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Communicating the climate impacts of meat consumption: The effect of values and message framing

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ABSTRACT

Meat production for human consumption has serious environmental implications and contributes significantly to climate change. Changing people's food choices is an important step towards reducing human impacts on the climate. Previous research shows that self-enhancement (i.e. self-interest) and self-transcendence (i.e. altruism) values are related to meat consumption. This study examined the effectiveness of the provision of information about climate impacts of meat consumption in influencing concern about these climate impacts of meat consumption, attitudes towards eating meat and behavioural intentions in a New Zealand sample (N = 848). Further, the study examined whether framing the message to align with people's value sets would enhance the information's effectiveness in affecting concern, attitudes and intentions. Survey participants were randomly assigned to a no-information control group, a message targeting self-enhancement values, or a message targeting self-transcendence values. Results indicated that the information provision was associated with significantly higher levels of concern about the climate impacts of meat consumption and significantly lower intentions to eat meat, but it did not affect attitudes towards meat consumption. However, the framing of the message did affect attitudes towards meat consumption, depending on existing values. Implications of this research can be applied to future climate change communication campaigns, through the use of targeted, value-congruent information.

1. Introduction

Throughout the world's history there has never been the need to produce so much food for human consumption as now. The mounting pressure on the global climate system is becoming more apparent because of a growing population and increased food production (IPCC, 2014). In most cases, meat production is proportionately more carbon expensive than the equivalent crop production for food energy (Carlsson-Kanyama and González, 2009; González et al., 2011; Stehfest et al., 2009). Producing meat is resource expensive because of the transfer of energy up the food chain, where converting plant protein into animal protein is inherently inefficient (Aiking et al., 2006; Gerber et al., 2013). The total livestock supply chain contributes approximately 15% or 7.1 Gigatonnes of carbon dioxide equivalent (CO_2-eq) per annum of anthropogenic GHGs (Gerber et al., 2013). A large portion of livestock emissions comes from enteric fermentation through ruminant digestion. Enteric fermentation creates methane (CH_4), which makes up approximately 44% of total livestock GHG emissions; nitrous oxide (N_2O) from waste and fertilizer materials make up about 29%; and carbon dioxide (CO_2) contributes 27% (Gerber et al., 2013). Methane and nitrous oxide are both more potent greenhouse gases than carbon dioxide and livestock is one of the major causes of overall increasing levels of these two gases in the atmosphere (FAO, 2013; Steinfeld et al., 2006; Cooper et al., 2013; Carlsson-Kanyama and González, 2009).

Consumer demand for meat is high in developed countries and an emerging middle class in developing countries is increasing demand for animal products in these markets (Gerber et al., 2013; Steinfeld et al., 2006). Increased affluence has been shown to be an important driver of meat consumption (York and Gossard, 2004), as well as the tendency of political and economic institutions to encourage animal agriculture (Dietz and York, 2015; Gunderson, 2011), in spite of its relatively low contribution to GDP. For example, agriculture's direct contribution to New Zealand's GDP is 4% (Treasury, 2016). The FAO (2011) predicts that global demand for meat will increase by 73% from 2010 levels in the next 40 years. Considering current pressures on the environment to support meat

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production, the question arises whether this increasing demand can be met.

Shifting dietary patterns towards lower meat consumption in developed countries is considered one viable strategy for mitigating GHG emissions (Berners-Lee et al., 2012; Westhoek et al., 2014). Much attention has, in general, been placed on technological and economic strategies for mitigating GHG emissions, but less so in trying to change or influence human behaviour (Spence and Pidgeon, 2010). A report by the FAO (2013) states that the key reason for increased demand for animal products has arisen from a shift in dietary choice. Halting this increased demand by making people (more) aware of the environmental impacts of their food choices is an important step in addressing this problem. However, there is relatively little research exploring initiatives to encourage reduced meat consumption (Dagevos and Voordouw, 2013; Laestadius et al., 2014). Research from psychology and sociology (Brunsø et al., 2004; Dietz et al., 1995; Robinson and Smith, 2002) suggest that psycho-social variables, such as values and attitudes have a greater influence on food choice than other factors, like socio-demographic variables such as, gender, age and education (Kalof et al., 1999; Robinson and Smith, 2002). Meat consumption has been found to relate to people's values, in that certain value types are related to the amount of meat people are likely to eat (De Boer et al., 2007; Dietz et al., 1995De). Values may therefore play a key role in changing dietary choices. To date, relatively little research has been conducted to examine how people could be motivated to change their meat consumption. This study is one of the first to explore the effectiveness of information provision to encourage people to reduce meat consumption. It examines whether information that is targeted at people's values through message framing can influence concern about the climate impacts of eating meat, people's attitudes towards eating meat and people's intentions to reduce meat consumption.

2. Theoretical background

2.1. Values and pro-environmental behaviour

Values are conceived of as guiding principles in one's life; which put them at the core of many decisions people make in their daily lives (De Boer et al., 2007; Rokeach, 1973; Stern et al., 1999). Values are characterised by five main attributes:

"values are (a) concepts and beliefs, (b) about desirable end states or behaviours, (c) that transcend specific situations, (d) guide selection or evaluation of behaviour and events, and (e) are ordered by relative importance" (Schwartz and Bilsky, 1987).

The widely used value theory developed by Schwartz (1992) suggests that values arrange themselves into four groups that reflect two underlying dimensions. The first dimension, self-enhancement versus self-transcendence values, is characterised by the pursuit of self-interest or egoistic goals (e.g. wealth, power, materialism) at one end and the concern for the welfare of others or altruism (e.g. social justice, environmental protection) at the opposite end (Dietz et al., 2005). In the conceptualisation by values theory, self-transcendence values include environmental values, such as care for nature. There is also a growing body of literature that examines environmental values specifically (for recent reviews, see Dietz, 2015; Steg and de Groot, 2012). The second dimension, openness to change versus traditionalism, is characterised by a willingness to accept new ideas and try new experiences (e.g., an exciting life, looking for new things), as opposed to sticking to more conventional or established ways of thinking and behaving (e.g., tradition, customs handed down by family) (Dietz et al., 2005). Values are not mutually exclusive and individuals can hold inconsistent values along a dimension (Schultz and Zelezny, 2003).

Research shows that the self-transcendence/self-enhancement value dimension is related to pro-environmental attitudes and behaviour (de Groot and Steg, 2007; Karp, 1996; Nordlund and Garvill, 2002; Schultz et al., 2005). Studies find that people who more strongly endorse self-transcendence values tend to have higher levels of environmental concern, compared to those with lower levels of self-transcendence values (Schultz et al., 2005; Stern et al., 1999). Other studies find a positive relationship between self-transcendence values and self-reported pro-environmental behaviour, such as recycling and willingness to reduce car use (Karp, 1996; Nordlund and Garvill, 2002). Self-enhancement values on the other hand are related to lower engagement in pro-environmental behaviours (Nordlund and Garvill, 2002). Environmental issues often involve a trade-off between immediate individual gains and longer term collective payoffs, meaning that people who endorse values which show concern for individual, or egoistic gains may be less likely to participate in pro-environmental behaviours (De Groot and Steg, 2007). The openness to change/tradition dimension also influences the likelihood a person will engage in pro-environmental behaviour (albeit these relationships tend to be weaker than the self-enhancement/self-transcendent value dimension). Traditionalism values are negatively correlated with pro-environmental behaviour, such as recycling and environmental activism (Schultz and Zelezny, 1999; Stern et al., 1995; Karp, 1996), while openness to change values are thought to have a relatively small effect (Dietz et al., 2005).

2.2. Values and meat consumption

Values are also associated with food choices, including meat consumption. Studies by Dietz et al. (1995) and Kalof et al. (1999) found that people with stronger self-transcendence (or altruistic) values were more likely to be vegetarian. A study by De Boer et al. (2007) found that people with strong universalism values (an example of a self-transcendence value) were more likely to have a diet higher in free range meat or a diet with less meat altogether. A study by Lindeman and Sirelius (2001) found that vegetarians were more likely to endorse a stronger ecological ideology compared to omnivores. Empirical evidence suggests a link between self-enhancement values and higher meat consumption. A study by Allen et al. (2000) found that people who self-identify as meat eaters tend to have a value orientation more in favour of hierarchical domination and social power. In comparison, people who viewed themselves as vegetarians valued equality and social justice more highly. Additionally, Allen and Ng (2003) found that positive attitudes towards eating red meat were higher when self-enhancement values were higher.

Tradition values are positively associated with meat consumption (Kalof et al., 1999). Dietz and colleagues (1995) found that people with traditional values were more likely to be meat eaters. They postulated that vegetarianism may be perceived as a non-traditional lifestyle and as something to avoid. Allen and Ng (2003) also suggest that the symbolism of meat aligns with traditionalism values. Openness to change values are weakly related to vegetarianism. Lindeman and Sirelius (2001) found a positive relationship between openness to change values (i.e., stimulation and self-direction) and the tendency to be a vegetarian. While previous research has examined the relationships between values and meat consumption, to the best of our knowledge, no studies have yet examined the role values could play in changing beliefs and behavioural intentions regarding meat consumption.

2.3. Information and message framing

One of the most frequently used approaches in climate change communication is the provision of information (Moser and Dilling,