Food Quality and Preference 42 (2015) 165–176

Contents lists available at ScienceDirect

Food Quality and Preference

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

Gender differences in the meanings associated with food hazards: A means-end chain analysis

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ARTICLE INFO

Article history:
Received 23 December 2013
Received in revised form 3 September 2014
Accepted 5 November 2014
Available online 15 November 2014

Keywords:
Food hazards
Means-end chain analysis
Gender differences

ABSTRACT

It is a common finding that men compared to women are less concerned about food hazards and technologies. While previous literature analyzed determinants such as trust in public actors in order to explain gender differences in food risk perception, a systematic analysis of women's and men's cognitions (associations) and emotions (feelings) is lacking. This study focuses on the very first associations and the deeper motives and values that women and men link to three potential food hazards: mycotoxins, pesticides and irradiation. Means-end chain theory was applied and in-depth laddering interviews were conducted with 34 women and 35 men in Munich, Germany. The results reveal that food hazards threaten self-centered and socio-altruistic values of men and women alike and that 'care for others' is not only a motive for women.

Introduction

People's perceptions of food-related risks are important determinants of food choice and safety practices (Frewer & Miles, 2001; Knox, 2000). Whereas a general concern about the safety of food seems to be ubiquitous (Hohl & Gaskell, 2008), it has been found that people differ in their individual judgments of food risks. It is a common finding that women rate risks higher than men or are more concerned about them. This is also found when investigating food risk perception. For instance, men have been found to be less concerned about pesticides (e.g. Byrne, Gempesaw, & Toensmeyer, 1991; Dressel et al., 2010; Knight & Warland, 2004), irradiation (e.g. Nayga, 1996; Starr, Langley, & Taylor, 2000), food additives (e.g. Buchler, Smith, & Lawrence, 2010; Dickson-Spillmann, Siegrist, & Keller, 2011), BSE-related risks (e.g. Leikas, Lindeman, Roininen, & Lähteenmäki, 2007; Weitkunat et al., 2003) and risks caused by moulds and food contamination (e.g. Finucane, Slovic, Mertz, Flynn, & Satterfield, 2000; Flynn, Slovic, & Mertz, 1994; Roosen, Thiele, & Hansen, 2005). Systematic investigations that seek to understand the reasons behind the gender gap in risk perception are sparse and based mainly on quantitative evidence (Gustafson, 1998). Following suggestions by Gustafson (1998), this study takes a qualitative approach. The aim is to analyze whether food hazards are differently constructed for women and men by investigating the meanings that women and men attach to food hazards. We chose a twofold approach: First, women's and men's most salient concepts with regard to food hazards are investigated. Salient concepts are the first associations to be activated when a person is confronted with a stimulus and we assume them to be especially relevant for people's risk perception. The second part of the analysis gives a more detailed view on women's and men's cognitive structures and motivational factors. It uses the means-end chain (MEC) theory in order to understand the deeper meanings behind women's and men's perception of risks. Getting insights into the motives and values that people perceive to be threatened by a risk helps to show the bigger picture in terms of what this risk means to people's lives.

Explaining (gender) differences in risk perception

In the past the majority of psychological studies investigating risk perception had a focus on the cognitive factors that influence risk perception and acceptance (Peters & Slovic, 1996; Slovic, 1999). The most influential cognitive approach focused on the characteristics of hazards to explain people's judgments. The school of thought headed by Paul Slovic, Sarah Lichtenstein and Baruch Fischhoff found that people's risk assessment is a function of general risk attributes such as the catastrophic potential of the risk, the extent to which a hazard is perceived as voluntary or controllable, inequitable and fatal. Further important characteristics

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http://dx.doi.org/10.1016/j.foodqual.2014.11.003
0950-3293/

are the extent to which the hazard is perceived as familiar or new, chronic or entailing delayed effects (Fischhoff, Slovic, Lichtenstein, Red, & Combs, 1978; Slovic, Lichtenstein, & Fischhoff, 1979). More recent empirical studies added the dimensions 'unnatural' and 'immoral' (Sjöberg, 2000).

However, risk characteristics alone do not explain why people differ in their overall judgment about one and the same risk. There exist several different approaches coming from diverse disciplines to investigate why people differ in their risk judgments. One dominant stream of research based on cognitive-psychological thinking is socio-psychological research into risk perception. It assumes that individuals have a consistent system of attitudes and motives and that these general and the more specific attitudes determine an individual's assessment of risks (Banse & Bechmann, 1998). Inspired by anthropological and political science approaches, socio-cultural approaches further propose that among others people's values and worldviews are important determinants in risk perception (Tulloch & Lupton, 2003). In contrast to the idea of a consistent and rather fixed system of attitudes and motives in socio-psychological risk perception, socio-cultural approaches to risk perception assume that people's worldviews and values are context-dependent and thus vary with the risk issue in question (Knox, 2000; Rayner, 1992).

While most findings regarding the gender gap in risk perception remain unexplained (Gustafson, 1998), a couple of researchers discussed and tested hypotheses related to the underlying reasons (for a review see Davidson & Freudenburg, 1996; Gustafson, 1998). These hypotheses are related to 'social roles and gender roles' (e.g. Eagly, 1987; Howard & Hollander, 1996), 'power and status' (e.g. Flynn et al., 1994), 'gender gap in scientific and technological knowledge' (e.g. Slovic, 1999) and 'gender identity' (e.g. Kahan, 2012; Kahan, Braman, Gastil, Slovic, & Mertz, 2007). As a detailed overview over these hypotheses goes beyond the scope of this study, the following shortly presents the hypotheses related to 'social roles and gender roles' and hypotheses related to gendered socialization as these are most relevant for our study.

According to the 'gender role hypotheses', gender differences in risk perception can be attributed to different social roles for women and men in everyday life such as the role of the 'breadwinner' for men and the 'caregiver' for women (Davidson & Freudenburg, 1996; Eagly, 1987; Howard & Hollander, 1996; Slovic, 1999). Related, the 'parenthood' hypothesis suggests gender roles to be intensified by parenthood. Some quantitative studies investigating environmental and technological risk perception controlled for level of employment, level of household activities, number and age of children, and level of child-rearing involvement, etc. Results do not show a consistent picture, with some studies finding significant influences of these variables and others not (Davidson & Freudenburg, 1996). This is also the case regarding food hazards, where level of employment was found to be negatively related to perceived importance of food safety (Lin, 1995). Roosen et al. (2005) found a negative relation between household responsibilities and the probability of being concerned about natural food risks, but a positive correlation with the probability for being worried about technical food risks. In Dosman, Adamowicz, and Hrudey (2001), however, the level of housework responsibility and the level of child-rearing activities did not significantly influence the perception of natural and technical food risks.

Other gender theorists assume that women are generally socialized to care, nurture and maintain life (Gilligan, 1982; Zelezny, Poh-Pheng, & Aldrich, 2000) and as a consequence are more sensitive to health risks. In their literature review Davidson and Freudenburg (1996) found that the gender gap in technological and environmental risk perception was (partially) mediated by women's higher sensitivity for health and safety issues in all studies that took health and safety sensitivity into account. In a study by Bord and O'Connor (1997) on the concern about global warming and hazardous waste sides, health risk perception fully mediated the gender gap in risk perception. Moreover, in one food-related study that controlled for health risk perception, men's more positive attitude towards gene technology in food was related to their relatively lower levels of concern about long-term health effects in Qin and Brown (2007).

Another finding relevant in the context of this study is related to the assumption that the activation of concepts and values are context-dependent (see section "Explaining (gender) differences in risk perception") and differs between women and men. In a study by Stern, Dietz, and Kalof (1993) on gender differences in environmental concern, women and men did not differ regarding their basic values, but for women these values were more likely to be activated as a consequence of environmental hazards.

Saliency of concepts & MEC theory

According to Fishbein and Ajzen (1980) the first associations that are activated, the so-called salient concepts, are the ones that are important for guiding behavior. These 'top of mind' cognitions are considered to be especially important in response-oriented studies (Wiedemann & Balderjahn, 1999) such as quantitative risk perception studies. They can reveal what women and men have in mind when they judge risks. The importance of salient concepts is underlined by the theory of spreading activation, which assumes that the activation runs from one memorized concept to the next, depending on the strength of the activation of the former one (Anderson, 1983; Cowley & Mitchell, 2003). Accordingly, other cognitions are activated by the first activated concepts or images, which thus play a key role. Thus, this study analyses differences and similarities between women and men in terms of the most important salient concepts.

There exist different models for presenting cognitive structures. The two most important ones are the model of cognitive or semantic networks (network models) (Anderson, 1983; Grunert, 1990; Quillian, 1968) and the means-end chains (MEC) (Gutman, 1982; Olson & Reynolds, 1983). This study builds on the MEC theory as methodological background because its objective is not only to uncover people's knowledge structure with regard to a number of food hazards, but also to understand consumers' motivational basis with regard to their perceptions of these food risks.

The MEC theory presupposes that knowledge is organized hierarchically and that the evaluation of a product or an issue is based on its relation to principal life values. Its main assumption is that self-relevant product meanings determine consumer choice (Olson, 1995). Socio-psychological approaches in risk perception propose a top-down process in terms of general attitudes and values determining the more context-specific attitudes and values and these determine risk perception (Banse et al., 1998). When aiming at uncovering cognitions of people, the concept of hierarchically organized knowledge structures of the MEC theory fits well to this conception of the socio-psychological approach in risk perception.

The MEC theory has originally been developed for advertising research to explain subjective product perceptions. It reveals the relationship from attributes (concrete and abstract attributes) that the consumer associates with a product (the means), via consequences (functional and psychosocial consequences) perceived by