

**How Consumers Process Unhealthy Food Advertising  
Featuring Risk-avoidance Appeals:  
Moderating Roles of Dieting Status and  
Gender on the Prediction Model of Self-  
and Functional Congruity**

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This study examined how the effects of risk-avoidance appeals in unhealthy food advertising are differently predicted by consumers' self- and functional congruity. In addition, this research explored whether the predictive effects are moderated by consumers' current dieting status and physiological gender. An experimental study found that functional-congruity had stronger predictive effects on ad evaluations than self-congruity. Moreover, the risk-avoidance appeals in unhealthy food advertising are more cognitively processed by dieting consumers, as well as among female consumers. These results provide several theoretical and practical implications for public health policy officials.

*Keywords: food advertising, self- and functional congruity, nutrient-content claims, risk-avoidance appeal, gender, dieting, public health policy*

## **Introduction**

Excessive consumption of unhealthy foods has been a serious health problem in the United States for a long time because such eating behavior is significantly related to numerous diet-related diseases, including diabetes and obesity (Flegal et al., 2013; Ogden et al., 2014). In particular, unhealthy food advertising has been criticized as a major reason for the problem since it occupies a majority of U.S. food advertising (Harris et al., 2013) and promotes consumers' excessive unhealthy food consumption (Harker et al., 2007; Nestle, 2007).

To improve the chronic health and nutrition problem, the U.S. government allows food companies to use nutrient-content claims in food advertisements, such as calcium-added, lower sodium, and more vitamins (NLEA 1990; DHSEA 1994). But, due to several legal loopholes, nutrient-claimed food advertising can delude consumers into believing that the advertised product is healthy, even if it still contains high levels of other unhealthy ingredients (Roe, Levy, & Derby, 1999; Chandon & Wansink, 2007; Choi et al., 2013). This problem is more prominent when the nutrient-content claims are the risk-avoidance appeal type, such as low-calories, reduced-fat, and less-sugar (Wansink & Chandon, 2006; Choi et al., 2013). Indeed, these risk-avoidance appeals are prevalently used in food advertisements across a variety of perceivably unhealthy food categories including sweets, fast foods, frozen meals, and so on (Choi et al., 2013). But, relatively few studies have examined how the unhealthy food ads with risk-avoidance appeals are processed in the consumer's mind.

In this context, employing the theoretical framework of self- and

functional congruity (Choi & Reid, 2016; Johar & Sirgy, 1991; Sirgy et al., 1991), this study basically examines how consumers' responses to unhealthy food ads with risk-avoidance appeals are differently predicted by their self- and functional congruity on the advertised products. Particularly, this study further scrutinizes how the predictive effects of both congruities are influenced by specific consumer situations. Consumers' current dieting status and physiological gender are examined as the specific consumer situations because dieting and female consumers might be more vulnerable to the problematic risk-avoidance appeals in unhealthy food advertising. The key findings in this study provide several implications for public health officials.

## **Literature review**

### **Health Problems and Nutrient-content Claims in the U.S.**

As mentioned above, excessive consumption of unhealthy foods causes serious health problems among U.S. citizens. For the past several decades, overweight and obesity have been prevalent among the majority of U.S. adults, and the rate has not decreased at all (Ogden et al., 2014). The overweight and obese people suffer from higher risks of cardiovascular diseases, diabetes, and obesity-related cancers than normal-weight people, and these diseases bring higher all-cause mortality to overweight and obese individuals (Flegal et al., 2007, 2013).

As the overweight and obesity are caused by the disproportionate balance between excessive caloric intake and inadequate energy expenditure (Ogden

et al., 2002), advertising for poor nutritional and energy-dense food products has been criticized as a major reason for the unhealthy eating habit (see Harker, Harker, & Burns, 2007; Hoek & Gendall, 2006). For example, Nestle (2007) argued that the U.S. food industry is investing more of their marketing budget in fast food advertising than in a healthy food consumption campaign, and the excessive fast food advertising stimulates people to consume more calories than necessary (also see Bell et al., 2009). Hoek and Gendall (2006) also contended that such unhealthy eating behaviors are enhanced by the combination of extensive unhealthy food advertising and sales promotions including product trial and reward. Several researchers also empirically found that the majority of food products advertised in the U.S. include too many unhealthy ingredients (e.g., sugar, sodium, and fat) based on the Daily Value proportion requirements (Jeffery & French, 1998; Parker, 2003; Lobstein & Dibb, 2005; Bell et al., 2009).

Responding to the researchers' and consumer advocates' criticism of food advertising and marketing practices, the U.S. government established Health and Nutrition-related (HNR) claim stipulations (NLEA, 1990; DSHEA, 1994) and has encouraged food industry to advertise healthier food products. According to the stipulations, food advertising practitioners can use nutrient-content claims on their food products, to communicate a specific level of particular nutrients/ingredients added or reduced in the foods (e.g., "low fat" and "calcium added") (NLEA 1990). Currently, the nutrient-content claims are prevalently used in the US food advertising industry due to their feasibility and effectiveness (Choi et al., 2013; Nan et al., 2013; Yoon et al., 2011).

However, many researchers have recently shown concern that the nutrient-content claims can mislead consumers (Andrews et al., 1998, 2000;

Chandon & Wansink, 2007; Choi et al., 2012, 2013; Parker, 2003; Roe, Levy, & Derby, 1999; Wansink & Chandon, 2006). Since the claims are not required to show unhealthy information in food ads, consumers would believe the nutrient-claimed products as healthy, even if these products still excessively include other unhealthy ingredients (Chandon & Wansink, 2007; Heller, 2001; Neslde, 2007; Wansink & Chandon, 2006). Indeed, previous studies found that a simple nutrient-content claim is enough to overestimate the health value of an advertised food product, and it makes consumers truncate their further information search about the product and thus underestimate its unhealthy risk (Andrews et al., 1998, 2000; Roe, Levy, & Derby, 1999; Wansink & Chandon, 2006).

Among the nutrient-content claims, particularly, previous studies indicated that risk-avoidance appeals are more problematic because these appeals are directly related to consumers' reduced risk and guilty perceptions about eating unhealthy food products (Choi et al., 2013; Wansink & Chandon, 2006). According to Choi and his colleagues (2013, 2014), nutrient-content claims are classified into benefit-seeking and risk-avoidance appeals based on consumers' psychological motivation. Benefit-seeking appeals are nutrient-content claims highlighting food products' enhanced healthy benefit (e.g., more vitamins, added calcium), while risk-avoidance appeals are nutrient-content claims highlighting food products' reduced unhealthy risk (0 gram sugar, reduced fat, low calories). Theoretically, this benefit-seeking and risk-avoidance categorization is different from the gain and loss message framing because while the structure of message framing has both action and outcome dimensions, the benefit-seeking and risk-avoidance categorization does not clarify outcome value (see Choi et al., 2013, p. 592 for detailed information).

For the risk-avoidance appeals, several researchers consistently indicated that its potential misleading problem could be more serious. For instance, Andrews et al. (1998) found that the “No Cholesterol” risk avoidance appeal led consumers to over-generalize the perceived healthiness of advertised food products, so this reduced the respondents’ concern about cancer and heart disease. Wansink and Chandon (2007) also found that consumers misled by the “low fat” label actually take in more calories from the food product than regular food since they underestimated the actual calories in the nutrient-claimed product. Additionally, Choi et al. (2013) reported that female consumers prefer risk-avoidance appeals to benefit-seeking appeals regardless of food healthiness because female consumers tend to have a prevention focus on their dietary behavior.

Although these studies provided plentiful evidence about the inappropriate use of nutrient-content claims, not many studies investigated how and why consumers are motivated by these appeals (Choi & Reid, 2016; Wansink & Chandon, 2006). Particularly for the context of food advertising with risk-avoidance appeal, fewer studies have investigated what psychological motivations predict the effects of food ads with risk-avoidance appeals and how the predictive mechanism is affected by specific health-related influences. Thus, additional research is needed to advance the literature on food advertising and health issues.

### **Self- and Functional Congruity Framework**

To satisfy these needs above, this study employed self- and functional congruity theory (Johar & Sirgy, 1991; Sirgy et al., 1991, 1997) as a main theoretical framework. The theory is based on the idea that consumers have

two major psychological motivations for purchasing a product. One is consumers' self-congruity based on their value-expressive motivation such as maintaining and enhancing self-image/identity by purchasing the product, while the other is consumers' functional-congruity based on their utilitarian motivation such as maximizing functional benefit by purchasing the product (see Johar & Sirgy, 1991; Katz, 1960; Snyder & DeBono, 1985; Shavitt, 1990, 1992).

Based on this theoretical foundation, as shown in Figure 1, the prediction model explains that consumers' ad evaluations are predicted by the value-expressive and utilitarian functions emphasized in the advertisement concurrently and differentially (Johar & Sirgy, 1991). When an ad for a utilitarian product is evaluated by consumers, the predictive effect of functional congruity becomes stronger than that of self-congruity. Conversely, when an ad for a value-expressive product is evaluated, the predictive effect of self-congruity becomes stronger than that of functional congruity (also see Choi & Reid, 2016). Moreover, since self-congruity represents the consumer's affective dimension while functional-congruity represents his/her cognitive dimension (Johar & Sirgy, 1991), the self-congruity also predicts functional-congruity (Sirgy et al., 1991). The reason is that affective attitudes are formed before cognitive attitudes (Fabrigar & Petty, 1999; Shiv & Fedorikin, 1999), so affective reactions influence cognitive reactions when consumers evaluate advertising (Eisend & Langner, 2010).

Indeed, employing this self- and functional congruity theory in the context of nutrient-claimed advertising, Choi and Reid (2016) found that while self-congruity predicted functional-congruity, the predictive effect of functional-congruity on ad evaluations was stronger than that of self-congruity, as nutrient-content claims in food advertising are generally perceived as

enhancing functional/utilitarian benefits of food products (also see Verbeke, 2006).

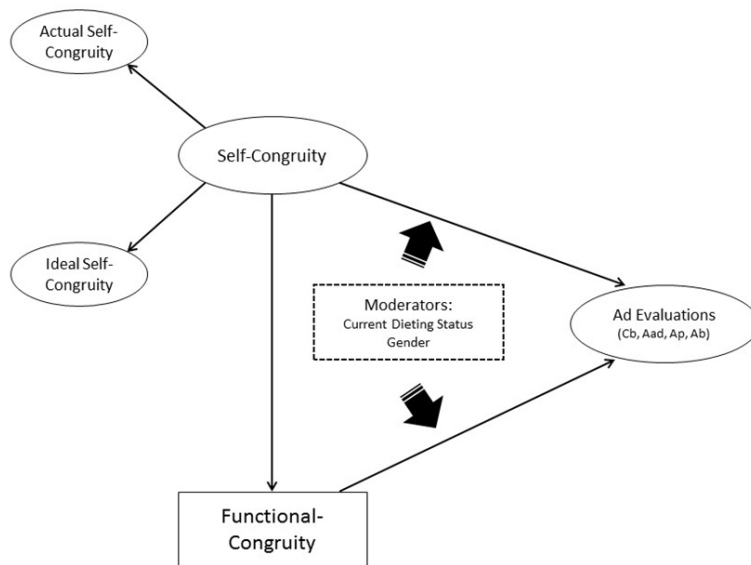


Figure 1. Proposed Prediction Model of Self- and Functional- Congruity and Moderators

### Moderators on the Prediction Model

According to previous studies (Choi & Reid, 2016; Johar & Sirvey, 1991), self- and functional congruity theory also shares the same theoretical basis as the Elaboration Likelihood Model (ELM). ELM's peripheral processing route is consistent with the predictive effect of self-congruity, whereas its central processing route is consistent with the effect of functional-congruity. That is, when consumers are more involved in the message and information



in advertising, their fortified cognitive elaboration makes a stronger predictive effect of functional-congruity. However, in situations where the message and information in advertising are believed to be less important, consumers are more involved in the peripheral source cues, thus making a stronger predictive effect of self-congruity (Choi & Reid, 2016; Johar & Sirgy, 1991).

Moreover, the strength of self and functional-congruity can be moderated by audience involvement. According to Choi and Reid (2016), the predictive effects of self- and functional-congruity on the attitudes toward nutrient-claimed ads were moderated by consumers' health consciousness level. As consumers are more involved in healthy eating, their functional-congruity became a stronger predictor because these consumers more carefully processed the nutrient-content claims in food ads. Conversely, as consumers are less involved in healthy eating, their self-congruity became a stronger predictor since the claims were not so important for them.

In this context, as shown in Figure 1, this study proposes two new possible moderators which might influence the predictive effects of self- and functional congruity on consumer ad evaluations. The first possible moderator is an individual's current dieting status. Since obesity is triggered by an "imbalance between caloric intake and energy expenditure" (Ogden et al., 2002, p.1731), dieting consumers try to lose weight by reducing caloric intake and increasing energy expenditure. And this dietary change requires more effort, time, consciousness, and involvement in food choice (Nestle et al., 1998). Thus, in the context of this study examining food advertising responses, it is expected that dieting consumers will be involved in greater cognitive elaboration of the food ads with risk-avoidance appeals, so functional congruity will be a stronger predictor among these consumers

than non-dieting consumers. Conversely, self-congruity will be a weaker predictor among dieting consumers than non-dieting consumers because the augmentation of cognitive processing linked with the utilitarian function decreases peripheral processing linked with the value-expressive function (see Choi & Reid, 2016; Petty, Priester, & Brinol, 2002).

H1: For unhealthy food ads with risk-avoidance appeals, functional congruity will have a stronger predictive effect on ad evaluations among consumers who are currently dieting than among consumers who are not dieting.

H2: For unhealthy food ads with risk-avoidance appeals, self-congruity will have a stronger predictive effect on ad evaluations among consumers who are not dieting than among consumers who are currently dieting.

The second possible moderator is the consumer's physiological gender. According to previous studies, female consumers have long been distressed by the pressure of weight loss and being-thin than male consumers (Garner et al., 1980; Hesse-Biber et al., 2006). This social background made female consumers' food choices more prevention-focused and led them to like the food ads with risk-avoidance appeals (e.g., less fat, lower calories) more than with benefit-seeking appeals (e.g., more calcium, added vitamins) (Choi et al., 2013). In this sense, this research proposes that female consumers would be more attentive to the food ads with risk avoidance appeals than male consumers would. That is, functional-congruity will be a more important predictor among female consumers than among male consumers, while self-congruity will be a less important predictor.

H3: For unhealthy food ads with risk-avoidance appeals, functional-

congruity will have a stronger predictive effect on ad evaluations among female consumers than among male consumers.

H4: For unhealthy food ads with risk-avoidance appeals, self-congruity will have a stronger predictive effect on ad evaluations among male consumers than among female consumers.

## Method

Given the theoretical framework explained in the literature review, this study employed the prediction model of self- and functional congruity to examine consumers' information processing of food advertisements with risk-avoidance appeals. To test the hypotheses proposed, this study used a part of a data set collected by Choi and Reid (2016). Since they tested 16 healthy and unhealthy food advertisements with nutrient-content claims, this study selected the data set of unhealthy food advertisements with risk-avoidance appeals only. The following methodological description is borrowed from the previous study but modified for the purpose of the current study.

### Pre-test

One pre-test was conducted prior to the main experiment. The first part of the pre-test was to select perceivably unhealthy food products. Employing the method of previous studies (Choi et al., 2012; Choi et al., 2013; Choi & Springston, 2014), an initial list of eight possibly unhealthy food products was derived: *chocolate chipped bagels*, *ranch dressing*, *chocolate ice cream*,

*pepperoni pizza, fried chicken, chocolate chip cookies, french fries, and sugar-glazed donuts.* These food products were selected based on the condition of “regular eating by more than 60% of U.S. consumers” in *Simmons Study of Media and Markets*. Pre-test data were collected from 41 adults, a convenience sample of 20 undergraduate students and 21 non-student adults. Perceived healthiness of these products was evaluated on two seven-point bipolar scales where “1” meant “not very nutritious/ not very healthy” and “7” meant “very nutritious/ very healthy” (Choi et al., 2012, 2013), and these items showed strong inter-item correlations ranging from .90 to 1.00. A set of One-Sample t-tests confirmed that all of the selected food products showed low perceived healthiness, which is significantly less than the mid-point “4” ( $p < .001$ ).

Second, the subjects were also asked to identify important utilitarian criteria for food choice. This was used to create the questionnaire of functional congruity (see Sirgy et al., 1991), which will be used in the main experiment. A questionnaire established by Steptoe, Pollard, and Wardle (1995) was employed to identify the utilitarian criteria. The 36 question items included 9 underlying motives of food choice: health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concern (see Steptoe et al., 1995, p. 272). The evaluative criteria were evaluated on one seven-point bipolar scale where “1” meant “not at all important,” “4” meant “moderately important,” and “7” meant “very important.” The results showed that health, convenience, sensory appeal, natural content, price, and weight control were the most important evaluative criteria for food choice. They were significantly higher than “moderately important (4)” at the level of  $p < .05$  (One-Sample T-Tests). Based on the pretest results, we decided to rename “sensory appeal” as

“taste.” The reason was that (1) the item “tastes good” showed the highest mean value ( $M = 6.54$ ,  $SD = .64$ ) among the sensory appeal factors, and (2) taste has been found to be a central value of sensory quality (Nielsen et al., 1998; Urala & Lähteenmäki, 2003; Zanolini & Naspetti, 2002).

### Developing Ad Stimuli

Based on the pre-test results, *chocolate chip cookies* and *pepperoni pizza* were selected to create the unhealthy ad stimuli in the main experiment because several nutrient-content claims are actually used for these products in the U.S. food market (see Choi & Reid, 2016). These products are also eaten regularly by the majority of American consumers (see Choi & Reid, 2016). For each food product, two print advertisements were created by modifying real food advertisements, and a risk-avoidance appeal was added to each ad stimulus. Less calorie and sugar ad appeals were employed in the *chocolate chip cookie* advertisements, while less fat and cholesterol ad appeals were employed in the *pepperoni pizza* advertisements. To avoid pre-existing bias and increase internal validity of the main experiment, a real but unfamiliar foreign brand, ‘*Familia*’, was used.

### Main Experiment

In the main experiment conducted by Choi and Reid (2016), 180 non-student adults were exposed to unhealthy ad stimuli with risk-avoidance appeals in an online survey. The sample was part of a national online panel administered by a marketing research firm, and the age range was from 20 to 87 ( $M = 52.81$ ,  $SD = 15.27$ ). Racially, 86% of respondents were White,

8.7% were Black, and 3.1% were Asian. Male participants were 47.3% while female participants were 52.7%.

Regarding unhealthy food ads with risk-avoidance appeals, each participant was randomly assigned to one of the two survey sets. The first survey set included the less-cholesterol *Pepperoni Pizza* ad and the less-sugar *Chocolate Chip Cookie* ad, while the second survey set included the less-fat *Pepperoni Pizza* ad and the less-calorie *Chocolate Chip Cookie* ad. Thus, participants evaluated two different unhealthy food ads with different risk-avoidance appeals.

Each survey set contained three sections. The first section contained the questionnaire to measure respondents' personal importance of the utilitarian criteria of food choice, which were selected in the pre-test. Between the first and second sections, a brief explanation of the *Familia* brand was introduced to the respondents. In the second section, ad stimuli were randomly presented followed by post-stimuli questions, including the measurements for manipulation check, self- and functional congruity, and ad evaluations. Finally, in the third section respondents were asked to answer the question items about their current dieting status, age, gender, and race.

### **Self-congruities**

Among the four types of self-congruity (actual, ideal, social, and ideal social) (Johar & Sirgy, 1991; Sirgy, 1985), actual and ideal self-congruity were employed in this study because food choice is primarily the product of individual more than social approval (Neumark-Sztainer, Story, Perry, & Casey, 1999; Pollard, Kirk, & Cade, 2002). Thus, in the main experiment, actual and ideal self-congruity items were brought and modified from previous studies (Sirgy et al., 1997; also see Han, 2006), and measured by

seven-point Likert scales, ranging from 1 (strongly disagree) to 7 (strongly agree). The question items of actual self-congruity consisted of “Eating the advertised product is consistent with how I see myself,” “The kind of person who typically eats the advertised product is very much like me,” “Eating the advertised product reflects who I am,” and “My actual self-image is consistent with the overall image of people who eat the advertised product” (Cronbach's alpha = .97), while those of ideal self-congruity included “Eating the advertised product is consistent with who I would like to be,” “The kind of person who typically eats the advertised product is like how I would like to be,” “Eating the advertised product reflects who I would like to be,” and “My ideal self-image is consistent with the overall image of people who eat the advertised product” (Cronbach's alpha = .98; from Choi & Reid, 2016, p. 3434).

According to a second-order Confirmatory Factor Analysis (CFA), actual and ideal self-congruities had a second-order self-congruity relationship. That is, question items representing actual and ideal self-congruity were loaded on each congruity significantly (.90 to .97,  $p < .001$ ), and the two congruity constructs were also loaded on the overall self-congruity construct significantly (.99 for actual self-congruity, .93 for ideal self-congruity,  $p < .001$ ). This second-order model provided an acceptable model fit ( $\chi^2(19) = 193.83$ ,  $p < .001$ ; SRMR=.0211; IFI=.972; GFI=.910; AGFI=.826; NFI=.969; CFI=.972; RMSEA=.138). Also, the average variance extracted (AVE) exceeded .82, and construct reliability (CR) exceeded .91 for each congruity.

### **Functional congruity**

Following previous studies, functional congruity was measured using the

Belief-Importance Model (see Choi & Reid, 2016; Bass & Talarzyk, 1972; Sirgy et al., 1991). As explained above, participants were asked to evaluate their personal importance of the six utilitarian criteria on food choice in the first section of the main experiment, before exposure to ad stimuli. The question example was, “If you were considering purchasing a XXX, how important or unimportant would the following characteristics be to you?” After ad-exposure, respondents were asked to evaluate the believability that the advertised food would possess the utilitarian criteria, for example, “Listed below are possible attributes of the advertised product. For each of these attributes, please indicate how likely or unlikely it is that the advertised product would possess each attribute” (see Choi & Reid, 2016 for details). For each ad condition, the assessed importance and believability of each criterion were multiplied and then summed for all of the criteria to create a functional congruity index. That is, the index was treated as a single indicator because it is an additive observed variable (Hair et al., 1998; also see Maignan, Ferrell, & Hult, 2006 for similar case).

#### **Dependent Variables**

After ad exposure, the respondents were asked to evaluate claim believability, attitude toward ad, attitude toward product, and attitude toward brand to the assigned advertisements. Each advertisement was evaluated using seven-point bipolar scales. Claim believability (hereafter Cb) was measured by three items of unbelievable/believable, untrustworthy/trustworthy, and not credible/credible (Andrews et al., 1998; Cronbach's alpha = .96). Attitude toward ad (hereafter Aad) was measured by five items (bad/good, dislike/like, uninteresting/interesting, negative/positive, and unfavorable/favorable; Mitchell & Olson, 1981; Cronbach's alpha = .96).



Attitude toward brand (hereafter  $A_b$ ) and attitude toward product (hereafter  $A_p$ ) were measured using four items (bad/good, low quality/high quality, unappealing/appealing, and unpleasant/pleasant; Andrews et al., 2000; Muehling, 1987). Strong internal consistency was observed for each measure (Cronbach's alpha of  $A_p = .97$ ; Cronbach's alpha of  $A_b = .97$ ).

### **Moderating Variables and Manipulation Check**

Respondents' current dieting status and gender were measured as the potential moderators in this study. Current dieting was measured using the question "Are you currently dieting? (Yes/No)" (Lindberg et al., 2006). For manipulation check, a question to measure the respondent's perception of nutrient content on ad stimuli was asked: "Compared with a regular \_\_\_\_ (e.g. *chocolate chip cookie*) product, please indicate how likely or unlikely it is that the advertised product possesses each of the listed attributes." For the *chocolate chip cookie* ad stimuli, evaluative criteria were sugar and calorie levels; for *pepperoni pizza* ad stimuli, the criteria were cholesterol and fat levels.

## **Results**

The total sample size generated by the ad stimuli was supposed to be 360 responses (180 participants x 2 ads). But, 129 of the 360 responses were excluded ( $N = 231$ ) from the analysis because (1) the respondents already knew the advertised brand, (2) they did not finish the experiment, or (3) they had not eaten the food products in ad stimuli in the last six months. Of the

total responses ( $N_{pizza} = 108$ ,  $N_{cookie} = 123$ ), 26.9% were currently dieting and 73.1% were not. Male and female responses were almost equivalent (48% vs. 52%).

### Manipulation Checks

The manipulation checks were successful as intended. First, one-sample t-tests revealed that respondents perceived risk-avoidance appeals in ad stimuli (fat, cholesterol, sugar, and calories) as having significantly lower values than “regular product (4)” ( $p < .001$ ).

### Hypotheses and Research Question Testing

To test the proposed model (see Figure 1), AMOS 23.0 was used to analyze the main experiment data of unhealthy food ads featuring risk-avoidance appeals. Because most studies employing the self- and functional congruity model used a single dependent variable (see Ahn, Ekinci & Gang, 2011; Choi & Reid, 2016; Hung & Petrick, 2010; Sirgy et al., 1991), a separate analysis was executed for each ad evaluation. Table 1 presents the correlations for each ad evaluation.

For each case, acceptable convergent validity and discriminant validity were reported by CFA. Overall, the CFA found that all the constructs including self-/functional congruities and ad-evaluation exceeded the Cronbach’s alpha threshold of .7 (Nunnally, 1978). Moreover, all factor loadings were also statistically significant ( $p < .01$ ; Bagozzi & Yi, 1988). The minimum AVE was .77, exceeding the recommended threshold of .50 (see Hair et al., 1998). The AVE was also more than the squared correlations

between all pairs of constructs. The minimum construct reliability of the measures was .89, which also exceeded the threshold of .70 (Fornell & Larcker, 1981).

Table 1. Construct Correlations in Experiment

Case of Ad Evaluation		Self- congruity	Functional congruity
Claim believability	Self-congruity		
	Functional congruity	.50***	
	Ad response	.38***	.58***
Attitude toward Ad	Self-congruity		
	Functional congruity	.50***	
	Ad response	.45***	.63***
Attitude toward Product	Self-congruity		
	Functional congruity	.50***	
	Ad response	.46***	.65***
Attitude toward Brand	Self-congruity		
	Functional congruity	.50***	
	Ad response	.33***	.58***

Note:

\*\*\* $p < .001$

Based on the results above, SEM (*Structural Equation Modeling*) analysis was conducted on the prediction model. As shown in Table 2, the overall predictive effects of self- and functional congruity on ad evaluations were positive and significant, while functional-congruity was a stronger predictor on each ad evaluation than self-congruity. Only exception was the insignificant predictive effect of self-congruity on Ab, but all the prediction models provided acceptable model fits. According to Table 2, the majority

of fit indices provided acceptable model fits for each ad response model. Although all GFI values and RMSEA values of Cb, Ap, and Ab models did not satisfy the acceptable model fit, the values of SRMR, IFI, TLI, NFI, and CFI satisfied acceptable model fits for each ad response model.

Table 2. Overall Predicting Relationship between Self-congruity, Functional-congruity, and Ad Evaluations

Case of DV	Path Coefficients		
	SC→FC	SC→DV	FC→DV
Claim believability	.50***	.12*	.51***
Attitude toward Ad	.50***	.19**	.53***
Attitude toward Product	.50***	.18**	.56***
Attitude toward Brand	.50***	.06	.55***

Note:

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; SC = Self-congruity, FC = Functional congruity, DV = Ad responses

Model fit for each ad response model:

Claim believability: Chi-square = 240.25 ( $p < .001$ ,  $df = 50$ ); SRMR = .026; IFI = .955; GFI = .857; TLI = .915; NFI = .944; CFI = .955; RMSEA = .13

Attitude toward ad: Chi-square = 212.27 ( $p < .001$ ,  $df = 73$ ); SRMR = .030; IFI = .971; GFI = .882; TLI = .930; NFI = .958; CFI = .971; RMSEA = .09

Attitude toward product: Chi-square = 241.88 ( $p < .001$ ,  $df = 73$ ); SRMR = .032; IFI = .966; GFI = .872; TLI = .931; NFI = .950; CFI = .962; RMSEA = .10

Attitude toward brand: Chi-square = 241.90 ( $p < .001$ ,  $df = 61$ ); SRMR = .033; IFI = .962; GFI = .866; TLI = .912; NFI = .950; CFI = .962; RMSEA = .11

To test H1 and H2, the respondents were divided into dieting and non-dieting consumers, and then the multi-group SEM analyses were conducted. Table 3 shows the path-coefficients for the two groups. Regarding the predictive effects of functional-congruity, both dieting and non-dieting respondent groups showed significant associations between functional-

congruity and ad evaluations, and Chi-square tests revealed the path-coefficients between two groups are not significantly different ( $p > .05$ ). But, regarding the predictive effects of self-congruity, although insignificant Chi-square results were observed between the two groups, non-dieting respondents showed significant associations between self-congruity and ad evaluations (except for Ab) while dieting respondents did not show such significant associations. Thus, H1 and H2 were not supported, but self-congruity had a significant direct effect on Cb, Aad, and Ap among consumers who were not dieting while the direct effect of self-congruity was not significant among consumers who were currently dieting.

Table 3. Moderating Effects of Dieting status on the Prediction Model of Self- and Functional Congruity

Case of Ad Response	Groups	Self-congruity → Functional congruity		Self-congruity → Ad Response		Functional – congruity → Ad Response	
		Standardized Estimate	$\Delta x^2$	Standardized Estimate	$\Delta x^2$	Standardized Estimate	$\Delta x^2$
Claim believability	Not Dieting	.53***		.13*		.50***	
	Currently Dieting	.44***	.77	.10	.08	.57***	.23
Attitude toward ad	Not Dieting	.53***		.24***		.53***	
	Currently Dieting	.44***	.66	.08	1.53	.55***	.02
Attitude Toward product	Not Dieting	.53***		.25***		.53***	
	Currently Dieting	.44***	.78	.06	2.57	.62***	.20
Attitude Toward brand	Not Dieting	.53***		.11		.55***	
	Currently Dieting	.44***	.64	-.05	1.47	.54***	.80

Note:  
 $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

For testing H3 and H4, male and female respondents were compared using another set of multi-group SEM analyses. As shown in Table 4, female respondents showed stronger associations between functional-congruity and the four ad evaluations than did male respondents. In contrast, male respondents showed stronger associations between self-congruity and the four evaluations than did female respondents. Moreover, the predictive effect of self-congruity among male respondents was stronger than that among female respondents. According to the chi-square tests, these differences were statistically significant across all the prediction models ( $\Delta d.f. = 1, p < .05$ ). Thus, H3 and H4 were fully supported.

Table 4. Moderating Effects of Gender on the Prediction Model of Self- and Functional Congruity

Case of Ad Response	Groups	Self-congruity→ Functional congruity		Self-congruity→ Ad Response		Functional - congruity→ Ad Response	
		Standardized Estimate	$\Delta x^2$	Standardized Estimate	$\Delta x^2$	Standardized Estimate	$\Delta x^2$
Claim believability	Female	.28***		-.11		.62***	
	Male	.70***	13.89***	.46***	18.38***	.27**	8.76**
Attitude toward ad	Female	.32***		.00		.61***	
	Male	.70***	12.50***	.49***	14.42***	.32***	6.31*
Attitude Toward product	Female	.32***		.01		.54***	
	Male	.70***	12.81***	.39***	21.163***	.47***	6.76*
Attitude Toward brand	Female	.32***		-.08		.61***	
	Male	.70***	13.06***	.37***	12.23***	.31***	4.99*

Note:  
# $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## **Summary and discussion**

### **Summary of Findings**

This experiment tested a conceptual model of self- and functional congruity to determine whether evaluative responses to risk-avoidance appeals in food ads are predicted by consumers' self- and functional congruity, and how the predictive effects are moderated by their current dieting status and physiological gender. In sum, this study found: When consumers process unhealthy food ads with risk-avoidance appeals, (1) both self- and functional-congruities generally predict the ad evaluations while self-congruity also predicts functional-congruity; (2) the direct effect of self-congruity is significant for non-dieting respondents but insignificant for dieting respondents; (3) the predictive effect of functional-congruity is stronger for female consumers than for male consumers; and (4) the predictive effect of self-congruity is stronger for male consumers than for female consumers. Based on these results, the following theoretical and practical implications are provided.

### **Implications**

The first key finding of this study is that when consumers process the information in unhealthy food ads with risk-avoidance appeals, the predictive effect of functional-congruity tended to be stronger than that of self-congruity. This finding is consistent with previous studies that food products with nutrient-content claims are perceived as enhancing functional benefit (Bech-Larsen & Grunert, 2003; Verbeke, 2006), so functional-

congruity becomes a stronger motivational predictor because it represents consumers' utilitarian attributes (Choi & Reid, 2016). This finding suggests that consumers perceive risk-avoidance appealed foods as more utilitarian regardless of food healthiness. That is, rather than thinking about the actual healthiness of advertised food products, consumers tend to process the functional quality of risk-avoidance appeals in unhealthy food ads. This finding confirms and supports several researchers' warning against the problematic use of nutrient-content claims (Roe, Levy, & Derby, 1999; Wansink & Chandon, 2006).

Moreover, this study newly found that the direct effect of self-congruity is not significant for dieting consumers, while the effect is still significant for non-dieting consumers. In other words, the predictive effect of functional-congruity is stronger for dieting consumers while that of self-congruity is relatively less important to them. Theoretically, considering that self- and functional congruity theory shares the same theoretical foundation with the Elaboration Likelihood Model (Johar & Sirgy, 1991), the result could be interpreted that dieting consumers tend to interpret the risk-avoidance appeals more cognitively and thoroughly than do non-dieting consumers (see Petty, Priester, & Brinol, 2002). That is, in line with the first key finding above, this result further supports the concern about risk-avoidance appeals and their potential to mislead consumers (Choi et al., 2013; Wansink & Chandon, 2006). Since dieting consumers tend to more cognitively process and rely on the nutrient information of risk avoidance appeal in an unhealthy food ad, they would be more vulnerable to the persuasion of unhealthy food ads featuring risk-avoidance appeals.

This tendency is more prominent when male and female consumers are compared. The multi-group SEM analyses found that the predictive effect of functional-congruity is stronger but that of self-congruity is weaker as for



female consumers. In the same context of the above, the result could also be interpreted that female consumers tend to interpret the risk-avoidance appeals more cognitively and thoroughly than male consumers do (see Petty, Priester, & Brinol, 2002). That is, since female consumers are more distressed by the pressure of being-thin than male consumers are (Garner et al., 1980; Hesse-Biber et al., 2006), female consumers would prefer unhealthy food products featuring risk-avoidance appeals for their utilitarian/functional needs, such as losing weight. Thus, the finding of this study implies that female consumers could be more vulnerable to the problematic risk-avoidance appeals in unhealthy food advertising.

Theoretically, the influences of dieting status and gender are new and unique findings in this study. Although researchers argued that the effects of self- and functional congruity can be influenced by several audience and product-related factors because the theoretical framework shares the same theoretical foundation as the ELM (Johar & Sirgy, 1991; Sirgy, Grewal, Mangleburg, 2000), few studies empirically examined the theoretical relationship (Choi & Reid, 2016). In this context, this study newly added a meaningful theoretical contribution that consumers' dieting status and physiological gender can be important audience factors influencing the effects of self- and functional congruity. Particularly in the context of food advertising evaluation, this study provides further empirical support that as consumers are more involved in advertising claims, the direct effect of functional congruity becomes stronger while that of self-congruity becomes weaker or insignificant.

Practically, to improve the health and nutrition problems in the U.S., this study suggests future regulatory actions for the use of nutrient-content claims in food advertising. As noted by others, since nutrient-content claims

in food advertisements make consumers truncate further information search for the advertised products (Roe et al., 1999), it would be a possible idea to display nutrition facts on food advertisements (Wansink & Chandon, 2006). Indeed, Mohr, Lichtenstein, and Janiszewski (2012) found that consumers' food healthiness evaluations and purchase decisions are significantly influenced by their interpretation of Nutrition Facts labels attached to food products. Likewise, if consumers are exposed to the Nutrition Facts labels when they evaluate nutrient-claimed food advertisements, this will enhance the chance of accurate food healthiness evaluation. Or, if nutrient-claimed food products (e.g., less fat) still exceed the daily suggested threshold of other unhealthy ingredients (e.g., sugar), policy officials need to require advertisers to indicate the unhealthy ingredients. As Choi and Reid (2016) suggested, when the nutrient-claimed foods (e.g., low fat) contain other excessive unhealthy ingredients (e.g., high sugar), not allowing the nutrient-content claims could be considered in future regulatory amendments.

Furthermore, continuous consumer education programs are also needed to teach the consumers about accurate nutritional information and appropriate healthy dietary behavior, especially for female consumers trying to lose weight (Choi et al., 2013; Wansink & Chandon, 2006). Public health officials need to focus on educating consumers to read and correctly interpret the Nutrition Facts Panel attached to the food package before they purchase and consume the product (Nestle, 2007; also see Choi, Paek, & King 2012). This would improve consumer product literacy and reduce the possibility of being misled by problematic nutrient-content claims. Additionally, public health officials also need to make an effort to educate consumers about healthy dietary behavior. As Nestle (2007) indicated, health dietary behavior comes from the consumption of proper portions of

diverse foods, rather than the consumption of single nutrient-manipulated junk foods. Therefore, nutritional education campaigns suggesting healthy dietary patterns, such as “ChooseMyPlate” (Choi, Paek & King, 2012; see <http://www.choosemyplate.gov/>), need to be continued.

### Limitations and Future Studies

Although this study provided several important findings, it also has the following limitations that need be noted. First, even though the study selected representative unhealthy food categories, it does not represent all food product categories. Thus, replication studies with other representative unhealthy food products and risk-avoidance appeals are needed in future research to confirm the results of the current study.

The second limitation is that the experiment was conducted online. Although online experiments have the strength of external validity, their internal validity is less than other more-controlled experimental settings (Reips, 2000). Thus, replication is needed under different laboratory or real-market experimental conditions.

The third limitation is the somewhat small sample size for multi-group SEM. When this study compared dieting and non-dieting consumer groups, the number of responses in the dieting group was only 62. Although SEM analysis can be valid even with small samples between 50 and 100 (see Iacobucci, 2010), in the conservative sense a sample size more than 100 is recommended to have sufficient convergent validity (Anderson & Gerbing, 1984). Thus, to strengthen the external validity of this study, future research needs to conduct replication with a larger sample size, which could satisfy the conservative sense of SEM analysis.

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## 위험 회피 어필을 이용한 비건강 음식광고에 대한 소비자들의 반응 연구: 자기일치성과 기능일치성 예측모델에 대한 다이어트와 성별의 조절 효과

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이 연구는 비건강 음식광고내에 있는 영양소를 이용한 위험 회피 어필의 효과가 소비자들의 자기 일치성과 기능 일치성에 의해 어떻게 다르게 예측되는지를 연구하였다. 더 나아가, 이 연구는 이러한 예측효과가 소비자들의 다이어트 상황과 성별에 의해 조절되는지 분석하였다. 실험연구의 결과, 위험 회피 어필을 이용한 비건강 음식광고를 평가함에 있어서, 소비자들의 기능 일치성이 자기 일치성보다 강력한 예측 변인임이 밝혀졌다. 더 나아가, 다이어트 중인 소비자들과 여성 소비자들에 있어서 이러한 광고들이 더욱 더 인지적으로 처리됨이 밝혀졌다. 이러한 결과들은 공공 건강 정책을 실행하는 이들에게 여러 이론적, 실재적 공헌을 제공한다.

주제어 : 음식 광고, 자기 일치성, 기능 일치성, 영양소 소구, 위험 회피 어필, 성별, 다이어트, 공공 건강 정책