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Serving science to the public: Deliberations by a sample of older adults upon exposure to a serving size recommendation for meat

Rui Gaspar[a,b,*], Samuel Domingos[c], Patrícia Demétrio[d]

[a] DPCE-FCHS, Universidade do Algarve, Campus de Gambelas, 8005-139 Faro, Portugal
[b] Catolica Research Centre for Psychological, Family and Social Wellbeing (CRC-W), Universidade Católica Portuguesa, Palma de Cima, 1649-023 Lisbon, Portugal
[c] William James Center for Research, ISPA-Instituto Universitário, Rua Jardim do Tabaco, 34, 1149-041 Lisbon, Portugal
[d] Centro de Investigação em Educação e Psicologia (CIEP), Universidade de Évora, Largo dos Colegiais 2, 7000 Évora, Portugal

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ABSTRACT

To enable consumers to make informed decisions based on communications about food risks and particularly intake recommendations, it is essential that individuals understand the information presented to them. Thus, research into the way people make sense and understand newly received information is important from a public policy perspective. This is the case when dealing with scientific information destined for the general public, such as recommended food intake serving sizes provided in numerical format. Hence, this study analysed responses from exposure to information concerning red meat intake risks and a numerical serving size recommendation. The study analysed: 1) participants' reported difficulties in understanding a recommended serving size of red meat (70 g/day); and 2) behavioural indicators of deliberation strategies used to manage uncertainty and make sense of the numerical information. A mixed qualitative-quantitative method collected data from an older adults' sample through single in-person deliberative sessions. While quantitative measures indicated that the information was perceived as moderately easy to understand; a qualitative thematic content analysis with a closed coding procedure evidenced participants' implicit difficulties in understanding the quantity recommendation. "Commonplace" arguments (e.g. using general arguments and remarks applicable to any context/theme) emerged as the most commonly used deliberative strategy, along with various other individual strategies apparently intended to reduce uncertainty about quantities. This type of deliberative approach provides a step towards developing policies to reduce citizens' uncertainty when exposed to scientific information in numerical formats. Such deliberative strategies may also promote increased citizen engagement in communication activities and health policy making.

1. Introduction

A much debated report from the International Agency for Research on Cancer (IARC), a specialized agency of the World Health Organization (WHO), recently published information about the carcinogenicity of red and processed meat (Bouvard et al., 2015; IARC, 2016). The authors reported a 17% increased risk of colorectal cancer per 100 g intake per day of red meat and 18% increase per 50 g intake per day of processed meat. This publication was intended to help people make informed decisions regarding their meat intake. However, it also raised many questions, provoked debate, and attracted considerable media attention. This hype led the WHO to produce a follow-up communication in the form of a set of FAQs aimed at clarifying the information and answering questions (WHO, 2015).

This event points out the need to implement policies to make information understandable so that it might be perceived as useful and then put into practice by citizens. In other words, it is important to develop food literacy and other relevant skills for understanding food serving recommendations, given that these may determine dietary intake and subsequent health (McGowan et al., 2015). An important step in assuring this understanding is to better understand how people make sense of the information they are exposed to and what related information management strategies they use. In our view, this can allow studying "how and what information is processed and understood in decisions" (Lipkus & Peters, 2009; p.2) thus providing evidence to design more effective health and risk communications. This understanding is especially relevant when society is presented with information or a new piece of evidence regarding an already familiar topic (Marcu et al., 2015).

In order to contribute to this effort, we designed an exploratory

* Corresponding author at: DPCE-FCHS, Universidade do Algarve, Campus de Gambelas, 8005-139 Faro, Portugal.
E-mail addresses: rfcarvalho@ualg.pt (R. Gaspar), samuel.domingos@sapo.pt (S. Domingos), patriciademetrio@msn.com (P. Demétrio).

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study in which consumers were exposed to information on red meat risks/benefits along with a recommended daily maximum serving size of red meat. The study focused specifically on qualitative indicators of individual deliberation strategies used to make sense of the information. This is because deliberation has not only been recognized as a rich data source on health related issues but also as an important tool for generating consumer engagement in health policy making and practice (Degeling, Carter, & Rychetnik, 2015; Street, Duszynski, Krawczyk, & Braunack-Mayer, 2014). The study also focused on a sample of older adults. This is a particularly vulnerable group regarding health issues and they are understudied in health communication, particularly with regard to their deliberation on numerical health information (Gaspar, Domingos, Diniz, & Falanga, 2016). Studying deliberation in this group may be an important step to increase the effectiveness of health and risk communication, to enable people to "overcome whatever problems are most critical to their decision-making success" (Strough, Bruine de Bruin, & Peters, 2015; p.6).

1.1. Deliberation upon exposure to numerical information

The WHO report referred that a daily intake of 100 g of red meat or 50 g of processed meat, may increase the risk of colorectal cancer by 17–18% (Bouvard et al., 2015; WHO, 2015). Considerable research has focused on this type of numerical risk information, especially the effects of providing numerical information to the public with regard to (Lipkus & Peters, 2009; p.1): "outcomes of preventive behaviours (e.g., how much will I decrease my risk of heart disease if I exercise and diet?), the risks and benefits of taking medication or undergoing medical procedures (e.g., chance of recovery, side effects), and the risks of contracting a disease (e.g., what is my chance of getting cancer?)". However, less attention has been given to numerical information about behavioural recommendations that often accompany food risk communications and, specifically, people's deliberations about this information (Degeling et al., 2015; Street et al., 2014). This is worrisome, given that research has identified that consumers often find it difficult not only to understand quantities such as food portions, serving sizes, labels and nutritional information (e.g. McCaffrey et al., 2016) but also to estimate their own intake levels (Almiron-Roig, Solis-Trapala, Dodd, & Jebb, 2013; Brown et al., 2011; Huizinga et al., 2009; Rothman et al., 2006). Indeed, obstacles to understanding may emerge with regard to the recommended serving size, i.e., how much exactly is 100 grams? Understanding such information is important because it provides a behavioural reference (i.e. how much to eat) that, if not understood, will not be incorporated into behaviour.

Additional research is needed, regarding how people interpret numerical information (such as serving sizes) and about qualitative indicators of these quantities. One example concerns the content of deliberation and the sense-making strategies people use, when exposed to information (for examples, see Marcu et al., 2015; Verbeke et al., 2015). Such studies are important, as they shed light onto the broad range of deliberation strategies determined by individual differences (Verbeke et al., 2015) as well as by variations in how information is framed and presented to the public (Timotijevic, Barnett, Brown, Raats, & Shepherd, 2013). Despite some investigation into the risks and benefits of red meat (Regan et al., 2014; Rutsaert et al., 2015) and cultured/lab-grown meat (Marcu et al., 2015), there is, to date, insufficient understanding of people's deliberative processes.

Thus, we designed an exploratory study on the effects of exposure to numerical information, specifically the recommended maximum daily serving size of red meat (70 g/day). We aimed, particularly, to answer to two main questions:

1.1.1. How do consumers respond when exposed to numerical information?

To answer this we focused on the participant's explicit or implicit expressions of difficulties in understanding the numerical information. Identifying such handicaps may enable communicators to develop more effective communication formats and contents, that may reduce such hindrances and provide a better understanding of numerically presented recommendations.

1.1.2. What deliberative strategies are used when receiving numerical information?

In order to develop communications that facilitate people's understanding of numerical recommendations, it is important to analyse the content of participants' deliberations, namely the type of individual strategies used. This may elucidate how consumers' make sense of and achieve an understanding of numerical information.

We used a qualitative methodology based on a thematic analysis with closed coding. The closed coding used the deliberation categories proposed by Marcu et al. (2015) in their study of consumer deliberation on information about lab-grown meat. Furthermore, our study focused specifically on a sample of older adults, as we consider them to be a vulnerable population group. The literature shows that vulnerable population groups such as older adults, evidence higher uncertainty and difficulties in comprehending health information (e.g. Hibbard, Peters, Slovic, Finucane, & Tusler, 2001) particularly in a numerical format (Lipkus & Peters, 2009), and may evidence declines in decision making competence with age (Bruine de Bruin, Parker, & Fischhoff, 2012). Such populations often face additional barriers in following recommendations, in part due to the content, format, and context of the information, as well as to their personal capabilities and characteristics. This usually leads to the reduced effectiveness of such communication (Gaspar et al., 2016a). Studies about communicating about food risk commonly focus more on younger groups than on the elderly (e.g. van der Dam et al., 2013). There are even fewer studies about the exposure to numerical health information on older adults.

2. Methodology

2.1. Participants

An initial sample of 81 older adults (> 65 years) residing in the Évora district in Portugal, were invited to participate in the research. They were non-institutionalized living on their own, and non-vegetarian. None of them reported any intolerance to red meat. All reported moderate levels of preference for display of numeric information (scale between one and six; $M = 2.49$; $SD = 1.10$)[1] and none showed signs of any cognitive deficits[2]. Additional inclusion criteria were those identified by Almiron-Roig et al. (2013) for the study of older adults' food intake: absence of conditions that could interfere with a regular diet, appetite, and food ingestion; absence of medically prescribed food regimens (i.e., diets); time spent doing exercise per week (below 10 h per week); no use of medication that could interfere with appetite. Accordingly, five participants were excluded from the final sample: one for signs of depression[3], one for exercising more than 10 h per week, and three that dropped out after the first phase of the study (dropout rate = 3.7%). The final sample included 76 participants. Their characteristics are identified in Table 1.

Regarding participants' self-reported estimated intake using the daily intake quantity of 70 g as reference, 31.6% ($n = 24$) mentioned they consumed less than 70 g, 34.2% ($n = 26$) about 70 g and 22.4% ($n = 17$) more than 70 g per day, with 11.8% not being able to estimate their own intake, based on the 70 g reference.

[1] Measured through the subjective numeracy sub-scale from Fagerlin et al. (2007).

[2] Measured through the Portuguese version of the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) test from Guerreiro et al. (1994).

[3] Measured through the Geriatric Depression Scale (GDS-15; Sheikh & Yesavage, 1986) translated and adapted to the Portuguese population by Diniz (2007).