



Short communication

The impact of health claims and food deprivation levels on health risk perceptions of fast-food restaurants



Romain Cadario

IÉSEG School of Management (LEM-CNRS 9221), 1 Parvis de la Défense, 92044 Paris La Défense, France

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ABSTRACT

Objective and procedure: We examined the effect of health claims and food deprivation levels on the health risk perceptions of fast-food restaurants. Consistent with previous research, we used a within-subjects experimental design to manipulate the health claims of fast-food restaurants using real brands: Subway, expressing strong health claims vs. McDonald's, expressing weak health claims. Participants who did not have access to nutrition information were asked to estimate the health risk associated with food items that were slightly more caloric for Subway than McDonald's (640 kcal vs. 600 kcal). We collected data through a web survey with a sample consisting of 414 American adults. Based on the USDA Food Insecurity Indicator, participants were classified into two categorical food deprivation levels: food sufficiency and food insufficiency.

Results and conclusions: We find that risk perceptions for obesity, diabetes and cardiac illnesses are lower (higher) for the restaurant with stronger (lower) health claims, i.e., Subway (McDonald's). Moreover, we also find that food deprivation levels moderate this effect, such that health risk underestimation is aggravated for individuals who suffer from food insufficiency. More precisely, we find that food insufficient individuals are more responsive to health claims, such that they perceive less health risk than food sufficient individuals for the restaurant with stronger health claims (Subway). Exploring the underlying mechanism of the latter effect, we found that dietary involvement mediates the relationship between food deprivation levels and health risk perceptions for the restaurant with stronger health claims (Subway). These results provide an interdisciplinary contribution in consumer psychology and public health.

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1. Theoretical background

In recent years, a growing number of marketers have used nutrition claims (e.g., “low fat” and “rich in omega 3”) as well as health claims (e.g., “healthy” and “supports immunity”). The previous literature in consumer psychology has shown that these claims may create perception biases or “health halos,” as they rely on an individual's natural tendency to categorize food as intrinsically healthy or unhealthy (for a literature review, see Chandon and Wansink, 2012). For instance, Chandon & Wansink (2007) showed that people are more likely to underestimate the caloric content for restaurants with strong health claims (e.g., Subway) compared to restaurants with weak health claims (e.g., McDonald's). Moreover, these results have been replicated with other foods and restaurant brands (Tangari et al., 2010).

Although this prior literature is valuable and insightful, it also has some limitations. First, the existing research in consumer psychology focuses more on the impact of health claims in terms of calorie estimation and food consumption rather than health risk perceptions. Yet, the concept of risk perception, defined as a subjective judgment, is an “outgrowth of our society's great concern about coping with the dangers of modern life” (Slovic, 2000, p.1). The literature in risk communication and public health has investigated various internal (e.g., values and gender) and external (e.g., familiarity with risk sources and irreversibility of the damage) antecedents of health risk perceptions (Bennett, 2010). However, no studies have assessed the impact of marketing health claims on risk perceptions from a public health perspective.

Second, little attention has been given to consumption deprivation in the consumer psychology literature (Chakravarti, 2006). Yet, food deprivation is a problem of considerable magnitude. Previous research has used various terms to label food deprivation and scarcity. According to Scott and Wehler (1998), food insecurity

E-mail address: r.cadario@ieseg.fr.

is defined as the limited or uncertain availability of food, while food insufficiency refers to restricted household food stores or insufficient food intake. For a detailed discussion on the similarities and conceptual differences between these terms, refer to [Heflin et al. \(2005, p. 1972\)](#). According to the most recent government estimates, nearly 15% of American households are food insecure, or approximately 18 million households ([Coleman-Jensen et al., 2013](#)). Because of the poor dietary practices that people adopt in the face of economic insecurity, food deprivation has been associated with obesity among adults – especially for women – in the USA ([Martin and Lippert, 2012](#); [Ma et al., 2003](#)), as well as in middle-income countries that have transitioned to the so-called Western diet ([Velásquez-Melendez et al., 2011](#)). Most research on food deprivation focuses on behavioral phenomena; however, little is known about the perceptual differences between food insufficient and sufficient individuals.

Hence, the purpose of this short report is to examine the impact of health claims and food deprivation levels on health risk perceptions. By doing so, we bring together two streams of literature, consumer psychology and public health, to develop an interdisciplinary contribution. In particular, the context of fast-food was chosen because it has been linked to obesity ([Jeffery et al., 2006](#)). Our findings are the first to suggest that food insufficiency may make individuals more susceptible to at least some types of food marketing communications. These results will pave the way towards more effective initiatives to assist vulnerable consumers in making the best possible food choices. In the next paragraphs, we develop the main hypotheses of the present study.

1.1. The effects of health claims on health risk perceptions

[Chandon and Wansink \(2007\)](#) found that health claims might influence calorie estimation through inferential mechanisms. We believe that a similar theoretical argument may be developed in the case of health risk perceptions. When estimating the health risks associated with food consumption, individuals may make inferences based on internal and external cues. Drawing on the literature of inferential mechanisms ([Kardes et al., 2004](#)), we posit that individuals may make inferences about health risks for a particular food from the health positioning of a restaurant's brand, that is:

- **H1:** Health risk perceptions will be lower for a fast-food restaurant with strong health claims (e.g., Subway) compared to a restaurant with weak health claims (e.g., McDonald's).

1.2. The moderating impact of food deprivation levels

We believe that the amplitude of health risk underestimation (McDonald's – Subway) may depend on food deprivation levels. First, public health and nutrition research has found that food insufficient individuals may develop poor dietary practices in terms of the consumption of high-calorie but nutritionally poor products ([Dixon et al., 2001](#)), meal irregularity ([Ma et al., 2003](#)) and the low consumption of healthy products, such as milk, fruit and vegetables ([Tarasuk et al., 2007](#)). Second, previous research in consumer psychology has found that the amplitude of calorie estimation biases decreases with nutrition involvement ([Chandon and Wansink, 2007](#)). Hence, we develop our theoretical argument drawing on the concept of dietary involvement, which may be defined as the degree of interest that an individual displays for both nutritional information (e.g., nutrition facts) and dietary healthiness (e.g., eating healthy products, such as fruits and vegetables). In short, because food insufficient individuals have a lower dietary

involvement, they may be more responsive to health claims such that they underestimate the health risks associated with a restaurant that claims to be healthy.

- **H2:** The health risk underestimation (McDonald's – Subway) is aggravated for food insufficient individuals compared to food sufficient individuals.
- **H3:** In the presence of strong health claims (Subway), dietary involvement mediates the negative relationship between food deprivation levels and health risk perceptions.

2. Methods

2.1. Design

Consistent with [Chandon and Wansink \(2007\)](#), this study uses a within-subjects design in which we manipulated health claims using two real brands: Subway, expressing strong health claims vs. McDonald's, expressing weak health claims. In a manipulation check study, we asked 111 American respondents to rate the two restaurants on several variables scored using a 9-point Likert format. Results from repeated-measures ANOVAs showed that the restaurants did not differ on familiarity (“I am familiar with [Restaurant],” $p = .802$) or affordability (“[Restaurant] is affordable,” $p = .378$). However, there was a significant difference regarding perceived health claims (“[Restaurant] advertises about its healthy products,” $M_{McDonald's} = 5.57$ vs. $M_{Subway} = 7.46$, $F(1; 110) = 77.94$, $p < .001$). Next, we selected two popular sandwiches with a similar number of calories: the Bacon & Cheese Quarter Pounder for McDonald's (600 kcal) and the 12-inch Club for Subway (640 kcal). The participants were shown names and pictures of the sandwiches as well as brand logos, before moving to the latter part of the questionnaire (available in the [online appendix](#)).

The second main independent variable of this study is food deprivation levels. The existing literature provides different measures for food deprivation. First, food insecurity is generally measured with 18 questions from the United States Department of Agriculture's Food Security Scale ([Bickel et al., 2000](#)). Using this scale, previous research has estimated that the level of food insecurity was 11.2% in 2003 ([Gundersen and Ribar, 2011](#)) and 14.5% in 2012 ([Coleman-Jensen et al., 2013](#)). Second, food insufficiency is measured with the USDA Food Sufficiency Indicator (USDA FSI), using a single question with three options: A) “You always have enough to eat and the kinds of food you want” B) “You have enough to eat but not always the kinds of food you want” and C) “Sometimes or frequently, you don't have enough to eat,” in which answers B and C are combined to measure food insufficiency ([Radimer, 2002](#)). In 2003, the prevalence of answer B was 17.8% and answer C was 3.5%, yielding a food insufficiency level of 21.3% ([Gundersen and Ribar, 2011](#)).

Given that questionnaire length may lower response quality for web surveys ([Galesic and Bosnjak, 2009](#)), we measured food deprivation levels using the USDA FSI. In fact, compared to the alternative option including 18 questions, combining answers B and C in the USDA FSI has the advantage of a single-question measure that gives rather good estimates of food insecurity ([Radimer, 2002](#)). In our sample, the prevalence of food insufficiency is 52.1% (177 respondents who answered B, that is 42.7%; and 40 respondents who answered C, that is 9.4%). Because we did not ask the market research institute for a representative sample using socio-demographic specifications, every panel member could participate in the study. Our sample is biased such that food insufficient individuals are over-represented. This may be because the consumers in the panel are below the national average in terms of income and food insufficiency. We do not believe that the

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