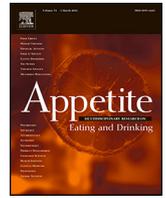




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Research report

Validity of a questionnaire measuring motives for choosing foods including sustainable concerns



Valérie Sautron ^a, Sandrine Péneau ^a, Géraldine M. Camilleri ^a, Laurent Muller ^{b,c}, Bernard Ruffieux ^{c,d}, Serge Hercberg ^{a,e}, Caroline Méjean ^{a,*}

^a Université Paris 13, Equipe de Recherche en Epidémiologie Nutritionnelle (EREN), Centre de Recherche en Epidémiologie et Statistiques, Inserm (U1153), Inra (U1125), Cnam, COMUE Sorbonne Paris Cité, F-93017, Bobigny, France

^b INRA, GAEL UMR 1215, F-38000 Grenoble, France

^c Université de Grenoble Alpes, GAEL UMR 1215, F-38000 Grenoble, France

^d Institut National Polytechnique Grenoble INPG, Génie Industriel, F-38000 Grenoble, France

^e Department of Public Health, Hôpital Avicenne, Bobigny, France

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ABSTRACT

Since the 1990s, sustainability of diet has become an increasingly important concern for consumers. However, there is no validated multidimensional measurement of motivation in the choice of foods including a concern for sustainability currently available. In the present study, we developed a questionnaire that measures food choice motives during purchasing, and we tested its psychometric properties. The questionnaire included 104 items divided into four predefined dimensions (environmental, health and well-being, economic and miscellaneous). It was administered to 1000 randomly selected subjects participating in the Nutrinet-Santé cohort study. Among 637 responders, one-third found the questionnaire complex or too long, while one-quarter found it difficult to fill in. Its underlying structure was determined by exploratory factor analysis and then internally validated by confirmatory factor analysis. Reliability was also assessed by internal consistency of selected dimensions and test–retest repeatability. After selecting the most relevant items, first-order analysis highlighted nine main dimensions: labeled ethics and environment, local and traditional production, taste, price, environmental limitations, health, convenience, innovation and absence of contaminants. The model demonstrated excellent internal validity (adjusted goodness of fit index = 0.97; standardized root mean square residuals = 0.07) and satisfactory reliability (internal consistency = 0.96, test–retest repeatability coefficient ranged between 0.31 and 0.68 over a mean 4-week period). This study enabled precise identification of the various dimensions in food choice motives and proposed an original, internally valid tool applicable to large populations for assessing consumer food motivation during purchasing, particularly in terms of sustainability.

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Introduction

The concept of sustainability in general and food sustainability, in particular, entails many aspects and many interpretations (Aiking & de Boer, 2004). The concept of sustainability in diet arose as a response to the significant environmental “footprints” of foods such as meat and dairy products (McMichael, Powles, Butler, & Uauy, 2007). Sustainable diets were defined by the Food and Agriculture Organization as “diets protective and respectful of biodiversity and

ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources” (FAO, 2010). Since consumer choices affect company strategies (Boccia & Sarno, 2012), consumers can be considered the main stakeholders in nutritional public health policies (Maresca & Dujin, 2010). To that end, public health strategies aimed at encouraging healthy and environmentally friendly food choices need to better understand consumer motives when purchasing. The main food choice motives of European and North Americans consumers include price (Blaylock, Smallwood, Kassel, Variyam, & Aldrich, 1999; Eertmans, Victoir, Vansant, & Van den Bergh, 2005; Lindeman & Vaananen, 2000; Steptoe, Pollard, & Wardle, 1995), health (Eertmans et al., 2005; Steptoe et al., 1995), sensory appeal (Januszewska, Pieniak, & Verbeke, 2011; Steptoe et al., 1995), mood during purchasing (Steptoe et al., 1995), attitude toward foods (Rozin, 1996), convenience and, to a lesser extent, ethical concerns (Blaylock et al., 1999; Eertmans et al., 2005; Pieniak, Verbeke,

Abbreviations: AGFI, adjusted goodness of fit index; AVE, average variance extracted; CFA, confirmatory factor analysis; EFA, exploratory factor analysis; FCQ, food choice questionnaire; PABAK, prevalence and bias adjusted kappa; SRMSR, standardized root mean square residuals; ULS, unweighted least square.

* Corresponding author.

E-mail address: c.mejean@uren.smbh.univ-paris13.fr (C. Méjean).

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Vanhonacker, Guerrero, & Hersleth, 2009; Pula, Parks, & Ross, 2014; Steptoe et al., 1995). Most of those studies used the Food Choice Questionnaire (FCQ) developed in 1995 by Steptoe et al. (1995) that sought to measure the importance of nine dimensions underlying food choice: convenience, price, health, sensory appeal, weight control, natural content, mood, familiarity and ethical concerns. Building on approaches used to investigate motives for other health-related behaviors (Cooper, Russell, Skinner, & Windle, 1992; West & Russell, 1985), the FCQ has been designed to assess the importance to individuals of a range of factors related to dietary choice (Steptoe et al., 1995). Lindeman and Väänänen further developed complementary scales for the FCQ that assessed distinct ethical motives: animal welfare, environmental protection, political values and religion (Lindeman & Vaananen, 2000). Nevertheless, their environmental items were related to food in general and did not take into account explicit food products with strong environmental effects. In addition, their social dimension addressed only international political issues and did not take into account fair trade or local production, subjects of growing interest on the part of consumers over the last decade (Boccia & Sarno, 2012; Roininen, Avorla, & Lahteenmaki, 2006; Siriex, 2008; Siriex, Grolleau, & Schaeer, 2008).

The consumers may use sustainability as a kind of shorthand of “the green and good” to indicate production and consumption systems with a broader range of attributes, such as community-based efforts to build healthy, just and local food systems (Kloppenburger, Lezberg, De Master, Stevenson, & Hendrickson, 2000). Grunert, Hieke, and Wills (2014) showed that sustainability is an abstract and diffuse term and consumers may have difficulty to relate to it. Most consumers associate it with aspects of environmental protection, and to a lesser extent to ethical issues that are also part of the broader sustainability concept. Previous studies suggest that the motivation to behave sustainably is frequently found among consumers, while its translation into actual sustainable food choice and consumption seems more difficult (Bray, Johns, & Kilburn, 2011; de Boer, Boersema, & Aiking, 2009; Grunert et al., 2014; Krystallis, Dutra de Barcellos, Kügler, Verbeke, & Grunert, 2009; van Dam & van Trijp, 2013; Vermeir & Verbeke, 2006). No study has simultaneously and thoroughly explored all dimensions of sustainability in consumer food-buying motives. Thus, a validated tool measuring overall food choice motives, including a concern for sustainability, would be particularly useful for accurately assessing current consumer motives. The present study sought to develop and validate a questionnaire revealing consumer motives when purchasing food and specific food groups. We paid particular attention to sustainability. The feasibility, internal validity and reliability of our questionnaire were evaluated as advised (DeVellis, 2003; Jensen, 2003). Internal validity of the scales was determined using exploratory and confirmatory factor analyses.

Methods

Questionnaire

A team of multidisciplinary experts (a nutritionist, a biostatistician, two economists and two epidemiologists) developed the questionnaire, which included 104 questions measuring food choice motives. Those 104 items were divided into four categories (environmental, health and well-being, economical and miscellaneous) predefined by experts and using extensive literature reviews (FAO, 2010; The World Bank, 2014) (Table 1).

The questionnaire consisted of two main sections (Table 1). The first concerned general aspects of food purchasing. All questions were formulated as follows: “When I purchase food, I take into account. . .” The second section focused on motives for choosing specific food groups. For each food group, participants were asked whether or not they bought this food group. If so, they answered all questions concerning that food group. If not, they answered specific questions on reasons for not buying this food group. Questions were worded as follows:

- (i) “When I purchase [meat/fish/fruits and vegetables/dairy products], I take into account. . .” for all participants.
- (ii) “I purchase [meat/fish/fruits and vegetables/dairy products] for health/taste/etc. issues” only for participants who reported purchasing that food group.
- (iii) “I avoid purchasing [meat/fish/fruits and vegetables/dairy products] for environmental/price/etc. issues”, for participants who did or did not purchase that food group.

Items from various categories were mingled throughout each section of the questionnaire. The subjects were asked to rate each item on a 4-point Likert scale from “I strongly disagree” to “I strongly agree”. If they could not answer the question, participants chose to reply “I do not know”.

Other information was collected, including:

- Their role in supplying food to the household (“Yes, alone or with someone else”, “Yes, frequently”, “Yes occasionally”, “No, never or rarely”),
- When participants declared that they did not purchase certain food groups, reasons for not buying them were requested (“I hesitate between buying meat/fish/fruits and vegetables/dairy products so as to respect national health policies and for environmental reasons”, “I do not hesitate”),
- Specific diets (vegetarian or vegan).

Table 1

The 104 items of the questionnaire scattered into four categories and two sections.

Questionnaire items according to category			
Environmental	Health and well-being	Economic	Miscellaneous
29 items addressing the following aspects of food choice motives: <ul style="list-style-type: none"> - Environment - Pollution - Resource wastage - Animal welfare 	42 items addressing the following aspects of food choice motives: <ul style="list-style-type: none"> - Impact of food on health - Concern about well-being - Social norms 	12 items addressing the following aspects of food choice motives: <ul style="list-style-type: none"> - Price - Price/quality ratio - Label - Brand 	21 items addressing the following aspects of food choice motives: <ul style="list-style-type: none"> - Seasonal production - Local production - Natural food - Convenience - Innovation - Religious conviction - Familiarity
Questionnaire items according to section			
1. General section		2. Food groups section	
51 items – Food in general		17 items – Meat	
		10 items – Fish	
		13 items – Fruits and vegetables	
		13 items – Dairy products	

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