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Research article

The humanity of what we eat: Conceptions of human uniqueness among vegetarians and omnivores†

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Abstract

Studies on dehumanization demonstrated that denying certain human characteristics might serve as a strategy for moral disengagement. Meat consumption—especially in the times of cruel animal farming—is related to the exclusion of animals from the human scope of justice. In the present research, it was hypothesized that the conception of human uniqueness (denying animals certain psychological characteristics) might be a strategy of meat-eaters' moral disengagement. Three studies compared the extent to which vegetarians and omnivores attribute psychological characteristics to humans versus animals. In Study 1, vegetarian participants ascribed more secondary (uniquely human) emotions to animals than did the omnivores; however, there were no differences in primary (animalistic) emotions. Study 2 showed that omnivores distinguish human characteristics from animalistic ones more sharply than vegetarians do, while both groups do not differ in distinguishing human characteristics from mechanistic ones. Study 3 confirmed the results by showing that omnivores ascribed less secondary emotions to traditionally edible animals than to the non-edible species, while vegetarians did not differentiate these animals. These results support the claim that the lay conceptions of 'human uniqueness' are strategies of moral disengagement. Copyright © 2010 John Wiley & Sons, Ltd.

In their recent best-selling book 'The Ethics of what we eat', Peter Singer and Jim Mason discussed the everyday ethical choices people make around food and the treatment of animals in farming industry. The increasing awareness of the ethical character of lay-persons dietary choices is also reflected in academic research. There is an ongoing debate in philosophy whether animals should be included in the scope of the principles of justice (Elliott, 1984; Opotow, 1993; Rawls, 1971), while psychologists study extensively the sources of human cruelty towards animals (Plous, 1993; Vollum, Bufington-Vollum, & Longmire, 2004).

Certainly, meat production and meat consumption belong to the central issues in the ethical discussion on human–animal relation (Singer & Mason, 2007). Even if most people are not aware of the cruelty that occurs in farming industry, they tend to morally disengage from the process of animal slaughter: They use euphemistic language about words related to meat-consumption (e.g. *process* instead of *slaughter*; *pork* instead of *pig*, singular form without an article—*chicken*—to describe meat), they prefer appearance of meat that does not resemble animal anatomy, and locate slaughterhouses in high physical distance from the residential areas (Plous, 1993). These strategies resemble the linguistic, cognitive and behavioural strategies of moral disengagement that were observed among humans (Bandura, 1999; Graumann & Wintermantel, 1989). In the present paper, it is argued that the commonsensical concept of human uniqueness (denying animals certain psychological characteristics) might be conceived as another form of the moral disengagement among the meat-eating population.

The uniquely human character of psychological features that were once attributed only to human beings (e.g. consciousness, theory of mind, empathy, personality) was questioned in contemporary cognitive and behavioural sciences (De Waal, 2009; Gosling, 2008; Gosling & John, 1999; Nettle, 2006; Premack & Woodruff, 1978; Tomasello & Call, 1997). At the same time the lay concept of psychological human uniqueness remained widespread and seems to be culturally universal (Bilewicz, Mikolajczak, Castano, & Kumagai, in press; Demoulin, Leyens, Paladino, Rodriguez, Rodriguez, & Dovidio, 2004). Among characteristics commonly perceived as uniquely human are intelligence, reasoning (rationality), sentiments (secondary emotions), maturity, language, refinement, civility, morality and certain personality traits (Haslam, Bain, Douge, Lee, & Bastian, 2005; Leyens et al., 2000).People tend to deny uniquely human characteristics, such as values, morality or secondary emotions, to the members of an outgroup (Haslam, 2006; Leyens et al., 2000; Struch & Schwartz, 1989). This process, named infrahumanization or dehumanization, was most commonly observed in the differential attribution of 'uniquely

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human' secondary emotions (e.g. love, hope, melancholy) as opposed to primary emotions (e.g. anger, joy, pain). The process of infrahumanization was found to be a basic, essential phenomenon occurring in human intergroup relations, observed both on explicit and implicit levels (Leyens et al., 2000; Paladino, Leyens, Rodriguez, Rodriguez, Gaunt, & Demoulin, 2002; Viki, Winchester, Titshall, Chisango, Pina, & Russell, 2006). Regardless of its basic and essential character, infrahumanization also proves to be a motivated psychological process. It is used as a tool to morally disengage from the crimes perpetrated by one's own group. Castano and Giner-Sorolla (2006) found that participants ascribed less uniquely human emotions to people and extraterrestrial creatures that were killed by the members of participants' ingroup. Infrahumanization was also related to lack of help after Katrina hurricane (Cuddy, Rock, & Norton, 2007) and discrimination of non-European countries (Pereira, Vala, & Leyens, 2009). All in all, these results suggest that denial of uniquely human features may be also a strategy of moral disengagement.

Although the naïve concepts of human uniqueness seem to be universal, there are some important exceptions worth mentioning: By far not all people deny uniquely human features to animals and not all animals are perceived as lacking of these features (Epley, Waytz, Akalis, & Cacioppo, 2008). People attribute higher cognitive functions to animals that are perceived as more similar to them (Eddy, Gallup, & Povinelli, 1993) and animal owners often attribute certain secondary emotions to their horses and dogs (Morris, Doe, & Godsell, 2008). Certain animals (those perceived as not conflicted with humans) are even included into the human scope of justice (Opotow, 1993).

There is an intriguing question, whether perceived utility of animals (e.g. as source of meat) would cause lesser ascription of human features to them. Cues existing in the literature seem quite contradicting: The utility of an animal was leading to its inclusion into human scope of justice (Opotow, 1993); however, other findings suggest that perception of animals' utility is unrelated to attitudes towards animal abuse and cruelty against animals (Vollum et al., 2004). The perceived utility of animals, combined with knowledge about the cruelty of animal farming, should lead to a state of dissonance that could be sufficiently reduced by excluding animals from the humanness. This is why we suppose that the meat-eating population should create clear-cut distinction between human and animalistic traits, thus denying animals some essential psychological characteristics.

Researchers studying differences between vegetarians and omnivores found that the two groups differ not only in their dietary choices, but also in other psychological aspects that suggest possible motivations for vegetarianism (Allen, Wilson, Ng, & Dunne, 2000; Fessler, Arguello, Mekdara, & Macias, 2003; Wilson & Allen, 2007). Fessler et al. (2003) found that vegetarians show higher level of disgust sensitivity than omnivores, regardless of their reason for being vegetarian. Allen et al. (2000) proved that omnivores overscore vegetarians in two scales related to hierarchical domination: Right wing authoritarianism and social dominance orientation. The preference for hierarchical values was found to be related with preference for red-meat consumption in several other studies (Allen & Ng, 2003; Wilson & Allen, 2007). This research suggests that meat avoidance may be linked with the emotion of disgust and perception of unjust superiority in the situation of animal consumption. Both of them seem to be consequences of including animals into broader scope of justice (Opotow, 1993). We suppose, however, that the inclusion of animals into the scope of justice by vegetarians is embedded in even more basic phenomenon: Attribution of 'uniquely human' psychological characteristics to animals. Such differences in naïve biology of vegetarians and omnivores could result in a different set of values, ethical codes, emotions towards animals and finally—in different dietary choices.

THE PRESENT RESEARCH

In order to test the prediction outlined above, we conducted three studies on denying animals certain psychological characteristics by the members of the meat-eating population, as opposed to the population that does not eat meat (vegetarians and vegans). We hypothesized that the groups should particularly differ in their ascription of characteristics that are perceived as reflecting intellectual and cultural superiority, i.e. characteristics commonly referred to as 'uniquely human'.

STUDY 1

People believe that some emotions can be experienced exclusively by human beings whereas other emotions are not reserved to humans. This distinction has not only been observed in explicit articulation but also in implicit measures that are assumed to tap automatic, unintended associations (Demoulin et al., 2004). Such lay theories of emotion are surprisingly similar to the ones used by emotion scientists who distinguish between 'primary emotions' and 'secondary emotions' (Demoulin et al., 2004). Infrahumanization research (Leyens et al., 2000; Paladino et al., 2002) has utilized this distinction to show that more secondary emotions are ascribed to ingroups compared to outgroups, particularly if a past ingroup atrocity against the outgroup can be justified by insisting on the lesser degree of humanness of the outgroup (i.e. lesser degree of secondary emotions; Castano & Giner-Sorolla, 2006). In the present study, we aimed at testing our hypothesis in the domain of emotional 'human uniqueness'. The specific hypothesis for the study was that the distinction between human and animalistic emotions found in previous research (Demoulin et al., 2004) would be more pronounced among omnivores. We expected that vegetarians should ascribe more secondary emotions, commonly perceived to be uniquely human, to animals, resulting in a less pronounced distinction between uniquely human and non-uniquely human emotions.

The present cross-sectional study compared the lacto-ovo-vegetarian (people eating plant products, as well as eggs and milk products), vegan (people eating plant products) and omnivore samples in their ascription of primary and secondary emotions to humans and animals.

Method

Participants

A total of 123 participants were recruited to participate in an online study on 'Emotions of Humans and Animals'. Participation was rewarded with a chance to win one of three 15 Euro gift cards for an online store. To increase the number of vegetarians and vegans in the sample the online study was advertised for on bulletin boards of vegetarian interest groups. The final sample consisted of 43 vegans, 38 ovo-lacto vegetarians and 42 omnivores. Although there was a descriptively larger proportion of women in the ovo-lacto vegetarian and vegan sample than in the omnivore sample, this distribution was not significantly different from chance, $\chi^2(N = 121,\ df = 2) = 4.25,\ p > .10$.

Measure

Participants had to rate the human uniqueness of 30 emotions on a scale ranging from 1 (animals and humans have this emotion to the same degree) to 7 (only humans have this emotion). Among these emotions, eight were pretested as either clearly primary (fear, panic, happiness, excitement) or secondary (guilt, regret, nostalgia, melancholy) in a non-vegetarian student sample (Table 1). Based on the pretest, primary and secondary emotions clearly differed in human uniqueness, $M_{\text{prim}} = 1.73, M_{\text{sec}} = 5.47, t(60) = 22.60, p < .001$, but not in valence, $M_{\text{prim}} = 3.76,\ M_{\text{sec}} = 3.61,\ t(60) = 1.61,\ p = .11$. The other 22 emotions from the pretest were kept in the questionnaire as distracters to keep the exact structure of the pretest.

Results

Two indices were calculated for primary and secondary emotions and these were subjected to a 2 (type of emotion) × 3 (vegan vs. vegetarian vs. omnivore) mixed-model analysis of variance (ANOVA). All effects were significant (Figure 1). The large main effect of the type of emotion, $F(1, 120) = 608.82,\ p < .001,\ \eta_p^2 = 0.84$, indicated a rating of greater human uniqueness for secondary emotions ($M = 4.73$, $SD = 1.66$) than for the primary emotions ($M = 1.34$, $SD = 0.82$). A main effect of the group, $F(2, 120) = 8.53$, $p < .001,\ \eta_p^2 = 0.12$, also reached significance but was qualified by a significant interaction of type of emotion and group, $F(2, 120) = 8.70,\ p < .001,\ \eta_p^2 = 0.13$. This showed that omnivores were inclined to aver more human uniqueness of emotions, and that this was particularly the case for secondary emotions (see Table 2 for exact means and *SD*). Separate one-way ANOVAs for both types of emotions show that the groups do not differ in their rating of primary emotions, $F < 1$, but secondary emotions, $F(2, 120) = 10.82,\ p < .001$. *Post hoc* LSD tests also show that vegetarians and vegans do not differ from each other, but both do differ from omnivores, $ps < .005$.

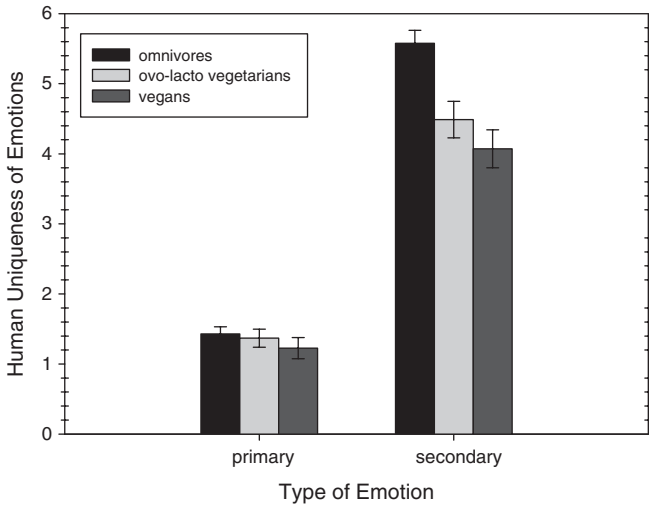

Figure 1. Human uniqueness of primary and secondary emotions as a function of omnivorism, vegetarianism and veganism (Study 1)

Table 1. Emotions used in Study 1 (mean scores of human uniqueness and valence in the pretest)

	Humanity		Valence	
	M	*SD*	*M*	*SD*
Fear	1.40_A	0.86	2.56_B	1.19
Panic	1.55_A	1.19	1.70_A	1.56
Excitement	1.74_A	1.24	4.11_C	1.08
Happiness	1.92_A	1.37	6.66_D	0.96
Melancholy	4.79_B	2.04	2.85_B	1.15
Guilt	5.26_B	2.05	2.89_B	1.61
Regret	5.47_B	1.65	4.51_C	1.61
Nostalgia	6.64_C	0.94	4.20_C	1.15

Note: Rating of human uniqueness from 1 (not unique to humans at all) to 7 (uniquely human) in pretest ($N = 53$). Mean with different subscripts are significantly different in Bonferroni-corrected simple tests ($\alpha = .0018$).

Discussion

The results obtained in this study support our hypothesis: The distinction into uniquely human (secondary) emotions and animalistic (primary) emotions was much more sharp among omnivores than among vegetarians. Vegetarians ascribed more emotional experiences to animals that are commonly perceived as uniquely human. The groups did not differ in their ascription of primary (non-uniquely human) emotions.

However, one could argue that the differences are not due to different perceptions of animals (or different attribution of emotions to animals), but rather because of different perceptions of humanity among vegetarians/vegans and omnivores. Being aware of numerous differences between vegetarians and omnivores (Allen et al., 2000; Fessler et al.,

Table 2. Exact means and standard deviations of the human uniqueness primary and secondary emotion as a function of group (vegan vs. vegetarians vs. omnivores)

	Vegans		Vegetarians		Omnivores	
	M	*SD*	*M*	*SD*	*M*	*SD*
Primary emotions	1.23	0.98	1.37	0.78	1.43	0.66
Secondary emotions	4.07	1.75	4.49	1.61	5.58	1.22

Note: $N = 123$.

2003), including preference for social hierarchies, one may suppose that omnivore participants perceive their own group (humans) as simply superior to any other category (machines, animals; Haslam, 2006), whereas vegetarians do less so. Such superiority would not necessarily mean that they morally disengage from the cruelty of animal exploitation. In order to test such possibility and to further verify our hypothesis, a second study was conducted, using two-dimensional model of dehumanization proposed by Haslam (2006).

STUDY 2

One of the lessons from the research on dehumanization is that the perception of human uniqueness does not exist only on the emotionality dimension (Haslam, 2006; Viki et al., 2006). There are several other psychological characteristics that are perceived as distinctively human. The attribution of humanness might be related to the perception of values (Struch & Schwartz, 1989), refinement, civility, morality, higher cognition and certain personality traits (Haslam, 2006), as well as implicit associations with human-related words (Viki et al., 2006).

The recent research by Nick Haslam and his colleagues (Haslam, 2006; Haslam & Bain, 2007; Haslam et al., 2005; Loughnan & Haslam, 2007) suggests that there are two distinctive senses of humanness with two different points of reference: Human uniqueness (being non-animalistic) and human nature (being non-mechanistic). These two senses distinguish humans from either animals or automata.

Based on our moral-disengagement hypothesis, we assumed that omnivores and vegetarians should differ in their lay concept of human uniqueness (what distinguishes humans from animals) but not in their concept of human essence (what distinguishes humans from mechanic automata). This difference is due to the fact that the we expect omnivores to deny animals the possibility to posses certain characteristics perceived as 'uniquely human', while vegetarians should rather include animals to their scope of humanness. There should be, however, no difference between the groups when it comes to the human nature—both groups have the same reasons to distinguish the human from the mechanistic world.

In Study 2, we did not distinguish between the two non-omnivore groups because there were no observable differences between these two groups in Study 1. Thus, in Study 2, we compared a vegetarian sample (including vegans) with an equal-sized sample of omnivores.

Method

Pretest

The list of 40 characteristics adapted from studies on two dimensions of humanness (Haslam, 2006; Haslam & Bain, 2007; Haslam et al., 2005; Loughnan & Haslam, 2007) was pretested on 74 university students in Poland (71 omnivore, 3 undeclared) in order to find which characteristics are perceived among Polish-speaking participants as uniquely human. Participants were asked to rate to what extent a given characteristic is unique for human beings on 7-point scale (1 = total disagreement to 7 = total agreement). The pretest allowed selecting 20 characteristics (both desirable and undesirable) that were perceived as unique for human beings (rated above the mean point of the scale; see Table 3).

Table 3. Uniquely human characteristics selected for Study 2 (mean scores of human uniqueness in the pretest)

	M	*SD*
Artistic	5.94	1.55
Conscientious	5.50	1.64
Talkative	5.47	1.82
Imaginative	5.45	1.88
Generous	5.29	1.89
Shallow	5.09	1.98
Organized	5.02	2.03
Curious	4.98	2.10
Irresponsible	4.91	1.99
Undependable	4.87	1.95
Assertive	4.83	1.90
Conventional	4.68	2.06
Frivolous	4.58	2.09
Shy	4.51	2.11
Reserved	4.36	2.18
Anxious	4.35	2.17
Reliable	4.22	2.14
Incapable	4.20	2.13
Hard-hearted	4.20	2.18
Tense	4.14	1.96

Note: Rating of human uniqueness from 1 (not unique to humans at all) to 7 (uniquely human) in pretest ($N = 74$).

Participants

A total of 74 participants were recruited to participate in a paper-and-pencil study entitled 'What do we think about the nature of other people?' The study took place in two colleges in Warsaw during the 'week of vegetarianism' (this allowed recruiting both vegetarian and omnivore participants). The final sample consisted of 36 vegetarians (including vegans) and 38 omnivores—both groups did not differ in age, $t(72) = 0.73$; $p = .46$ and gender, χ^2 ($N = 74$, $df = 1$) $= 0.97$, $p = .32$.

Measure

Participants rated to what extent 20 previously pretested characteristics (desirable and undesirable) are perceived as uniquely human (This characteristic is uniquely human: It distinguishes humans from animals) and to what extent the same characteristics are basis of human nature. (This characteristics lies in human nature: It distinguishes humans from machines.) The responses were coded on a 7-point scale ranging from 1 (completely disagree) to 7 (completely agree). The characteristics were hidden among other 20 filler characteristics.

Results

Two indices were calculated for non-animalistic humanness (human uniqueness) and non-mechanistic humanness (human

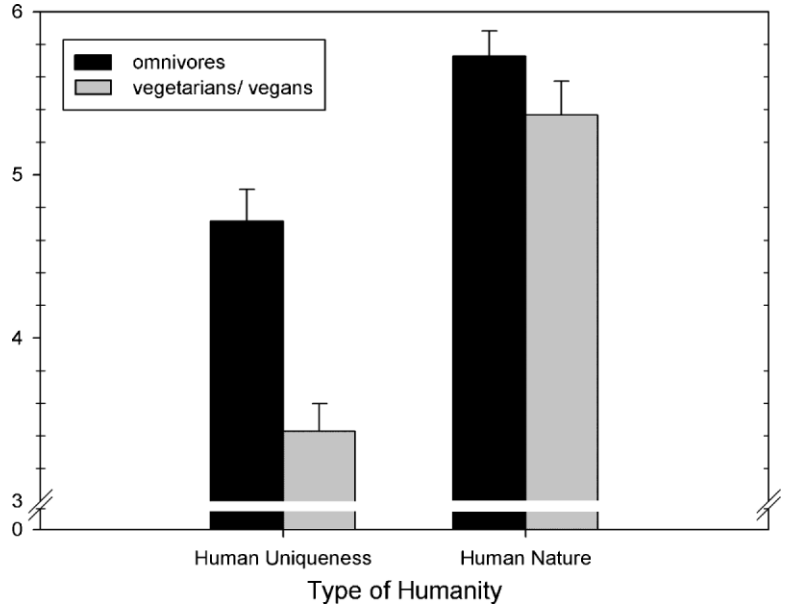

Figure 2. Human uniqueness and human nature of psychological characteristics as a function omnivorism and vegetarianism (Study 2)

nature). These were subjected to a 2 (type of humanness) × 2 (vegetarian vs. omnivore) mixed-model ANOVA. There was a main effect of the humanness, $F(1, 72) = 73.93$, $p < .001$, $\eta_p^2 = 0.51$, indicating that the characteristics were perceived as indicating more human nature (distinguishing humans from machines; $M = 5.55$, $SD = 0.13$) than human uniqueness (distinguishing humans from animals; $M = 4.07$, $SD = 0.13$). A main effect of the group, $F(1, 72) = 18.08$, $p < .001$, $\eta_p^2 = 0.20$, was also significance and was qualified by a significant interaction with type of humanness, $F(1, 72) = 7.33$, $p < .01$, $\eta_p^2 = 0.09$ (Figure 2). This showed that omnivores and vegetarians significantly differed in their lay conceptions of the two kinds of humanness, and the effect was due to differences in the perception of human uniqueness. The separate *t*-tests for both types of humanity showed that the groups did not differ in their lay conceptions of human nature, $t(72) = 1.39$, $p = .17$ ($M = 5.73$, $SD = 0.18$ for vegetarians and $M = 5.37$, $SD = 0.19$ for omnivores), but that vegetarians perceived these characteristics as less uniquely human than omnivores did, $t(72) = 4.99$, $p < .001$ ($M = 3.43$, $SD = 0.18$ for vegetarians as opposed to $M = 4.72$, $SD = 0.18$ for omnivores).

Discussion

Study 2 confirmed—this time using other characteristics than emotions—that omnivores deny animals certain characteristics to much greater extent than the vegetarians do. The difference is not related to different overall perceptions of humanity among both groups, as the same groups did not differ in their conceptions of human nature (denying automata several essentially human characteristics). They proved similar in their concept of the human essence of what distinguishes humans from mechanic automata, but different in the concept of what distinguishes humans from animals (Haslam, 2006). This study suggests that ascription of human uniqueness might be related to moral disengagement from animal-eating; nevertheless it does not rule out the alternative explanations for the effects observed in Study 1. The personality differences between vegetarians and omnivores might still be responsible for denying animals human characteristics. If animals are perceived as generally inferior to humans, then the particularly low social dominance orientation observed among vegetarians (Allen et al., 2000) could be responsible for the differences found in Study 1 and Study 2. In order to rule out such possibility, a third study was performed.

STUDY 3

The previous studies showed that the typical meat-eater would deny animals uniquely human characteristics more often than a vegetarian or vegan person would do. At the same time both groups do not differ in their denial of the same characteristics to machines or robots. However, if the moral disengagement hypothesis is true, vegetarians should differ from omnivores in ascribing human uniqueness to traditionally edible animals (pigs, cows, poultry), but not to the non-edible animals (dogs, cats, snakes)[1]. To test this prediction, we designed an experimental study in a between-participants design, in which we randomly assigned participants into two conditions: Half of them ascribed uniquely human emotions to edible animals, half of them ascribed uniquely human emotions to non-edible animals. In order to finally verify the alternative explanation of observed phenomena (individual differences explanation; Allen et al., 2000), we decided to measure the social dominance orientation (Pratto, Sidianius, Stallwort, & Malle, 1994). Social dominance orientation measures individual's acceptance of an ideology that legitimizes ingroup-supporting hierarchies and domination, as well as rejection of egalitarian ideologies. Thus, it could be the most probable candidate for an individual-difference basis of human uniqueness differences between vegetarians and omnivores. For higher confidence in the results, we decided for a relatively large number of participants and for a different linguistic community than in previous studies (English-language speakers).

[1]The species selected as edible are subject to cross-cultural differences, reflecting local taboos, as well as economic and physical constraints of certain cultures (Harris & Ross, 1987).

Method

Participants

An online study of emotions in English language was advertised on online bulletin boards that were either special interest boards for vegetarians or general boards not related to alimentation. As an incentive, five gift certificates for an online bookstore worth $30 each were raffled among all participants. To categorize participants according to the variable of interest (vegetarians vs. carnivores), participants were asked to self-categorize as either vegan, vegetarian, pescatarian or omnivores (without any dietary restriction regarding animal products) at the end of the study. As an additional plausibility check, participants were asked to estimate the average frequency of consumption of several food products (e.g. eggs, pork, pasta, beef, fruit and poultry). All participants that declared to be either vegetarians or vegans and did not report any consumption of meat product were categorized as vegetarians and all participants that declared to have no dietary restriction and reported meat consumption were categorized as omnivores. The final sample consisted of 325 participants (177 vegetarians and 148 omnivores) that were predominantly female (253 women, 69 men, 3 missing values) ranging in age between 16 and 84 years ($M = 30.08$, $SD = 10.82$). Vegetarian and omnivore participants did not differ regarding age, $t(322) = 1.15$, $p = .25$ and sex distribution, χ^2 ($N = 322$, $df = 1) = 0.04$, $p = .85$. The participants were randomly assigned to one of two experimental conditions (target animal dog vs. pig).

Independent Variable

Participants received the information that the current study dealt with the emotional life of animals (target animals were dogs vs. pigs). The selection of animals was based on several similarities: Both of them are mammals and previous studies proved that people perceive both of them as moderately similar to humans (Eddy et al., 1993). The factual cognitive differences between both species and humans are relatively small (e.g. in cephalization index), even comparing to other mammals (Pearce, 1987), and these are two earliest domesticated animals, found already in late Palaeolithic human settlements (Bokonyi, 1983). However, in the Western culture, dogs are typically regarded to as non-edible while pigs are treated as edible animals (although several other cultures and religions would define both species as non-edible).

Measures

Participants were asked to rate for 12 emotions how likely they thought that dogs (or pigs) experienced these emotions on a 5-point scale ranging from 'completely unlikely' to 'highly likely'.

The 12 emotions were chosen from a list of emotions previously tested as clearly primary (rage, surprise, pain, fear, happiness, pleasure) or secondary (shame, hope, melancholy, love, guilt, tenderness) in English language (Demoulin et al., 2004). After this, participants filled in the 16-item social dominance orientation (SDO) scale tapping into social dominance orientation (Pratto et al., 1994) and demographics regarding age, sex and eating habits before they were thanked and debriefed.

Design and Specific Hypothesis

The resulting design was a 2 (group: Vegetarians vs. omnivores) $\times$ 2 (target animal: Dog vs. pig) $\times$ 2 (emotions: Primary vs. secondary) design with two between-factors and one within-factor. It was hypothesized that the general differentiation of primary and secondary emotion should be particularly pronounced for omnivores in the pig condition.

Results

To test whether carnivores denied particularly secondary emotions of pigs, a 2 (group: Vegetarians vs. omnivores) $\times$ 2 (target animal: Dog vs. pig) $\times$ 2 (emotions: Primary vs. secondary) mixed model ANOVA was conducted. All main effects were significant, indicating that more primary than secondary emotions were ascribed, $F(1, 321) = 569.71$, $p < .001$, that more emotions were ascribed to dogs compared to pigs, $F(1, 321) = 20.55$, $p < .001$, and that vegetarians ascribed more emotions than omnivores, $F(1, 321) = 56.20$, $p < .001$. More importantly, these main effect and the significant two-way interaction were qualified by the hypothesized three-way interaction of group by target animal by emotions, $F(1, 321) = 7.99$, $p < .005$. Means show that in line with the predictions, particularly omnivores in the pig condition ascribed less secondary emotions (Figure 3). Separate univariate ANOVA for primary and secondary emotions revealed that omnivores already ascribed significantly less primary emotions to animals, $F(1, 321) = 44.71$, $p < .001$, particular to pigs as indicated by a group by target animal interaction, $F(1, 321) = 6.43$, $p = .01$. However, this pattern was even more pronounced for secondary emotions, as omnivores ($M = 2.73$, $SD = 1.03$) rated the likelihood of secondary emotions in pigs significantly lower than vegetarians ($M = 3.93$, $SD = 0.81$), $t(163) = 8.32$, $p < .001$, Cohen's $d = 1.30$. This effect was larger than the corresponding effect for dogs, $M = 4.13$, $SD = 0.75$ for vegetarians and $M = 3.66$, $SD = 0.88$ for omnivores, Cohen's $d = 0.57$, as indicated by a significant interaction in a 2 (group) $\times$ 2 (target animal) ANOVA for secondary emotion ratings, $F(1, 321) = 10.76$, $p < .001$. Importantly, vegetarians did not differentiate between pig and dogs in their ascription of secondary emotions, $t(175) = 1.77$, $p = .08$, whereas omnivores clearly did, $t(158) = 3.62$, $p < .001$ (see Figure 3 for means). This finding supports the notion that the denial of secondary emotions in animals may (in part) be a motivated process of individuals who consume these animals.

As an alternative hypothesis, it was proposed that vegetarians are particularly low in SDO and, therefore, extrahumanize animals. This alone would not explain why the difference between vegetarians and omnivores is much more pronounced for pigs than for dogs. It is conceivable, however, that dogs indeed experience more secondary emotions than pigs (as estimated by omnivores) but that vegetarians neglect

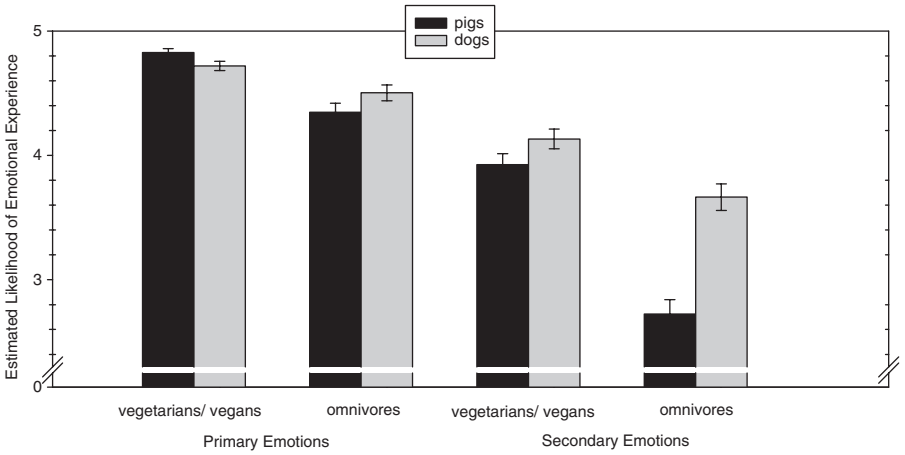

Figure 3. Estimated likelihood of primary and secondary emotions as a function of target animal and vegetarianism (Study 3)

this difference and perceive any animal as more human than it may be justified (due to their low SDO).

To test for this alternative hypothesis, we first tested whether the group differences found by Allen et al. (2000) were replicated in the current dataset. To this end, an index for SDO was calculated (Cronbach's $\alpha = .93$) and the mean values of the two groups were tested for differences. In line with previous results by Allen et al. (2000), vegetarians showed lower scores on the SDO scale, $M = 1.68$, $SD = 0.73$, than omnivores, $M = 2.23$, $SD = 1.09$, $t(249.83) = 5.18$, $p < .001$[2]. To assess whether the reported group differences could be explained by different *a priori* levels in SDO, the SDO score was centred (Delaney & Maxwell, 1981) and included as a covariate in the ANOVA: The analysis yielded a main effect of SDO, $F(1, 317) = 4.09$, $p < .05$, qualified by an interaction of SDO with the between-subjects-factor emotion, $F(1, 317) = 4.19$, $p < .05$. This result indicates that participants high in social dominance orientation ascribed fewer emotions to animals, particularly secondary emotions. However, more importantly, all other effects remained significant, $ps < .02$. Thus, the difference between vegetarians and omnivores cannot be explained by their different levels of *a priori* SDO.

Discussion

The results of Study 3 replicated and extended the findings obtained in previous studies. In all three studies, vegetarian participants ascribed greater humanity to animals. In Study 1, we found that vegetarian participants ascribe more secondary emotion to animals than omnivores. The results of the present experiment showed that this effect is specific for traditionally edible animals (pigs) and is less pronounced if the target animal is perceived as non-edible (dogs). We found that vegetarian and omnivore participants similarly ascribe primary emotions to dogs and pigs; however, they importantly differ in ascriptions of secondary emotions: Vegetarians recognize secondary emotions in both dogs and pigs, while omnivores ascribe much less secondary emotions to edible pigs than to non-edible dogs. This result clearly supports the moral disengagement hypothesis of dehumanization: The lay concepts of humanity reflect needs for potential aggression and exploitation. In Study 3, we also examined possible alternative explanation stressing the role of personality differences. Entering relevant personality measure (social dominance orientation) into our model did not change the results, thus confirming that it is not SDO *per se* but a process of moral disengagement from being involved in the larger process of pork production (even only as an end-consumer) that motivates omnivores' denial of secondary emotions in pigs.

[2]Due to the very low scores of vegetarians they had a restricted range, violating the prerequisite of variance homogeneity. Thus, for the *t*-test the degrees of freedom had to be adjusted.

CONCLUSIONS

Consistent results of the three studies performed on three different linguistic samples (German, Polish, English) give substantial support to our original hypothesis. The lay conception of human uniqueness, observed in the field of emotions as well as in other psychological concepts, is not equally prevalent among all humans. Particularly vegetarians ascribed to animals more emotions and characteristics that are commonly perceived as uniquely human. This interesting difference could be explained in one of two ways.

It is conceivable that some individuals may have idiosyncratic views about the characteristics of animals. Seeing animals as more similar to humans may result in the refusal to support killing animals for consumption. Previous research showed that vegetarians are less prone to affirm hierarchies (Allen et al., 2000). This interpretation would accept the differences between animals and humans as given and see the vegetarian diminishment of these differences as a form of biased view motivated by egalitarian concerns. Our results do not support this explanation. Although vegetarians and omnivores differ in their level of social dominance orientation, their personality could not be regarded as a reason for their conceptions of human uniqueness.

An alternative explanation is more in line with previous reasoning about infra- and dehumanization. Our findings regarding emotion attribution parallel those observed in the intergroup relations among humans that found lesser ascription of secondary emotion to the victims of one's ingroup (Castano & Giner-Sorolla, 2006). Similarly, participants who are involved in animal consumption (omnivores), ascribe less uniquely human emotions to animals (victims). Thus, it is

conceivable that the difference found in both studies is rather due to a biased view on the side of the omnivores, motivated by moral disengagement. Omnivores may seek a justification for participating in or complying with a complex process of killing animals. By establishing and maintaining the conceptions of human uniqueness, they may subjectively minimize the psychological costs of their own actions: 'If animals are primitive and have no human-like feelings anyway, it seems legitimate to kill them'. Such a strategy of moral disengagement (Bandura, 1999; Opotow, 1993) creates a wall of indifference between meat-eating humans and animals. Evidence for a similar active distancing comes from previous research. People who are agentic in the process of meat production seek for a strategy to distance from this sphere, both physically (Plous, 1993) and psychologically (Vollum et al., 2004). In contrast, people who refuse meat consumption by becoming vegetarians or vegans are more eager to include animals into their broad scope of justice and seize to deny animals crucial psychological characteristics. Future research might take advantage of longitudinal studies to see whether egalitarian views towards animals predict vegetarianism or whether (re-)turning to a diet including meat predicts a more pronounced dehumanization of animals. Both pathways seem plausible and are not mutually exclusive.

The results obtained in the present studies have some limitations. The studies presented above used overt and explicit methods to capture participants' conceptions of human uniqueness. Future studies, implying also the implicit methods (as in Demoulin et al., 2004) could assess to what extent the effects observed in our studies might be affected by desirability norms among vegetarians, but also among omnivores. Nevertheless, even if such norms affected our results, they might prove socially shared strategies of moral disengagement among meat-eaters and, maybe also socially shared, strategies of moral inclusion among vegetarians (Opotow, 1993; Vollum et al., 2004).

The human uniqueness of various psychological concepts was questioned by researchers in recent decades (De Waal, 2009; Premack & Woodruff, 1978; Tomasello & Call, 1997). The lay concepts of human uniqueness, that were regarded as universal and essential (Bilewicz et al., in press; Demoulin et al., 2004), seem to be however much more varied in the population than previous research would suppose. The 'humanization' or anthropomorphization of animals was recently observed among pet owners (Morris et al., 2008) and found to reflect the need of sociality and effectance motivations (Epley et al., 2008). Our studies suggest that moral disengagement of meat-eaters might substantially reduce the anthropomorphic perceptions of animals, thus critically affecting human lay theories of emotions and naïve psychology of animals.

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