Appetite 95 (2015) 475–483

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Does better for the environment mean less tasty? Offering more climate-friendly meals is good for the environment and customer satisfaction

Vivianne H.M. Visschers*, Michael Siegrist

ETH Zurich, Institute for Environmental Decisions, Consumer Behavior, Zurich, Switzerland

ARTICLE INFO

Article history:
Received 19 May 2015
Received in revised form
11 August 2015
Accepted 12 August 2015
Available online 13 August 2015

Keywords:
Sustainable food consumption
Customer satisfaction
Climate-friendly choice label
Intervention

ABSTRACT

Food consumption comprises a significant portion of the total environmental impact of households. One way to reduce this impact may be to offer consumers more climate-friendly meal choices, such as when eating out. However, the environmental benefits of such an intervention will depend on not only consumers' liking of the climate-friendlier meals, but also on the perceived environmental impact. We therefore investigated the relationship between the global warming potential (GWP) of and consumers' liking of meals in two field studies in the same restaurant. Visitors to the restaurant were asked to rate the taste of the meal they had just consumed. These taste ratings were then related to the meals' GWP and number of purchases. In the second study, an intervention was tested consisting of a climate-friendly choice label and information posters. Contrary to expectations, it was found in both studies that the GWP of the meals was unrelated to the taste or the number of purchases. Offering more climate-friendly meals did not change consumer satisfaction. As expected, the introduction of the climate-friendly choice label increased the number of climate-friendly meal purchases. Therefore, offering more climate-friendly meals with a climate-friendly choice label can affect consumers' meal choices, but not their preferences or satisfaction, which is beneficial for the climate, consumers and gastronomic establishments.

1. Introduction

It is estimated that food consumption accounts for 20–30% of the environmental impact of households in European countries (Tukker & Jansen, 2006). Improved diets and a decrease in food waste have been identified as essential measures for reducing greenhouse gas (GHG) emissions related to food production (Bajzelj et al., 2014). The environmental burden of food consumption in Europe could be reduced by 10% if consumers were to choose environmentally friendlier diets, which mainly implies a reduction in dairy and meat consumption (Jungbluth, Flury, & Doublet, 2013; Tukker et al., 2011; Westhoek et al., 2014).

Large proportions of consumers (between 41% and 63%) were reported in a Swiss study to have already adopted some so-called climate-friendly food choices, such as consuming only seasonal fruits and vegetables and avoiding foods transported by air (Tobler, Visschers, & Siegrist, 2011). Nevertheless, there is still considerable potential for more climate-friendly food choices. Currently, consumers cannot make such choices because they cannot directly assess the environmental impact during purchase, and information about the climate impact of food is scarcely provided. Consumers should thus be better informed. However, little is known about the effect of information provision on consumers' green food choices and on their perceptions of climate-friendlier meals.

It is relatively easy to calculate how much carbon emissions could be reduced if consumers changed their behaviours (e.g. eating less meat) (e.g. Dietz, Gardner, Gilligan, Stern, & Vandenbergh, 2009). However, it is more difficult to estimate what amount of a reduction is feasible, given consumers' actual decisions and behaviours. Therefore, understanding consumers' perceptions and behaviours related to climate-friendlier food choices is necessary. Food choices in restaurants and canteens are relevant to consider in this respect, as consumers' expenditures on eating out have been increasing for years (e.g. Swiss Statistics, 2014; USDA ERS, 2014). If offering more climate-friendly meals in restaurants appeared to relate to lower customer satisfaction and could thus damage a restaurant's reputation, such an offer would

* Corresponding author. ETH Zurich, Institute for Environmental Decisions, Consumer Behavior, Universitaetsstrasse 22 CHN J75.2, 8092, Zurich, Switzerland.
E-mail address: vvisschers@ethz.ch (V.H.M. Visschers).

http://dx.doi.org/10.1016/j.appet.2015.08.013
0195-6663/

not be a sustainable option. Therefore, this paper investigated how the objective climate impact (i.e. global warming potential [GWP]) of meals relates to consumers' preferences for and perceived environmental impact of meals, as well as their purchase behaviours in a gastronomic setting. Moreover, we examined whether informing consumers about climate-friendlier meals would affect their meal choices. In the following, several studies will be reviewed on consumers' perceptions of foods and their environmental friendliness, as well as on providing information about the climate-friendliness of food, which resulted in four hypotheses.

1.1. Relation between environmental impact of and liking of food

Little is known about customer satisfaction in relation to environmentally friendly offers in restaurants. Consumers were found to have positive attitudes towards restaurants that serve local and organic products and that try to act green in other areas (Schubert, Kandampully, Solnet, & Kralj, 2010; Vieregge, Scanlon, & Huss, 2007). Restaurant visitors mostly do not receive detailed information on the climate friendliness of the offered meals. Hence, an important criterion in their meal choice is its sensory appeal (Scheibehenne, Miesler, & Todd, 2007; Steptoe, Pollard, & Wardle, 1995). Consumers have an innate preference for energy-dense food (i.e. rich in fat and sugars), such as dairy and meat (Drewnowski, 1997). The production of meat and dairy products has a high environmental impact (i.e. a high GWP, Tukker & Jansen, 2006) so that climate-friendlier meals are less likely to include these products. Most consumers associate meat with a high hedonic value (Graça, Oliveira, & Calheiros, 2015; Lea & Worsley, 2001). Moreover, consumers have been found to rate the attractiveness of meals in which meat has been substituted by alternative products as rather low (Schösler, Boer, & Boersema, 2012; Verbeke et al., 2015). Hence, we hypothesised that:

Hypothesis 1. *A meal's GWP is positively related to consumers' liking of the meal and to the number of purchases, because GWP-rich ingredients are generally associated with a higher sensory appeal* (*tested in Studies* 1 *and* 2).

After purchase, consumers experience the taste and some nutritious qualities of the meal (e.g. satiety), and they use this information to update their taste expectations and their general product evaluation before their next purchase (Grunert, Bredahl, & Brunsø, 2004). Because a meal's environmental and health qualities cannot be based on direct experiences, consumers have to assess them using any available information, which may be their product experience or a health claim. Hence, if consumers have to estimate the environmental impact of their meal after consumption, they will rely on their taste experience. The latter will thus be generalised to the perceived environmental impact. In short, it was hypothesised that:

Hypothesis 2. *Consumers' perceived environmental impact of a meal is positively related to their liking of the meal* (*tested in Study* 1).

Understanding the size and the direction of the associations between a meal's objective climate friendliness, taste, sales numbers and perceived environmental impact is important to promoting the consumption of environmentally friendlier meals. Should there be a negative association between the meals' objective climate friendliness and the consumer's taste experience, as well as between the objective climate friendliness and sales numbers, gastronomic establishments may be less inclined to offer such foods, as they will decrease customer satisfaction. On the other hand, if a meal's objective climate friendliness relates positively with consumer's experienced taste and sales numbers, as well as negatively with its perceived environmental impact, this information may be useful to food providers. This is because the careful development of a climate-friendly meal's taste profile will improve consumer satisfaction in two ways: through a pleasant taste experience and through the perceived environmental friendliness of the food.

Most gastronomic establishments offer different meals with different GWP values so that the total GWP of a restaurant varies per day. The unit of interest is in this case all meals sold on a single day. Hence, we examined the relationship between customer satisfaction and the offered meals per day, as well as the total GWP of meals consumed on that day. Again, based on the phenomenon that people prefer energy-dense food (Drewnowski, 1997), which may be related with a higher GWP (Macdiarmid, 2013), we expected that:

Hypothesis 3. *A higher GWP per day relates to higher customer satisfaction per day* (*examined in Studies* 1 *and* 2).

1.2. Information about the climate-friendliness of foods

Climate-friendlier meals are often associated with organic and seasonal products. Seasonal fruits and vegetables are perceived to have a higher quality because of their freshness, taste and healthiness (Chambers, Lobb, Butler, Harvey, & Bruce Traill, 2007), which have been found to be important determinants of purchasing seasonal fruits and vegetables (Tobler et al., 2011).

The organic production of food products must be communicated to consumers (e.g. by means of a label), as they are so-called credence characteristics and cannot be directly experienced before or after the purchase (Darby & Karni, 1973). Overall, consumers believe that organic-labelled products are healthier, more natural and tastier than conventional products (see e.g. Schleenbecker & Hamm, 2013; Yiridoe, Bonti-Ankomah, & Martin, 2005 for reviews). In other words, organic-labelled food products seem to cause so-called *halo effects*, meaning that the beneficial characteristic that is claimed (e.g. '100% organic') is generalised to other positive evaluations of the product's characteristics (e.g. its nutritious qualities), which may be unwarranted (Lee, Shimizu, Kniffin, & Wansink, 2013; Schuldt & Hannahan, 2013; Thorndike, 1920).

For example, Lee et al. (2013) asked consumers to taste and evaluate pairs of the same food products, with or without an organic label, based on their taste, nutritious qualities and caloric content. Respondents rated the organic-labelled products to be lower in calories and to have better nutritious qualities than their conventional counterparts, thus revealing a halo effect of the organic label on nutritious qualities. In a detailed investigation by Bratanova et al. (2015), information that a food product has high sustainable qualities (i.e. regarding environmental friendliness, local production or fair trade) activated respondents' moral satisfaction and their taste expectations of the offered food, which in turn influenced their taste experiences of this food. This occurred mostly among respondents with strong values that corresponded to the type of sustainability information.

Campbell-Arvai, Arvai, and Kalof (2014) found that their respondents were more likely to choose a climate-friendlier meal (i.e. a meatless meal) from a menu when such meals were the default options on the menu and when information was provided on the menu about the climate-friendliness of the meals, which was compared to a standard situation in which both meat-free and meat meals were presented on the same menu. Thus, it seems possible to induce climate-friendlier meal choices among consumers by increasing the offerings of such meals and by increasing their visibility in the restaurant. However, this study was conducted in a