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Appetite 42 (2004) 71–78

Appetite

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Research Report

Ambivalence towards meat

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Received 28 October 2002; revised 1 July 2003; accepted 17 July 2003

Abstract

The purpose of the present study was to examine whether differences in ambivalence between meat eaters affect their attitude towards eating meat, the belief structure underlying these attitudes, meat consumption, and intentions to reduce consumption in the future. Not surprisingly, more ambivalent meat eaters held a less positive attitude towards meat as compared to less ambivalent meat eaters. Moreover, the belief structure of the two groups also differed: More ambivalent persons associated the consumption of meat with slightly negative feelings, morally unacceptable issues, and risks for both their health and the environment. In contrast, less ambivalent meat eaters reported positive affective beliefs, did not emphasize moral issues, and perceived less risk. Results highlight the role of affective beliefs as a predictor of both attitude and ambivalence. Ambivalence, in turn, was a predictor of actual meat consumption; i.e. increased ambivalence was related to reduced meat consumption. Moreover, more ambivalent meat eaters intended to further reduce their meat consumption in the future. Practical and theoretical implications of these results are discussed.

Keywords: Ambivalence; Meat eaters; Attitude

Attitudinal ambivalence towards meat

Recently, a number of European countries have been confronted with meat crises and scandals such as BSE, foot and mouth disease, and illegal hormones in beef. It is likely that such events create ambivalent, i.e. conflicting, attitudes towards eating meat. On the other hand, even before these crises, ambivalence towards meat was already reported in the literature. The main reason was that eating meat, like other ingestive behaviours, could cause a conflict between pleasure and health (Povey, Wellens, & Conner, 2001; Sparks, Conner, James, Sheperd, & Povey, 2001). Thus ambivalence towards meat might be more widespread than expected. Indeed, in a pilot study (Berndsen & Van der Pligt, 2001) we found that 69% of the meat eaters felt ambivalent about meat consumption, whereas only 4% of the vegetarians felt ambivalent about abstaining from meat (participants in this pilot study were 36 meat eaters and 34 vegetarians). The purpose of the present study is to assess the impact of attitudinal ambivalence on actual meat consumption and intentions about meat consumption in the future.

Attitudinal ambivalence may be defined as having (at the same time) both positive and negative evaluations towards an object, issue or behaviour (Thompson, Zanna, & Griffin, 1995). Thus people who are ambivalent towards meat have mixed feelings about meat, i.e. both positive and negative feelings simultaneously. Ambivalence has been studied in the context of attitudes (e.g. Jonas, Diehl, & Brömer, 1997), attitude–intention and attitude–behaviour relationships (e.g. Conner & Sparks, 2002). Research focused on issues such as temporal stability (e.g. Bargh, Chaiken, Govender, & Pratto, 1992), pliability of attitudes (e.g. Bassili, 1996), and information processing (e.g. Bargh et al., 1992; Van der Pligt, De Vries, Manstead, & Van Harreveld, 2000). Findings suggest that ambivalent attitudes are less stable, more pliable and tend to result in more systematic information processing.

With respect to research on ambivalence towards meat, Sparks et al. (2001) found that higher levels of ambivalence were associated with weaker relationships between attitude and intention related to food choices. This moderating effect of ambivalence might be due to the conflicting motives, which reduce the predictability of intentions. Povey et al.

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doi:10.1016/S0195-6663(03)00119-3

(2001) reported a similar finding, such that higher levels of ambivalence towards a chosen diet (eating meat, meat avoidance, vegetarian, vegan) weakened the relation between attitude and intentions to follow the diet. They also found that respondents generally displayed positive attitudes and beliefs towards their own diets, and negative attitudes and beliefs towards diets that differed most from their own. Interestingly, meat eaters showed more ambivalence towards their own diet than towards the other diets. On the one hand, they like the taste, variety of choice, and nutritionally balanced value of meat; on the other hand they belief that meat is fattening and raises health-related worries. According to Povey et al. (2001) such ambivalence might be a reaction to recent health concerns about meat because of BSE, and foot and mouth disease.

Previous research on meat consumption has shown that reasons for eating meat include taste and health (e.g. Kenyon & Barker, 1998), as well as social influences such as family and friends (Lea & Worsley, 2001). Reasons for not eating meat include health, moral aspects of killing animals, social influences (Santos & Booth, 1996), as well as beliefs about environmental problems and the cruelty of eating meat (Beardsworth & Keil, 1991; Povey et al., 2001).

As far as we know, there are no published studies that compared the attitudes and beliefs of meat eaters who show different levels of ambivalence towards meat. Moreover, the effect of ambivalence on meat consumption, seems also under-explored. The present study examines these issues, which is important for two reasons. First, it provides insight into how different levels of ambivalence are related to attitudes, the belief structure underlying these attitudes, and the behaviours of meat eaters. Second, ambivalence can also have consequences such as the intention to reduce or even avoid meat consumption in the future. Levels of meat consumption will be of interest for people involved in health promotion, marketers (Pennings, Wansink, & Meulenberg, 2001) and farmers. This study focuses on the first point.

Given that more ambivalent persons may hold both positive and negative attitudes (Armitage & Conner, 2000; Thompson et al., 1995), we expected that the overall attitude scores of more ambivalent meat eaters would be near the mid-point of the attitude scale. We also expect that less ambivalent meat eaters would hold more positive attitudes (overall) than negative attitudes (overall) towards eating meat. Based on these expectations we predict that more ambivalent meat eaters would have less positive attitudes towards meat (prediction 1) and as a consequence, would eat less meat (prediction 2) compared to less ambivalent meat eaters.

In addition to assessing the general attitude towards eating meat, we examined the belief structure underlying these attitudes. Expectancy-value models of attitude and behaviour such as the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1985) showed that beliefs about costs and benefits are likely to determine people's attitudes, which in turn predict their behaviour. These models focus on the relation between beliefs and attitudes, and particularly on the belief structure underlying attitudes. Belief structure refers to cognitions underlying one's attitude. These can include both affective and cognitive components (Van der Pligt et al., 2000). We assess the beliefs underlying attitudes towards meat for respondents with different levels of ambivalence.

Armitage and Conner (2000) argued that the predictive value of the attitude–behaviour relation could be improved by a reconceptualization of the attitude construct. For a long time, attitude has been thought of as a unidimensional construct indicating that people have a positive, a neutral, or a negative attitude towards an object. In line with this view, attitudes were measured by using bipolar scales ranging from 'strongly disagree' to 'strongly agree'. This method is problematic for people with ambivalent attitudes because they could not express their ambivalent feelings, which include both positive and negative evaluations (e.g. Thompson et al., 1995). Attitudinal ambivalence therefore reconceptualizes the attitude construct as a bidimensional construct.

Attitude towards an object or person is assumed to be a summative function of the behavioural beliefs (B) multiplied by the evaluation (E) for each behavioural belief. Following Fishbein and Ajzen (1975), we expect that $B \times E$ scores for meat would predict the attitude towards meat (prediction 3a). Applying Fishbein and Ajzen's theory to the first prediction, which is that more ambivalent meat eaters would have less positive attitudes towards meat than less ambivalent meat eaters, it follows that the less positive attitudes should be due to the $B \times E$ scores of ambivalent meat eaters. We therefore predict that that the $B \times E$ scores of more ambivalent meat eaters would be less positive compared to those of less ambivalent meat eaters (prediction 3b).

We also explore the extent to which attitude, $B \times E$ scores, ambivalence, and subjective norms influence meat consumption. We included subjective norm, which is a component of Fishbein and Ajzen's model (1975), because it also deals with behavioural beliefs, namely, the perceived social pressure of other important people to perform or not to perform the behaviour.

Measures of ambivalence

Conner and Sparks (2002) discussed a number of different measures of ambivalence, and noted that there are no studies providing a systematic comparison of the various measures. Some methods of measuring ambivalence refer to the potential to feel ambivalent (Kaplan, 1972), whereas others refer to feelings of ambivalence (Jamieson, 1988). In the present research we employ Jamieson's felt ambivalence measure and a method described by Priester and Petty (1996), which is related to the tripartite model of attitudes. Priester and Petty (1996) asked their respondents to which extent their feelings were mixed (cognitive

component), conflicted (affective component), and indecisive (conative component). Van Harreveld (2001) showed that that this measure of ambivalence correlates highly with Jamiesons's measure of felt ambivalence. It thus seems that Priester and Petty's measure (1996) also measures felt ambivalence. In the present study we opt for felt ambivalence rather than potential ambivalence, because the former might have stronger motivational consequences such as the wish to reduce uncertainty related to ambivalence (Newby-Clark, McGregor, & Zanna, 2002; Van Harreveld, 2001). Based on our first prediction that more ambivalent would have less positive attitudes towards meat, they might attenuate their uncertainty about eating meat by reducing meat consumption. This idea leads to our fourth prediction: more ambivalent meat eaters are more likely to intend to reduce future meat consumption than less ambivalent meat eaters.

Elicitors of ambivalence

Examining the belief structure underlying attitudes also enables us to increase our insight in the elicitors of ambivalence. To date, there are a few studies that have investigated elicitors of ambivalence. Conner and Sparks (2002) noted that there are two approaches within this research. The first focuses on individual difference variables, such as the degree of intolerance of ambiguity. The second approach focuses on elicitors of both positive and negative evaluations. For example, ingestive behaviours such as drinking or eating are associated with high levels of ambivalence (Povey et al., 2001; Sparks et al., 2001). Not only do many people perform these behaviours and experience a conflict between pleasure and health, they are also behaviours that elicit ambivalence when the immediate (positive) outcomes of the behaviours are compared with (negative) outcomes in the distant future. In the present study we explore possible elicitors of ambivalence towards meat.

In sum, the present study examines differences in attitudes, B × E scores, actual meat consumption, and intentions to reduce future meat consumption between people showing more ambivalence towards meat and those with less ambivalence. We also explore which of the predictor variables (attitude, B × E scores, ambivalence, subjective norm) affected meat consumption and which of the B × E scores and subjective norm contributed most to ambivalence towards meat.

Method

Participants. A total of 110 psychology students (69 male, 41 female, mean age 20.8 years) at the University of Amsterdam participated in this study for course credit. They were asked to complete a paper-and-pencil questionnaire.

Questionnaire. A number of behavioural beliefs about eating meat or avoiding meat were collected from the literature (e.g. Van Harreveld, 2001; Kenyon and Barker, 1998; Lea & Worsley, 2001; Povey et al., 2001; Santos & Booth, 1996). Eiser and Van der Pligt (1979) showed that people with opposing attitudes tend to find different aspects of an attitudinal issue important. We therefore examined the importance of a wide variety of behavioural beliefs in a pilot study in which 16 participants rated 35 behavioural beliefs on a scale ranging from 1 (very unimportant) to 9 (very important). For the questionnaire 24 behavioural beliefs were selected, which represented a modally important set (Table 1). These beliefs focused on health risks (6 items), environmental risks (4 items), hedonic aspects (5 items), moral aspects (4 items), and affective reactions (5 items).

The questionnaire consisted of seven parts, which will be outlined below.

(i) *Attitude*. Five semantic differential scales measured respondents' attitude towards meat. The five items were 'bad–good', 'unpleasant–pleasant', 'against–for', 'unfavourable–favourable', 'negative–positive'.

Table 1
Behavioural beliefs presented in the questionnaire

Hedonic beliefs	The good taste of meat (+)
	The versatility of vegetarian food (−)
	Flavorless cooking with meat (−)
	Food without meat is insipid (+)
	More variety with meat (+)
Health beliefs	Meat is bad for your health (−)
	Meat safety due to control over quality (+)
	Meat contains nutrients that are important for the human body (+)
	Experts' lack of knowledge about risks of meat consumption (−)
	Negative health consequences of meat due to hormones (−)
	Bad quality of drinking—and swimming—water due to nitrates from manure (−)
Environmental beliefs	Production of meat is harmless for the environment (+)
	Production of meat causes manure problems (−)
	Nitrates from manure attacks the quality of fish stock (−)
	Eating meat helps to maintain the ecological balance in the polder[a] (+)
Moral beliefs	Eating meat is morally sound (+)
	Killing animals for consumption is justified (+)
	Production and consumption of meat is detrimental to future generations (−)
	Animal welfare (−)
Affective beliefs	No worries about the safety of meat (+)
	Feeling guilty about meat consumption (−)
	Health concerns due to meat are unnecessary (+)
	Shame about eating meat (−)
	Eating meat arouses anxiety (−)

[a] A polder is a piece of land won from sea or inland water and constantly defended from it thereafter (Wagret, 1968, p.19).

(ii) *Current behaviour*. Participants were asked how many days a month they eat meat. They also indicated the weight of the meat per meal: less than 100, 100–200, 200–300 g, more than 300 g. These two scores were multiplied, yielding an index of meat consumption, ranging from 0 to 9300 g a month.

(iii) *Behavioural beliefs*. The strength of the 24 behavioural beliefs had to be rated on a scale ranging from 1 (strongly disagree) to 9 (strongly agree) (see e.g. Sutherland, Da Cunha, Lockwood & Till, 1998).

(iv) *Evaluation*. Respondents evaluated the behavioural beliefs on a scale anchored by 1 (very negative) to 9 (very positive). The behavioural beliefs and evaluation scores for each belief item were combined as follows. For negatively formulated items the scores were reversed and the behavioural-beliefs ratings were transformed to a scale ranging from −4 to +4. Next, the behavioural beliefs (B) and evaluation (E) ratings were multiplied, resulting in a B × E score for each item. These scores could vary from −36 (anti meat) to +36 (pro-meat).

(v) *Subjective norm* was assessed by two items. The first is 'people who are important for me think that I should eat meat', which refers to perceived social pressure. The scores could vary from 1 (not at all) to 9 (to a very great extent). The second item measured the motivation to comply: 'how much do you want to do what these important people think you should?', which was measured on a scale anchored by 1 (not at all) to 9 (very much). Subjective norm was computed by multiplying both scores.

(vi) *Ambivalence* was assessed by two different measures. The first measure includes two items based on Jamieson's (1988) measure: 'I am unsure about eating meat because I have strong feelings about it and I can't make up my mind one way or the other' and 'I feel torn between the two sides of eating meat'. Both measures ranged from 1 (strongly disagree) to 9 (strongly agree). The second measure of ambivalence is Priester and Petty's (1996) measure, which includes three items ranging from 1 ('towards the issue of eating meat I feel no conflict at all', 'towards the issue of eating meat I feel no indecision at all', and 'towards the issue of eating meat I have completely clear reactions') to 9 ('maximum conflict', 'maximum indecision', and 'mixed reactions').

(vii) *Intentions to change meat consumption*. Participants were asked to indicate whether they intend to change their meat consumption in the future. The response categories included: less meat, the same amount of meat as now, more meat. It might be important to stress that our concept of intentions refers to behavioural *change* in the future, whereas intentions in the attitude–behaviour models usually refer to performing the behaviour in the future.

Results

Reliabilities. Nine participants reported to abstain from eating meat and were excluded from the analyses. The five items designed to measure attitude yielded a Cronbach's alpha of 0.92, and one attitude score was computed ranging from 1 to 9, with higher ratings indicating a more positive attitude. The reliabilities for the belief items were as follows: the five hedonic items yielded a Cronbach's alpha of 0.60, the six items involving health risks yielded a Cronbach's alpha of 0.40, the four items about environmental risks yielded a Cronbach's alpha of 0.52, the four moral items yielded a Cronbach's alpha of 0.60, the five affective items yielded a Cronbach's alpha of 0.68. For each of the five attributes we computed one B × E score (hedonic, health risk, environmental risk, moral, and affect), and each of them could range from −36 (anti meat) to +36 (pro-meat). The two ambivalence items based on Jamieson's measure yielded a Cronbach's alpha of 0.89, and the three items based on Priester and Petty's measure yielded a Cronbach's alpha of 0.88. For both ambivalence measures we computed one score varying from 1 (no ambivalence at all) to 9 (very much ambivalence).

Ambivalence towards meat. The correlation between Jamieson's ambivalence measure and Priester and Petty's measure was 0.74 ($p < 0.01$). Analyses including Jamieson's measure produced generally similar results to those obtained with Priester and Petty's measure. Below, we will present only the results based on Priester and Petty's measure, which we prefer above Jamieson's measure because the former is related to the tripartite model of attitudes (see Introduction). Our first prediction was that more ambivalent meat eaters would have less positive attitudes towards meat than less ambivalent meat eaters. To test this prediction, we performed a median split on Priester and Petty's ambivalence measure, resulting in a group of less ambivalence ($n = 56$, $M = 2.52$) and in a group of more ambivalence ($n = 45$, $M = 6.62$). The two ambivalence groups differed significantly in their attitude, $t(89) = 2.19$, $p < 0.05$, showing that more ambivalent respondents ($M = 4.88$) hold a less positive attitude towards meat (near the midpoint of the scale) whereas less ambivalent respondents hold a positive attitude ($M = 5.72$).

The second prediction that more ambivalent meat eaters would eat less meat than less ambivalent meat eaters, was also supported, $t(94) = 2.03$, $p < 0.05$. Respondents in the more ambivalence group consumed 2477 g of meat a month, whereas meat consumption in the less ambivalence group was 3398 g a month.

Following Fishbein and Ajzen's (1975) model, we expected that B × E scores for meat consumption would predict the attitude towards meat (prediction 3a). Regression analysis of attitude was run with the 5 B × E scores (hedonic, health risk, environmental risk, moral, and affect) entered together (Table 2). The analysis revealed that B × E scores explained 23% of the variance in attitude, $F(5, 91) = 5.46$,

Table 2
Hierarchical regression analysis of attitude on measures of B × E and their correlations

Behavioural belief	β	r
Affect	0.30*	0.43**
Moral	0.16	0.40**
Health	−0.04	0.19
Environment	−0.03	0.18
Hedonic	0.16	0.33**

Note. *$p < 0.05$, **$p < 0.01$.

$p < 0.01$, and that affect was a significant predictor of the attitude, showing that a more positive attitude towards meat was related to stronger positive B × E scores for affect.

We also predicted that the B × E scores of more ambivalent meat eaters would be less positive compared to those of less ambivalent meat eaters (prediction 3b). We found that the more ambivalent group considered eating meat as relatively immoral, unhealthy, risky for the environment, and experienced relatively negative affect in contrast to the less ambivalent group (Table 3). The two groups did not differ in their hedonic appreciation of meat, which was slightly positive for both groups (Table 3). Interestingly, the less ambivalent group seems to acknowledge that consuming meat can have negative consequences because they do acknowledge risks for one's health as well as for the environment. A similar picture emerged for the ratings of the behavioural beliefs: In general, more ambivalent meat eaters hold relatively more negative behavioural beliefs involving the consumption of meat (Table 3). Furthermore, the groups did not differ significantly in the evaluations of the behavioural beliefs (except for the hedonic evaluations). Both groups showed positive outcome evaluations (Table 3). This is in line with results of the pilot study, in which the selected beliefs reflected a modally important set.

The fourth prediction was that more ambivalent meat eaters would show more intentions to reduce future meat consumption than less ambivalent meat eaters. This is because we argued that ambivalence generates motivational wishes to reduce uncertainty, which could be attenuated by intending to reduce meat consumption in the future. With respect to future intentions involving meat consumption no one answered to increase his/her meat consumption. Our prediction was supported, showing that 15% of the less ambivalent meat eaters reported to reduce their meat consumption in the future, whereas 68% of the more ambivalent meat eaters did so, $\chi^2(1) = 23.81$, $p < 0.01$.

Table 3
Mean ratings for behavioural beliefs (B), evaluation scores (E), and B × E scores as a function of ambivalence

	Ambivalent groups					
	Behavioural beliefs		Evaluation		B × E	
	Less	More	Less	More	Less	More
Affect	1.15	−0.21***	7.02	6.73	8.59	−0.84***
Moral	0.80	−0.69***	7.07	7.00	5.29	−5.27***
Health	−0.35	−0.90*	6.74	6.89	−2.60	−6.49*
Environm.	−0.70	−1.43**	7.40	7.37	−5.37	−10.95**
Hedonic	0.10	−0.00	8.21	7.84*	1.10	0.15

Note. Behavioural-beliefs ratings could range from −4 (strongly disagree) to +4 (strongly agree). Evaluation ratings could range from 1 (very negative) to 9 (very positive). B × E scores could range from −36 (extreme negative utility) to +36 (extreme positive utility). Differences between the groups were tested with t-tests. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

In order to gain more insight into the relation between ambivalence and attitude with respect to intentions to change meat consumption, analyses of covariance were conducted using either ambivalence or attitude as a covariate. A median split on the attitude measure, resulted in a group with a less positive attitude ($n = 37$, $M = 3.44$) and a group with a clearly positive attitude ($n = 57$, $M = 6.68$). An ANCOVA on the ratings of future meat consumption, using ambivalence as a between-subjects factor and attitude as a covariate, revealed that attitude was a significant covariate, $F(1, 78) = 12.55$, $p < 0.01$, and showed a significant main effect of ambivalence, $F(1, 78) = 26.95$, $p < 0.01$. When a corresponding ANCOVA was conducted on the ratings of future meat consumption, using attitude as a between-subjects factor and ambivalence ratings as a covariate, the effect of attitude was not significant, $F(1, 79) < 1.00$. Rated ambivalence was a significant covariate, $F(1, 79) = 35.27$, $p < 0.01$. In other words, the effect of attitude on future meat consumption appears to have been mediated by ambivalence.

We also explored which of the predictor variables affected current meat consumption. Regression analysis was carried out with attitude and subjective norm, ambivalence, the interaction between attitude and ambivalence, and the B × E scores for the five attributes entered together. The analysis showed that 45% of the variance in meat consumption was explained, $F(9, 82) = 7.41$, $p < 0.01$. Almost all variables contributed significantly to the prediction of meat consumption (attitude and subjective norm, $F(2, 91) = 7.65$, $p < 0.01$; ambivalence, $F(1, 91) = 7.54$, $p < 0.01$; five attributes, $F(5, 91) = 5.91$, $p < 0.05$). The exception was the interaction between attitude and

Table 4
Hierarchical regression analysis of current meat consumption on measures of attitude, social norm, ambivalence, B × E scores, and their correlations

	β	r
Attitude	0.25*	0.48**
Subjective norm	0.24*	0.33**
Ambivalence	−0.28**	−0.37**
Attitude × ambivalence	−0.15	−0.22*
B × E scores affect	−0.03	0.35**
B × E scores moral	−0.11	0.29**
B × E scores health	0.23*	0.39**
B × E scores environment	−0.03	0.24*
B × E scores hedonic	0.19‡	0.39**

Note. ‡$p < 0.08$,* $p < 0.05$, **$p < 0.01$.

Table 5
Hierarchical regression analysis of ambivalence on measures of social norm, B × E scores, and their correlations

	β	r
Subjective norm	0.01	−0.06
B × E scores affect	−0.26*	−0.47**
B × E scores moral	−0.30*	−0.45**
B × E scores health	−0.12	−0.30**
B × E scores environment	−0.10	−0.32**
B × E scores hedonic	0.21*	−0.10

Note. *$p < 0.05$, **$p < 0.01$.

ambivalence, $F(1, 91) = 2.63$, ns, which indicates that the attitude–behaviour relationship was not moderated by ambivalence. The regression analysis also showed that eating meat increased with a more positive attitude, perceiving more social pressure to eat meat, having more pronounced hedonic appreciation of meat, considering meat as healthy food, and that meat consumption decreased with higher levels of ambivalence (Table 4).

Finally, we explored which of the B × E scores for the five attributes and subjective norm contributed most to ambivalence towards meat. Hierarchical regression analysis revealed that the 5 B × E scores and subjective norm explained 30% of the variance in ambivalence, $F(6, 98) = 7.13$, $p < 0.01$. Stronger ambivalence was associated with more positive hedonic B × E scores, more negative moral B × E scores, and more negative B × E scores for affect (Table 5).

Discussion

The purpose of the present study was to examine whether differences in ambivalence between meat eaters affect attitude towards meat, the belief structure underlying these attitudes, current meat consumption, and intentions to reduce this consumption in the future. It is possible that the external validity of our findings is somewhat restricted because of our sample, which consists of students. On the other hand, the fact that we did find a number of significant differences within this sample, seems a promising basis for a broader survey. Such a survey might improve our understanding in three ways. First, it will provide the opportunity to examine whether our findings are replicable, which is relevant given the modest inter-item reliabilities of the beliefs in the present study. Second, it might be useful to include non-meat eating people. In the present study we could not conduct statistical analyses on the data obtained for this group because of their small number. We expect that this group does not feel ambivalent about abstaining from meat, but it might be interesting to explore their behavioural beliefs towards (non-) meat consumption. Third, a survey will enable us to further improve our meat consumption measure. The present one might suggest that people consume meat once per day, which is not necessarily the case. The new measure should also include meat products such as sliced cold meat and meaty snacks. We therefore, recommend that a measure of meat consumption should at least comprise questions about the frequency and the magnitude of meat consumption over the day.

Attitude and belief structure. The prediction that more ambivalent meat eaters would have a less positive attitude towards meat compared to less ambivalent meat eaters, was supported. Results from regression analysis showed that attitude was best predicted by B × E scores for affect, or affective aspects; thus increased doubts, worry, fear, and feelings of guilt due to meat consumption were associated with a less positive attitude. Evidence for the role of affect in judgment and decision making has also been found by Lerner and Keltner (2001); Mellers, Schwartz, Ho and Ritov (1997); Richard, Van der Pligt, and De Vries (1996); Zeelenberg, Van der Pligt, and Manstead (1998).

The prediction that the belief structure of more ambivalent meat eaters would differ from that of less ambivalent meat eaters was supported. More ambivalent persons associated the consumption of meat with slightly negative affective aspects, morally unacceptable aspects, and more risks for both their health and the environment. In contrast, less ambivalent meat eaters reported more positive affective aspects about meat consumption and also thought it to be more morally acceptable. They were also aware that meat consumption could lead to risks for both their health and the environment, although they saw the risk as smaller than the more ambivalent meat eaters. The acknowledgment of these risks might be due to recent concerns about contaminated meat (BSE, foot and mouth disease) and manure problems (a salient issue in the intensive cattle industry in the Netherlands). The more ambivalent and less ambivalent meat eaters did not differ with regard to the hedonic aspects of meat: Both groups appreciated meat because of its taste and variety.

Results from regression analysis showed that affective and moral aspects were the prime predictors of ambivalence towards meat. Hedonic aspects were also found to be a predictor of ambivalence. This is not surprising because those who do not like the taste of meat are not likely to have ambivalent feelings. Thus the occurrence of both positive and negative aspects about eating meat demonstrates ambivalence towards meat.

(Intended) meat consumption. We found support for the predictions that more ambivalent persons consume less meat, and are more willing to reduce their consumption in the future than less ambivalent meat eaters. Results revealed that current meat consumption is predicted by attitude and subjective norm, and ambivalence. Hedonic and health aspects were also significant predictors, with increased meat consumption for those who liked the taste and also thought it to be healthy. The impact of attitude and subjective norm on behaviour provides support for the attitude–behaviour

models of Fishbein and Ajzen (1975); Ajzen (1985). Future research might include a measure of perceived behavioural control, which is a component of the theory of planned behaviour (Azjen, 1991) in order to assess whether meat eaters find it difficult not to eat meat.

It is interesting to note that ambivalence had a direct effect on current meat consumption. This is an unexpected finding because ambivalence is usually captured by attitude: Because ambivalent persons have both positive and negative evaluations about the attitude object, one would expect ambivalence to reveal itself in the expression of less extreme attitudes. The independent effect of ambivalence suggests that, in case of behaviours that elicit conflicting motives, the predictive value of the attitude–behaviour models might be improved by including the ambivalence construct. Moreover, future research might investigate whether independent predictive effects for a measure of ambivalence would occur in case of conflicting motives but without a relationship between attitude and ambivalence.

Moreover, the mediational analysis showed the relevance of ambivalence over attitude with respect to intentions to change meat consumption in the future. Here it was found that stronger intentions to reduce meat consumption in the future were mediated by ambivalence, and not by attitude.

Conclusions. This study shows how more ambivalent and less ambivalent meat eaters have different belief structure about the consumption of meat, which helps to increase our understanding of their attitudes and behaviours towards meat. Results highlight the role of affective aspects as a predictor of both attitude and ambivalence. The latter is also predicted by moral aspects. Ambivalence, in turn, is related to meat consumption and to stronger intentions to consume less meat in the future.

The mediational analysis also shows the useful contribution of ambivalence over attitude: more ambivalent meat eaters have stronger intentions to change their meat consumption in the future. They thus seem more open to behavioural change in the long term than less ambivalent meat eaters. Povey et al. (2001) reached a similar conclusion. Moreover, this finding might be related to other research, which showed that ambivalent attitudes tend to be more pliable (e.g. Bassili, 1996) and are less stable over time (e.g. Bargh et al., 1992) than univalent attitudes.

These findings might have both practical and theoretical implications. With respect to the latter, in situations where behaviour can trigger conflicting motives, we believe that it could be useful to incorporate ambivalence as a separate factor in research on the attitude–behaviour relationship. Our findings could also have important practical implications for people who are involved in the promotion of change in food consumption. In line with Povey et al. (2001), we believe that ambivalence could play an important role in promoting changes in meat consumption. Decreasing people's ambivalence, for instance, by creating more favourable viewpoints about the affective and moral aspects associated with meat consumption, should increase meat consumption. Conversely, if one intends to reduce meat consumption, one should increase people's ambivalence, by stressing the negativity of affective and moral aspects of meat consumption.

Acknowledgements

This project was facilitated by a grant from the Netherlands Organisation for Health Research and Development to the first author.

The authors would like to thank an anonymous reviewer for his/her suggestions and helpful comments on an earlier draft of this paper.

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