



## Research report

Eating green. Consumers' willingness to adopt ecological food consumption behaviors<sup>☆</sup>Christina Tobler, Vivianne H.M. Visschers<sup>\*</sup>, Michael Siegrist

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## ABSTRACT

Food consumption is associated with various environmental impacts, and consumers' food choices therefore represent important environmental decisions. In a large-scale survey, we examined consumers' beliefs about ecological food consumption and their willingness to adopt such behaviors. Additionally, we investigated in more detail how different motives and food-related attitudes influenced consumers' willingness to reduce meat consumption and to buy seasonal fruits and vegetables. We found consumers believed avoiding excessive packaging had the strongest impact on the environment, whereas they rated purchasing organic food and reducing meat consumption as least environmentally beneficial. Similarly, respondents appeared to be most unwilling to reduce meat consumption and purchase organic food. Taste and environmental motives influenced consumers' willingness to eat seasonal fruits and vegetables, whereas preparedness to reduce meat consumption was influenced by health and ethical motives. Women and respondents who preferred natural foods were more willing to adopt ecological food consumption patterns.

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## Introduction

In this study, we aimed to examine consumers' willingness to consume food in an environmentally friendly manner and tested which motives and attitudes influence the respondents' propensity to adopt green food consumption behaviors. Food consumption has been recognized as an environmentally significant behavior, because food production, transport, and consumption contribute to environmental problems, such as greenhouse gas emissions, farmland erosion, and excess wastage (e.g., Carlsson-Kanyama, 1998; Jungbluth, 2000; Tukker & Jansen, 2006). Overall, food consumption has been estimated to account for about 20–30% of the total environmental impact in the Western world (Tukker & Jansen, 2006). Unlike other consumption goods, food is a basic need and cannot be renounced or substituted. Depending on the ingredients, greenhouse gas emissions from different meals containing the same amount of calories and protein can vary, however, by a factor of nine (Carlsson-Kanyama, 1998). Dietary choices form an important part of overall sustainable consumption, and with daily food choices, consumers make

important environmental decisions. A large body of research has examined consumers' willingness to purchase and consume organic food (e.g., Lockie, Lyons, Lawrence, & Grice, 2004; Magnusson, Arvola, Koivisto Hursti, Aberg, & Sjöden, 2001, 2003; Shepherd, Magnusson, & Sjöden, 2005; Squires, Juric, & Cornwell, 2001). However, we are only aware of an Australian study examining consumers' food-related environmental beliefs and behaviors, which included other factors of ecological food consumption, such as reducing meat consumption or purchasing local food products (Lea & Worsley, 2008). Therefore, we conducted a large-scale survey to examine consumers' beliefs about ecological food consumption and their willingness to adopt such behaviors. Furthermore, we examined how different motives for eating ecologically and different food-related attitudes influenced consumers' willingness to consume food in an environmentally friendly manner.

*Perceived environmental benefits and willingness to consume food in an environmentally friendly manner*

Making ecological food choices is difficult for consumers, as many different factors have to be taken into account. From the perspective of life cycle analysis (LCA), which examines the overall environmental impact of a product throughout its life cycle, it seems most important to avoid products transported by air, to prefer organic products, and to reduce meat consumption (Jungbluth, Tietje, & Scholz, 2000). Furthermore, heated

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greenhouse production should be avoided. Food packaging, however, tends to be relatively less important in terms of environmental impact (Jungbluth et al., 2000).

However, past research indicates that consumers are not necessarily aware of the environmental impact associated with product criteria. Although consumers generally believe that preferring locally produced and organic food is environmentally beneficial, they seem to overestimate the environmental impact caused by packaging material (Lea & Worsley, 2008; Tobler, Visschers, & Siegrist, 2011). Furthermore, consumers seem to be unaware of the environmental impact associated with meat consumption (Lea & Worsley, 2008). Similarly, consumers' willingness to eat ecologically does not necessarily reflect the ecological impact order based on LCA results. While most consumers indicated they composted food scraps and bought locally produced foods, they were clearly less willing to reduce meat consumption and buy organic products (Lea & Worsley, 2008).

In this study, we aimed to examine consumers' perception of the environmental benefits associated with ecological food consumption. Furthermore, we intended to investigate which ecological food consumption patterns consumers are willing to adopt. Based on the idea that behavioral changes occur over time and unfold through a series of different stages (Prochaska & Velicer, 1997; Prochaska, Redding, & Evers, 2008), we also assumed that willingness to consume ecologically occurs in steps, ranging from unwillingness to do the desired behavior to performing the desired behavior. The transtheoretical model (TTM) assumes that people move from the *precontemplation* stage (no intention of taking action in the near future, for instance because people lack information or motivation) through *contemplation* (intention to change, considering the associated costs and benefits) and then *preparation* (intention to take action in the immediate future with a concrete plan of action) to *action* (lifestyle and behavior have changed) (Prochaska & Velicer, 1997; Prochaska et al., 2008). People in the *modification* and *termination* stages sustain their new behaviors with decreasing temptation to relapse. The TTM by no means assumes that people progress through these stages in a linear way. For instance, people might also relapse (i.e., return to an earlier stage). A balance of costs and benefits of behavioral changes might also keep individuals stuck in the stage of contemplation for a long period of time (which the authors call *chronic contemplation* or *behavioral procrastination*).

Although this theory was traditionally used in the field of health behavior, consumers might also change their behavior toward ecological consumption through different stages of willingness. Changing behavior, in the domain of health behavior and ecological consumption, often requires consumers to overcome barriers, such as changing habits and lifestyle. Thus, the progress from willingness to change toward action might happen gradually. We therefore adapted the first four stages of the TTM to measure respondents' willingness to consume food in an environmentally friendly manner.

During the transition from unwillingness to act to performing the desired behavior, people might be motivated by different benefits associated with the new behavior. Knowing which motives encourage consumers to adopt ecological food consumption patterns could be useful for future campaigns promoting these behaviors. For this reason, in the second step of our study we examined consumers' motives for adopting ecological food consumption behaviors.

#### *Motives for consuming food in an environmentally friendly manner*

Consumers can have different motives underlying their food selection behaviors. Past research indicates that sensory appeal, healthiness, convenience, and price generally tend to be important

factors influencing food choice (Scheibehenne, Miesler, & Todd, 2007; Steptoe, Pollard, & Wardle, 1995; Van Birgelen, Semeijn, & Keicher, 2009). The eco-friendliness of a food product, however, does not seem to have a major influence on consumers' food choice. Nevertheless, some ecological food patterns also have additional nonenvironmental benefits. For instance, seasonal and regional fruits and vegetables might be perceived as fresher, as they can be harvested when ripe and do not have to be transported for a long time. In fact, past research has shown that consumers tend to perceive locally produced food as of higher quality, particularly in terms of freshness and taste (Chambers, Lobb, Butler, Harvey, & Traill, 2007). Similarly, renouncing meat consumption can be motivated by health concerns or moral considerations regarding animal welfare (Beardsworth & Keil, 1991; Jabs, Devine, & Sobal, 1998). A recent study examined students' consumption of animal products and found that a large majority of vegetarians indicated they renounced meat for health reasons (Izmirli & Phillips, 2011). Students who were vegan or avoided some meat but not all, however, were motivated by both health and environmental reasons.

Thus, there might be several reasons for ecological food consumption behavior, which do not necessarily focus solely on the environmental outcome. Accordingly, ecological food consumption can have nonenvironmental benefits, which for many consumers might be more convincing for changing dietary choices than the environmental motive. To the best of our knowledge, no study has examined the different motives that might stimulate consumers to change toward ecological food consumption patterns that go beyond consuming organic products. Such information, however, would aid the development of persuasive campaigns to motivate consumers to adopt eco-friendly consumption patterns.

Therefore, we studied the influence of different motives on consumers' willingness to eat ecologically. As discussed above, consumers can reduce the environmental impact of their food consumption by eating less meat, and avoiding air transportation and greenhouse production (Jungbluth et al., 2000). The latter two criteria can be put in practice by eating fruits and vegetables that are seasonal where consumers live, as these do not need heated greenhouse production and can be produced locally (thus avoid long haulage, particularly by air). Accordingly, we focused in this study on consumers' willingness to reduce meat consumption and to eat seasonal fruits and vegetables.

In addition to the influence of motives, we also examined the influence of several food-related attitudes on reducing meat consumption and eating seasonal fruits and vegetables. Past research indicated that consumers strongly associate sustainability with naturalness (Verhoog, Matze, van Bueren, & Baars, 2003). Consumers concerned about the naturalness of food seem to be more willing to purchase organic food products (Lockie et al., 2004). Furthermore, people who buy organic food also seem to have a stronger health consciousness and seem to be willing to eat something else if they are convinced it improves their health (Schifferstein & Oude Ophuis, 1998). Although these relationships were found for organic food consumption, these attitudes might also influence other ecological food consumption behaviors. Hence, we included consumers' preference for natural food and their attitude toward a food's healthiness to test the influence of these two factors on willingness to reduce meat consumption and eat seasonal fruits and vegetables. As consuming seasonal fruits and vegetables allows consumers to avoid excessive packaging (such as tins), we additionally included participants' attitude toward avoiding waste to predict willingness to consume ecological fruits and vegetables.

In sum, our study investigated consumers' perception of the environmental benefit of several ecological consumption patterns

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