poster winner

An integrated approach towards behavior change: How conscious and unconscious cognitions jointly determine (reduced) red meat intake

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Background

Red meat (RM), when consumed excessively, can be a threat to people's health as it is associated with the development of non-communicable diseases, e.g. colon and lung cancer (Cross et al., 2007; Giovannucci et al., 1994), cardiovascular diseases (Kelemen, Kushi, Jacobs, & Cerhan, 2005; Kontogianni, Panagiotakos, Pitsavos, Chrysohoou, & Stefanadis, 2008), type II diabetes (Pan et al., 2011; Song, Manson, Buring, & Liu, 2004), and obesity (Pan et al., 2012). In 2015, this led the World Health Organization (WHO) to classify the consumption of processed RM as carcinogenic and the consumption of RM as potentially carcinogenic (WHO, 2015). Therefore, it is recommended to consume no more than 500 grams per week (World Cancer Research Fund, 2007) and less than 26 kg of beef, pork, lamb, and goat per person and year. With an annual average consumption of 43.4 kg per person, European citizens exceed this recommendation by far (Chemnitz & Becheva, 2014). As a natural decrease in RM intake is not expected in the near future (Chemnitz & Becheva, 2014), a deeper understanding of the cognitions that determine a moderate meat intake is needed in order to inform future intervention efforts. Until now, previous studies demonstrated that conscious or so called explicit determinants are related to a reduced RM intake. More precisely, an increased intention to reduce one's RM consumption actually resulted in a lower intake (Carfora, Caso, & Conner, 2017). A high intention in turn was associated with a positive explicit attitude towards RM consumption (Carfora et al., 2017), the perception of behavioral control to change one's meat consumption (Carfora et al., 2017; Graca, Calheiros, & Oliveira, 2015) and a high number of vegetarian friends (Lea & Worsley, 2001). This is in line with socio-cognitive models, e.g. the Theory of Planned Behavior (Ajzen, 1991) or the I-Change Model (de Vries, Kremers, Smeets, & Reubsaet, 2008; de Vries, Mesters, Van de Steeg, & Honing, 2005), which explain an individual's intention and behavior by (beliefs underlying) determinants that people can reflect on and can express consciously (i.e., they are reasoned, but not necessarily rational). Unconscious attitudes, referred to as implicit attitudes, are also associated with meat intake. They are defined as attitudes that are activated automatically and occur partially or completely outside a person's awareness (Rydell & McConnell, 2006). To assess them, computerized reaction time tasks are used (e.g. Greenwald, McGhee, & Schwartz, 1998; Karpinski & Steinman, 2006). De Houwer and de Bruycker (2007) demonstrated that vegetarians have a more negative implicit attitude towards meat whereas meat eaters show a more positive implicit attitude towards the same object. Although both, conscious and unconscious determinants are associated with a lower RM intake, it remains unclear how they jointly influence this behavior. There are three possible ways conscious and unconscious determinants assumingly operate in guiding a behavior: (1) both types of determinants explain unique variance in the

behavior (additive pattern), (2) both types of determinants interact synergistically in the prediction of behavior (interactive pattern), i.e. one type of determinant strengthens or weakens the effect of the other type of determinant on behavior (3) unconscious determinants predict spontaneous and conscious determinants predict deliberate behavior but not vice versa (double dissociation pattern) (Perugini, 2005). This study is conducted to shed light on the pattern that applies to (reduced) red meat intake.

Design

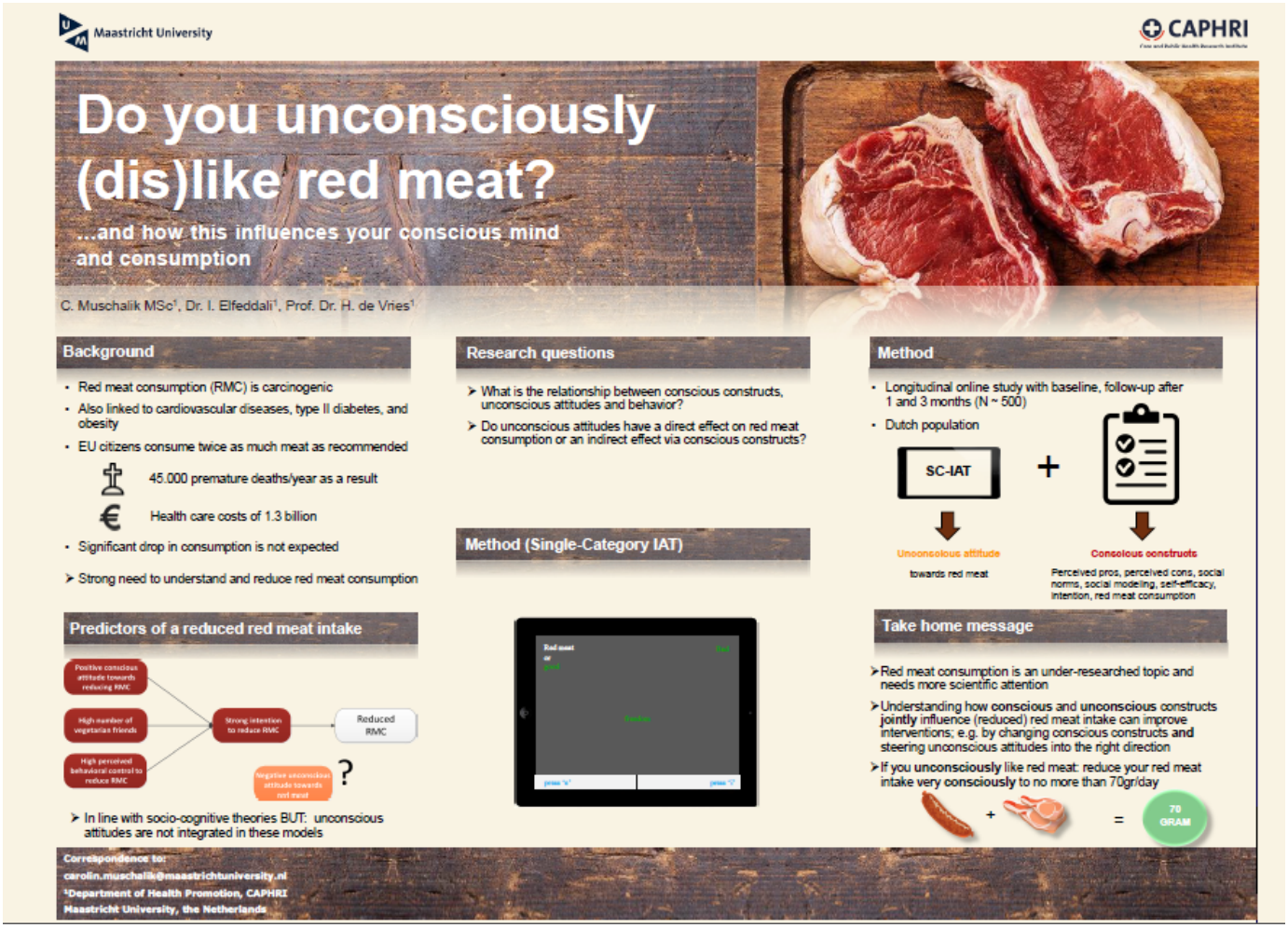
A quantitative longitudinal study, consisting of a baseline measure (September 2017) and follow-up measures after one (October 2017) and three months (December 2017) is conducted among a representative sample of the Dutch population (N = 500 at last follow-up). All three measures are composed of a computerized reaction-time task, the Single-Category Implicit Association Task (SC-IAT) (Karpinski & Steinman, 2006), to assess implicit attitudes towards RM, and a subsequent self-report questionnaire, that are both delivered online. Within the SC-IAT participants are asked to sort (positive or negative) words and pictures (representing RM) to two given categories ("Red meat or good"/"Bad" vs. "Red meat or bad"/"Good"). It is assumed that a person possesses a positive implicit attitude when he or she is quicker with categorizing the stimuli when "Red meat or good" are in one category compared to when "Red meat or negative" are in one category. When this pattern is reversed, the person assumingly holds a negative implicit attitude. Positive and negative words for the SC-IAT were selected from the Affective Norms for English Words (ANEW) (Bradley & Lang, 1999) and pretested regarding their perceived levels of valence, arousal, and familiarity. Pictures representing RM were selected from an earlier study that used an implicit task to assess implicit attitudes towards RM (De Houwer & De Bruycker, 2007) as well as from the internet and were pretested regarding their representativeness for RM. After the SC-IAT, participants fill in a questionnaire to assess their RM intake as well as conscious cognitions which are known to determine dietary behaviors (perceived pros, perceive cons, social norms, social modeling, self-efficacy, and intention, operationalized in line with the I-Change model (de Vries et al., 2008; Springvloet, Lechner, Candel, de Vries, & Oenema, 2016). Multiple hierarchical regressions will be used to assess direct effects of conscious and unconscious determinants on RM consumption and intention (additive pattern) as well as moderations between unconscious and conscious determinants to examine interactions (interactive pattern). As only one behavior is present in the current study, the double dissociation pattern cannot be investigated.

Expected findings

In a former study regarding physical activity (PA), we found evidence for the interactive pattern, meaning that implicit attitudes interact synergistically in the prediction of PA intention and behavior. We expect similar moderation effects for the current behavior as well as direct effects.

Practical application

Human behavior is rarely guided completely by conscious or by unconscious factors. Understanding the importance that both types of determinants play in guiding health behaviors would aid in the development of even better and more successful interventions. Instead of tackling only conscious constructs to cause behavioral change, changing implicit attitudes into the right direction (e.g. by means of computerized tasks) could support these efforts, also in the context of RM consumption.



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