



Attached to meat? (Un)Willingness and intentions to adopt a more plant-based diet



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ABSTRACT

In response to calls to expand knowledge on consumer willingness to reduce meat consumption and to adopt a more plant-based diet, this work advances the construct of meat attachment and the Meat Attachment Questionnaire (MAQ). The MAQ is a new measure referring to a positive bond towards meat consumption. It was developed and validated through three sequential studies following from an in-depth approach to consumer representations of meat. The construct and initial pool of items were firstly developed drawing on qualitative data from 410 participants in a previous work on consumers' valuation of meat. Afterwards, 1023 participants completed these items and other measures, providing data to assess item selection, factor structure, reliability, convergent and concurrent validity, and predictive ability. Finally, a sample of 318 participants from a different cultural background completed the final version of the MAQ along with other measures to assess measurement invariance, reliability and predictive ability. Across samples, a four-factor solution (i.e., hedonism, affinity, entitlement, and dependence) with 16 items and a second-order global dimension of meat attachment fully met criteria for good model fit. The MAQ subscales and global scale were associated with attitudes towards meat, subjective norm, human supremacy beliefs, eating habits, and dietary identity. They also provided additional explanatory variance above and beyond the core TPB variables (i.e. attitudes, subjective norm and perceived behavioral control) in willingness and intentions concerning meat substitution. Overall, the findings point towards the relevance of the MAQ for the study of meat consumption and meat substitution, and lend support to the idea that holding a pattern of attachment towards meat may hinder a shift towards a more plant-based diet.

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1. Introduction

For several millennia human beings have been drawing on meat as a means to satisfy nutritional needs, a practice that is believed to have shaped our evolutionary history (Leroy & Praet, 2015). Historically a scarce but cherished food, during the last century there was a massive and global shift towards an increased consumption of meat and animal-based products in general, and a decreased consumption of grain and plant-based foods (Chopra, Galbraith, & Darnton-Hill, 2002; Delgado, Rosegrant, Steinfeld, Ehui, & Courbois, 1999; Popkin, 2001). Three main issues are identified as having played a key role in triggering this shift, namely economic

growth, changes in the food industry, and urbanization (e.g., Delgado, 2003; Stabler, 2011). In many western countries meat has become a symbol of food itself, an item taken as granted to which most consumers feel they are naturally entitled to (Fiddes, 1991). However, meat's central place in the menu is being increasingly challenged on the grounds of environmental sustainability, health and safety concerns, and animal rights/welfare arguments (Pluhar, 2010; Ruby, 2012; Tilman & Clark, 2014; Westhoek et al., 2014). For instance, animal based products tend to have higher impacts in terms of greenhouse gas (GHG) emissions, water footprint, biomass use and reactive nitrogen mobilization than most nutritionally equivalent plant-based foods (e.g., Ercin, Aldaya, & Hoekstra, 2012; González, Frostell, & Carlsson-Kanyama, 2011; Mekonnen & Hoekstra, 2012; Pelletier & Tyedmers, 2010; Stehfest et al., 2009). Drawing on estimates of future production and consumption, scholars have voiced concerns that the impacts of the livestock sector alone may bring irreversible environmental changes

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regardless of any technological methods of addressing climate change (Raphaely & Marinova, 2014). A major transformation of agrifood systems has thus been called for to meet the regulatory capacity of the earth, along with a global transition towards a more plant-based diet (i.e., diets which have the bulk of calories from plant sources while limiting or avoiding animal sources) (e.g., Kahiluoto, Kuisma, Kuokkanen, Mikkilä, & Linnanen, 2014; Stehfest et al., 2009). Such transition can also contribute to improve health due to decreased exposure to health-hazardous components (e.g., excessive ingestion of saturated fat and cholesterol) and increased exposure to protective items (e.g., higher amounts of fibre, folate, antioxidants, carotenoids and phytochemicals) (e.g., Sabaté, 2003; Scarborough, Allender, & Clarke, 2012). Likewise, decreasing consumer demand for meat might also allow for minimizing harm, suffering and death to sentient animals used in the livestock industry (e.g., Foer, 2010; Singer & Mason, 2007).

Earlier relevant research on the topic of meat eating has applied the Theory of Planned Behavior (TPB; Ajzen, 1991) to understand consumer behavior. This theoretical model highlights the role of intentions as proximal determinants of food choice, which in turn are affected by attitudes (i.e. an overall evaluation of the behavior), subjective norm (i.e. beliefs about whether others think you should or should not perform the behavior), and perceived behavioral control (i.e. the extent to which the behavior is perceived as controllable). Intentions to eat meat have indeed been shown to predict actual consumption (Berndsen & van der Pligt, 2005; Saba & Di Natale, 1998), and all three TPB variables were observed to successfully predict intentions to eat meat, although subjective norm emerged as the weakest predictor (Povey, Wellens, & Conner, 2001). Habit was also found to play an important role in the context of food choice, including meat consumption, increasing the power of the TPB model to predict actual consumption (Saba & Di Natale, 1998).

More recently, drawing from concerns surrounding current and projected meat production and consumption patterns, there have been calls to expand knowledge on consumer willingness to reduce meat consumption and to adopt a more plant-based diet (e.g., Dagevos & Voordouw, 2013; Stehfest et al., 2009). Evidence on this matter indicates that while plant-based diets and alternatives to meat are increasingly associated with several benefits, a high consumption of meat, a low regard for meat substitutes, and a lack of willingness to adopt a more plant-based diet are still the dominant cultural pattern in most western societies (e.g., Latvala et al., 2012; Lea, Crawford, & Worsley, 2006a, 2006b; Schösler, de Boer, & Boersema, 2012; Schösler, de Boer, Boersema, & Aiking, 2015). Recent findings exploring the ideological underpinnings of meat consumption suggest that human-animal dominance ideologies may play a role in hindering consumer behavior and willingness to change habits (Dhont & Hodson, 2014), and many studies consistently show that men tend to be particularly more reluctant than women to endorse meat avoidance and reduced meat consumption (e.g., Kubberød, Ueland, Rødbotten, Westad, & Risvik, 2002; Prättälä et al., 2007; Rothgerber, 2013; Ruby & Heine, 2011; Schösler et al., 2015).

Importantly, it has also been argued that meat's special status as a food item is not to be neglected in this regard, as it seems to be invested with a socially constructed meaning that goes beyond its biological role and nutritional properties (e.g., Fiddes, 1991; Holm & Möhl, 2000; Schösler et al., 2012; Twigg, 1984). In line with this argument, recent findings have reinforced the idea that some consumers have an affective connection towards meat that may play a role in their willingness to change consumption habits (Graça, Oliveira, & Calheiros, 2015). More specifically, it has been suggested that affective connection towards meat may be a continuum in which one end refers to disgust (i.e., negative affect and

repulsion, related with moral internalization), while the other shows a pattern of attachment (i.e., high positive affect and dependence towards meat, and feelings of sadness and deprivation when considering abstaining from meat consumption) that may hinder a change in consumption habits (Graça et al., 2015). This pattern mirrors the main characteristic of the general concept of attachment, which is the presence of a positive bond and desire to maintain closeness to the object of attachment (Hidalgo & Hernández, 2001).

The existence of an affective connection towards meat is well established concerning a pattern of disgust (Rozin, Markwith, & Stoess, 1997), as is the relevance of negative affective reactions towards meat (e.g. feeling guilty about meat consumption) in variables such as attitudes, ambivalence, intentions, and reported meat consumption (Berndsen & van der Pligt, 2004, 2005). It is also well known that in addition to meeting basic needs for energy and nutrition, food choices and preferences are often anchored in values, meanings and shared conventions that go beyond the biological function they ensure (Beardsworth & Keil, 2002). However, the role meat plays beyond nutrition has only recently started to receive attention, and the merit of meat attachment as a construct and measure to help increasing knowledge on the psychology of meat consumption and meat substitution is yet to be determined.

In response to calls to expand knowledge on consumer willingness to reduce meat consumption and to adopt a more plant-based diet, this work advances the construct of meat attachment by describing the validation of the Meat Attachment Questionnaire (MAQ). Developed following an in-depth approach to consumer representations of meat, the MAQ is a new instrument measuring a positive bond towards meat consumption. Such measure may be useful for research advancing on the theoretical understanding of consumer willingness to adopt a more plant-based diet, but ultimately also as a tool for the assessment, design and evaluation of tailored initiatives encouraging meat substitution. This work aims to: (1) propose a tentative structure for the MAQ, (2) test the resulting structure in samples from different settings, (3) observe evidence for the validation of the questionnaire, and (4) explore the relevance of the MAQ for the study of meat consumption and meat substitution.

1.1. Overview of the MAQ development and validation

The MAQ was developed and validated through three sequential studies. In this process we followed a mixed approach that combined a social constructionist framework in generating data-driven propositions (i.e. the construct of meat attachment framed in consumers' representations of meat), with a more positivistic framework addressing researcher-defined variables (i.e. operationalizing the construct and testing hypotheses about the validity and reliability of the questionnaire). Specifically, the construct and initial pool of items were firstly developed drawing on qualitative data from 410 participants in a previous work on consumers' valuation of meat (Graça et al., 2015). Afterwards, in study one of the present work, 1023 participants answered these items and other measures. These data provided information on item selection, factor structure (principal axis factoring and confirmatory factor analysis), reliability (Cronbach's alpha), and several types of validity: convergent (associations with attitudes towards meat, subjective norm, gender, and human supremacy beliefs), concurrent (associations with eating habits and dietary identity), and predictive ability (additional explanatory variance above and beyond the effects of attitudes towards meat and current consumption habits in willingness to reduce meat consumption and to follow a plant-based diet). In study two, a new sample of 318 participants from a different cultural background completed the final version of the

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