed epidemic of overweight and obesity. Not only does using food to cope with emotional problems lead to weight-related problems, but also it may prevent individuals from learning constructive coping skills for effectively resolving emotional distress (Brown et al. 2009). More generally, research suggests that emotional eating can detract from consumer health and reduce consumer well-being. Findings highlight how advertising and social norms may contribute to emotional eating and identify cognitive and emotional mechanisms that mediate the influence of these constructs on emotional eating. Additionally, results highlight important outcomes of emotional eating, namely a decreased motivation to process nutritional information and overconsumption. These findings have implications for understanding emotional eating, its role in America's "weight problem" and the development of interventions to enhance consumer welfare.

Emotional Eating—An Invisible Plague?

Given the ramifications of obesity—directly on health care costs and indirectly economically in lost productivity and future earnings lost due to premature death—a great deal of the social conversation in obesity has focused on environmental issues and factors that impel people to eat. However, private behavior, related to consumer choice, is also becoming a focal point for action (Kersh and Morone 2005; Block et al. 2009; Biltkoff 2010).

Our results suggest that reducing emotional eating among consumers may necessitate interventions targeted at both individual consumer behavior and social processes. Efforts by public health organizations, government agencies, or the corporate sector might develop education programs that make individuals aware of why they are engaging in aversive eating behavioral patterns and encourage more healthy alternatives to manage emotions. For example, pharmaceutical company GlaxoSmithKline plans to fund a documentary about the hazards of mindless and emotional eating (Warner 2010). However, education is most effective when the goals of society are consistent with those of the target audience, the benefits of changing behavior are inherently attractive, the costs of changing are low, and the skills and other resources needed to change are readily available (Rothschild 1999). While increased awareness of emotional eating is a necessary start to addressing the problem, given the intricacies and complexity of the issue, education is likely not a sufficient condition.

Social marketing efforts should be used to offer people alternative choices to prompt voluntary change (Rothschild 1999). Specifically, social marketing can be used to alter the environment to make the recommended health behavior more advantageous than the unhealthy behavior it is designed to replace (Rothschild 1999). For example, social marketing efforts can help create a less hospitable environment for emotional eating. Interventions might suggest alternative behaviors such as increasing consumer motivation to seek out and make healthier food choices. Furthermore, individuals might receive coaching on how to better manage their emotions and resist the temptation to overconsume unhealthy food products (Arnold et al. 2010). This might include support programs that

offer coping resources on how to regulate and even reappraise negative emotions (Gross 1998). Additionally, engaging in stress management techniques such as meditation or relaxation might assist in curtailing eating in response to negative emotion (Manzoni et al. 2009).

Results also suggest that individuals engaging in emotional eating may be more likely to avoid processing nutrition information as it is currently presented on packaged labels. Thus, identifying the types and nature of food information that support recognition of food content and its potential weight effects might be key (Aboulnasr and Sivaranman 2010). Specifically, information may be made more salient for individuals not interested in processing nutrition information in a nutrition facts panel by conveying it in graphic formats and using graphic rating systems (Viswanathan et al. 2009). This might include placing nutrient values as bar graphs in terms of “high” and “low” ratings to make such information more obvious and possibly more imposing.

Additionally, since research has shown that parents can model aversive eating behavior for their children (Elfhag and Linne 2005; Grier et al. 2007), parenting skills programs might be used to help parents cultivate healthier relationships with food in their children. More generally, initiatives to support the development of healthy relationships with food appear important to overall well-being (Block et al. 2009).

Study Limitations and Future Research

Although the current research has potentially important implications for social marketing efforts in combating overconsumption and the obesity epidemic, it is not without its limitations. First of all, this study only examined emotional eating behavior in women. Women were chosen as the focus of this study because more women self-report as emotional eaters. Future research might include a larger sample with both genders to examine the role of emotions in eating behavior. Further, this study used convenience sampling, and the cross-sectional data obtained limited the ability to establish the direction of causality in the relationships between variables. Subsequent research endeavors might employ experimental studies that manipulate advertisements and emotions and then assess actual eating behavior. Finally, given the convenience sample used in this research, the study sample does not represent the US population. However, the sample does reflect groups who are at the highest risk for obesity, specifically minority women who tend to be disproportionately overweight and obese.

In our study, we found that ruminative thoughts might be maladaptive for emotion eaters. Future studies might explore strategies that can be used to decrease ruminative thinking.

Further, since emotional eaters are prone to consuming and overconsuming unhealthy food when experiencing negative emotional states, methods which might assist individuals in focusing less on negative emotional outcomes might be put forth. These internal issues need to be addressed before public service announcements can be instituted and effective at initiating behavioral change. Also, as future studies explore the role of emotions in eating behavior for both men and women, the most effective and appealing ways to target social marketing efforts might be explored, given the differences between the two genders.

Results of our research indicate that emotional eaters consciously avoid reading nutrition information. Subsequent research might explore whether there are other packaging/promotion strategies that can be utilized to communicate nutritional content (Viswanathan et al. 2009). Addressing emotional eating is also important as emotional

eating among adults may directly or indirectly affect children. Parents set examples for their children's eating behavior through their own food consumption, the type of food marketing they are exposed to and their perceived social norms (Grier et al. 2007). Future studies might explore the link between parent and child eating behaviors with respect to emotional eating.

Finally, additional studies might examine whether building and creating the perception of "healthy brands" (Nielsen 2009) and even the "health of the community" are successful ways to reduce the negative effects of emotional eating and overconsumption.

Conclusion

Emotional eating is a common behavior, and one that frequently serves its purpose of short-term gratification. Results of this research suggest the importance of further understanding perceptual and social processes related to eating behavior as well as consumers' relationships with food. Continued research on emotional eating appears to be a worthwhile path in addressing issues related to food overconsumption and obesity.

Appendix Measures

Emotional Eating (.92)

In general, how often do you eat to cope with your emotions (or feelings)?

Infrequently/Frequently

Seldom/Often

Never/Always

Attitude toward Advertising for Hedonic Foods (.93)

Anchored by Strongly Disagree/Strongly Agree

I feel that advertisements for indulgent food items are persuasive.

I feel that advertisements for indulgent food items are convincing.

Advertisements for indulgent food items are interesting.

Desire for Hedonic Foods (.96)

In general, how often do you desire or crave indulgent food items? Infrequently/Frequently

Seldom/Often

Never/Always

Hedonic Rationalizations (.78) Adapted from Moore and Bovell (2008)

Anchored by Strongly Disagree/Strongly Agree

Yielding to this temptation once, won't hurt me.

I deserve a break sometimes to enjoy life.

This is so delicious, I'll just enjoy it.

Rumination (.90)

Anchored by Strongly Disagree/Strongly Agree

Memories of indulgent food items pop into my head when trying to work.

I spend time thinking about when I can consume indulgent food items.

Pictures of indulgent food items pop into my mind throughout the day.

Social Norms (.87)

Anchored by Strongly Disagree/Strongly Agree

My family members eat indulgent food items.

My community members eat indulgent food items. (*Removed to improve model fit*)

Most people who are important to me eat indulgent food items.

Motivation to Process Nutrition Information (.90)

In general, how often do you read the NUTRITION FACTS panel (located on the package or label) that reports nutrient information on food products? Not Often/Very Often

In general, how interested are you in reading nutrition and health-related information?

Very Interested/Not Interested (*Removed to improve model fit*)

I really care about reading nutrition information and nutrition labels. Not At All/Very Much

Overconsumption of Hedonic Foods (.94)

Anchored by Never to Frequently

In general, I feel like I eat more indulgent food items than I should.

At times, I eat a lot of indulgent food items.

My diet includes many indulgent food items.

I eat a fair amount of indulgent food.

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