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Animal Ethics and Eating Animals: Consumer Segmentation Based on Domain-Specific Values

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Abstract: For a sustainable diet, especially with regard to animal welfare, human health, and environmental issues, a significant reduction in the consumption of animal source foods is essential. The most frequently reported motivations for a meat-reduced or meat-free diet are ethical concerns about animal welfare. This study realizes one of the first consumer segmentations in the context of the human–animal relationship based on domain-specific values; animal ethics. Such a consumer segmentation is relatively stable over time and encompasses the issue of the human–animal relationship in its entirety without limiting itself to a specific question. Based on a comprehensive consumer survey in Germany and by means of a three-step cluster analysis, five consumer segments characterized by different animal-ethical value profiles were defined. A subsequent analysis revealed a link between animal ethics and diet. As a key result, relationism as an animal-ethical position seems to play a key role in the choice of a sustainable diet. About a quarter of the population is characterized by a combination of animal welfare-oriented ethical positions with a clear rejection of relationism, i.e., they do not distinguish between farm animals and companion animals. This specific combination of animal-ethical values is associated with a significantly above-average proportion of flexitarians and vegetarians. Thus, the study contributes to a deeper understanding of existing animal-ethical values and their link to the choice of diet.

Keywords: human–animal relationship; animal welfare; animal-ethical intuitions; animal-ethical values; consumer behavior; sustainable diet

1. Introduction

According to current scientific knowledge, it is necessary to significantly reduce the consumption of animal source foods for several reasons, including (1) animal welfare; (2) human health; and (3) environmental issues. With regard to the first reason, the transformation of agriculture towards socially accepted and thus animal welfare-oriented livestock farming seems to be possible only with a 'less-but-better'-strategy; the significant reduction of farm animal production by each farm and in total in order to improve the production standards for the remaining animals [1]. Related to the second reason, a diet with a significant reduction in the proportion of animal source foods has considerable health benefits, such as a lower risk of type 2 diabetes, coronary heart diseases, and some types of cancer [2,3]. Finally, the production of animal source foods is, across various environmental indicators, especially greenhouse gases, much more harmful to the environment than the production of plant-based food [4,5]. In sustainability research, a significant reduction (i.e., 50–75%) in the consumption of animal source foods is usually proposed, especially for developed countries [2].

Although the proportion of people who adopt sustainable diets (e.g., flexitarianism, vegetarianism, and veganism) has increased in recent years, especially in Western societies, these diets are still clearly in the minority [6]. Numerous studies have explored the motivations behind why people shift to a

more sustainable diet [6,7]. The most frequently cited motivations for a meat-reduced or meat-free diet are ethical concerns about animal welfare [6]. Animal welfare concerns often refer explicitly to applied methods such as husbandry systems, fattening, or slaughter [6–8]; they may also include fundamental ethical concerns, such as whether animals have rights and whether humans should be allowed to use animals at all [7,8]. The first kind of concern can be classified on the level of attitudes, which are limited to a specific object (e.g., the husbandry system or slaughtering process) [9]. The second type of concern, by contrast, does not refer to a specific object but to the treatment of animals in general; thus it can be classified at the level of domain-specific values [10]. Such domain-specific values are relatively deeply rooted in the human value system and do not change as quickly as attitudes. At the same time, due to their concentration on a thematic complex, domain-specific values are relatively well connected to consumer behavior. As a result, analyzing domain-specific values as they relate to consumer behavior offers two decisive advantages over using attitudinal information. First, domain-specific values possess a certain prognostic quality, and second, they permit a higher degree of generalizability. Although there are already studies dealing with the correlation between ethics and the consumption of animal source food [11,12], a detailed analysis of domain-specific values in the context of the human–animal relationship, particularly as a significant motivator for sustainable diets, is still missing.

An initial study has already indicated that animal-ethical positions, as they are conceived of in philosophy, can be found in society, though they are often highly simplified and limited to their core statements [13]. Therefore, in this study, instead of talking about animal-ethical positions, the term 'intuition' is used. Use of this term is based on the fact that laymen usually act and decide intuitively in everyday situations, often referring to so-called lay or intuitive theories, which are widely based on scientific theories [14,15]. These intuitions mirror central positions of animal ethics, which range from the original anthropocentrism (i.e., that humans are allowed to treat animals as they please without any consideration for pain or suffering) to abolitionism (i.e., that humans are not allowed to use animals for their own purposes in principle) [16]. It has been shown that such animal-ethical intuitions, in particular the two polarizing intuitions of original anthropocentrism and abolitionism, significantly affect the consumption of animal source foods [13]. Nevertheless, the study also indicated that several intuitions are represented in society at the same time.

The aims of the present study are to firstly identify which combinations of animal-ethical intuitions are predominantly represented in society and, secondly, to investigate how respective consumer segments are linked to the consumption of animal source foods. Using consumer segmentation, this study examines which value profiles regarding animal-ethical intuitions are represented in German society. This is one of the first times that domain-specific values are the basis for consumer segmentation in the context of the human–animal relationship. Segmentation based on relatively abstract and more deeply rooted domain-specific values can provide a stable consumer segmentation that covers the whole thematic complex of the human–animal relationship. A subsequent analysis of the relationship between different value profiles and the diet followed contributes to a deeper understanding of which ethical values actually lead to a diet consisting of few or no animal source foods. This study represents a first attempt to identify key ethical drivers of the shift towards a more sustainable diet.

2. Theoretical Background: Animal-Ethical Intuitions

Laymen often base their daily actions and decisions on so-called lay or intuitive theories [14], which are often based on scientific theories [15]. In the context of the human–animal relationship, animal ethics provides such a scientific basis. Animal ethics deals intensively with the question of the ethically correct treatment of animals [16]. In recent centuries, various animal-ethical positions have been developed in philosophy, ranging from original anthropocentrism to abolitionism; it is possible that these philosophical theories serve laymen as a basis for their intuitive theories when dealing with animals. Thus, central animal-ethical positions (Figure 1) were used as a starting point for the development of domain-specific values in the context of the human–animal relationship [13].
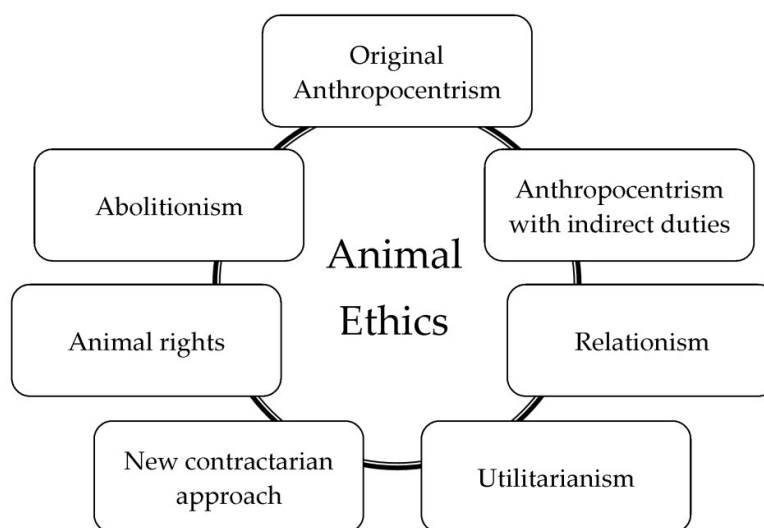
Figure 1. Central animal-ethical positions from philosophy.

Intuitive theories often follow simple structures [15]. Therefore, in the following study, only the core ideas of the central animal-ethical positions were used [13]. Original anthropocentrism attributes a moral status only to humans [17]. Thus, under this position, humans are allowed to do whatever they want with animals and do not have to consider the welfare of animals [16]. Anthropocentrism was first extended in the 13th century (Thomas Aquinas) and decisively in the 18th century (Immanuel Kant) by indirect duties towards animals [16]. Accordingly, in this extended view, humans may use animals for their own purposes, but should treat them without cruelty. This prohibition of cruelty is not for the sake of the animal, but is in order to not reinforce brutal human behavior [18]. In relationism, the relationship between animals and humans is decisive for the moral consideration of animals [19]. Thus, companion animals are considered differently than, for example, wild animals, which live more independently of humans. Utilitarianism considers the consequences of actions in order to decide which action is morally correct [20]. Both positive and negative consequences of an action, for humans as well as for animals, are weighed against each other. In the new contractarian approach, humans are allowed to use animals, but should enable them a good life [21]. In this context, the term of an implicit contract between society and animals is widely used [22]. The animal rights approach is based on the principle of respect, according to which all sentient beings have the moral right to be treated with respect for their own sake [23]. Under this approach, interests must not be weighed against each other, no matter how great the benefit may be. The most extreme form of the animal rights approach is abolitionism, which aims to abolish the use of animals for human purposes [24].

As already mentioned above, a previous study revealed that animal-ethical intuitions can be classified at the level of domain-specific values and that such animal-ethical intuitions significantly affect consumer behavior [13]. In addition to these key findings, however, it also became apparent that—as is common for lay theories [14], but not for philosophical positions on animal ethics—lay participants widely represent more than one intuition simultaneously. For this reason, it should be noted that consumer behavior is affected by the interplay of several animal-ethical intuitions (i.e., value profiles) and not by a single animal-ethical intuition alone. So far, there has been no analysis of whether different combinations of animal-ethical intuitions are represented in society and whether the interplay of different intuitions affects the consumption of animal source foods. The aim of the present study is thus to close this gap.

3. Materials and Methods

In order to reveal existing value profiles regarding animal-ethical intuitions in society, the present study performed consumer segmentation. The segmentation was based on domain-specific values in

the context of the human–animal relationship (i.e., animal-ethical intuitions; see Figure 1). Subsequently, the consumer segments with their different underlying value profiles were linked to the consumption of animal source foods. In order to survey animal-ethical intuitions, a standardized questionnaire was developed that consisted of statements which were previously tested in a similar form for their reliability and validity and were rated as good [13]. The comprehensive online survey was distributed in August 2017, and respondents were recruited by a professional online access panel provider. Quotas were set for gender, age, and education based on the German population. A total of 1895 respondents took part in the online survey. Out of these, 501 respondents were rejected due to quota setting, 210 respondents were screened out due to lack of attention/thoroughness (two quality checks, randomly positioned within the items), and 91 respondents did not complete the survey. Thus, an initial data set with 1093 respondents could be generated. In order to ensure good data quality, the data set was adjusted for subjects who had too fast (less than one third of the average time), stereotypical (e.g., straight-liners within item batteries), or inconsistent response (contradictory statements) behavior ($n = 44$). After data cleaning, the final sample contains the data of 1049 respondents.

As typical, a survey on ethical issues is associated with the risk of social desirability response bias. In order to reduce this risk of response bias, the survey was conducted online. The self-administered conduction of the survey, without the presence of interviewers or bystanders, as well as the guaranteed anonymity (which was further encouraged by the recruiting process via an online access panel) contributes to a significant reduction of the social desirability response bias [25,26]. Nevertheless, it cannot be completely excluded that such a bias could also exist in this study, which could be considered a limitation.

To analyze the data, first, the statements regarding intuitions towards animal ethics were reduced to the seven listed constructs (see Figure 1) using a confirmatory factor analysis performed with the software smartPLS 3 [27]. Then, the statistical software IBM SPSS 24 was used to perform a cluster analysis based on the factor values of the animal-ethical intuitions. The cluster analysis was conducted in three steps. First, outliers ($n = 3$) were identified using the single-linkage method and were eliminated from the data set. Thus, the resulting data set used in subsequent analyses contained the data of 1046 respondents. Second, the Ward algorithm was used to determine the optimal number of clusters. After evaluating the scree test and the dendrogram, a five-cluster solution was selected. To optimize cluster allocation, the third step of the cluster analysis was the K-means algorithm. Finally, a discriminant analysis was carried out to validate the results of the cluster analysis. Therefore, the previously determined cluster memberships served as the grouping variable, and the factor values of the seven animal-ethical intuitions were included as independent variables. This analysis provides the following information: (1) the discriminatory significance of the individual variables; (2) the influence of the individual variables on the affiliation to the respective clusters; and (3) the quality of the classification accuracy of the cluster analysis.

In order to analyze the differences between the clusters with respect to the animal-ethical intuitions in more detail, an analysis of variance (ANOVA) was carried out. Because the number of clusters exceeded two, post hoc tests were conducted to show the significant differences between clusters. In the case of no variance homogeneity, the Games–Howell test was applied, whereas the Scheffé test was used for variance homogeneity. Subsequently, in order to link the generated consumer segments with diet, a cross table was created. To identify significant differences between the individual consumer segments and their followed diets, the Pearson chi-square test was carried out at a significance level of $p = 0.05$.

4. Results

4.1. Description of the Sample

The generated sample is approximately representative of the German population in terms of gender, age, and education (Appendix A). Compared to findings of recent research [28–31], the various

diets of the German population are also well reflected in the sample, which is comprised of 25.7% flexitarians, 5.1% vegetarians, and 0.9% vegans. When asking about the followed diet, we did not pre-define the terms of the different diets. Thus we are dealing with a self-assessment of the respondents. The proportion of respondents who call themselves a flexitarian is higher in the present study than in the cited literature. On the one hand, this may be due to the fact that the term 'flexitarian' is defined very differently and, on the other hand, the social discussion about the negative consequences of meat consumption has increased, so that more consumers may already reflect their meat consumption. The confirmatory factor analysis revealed the seven animal-ethical intuitions, mentioned in Figure 1. Various quality criteria, like Cronbach's alpha (CA), composite reliability (CR) and the average variance extracted (AVE), indicated good reliability and validity of the generated factors. Table 1 illustrates which animal-ethical intuitions respondents agreed with or rejected. The *new contractarian approach* received very high approval, whereas the *original anthropocentrism approach* was almost completely rejected.

Table 1. Intuitions towards animal ethics (descriptive results and confirmatory factor analysis).

	Negative	Indifferent	Positive	M (SD)
Original anthropocentrism (CA = 0.740; CR = 0.838; AVE = 0.569)				
Humans are allowed to do what they want with animals.	92.9%	4.5%	2.0%	1.30 (±0.690)
We are allowed to treat animals as we please, because they are just animals.	93.0%	4.2%	1.5%	1.27 (±0.630)
We may cause pain to animals at any time because they are just animals.	95.8%	2.3%	1.1%	1.17 (±0.526)
Humans may use animals without any restrictions.	66.4%	26.6%	6.1%	2.05 (±0.969)
Anthropocentrism with indirect duties (CA = 0.755; CR = 0.859; AVE = 0.669)				
Only the one who is kind-hearted to animals is also kind-hearted to humans.	8.0%	21.9%	69.8%	3.98 (±1.036)
We must not be cruel to animals; otherwise we may also be cruel to humans later on.	5.1%	11.0%	83.4%	4.27 (±0.921)
We should treat animals well, in order not to become brutal ourselves.	2.0%	7.9%	88.9%	4.41 (±0.752)
Relationism (CA = 0.726; CR = 0.840; AVE = 0.638)				
We are more committed to our pets than we are to farm animals.	45.2%	33.6%	20.6%	2.59 (±1.125)
We have more far-reaching obligations towards domesticated animals than towards wild animals.	27.8%	39.6%	31.6%	3.00 (±1.095)
Pets should be given increased protection compared to farm animals.	43.1%	33.7%	22.7%	2.67 (±1.157)
Utilitarianism (CA = 0.711; CR = 0.837; AVE = 0.631)				
Humans should weigh off the interests of animals against their own as well.	12.2%	40.0%	46.7%	3.48 (±0.992)
If we use animals for our purposes, we must weigh off the consequences for humans and animals against each other.	6.1%	29.2%	64.1%	3.82 (±0.943)
The interests of humans and animals should be weighed off against each other.	8.1%	39.9%	51.3%	3.62 (±0.971)
New contractarian approach (CA = 0.704; CR = 0.794; AVE = 0.503)				
If we use animals, we should ensure a good life for them.	0.2%	4.5%	94.0%	4.60 (±0.586)
When using animals, people are committed to take best possible care of them.	1.5%	5.9%	92.1%	4.54 (±0.700)
We may only use animals for our own purposes if we treat them well.	7.1%	17.8%	74.1%	4.06 (± 1.015)
We may use animals for our purposes, but we should do our best to meet their needs.	4.7%	15.4%	79.6%	4.18 (±0.914)
Animal rights (CA = 0.886; CR = 0.921; AVE = 0.744)				
Animals, as well as humans, should have certain fundamental rights.	8.6%	20.2%	70.1%	3.98 (±1.024)
We should also grant animals something similar to human rights.	9.9%	21.8%	67.7%	3.91 (±1.044)
Animals should also have the fundamental right to be treated with dignity.	3.8%	10.3%	84.6%	4.34 (±0.861)
The right to physical integrity should also be granted to animals.	5.7%	19.7%	73.9%	4.12 (±0.989)
Abolitionism (CA = 0.752; CR = 0.843; AVE = 0.573)				
We must not deprive animals of their freedom.	6.8%	32.2%	59.9%	3.81 (±0.961)
It is wrong to use animals for our purposes.	32.5%	44.4%	22.8%	2.91 (±1.092)
Animals have a right to freedom.	3.7%	26.1%	69.6%	4.04 (±0.927)
We must not, under any circumstances, use animals for our purposes.	48.6%	38.7%	12.3%	2.50 (±1.059)

Note: Question "To what degree do you agree or disagree with the following statements?"; Scale from 1 = "I totally disagree" to 5 = "I totally agree"; Negative: 1 = "I totally disagree" and 2 = "I rather disagree"; Indifferent 3 = "I neither agree nor disagree"; Positive 4 = "I rather agree" and 5 = "I totally agree"; M = mean; SD = standard deviation; CA = Cronbach's alpha, CR = Composite Reliability, AVE = Average Variance Extracted.
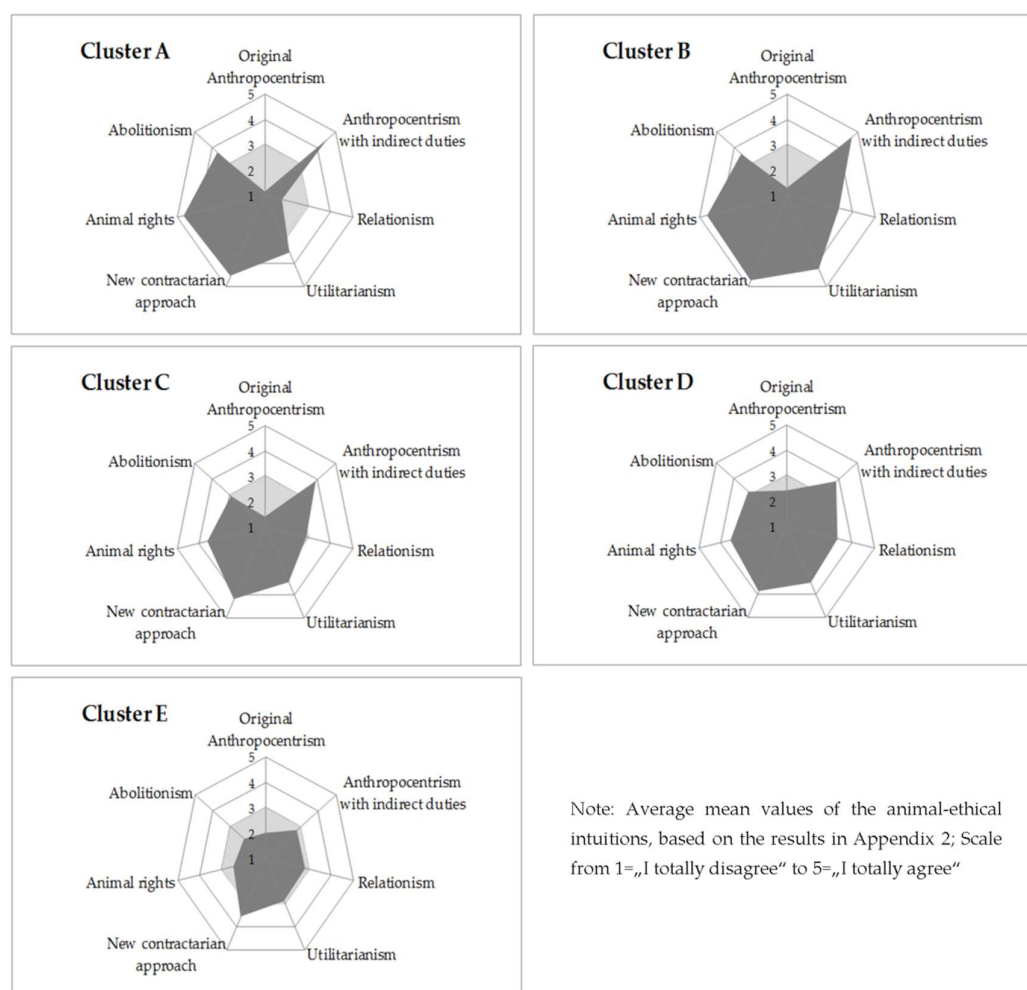
4.2. Cluster Analysis

The cluster analysis, based on the factor values of the seven intuitions towards animal ethics, revealed five clusters (Appendix B). The smallest cluster included 59 respondents (5.6% of the sample), and the largest cluster contained 271 respondents (25.9%).

In order to describe the five clusters in more detail, first, the animal-ethical intuitions were analyzed. Mean values of responses to all individual statements as well as the average mean values (index) of the seven animal-ethical intuitions were calculated for all five clusters (Appendix C). The average

mean values of the animal-ethical intuitions are graphically presented for all five clusters in Figure 2. The radar charts visually illustrate the value profiles of the respondents in the various clusters. As can be seen, cluster A and B differ mainly in their rejection of/agreement with relationism. While the other intuitions towards animal ethics are almost equally pronounced in the two clusters, cluster A rather rejects relationism (M = 1.78), whereas cluster B at least partially agrees with relationism (M = 3.37). In contrast to clusters A and B, clusters C and D are characterized by a lower approval of the animal-ethical intuitions regarding animal rights and abolitionism. Cluster D also has the highest mean value for original anthropocentrism among all clusters (M = 2.40). However, this cluster also, on average, rather rejects original anthropocentrism (M = 2.40). Cluster E is characterized by the fact that the respondents tend to rather reject all animal-ethical intuitions with the exception of the new contractarian approach (M = 3.55).

Figure 2. Radar charts of the average mean values of animal-ethical intuitions (index), separated by clusters.

4.3. Discriminant Analysis

In order to validate the results of the cluster analysis, a discriminant analysis was performed. The discriminant analysis revealed that 95.8% of all cases were correctly classified (Appendix D). This result indicates good reliability and validity of the consumer segmentation. The test of equality of group means (Table 2) reveals that all seven animal-ethical intuitions contributed significantly to group separation. However, the variables animal rights (Wilks' λ = 0.362) and original anthropocentrism (Wilks' λ = 0.379) were the most important factors for separation, whereas the variable utilitarianism (Wilks' λ = 0.748) was the least important.

Table 2. Test of equality of group means.

Variables	Wilks' λ	F	Significance
Original anthropocentrism	0.379	367.011	0.000
Anthropocentrism with indirect duties	0.502	222.747	0.000
Relationism	0.516	210.203	0.000
Utilitarianism	0.748	75.558	0.000
New contractarian approach	0.567	171.499	0.000
Animal rights	0.362	395.696	0.000
Abolitionism	0.653	119.148	0.000

The discriminant analysis indicated four discriminant functions. All four functions were considered in the classification and contributed significantly to the separation of the groups (Appendix E). Moreover, the predominantly high eigenvalues and canonical correlation coefficients indicate a good separation of the groups (Appendix E). The average discriminant coefficients of the standardized canonical discriminant functions indicate the discriminatory significance of the individual variables, taking into account all discriminant functions [32]. The most discriminatory potential is found in the variable original anthropocentrism (0.4463), followed by animal rights (0.3946), and the new contractarian approach (0.3161) (Appendix F).

The corresponding Fisher's classification function coefficients (Table 3) provide an indication of which variables significantly influence the affiliation to the respective clusters. The results indicated that affiliation to cluster A was largely determined by a below-average agreement to relationism (−2.109) as well as an above-average agreement to animal rights (1.414). The respondents assigned to cluster B were characterized by an above-average agreement to animal rights (1.635) as well as an above-average agreement to relationism (1.490). Cluster C consisted mainly of respondents with below-average agreement rates to both animal rights (–1.230) and original anthropocentrism (−0.727). Affiliation to cluster D was determined largely by an above-average agreement with original anthropocentrism (5.397) and below-average agreement with animal rights (−1.204). The respondents assigned to cluster E were characterized by below-average agreement generally, and especially with regard to animal rights (−4.306), anthropocentrism with indirect duties (−3.108), and new contractarian approach (−2.747). These results are consistent with the mean values of the descriptive analysis of the clusters (Appendix C).

Table 3. Fisher's linear discriminant functions.

Variables	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E
Original anthropocentrism	−0.106	−1.060	−0.727	5.397	2.594
Anthropocentrism with indirect duties	0.828	0.898	−0.667	−0.713	−3.108
Relationism	−2.109	1.490	0.386	0.749	−0.028
Utilitarianism	−0.388	1.199	−0.316	−0.127	−1.356
New contractarian approach	0.980	1.205	−0.665	−1.569	−2.747
Animal rights	1.414	1.635	−1.230	−1.204	−4.306
Abolitionism	0.878	0.495	−0.692	−0.441	−1.847
(Constant)	−4.239	−4.116	−2.484	−8.383	−14.010

Note: Variables are factor values—population parameters that are "supposed to characterize everyone in the population" [33] (p. 6); they are standardized so that a negative/positive value indicates that the respondent is below/above the sample average. The factor value does not provide any information about the actual (dis-)agreement to the statements within the factor.

4.4. Links between Consumer Segments and Diet

Comparing the diets of the respondents in the various clusters, cluster A and E are particularly notable (Table 4). Cluster A has the highest proportion of flexitarians (34.6%) and vegetarians (13.4%). Cluster E, by contrast, contains no vegetarians or vegans and the lowest proportion of flexitarians (3.4%). In clusters B and C, respondents adopt a vegetarian diet significantly less compared to the overall sample.

Table 4. Cluster descriptive variable: Diet.

	Cluster A (*n* = 248)	Cluster B (*n* = 236)	Cluster C (*n* = 271)	Cluster D (*n* = 88)	Cluster E (*n* = 59)	Sample (*n* = 1046)
Omnivore	50.4%$^-$	73.3%	74.8%	65.1%	96.6%$^+$	67.8%
Flexitarian	34.6%$^+$	24.2%	22.6%	27.9%	3.4%$^-$	25.7%
Vegetarian	13.4%$^+$	2.1%$^-$	1.9%$^-$	5.8%	0.0%	5.1%
Vegan	1.6%	0.4%	0.7%	1.2%	0.0%	0.9%

Note: Question: "Which diet do you follow?"; significance of the Pearson chi-square test ($p \leq 0.05$); +/− significant deviations of the standardized residuals ($p \geq |2|$).

5. Discussion

The present study performed the first consumer segmentation based on value profiles of animal-ethical intuitions and subsequently established a connection to the consumption of animal source foods. The identification of such animal-ethical value profiles in society helps to lead to a deeper understanding of the human–animal relationship. Furthermore, the use of domain-specific values results in relatively stable consumer segmentation over time, that considers a wide range of topics within the human–animal relationship. Finally, the present study provides a deeper understanding of which animal-ethical value profiles actually lead to a more sustainable diet.

The consumer segmentation based on animal-ethical intuitions resulted in five distinct segments. The majority of consumers represented more than one intuition at the same time, as is typical for so-called lay theories [14]. The generated segments differed, then, both in the agreement to or rejection of the individual intuitions towards animal ethics and in the combination of the intuitions represented.

The results of this study suggest that the value profile of animal-ethical intuitions is closely related to the consumption of animal source foods. The intensity of agreement with or rejection of animal-ethical intuitions does not seem to affect the consumption of animal source foods. Also, Lund et al. revealed a clear relationship between ethical profile and diet choice [11]. In contrast to the present study, the respondents of Lund et al. had to decide on exactly one ethical position in each ethical dilemma. In the present study, however, animal-ethical intuitions were asked independently of specific dilemmas (e.g., reason for the use of animals, type of use and animal species). Another difference is the way animal-ethical intuitions were queried. The respondents in the present study could not only adopt an animal-ethical intuition, there was also the possibility to state the degree of agreement and particularly the degree of rejection (Likert scale). As a result, it was possible to generate animal-ethical value profiles that are independent of specific situations but yet limited to the complex of human–animal relationships and that not only took into account the agreement but also the rejection of animal-ethical intuitions. The value profiles that are predominantly represented in the German population and how they affect the consumption of animal source foods in particular will be discussed in the following paragraphs in more detail with reference to the generated consumer segments.

The first segment, cluster A, was characterized, in particular, by the rejection of relationism. At the same time, consumers in this cluster strongly agreed with the new contractarian approach, animal rights, and abolitionism. In combination with the rejection of relationism, the represented intuitions refer to all animals equally. The respondents in this cluster appear to believe, for example, that no differences in terms of treatment of or human obligation towards animals should be made between companion animals and farm animals. Thus, cluster A stands out very clearly from all other clusters. The equality of companion animals and farm animals (rejection of relationism) as well as the intention to enable animals to have a good life to the greatest extent possible (new contractarian approach), to grant animals various rights (animal rights), or to reject the use of animals altogether (abolitionism) is probably multifactorial. One reason may be the increasing importance of post-materialistic values in Western societies [34]. As Hölker et al. [13] revealed, the Schwartz values of benevolence, universalism, security, and self-direction positively affect the animal-ethical intuitions new contractarian approach, animal rights, and abolitionism; the intuition of relationism is affected negatively by these values. Furthermore, living with so-called companion animals has increased significantly along with urbanization [35].

Nearly every second household in Germany has at least one companion animal [36]. In contrast to the former, more use-oriented relationship towards animals, companion animals today tend to have the status of family members [35]. Due to their status as family members, it is not surprising that companion animals in particular receive a high level of moral attention. With the growing number of companion animals, the concern about animal welfare in general has also increased [37]. Another important contribution to the above-mentioned intuitions is new scientific knowledge about the sentience, sociality, and cognition of animals. In particular, the ability of animals to feel pain affects moral concerns about the use of animals [38]; animals' social and cognitive abilities also play a role in how we look at, treat, and use them [38,39]. In fact, the rejection of relationism may be related to increasing knowledge about the abilities of animals, because scientific findings show that various animal species feel pain and have more or less marked cognitive skills [40–44] and, thus, that sensitivity as well as cognitive skills do not depend on the categorization as companion animal or farm animal. Also, in the comparison between humans and animals, there are sometimes considerable similarities in anatomy, physiology, sociality, and cognition [39,45]. As a result, humans pay more and more attention to animals and have already granted them certain rights in, for example, changed national legislations and EU regulations [12].

The animal-ethical value profile of the respondents in cluster A, with strong approval of the new contractarian approach, animal rights, and abolitionism and a clear rejection of relationism, is also reflected in their chosen diets. The proportion of flexitarians and vegetarians in this consumer segment is very high, likely due to the fact that a high consumption of animal source foods is incompatible with the stated intuitions. According to abolitionism, animals should not be used for human purposes at all [24], including the use of animals for food. Also, the right to physical integrity, often demanded in the animal rights approach [23], is frequently violated in conventional livestock farming [46,47]. Lund et al. also point to the specific role of the animal rights stance in the rejection of meat consumption [11]. According to the new contractarian approach, humans should address animals' needs in the best possible way and enable them to have a good life [21]. This does not seem to be the case, because many consumers believe that current legal standards do not meet consumers' requirements for adequate animal welfare and are therefore not sufficient [12]. It is therefore not surprising that this value profile corresponds to a complete or partial abstinence from animal source foods. Nevertheless, it is also clear that not all respondents in this cluster have adapted their diet to their current value profile. This phenomenon, the conflict between inner values and actual behavior, is known in consumer research as the "meat paradox" [48,49]. In the context of the so-called consumer-citizen-gap, it is important to note that even though animal ethics is one of the key issues driving the consumption of animal source food, actual consumption is influenced by the interaction of numerous factors. For example, aspects such as costs and availability of alternative products, supermarket bargains and a lack of clear and easy-to-understand food/animal welfare labels immediately affects purchasing.

Cluster B differs from cluster A mainly in that respondents in cluster B agree at least partly with relationism. However, like the respondents in cluster A, they strongly agree with the animal-ethical intuitions of the new contractarian approach, animal rights, and abolitionism. Nevertheless, in the case of cluster B, these strong intuitions do not correspond to such a significant reduction in the consumption of animal source foods as in cluster A. According to their relationistic intuition, the respondents consider that humans are differently obligated to so-called companion animals, farm animals, and wild animals [19]. Furthermore, the respondents agree somewhat more with utilitarianism, according to which the consequences of an action should be weighed with respect to humans and animals [20]. The support for relationism and utilitarianism therefore leads to the belief that breeding, husbandry, and slaughtering of so-called farm animals in order to produce food, as well as their consumption, is acceptable, despite strong support for values of the new contractarian approach, animal rights, and abolitionism. In this direction, Bratanova et al. [38] reveal that the categorization of some animals as 'food' leads to the belief that their ability to suffer is much lower and, therefore, that less moral consideration is needed. Categorization of animals is one strategy by humans to overcome the conflict

of inner values and actual behavior [49]. Therefore, the intuitions of the new contractarian approach, animal rights, and abolitionism, which are strongly represented in this segment (i.e., cluster B), do not lead to a significantly higher proportion of flexitarians, vegetarians, or vegans; rather the opposite is true: at 2.1% the proportion of vegetarians is significantly lower compared to cluster A, and also to the whole sample. Lund et al. discovered similar relationships [11]. In their study, meat-eaters predominantly agreed with the utilitarian statements and, compared to vegetarians and vegans, also tended more often towards the relational approach.

The respondents of the third cluster (Cluster C) share the same intuitions as respondents in cluster B, but at a slightly lower level. The diets within this cluster are the same as in cluster B. The less powerful agreement with the intuitions of the new contractarian approach, animal rights, and abolitionism is, thus, not reflected in the general consumption of animal source foods. At least with regard to the actual consumption of animal source foods, the strength of agreement with these intuitions does not seem to be as decisive. Much more important seems to be the interplay of different intuitions, like the above-mentioned interplay with the relationistic intuition.

Cluster D is characterized by a less strict rejection of original anthropocentrism, although even these respondents still rather reject this intuition. A less strict rejection of this intuition does not seem to be sufficient to have an effect on the consumption of animal source foods. This is clearly demonstrated by the fact that the distribution of diets in the consumer segment D does not differ from the overall sample. According to original anthropocentrism, humans may treat animals as they please [16]. Since the respondents do not completely reject this intuition, it would be expected that the number of vegetarians and vegans in this cluster would be significantly lower than in the overall sample. However, it should be noted that this cluster is, with its 88 respondents (8.4% of the sample), quite small. In absolute numbers, only one vegan and five vegetarians belong to this cluster, which may also be a coincidence. It should be noted that there are other motivations to follow a vegetarian or vegan diet besides animal welfare (e.g., concerns about one's own health or negative environmental impacts during the production of animal source foods) [6]. The lack of consideration of other motives for sustainable diet is a limitation of this study.

The last cluster (Cluster E) is characterized by the fact that it seems to reject almost all ethical intuitions. An exception is the new contractarian approach, however, which receives at least a small degree of agreement. The respondents in this segment seem to have little interest in animals or their welfare. This is also reflected very clearly in the diet chosen by these consumers. All respondents consume animal source foods without restrictions. Thus, it becomes clear that the newer animal-ethical discussions [12] have eluded this consumer segment, which is the smallest. Such a segment, consisting of consumers who show no interest in animal welfare issues at all or are even annoyed by it, could also be identified in other consumer segments [50,51].

The present consumer segmentation shows that the interplay of different animal-ethical intuitions affects the consumption of animal source foods. Four out of five animal-ethical value profiles differ significantly in their diets compared to the overall sample. With regard to sustainable diets, there is clear evidence that the combination of strong intuitions related to the new contractarian approach, animal rights, and abolitionism and strong rejection of relationism result in a significantly higher rate of flexitarian, vegetarian, and vegan diets (Segment A). In contrast, agreeing to the intuitions of new contractarian approach, animal rights, and abolitionism in combination while also accepting relationism hardly ever leads to a vegetarian diet (Segments B and C). Finally, a value profile that rejects almost all animal-ethical intuitions seems to be negatively correlated with sustainable diets such as flexitarianism, vegetarianism, and veganism.

6. Conclusions

This study is one of the first consumer segmentations based on domain-specific values in the context of the human–animal relationship (animal-ethical intuitions). Such consumer segmentation is relatively stable over time and encompasses the topic of human–animal relationships in its entirety.

Thus, this consumer segmentation offers two important advantages. First, this segmentation has a certain prognostic quality, since domain-specific values only change slowly. Second, this segmentation is to a certain degree generalizable, since it does not refer to a specific question but rather captures the human–animal relationship as a whole. Therefore, the developed consumer segmentation can also be used to address other questions within this thematic complex. Finally, in the present study, it has been shown that the animal-ethical value profiles presented significantly affect consumer behavior.

Concerning the question of which animal-ethical values affect the adoption of a sustainability-oriented diet in terms of animal welfare, human health, and environment (i.e., a diet with low or no consumption of animal source foods) it could be shown that the rejection of relationism plays a key role. In combination with the strongly expressed intuitions of the new contractarian approach, animal rights, and abolitionism, a rejection of relationism corresponds to a reduction or rejection of some (flexitarians, vegetarians) or all (vegans) animal source foods. Approximately one quarter of the sample (Cluster A) is characterized by these positions and reduces or even stops meat consumption. Thus, a significant decrease in the differentiation between so-called farm animals and companion animals with regard to moral obligations towards them seems to be a decisive factor in the adoption of a more sustainable diet.

The interest in animal welfare is more widely anchored in the population than the willingness to give up meat consumption. In addition to the remaining meat eaters in cluster A, cluster B (nearly a quarter of the sample) and some parts of the clusters C and D support animal welfare. Traditional anthropocentric positions are only present in a small part of the population.

This study deals for the first time with different animal-ethical value profiles in society and links them to the consumption behavior of animal source foods. Thus, it contributes to a deeper understanding of the human–animal relationship and its influence on consumer behavior. The generated consumer segmentation provides a relatively stable basis for upcoming stakeholder decisions concerning animal products, not only animal source foods. Moreover, with the animal-ethical intuition of relationism, a key element could be identified that has a major impact on the shift towards a more sustainable diet.

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Appendix A

Table A1. Description of the sample.

		Sample	German Population [52]
Gender	female	51.0%	50.9%
	male	49.0%	49.1%
Age	18–24 years	8.8%	9.2%
	25–39 years	20.4%	22.1%
	40–64 years	44.6%	43.7%
	65 years and over	26.3%	25.1%
Education	No graduation (yet)	1.8%	3.9%
	Certificate of Secondary Education	35.5%	34.5%
	General Certificate of Secondary Education	31.6%	30.8%
	General qualification for university entrance	14.1%	13.8%
	University degree	17.0%	17.1%
Net household income per month	<1300 €	23.1%	26.3%
	1300–2599 €	41.8%	39.6%
	2600–4999 €	30.2%	27.1%
	>5000 €	4.9%	6.5%
Diet	omnivore	67.8%	-
	flexitarian	25.7%	11.6% [28]/13.0% [29]
	vegetarian	5.1%	3.7% [28]/7.6% [30]
	vegan	0.9%	0.3% [28]/1.0% [31]

Appendix B

Table A2. Cluster analysis based on factor values.

	Cluster A (*n* = 248)	Cluster B (*n* = 236)	Cluster C (*n* = 271)	Cluster D (*n* = 88)	Cluster E (*n* = 59)	*F*-Values
Original anthropocentrism	−0.5373[a]	−0.3433[b]	−0.1880[c]	1.9351[d]	1.0443[e]	367,011
(CA = 0.740; CR = 0.838; AVE = 0.569)	(±0.2544)	(±0.4534)	(±0.4245)	(±1.1342)	(±1.1864)	
Anthropocentrism with indirect duties	0.4690[a]	0.6435[b]	−0.4068[c]	−0.5159[c]	−1.9124[d]	222,747
(CA = 0.755; CR = 0.859; AVE = 0.669)	(±0.7101)	(±0.5428)	(±0.7616)	(±0.6602)	(±0.9380)	
Relationism	−1.0960[a]	0.6859[b]	0.1510[c]	0.6483[b]	0.0644[c]	210,203
(CA = 0.726; CR = 0.840; AVE = 0.638)	(±0.6689)	(±0.8219)	(±0.7203)	(±0.5818)	(±0.8679)	
Utilitarianism	−0.1497[a]	0.7862[b]	−0.2438[a]	−0.1775[a]	−0.9635[c]	75,558
(CA = 0.711; CR = 0.837; AVE = 0.631)	(±1.1169)	(±0.7862)	(±0.7219)	(±0.6117)	(±0.8413)	
New contractarian approach	0.4122[a]	0.6946[b]	−0.2873[c]	−0.8799[d]	−1.4232[e]	171,499
(CA = 0.704; CR = 0.794; AVE = 0.503)	(±0.7614)	(±0.5061)	(±0.7688)	(±0.8694)	(±0.9172)	
Animal rights	0.7227[a]	0.6500[a]	−0.5419[b]	−0.6346[b]	−1.9232[c]	395,696
(CA = 0.886; CR = 0.921; AVE = 0.744)	(±0.4777)	(±0.4996)	(±0.6540)	(±0.6923)	(±0.8942)	
Abolitionism	0.5490[a]	0.4179[a]	−0.5022[b]	−0.1924[c]	−1.4374[d]	119,148
(CA = 0.752; CR = 0.843; AVE = 0.573)	(±0.8757)	(±0.9148)	(±0.6936)	(±0.6958)	(±0.6480)	

Note: Final step of the cluster analysis (K-means algorithm) on the basis of factor values of intuitions towards animal ethics; [a,b,c,d] Different letters signify a significant difference between groups; no homogeneity of variance: running Games–Howell post hoc test.

Appendix C

Table A3. Confirmatory factor analysis: animal-ethical intuitions.

	Cluster A (*n* = 248)	Cluster B (*n* = 236)	Cluster C (*n* = 271)	Cluster D (*n* = 88)	Cluster E (*n* = 59)	Sample (*n* = 1046)
Original anthropocentrism (CA = 0.740; CR = 0.838; AVE = 0.569)	**1.14**	**1.29**	**1.39**	**2.40**	**2.00**	**1.45**
Humans are allowed to do what they want with animals. [G]	1.03[a] (±0.177)	1.08[ab] (±0.354)	1.16[b] (±0.404)	2.48[d] (±1.039)	1.90[c] (±0.759)	1.30 (±0.690)
We are allowed to treat animals as we please, because they are just animals. [G]	1.01[a] (±0.090)	1.05[a] (±0.256)	1.14[b] (±0.401)	2.33[c] (±0.880)	1.93[c] (±0.868)	1.27 (±0.630)
We may cause pain to animals at any time, because they are just animals. [G]	1.01[a] (±0.090)	1.05[a] (±0.388)	1.04[a] (±0.206)	2.03[c] (±0.976)	1.51[b] (±0.653)	1.17 (±0.526)
Humans may use animals without any restrictions. [G]	1.49[a] (±0.795)	1.96[b] (±1.008)	2.23[c] (±0.843)	2.75[d] (±0.820)	2.64[d] (±0.905)	2.05 (±0.969)
Anthropocentrism with indirect duties (CA = 0.755; CR = 0.859; AVE = 0.669)	**4.56**	**4.69**	**3.89**	**3.83**	**2.78**	**3.31**
Only the one who is kind-hearted to animals is also kind-hearted to humans. [G]	4.33[a] (±0.901)	4.50[a] (±0.796)	3.57[b] (±0.948)	3.60[b] (±0.720)	2.37[c] (±1.049)	3.98 (± 1.036)
We must not be cruel to animals; otherwise we may also be cruel to humans later on. [G]	4.62[a] (±0.727)	4.75[a] (±0.601)	3.97[b] (±0.858)	3.92[b] (±0.746)	2.81[c] (±1.137)	4.27 (± 0.921)
We should treat animals well, in order not to become brutal ourselves. [G]	4.74[a] (±0.583)	4.83[a] (±0.473)	4.17[b] (±0.625)	3.98[b] (±0.625)	3.15[c] (±0.827)	4.41 (± 0.752)
Relationism (CA = 0.726; CR = 0.840; AVE = 0.638)	**1.78**	**3.37**	**2.89**	**3.33**	**2.81**	**2.75**
We are more committed to our pets than we are to farm animals. [G]	1.56[a] (±0.706)	3.19[bc] (±1.131)	2.75[d] (±0.880)	3.32[c] (±0.781)	2.78[b] (±1.052)	2.59 (±1.125)
We have more far-reaching obligations towards domesticated animals than towards wild animals. [G]	2.11[a] (±1.081)	3.56[b] (±0.955)	3.15[c] (±0.858)	3.42[b] (±0.754)	2.97[c] (±0.928)	3.00 (±1.095)
Pets should be given increased protection compared to farm animals. [G]	1.66[a] (±0.829)	3.36[b] (±1.164)	2.77[c] (±0.868)	3.25[b] (±0.834)	2.68[c] (±0.918)	2.67 (±1.157)
Utilitarianism (CA = 0.711; CR = 0.837; AVE = 0.631)	**3.52**	**4.24**	**3.44**	**3.49**	**2.88**	**3.64**
Humans should weigh off the interests of animals against their own as well. [G]	3.38[a] (±1.138)	4.07[b] (±0.922)	3.28[a] (±0.753)	3.38[a] (±0.700)	2.69[c] (±0.815)	3.48 (±0.992)
If we use animals for our purposes, we must weigh off the consequences for humans and animals against each other. [G]	3.75[a] (±1.091)	4.41[b] (±0.801)	3.60[a] (±0.748)	3.56[a] (±0.738)	3.15[c] (±0.847)	3.82 (±0.943)
The interests of humans and animals should be weighed off against each other. [G]	3.42[a] (±1.054)	4.24[b] (±0.893)	3.45[a] (±0.723)	3.53[a] (±0.710)	2.81[c] (±0.991)	3.62 (±0.971)

Note: Question "To what degree do you agree or disagree with the following statements?"; Mean values of the statements and the average mean values of animal-ethical intuitions (index), separated by clusters; Scale from 1 = "I totally disagree" to 5 = "I totally agree"; CA = Cronbach's alpha, CR = Composite Reliability, AVE = Average Variance Extracted; [a,b,c,d] Different letters signify a significant difference between groups (post hoc [G]Games–Howell (No homogeneity of variance) or [S]Scheffé (Homogeneity of variance) at a significance level of $p \leq 0.05$.

Table A4. Confirmatory factor analysis: animal-ethical intuitions.

	Cluster A (*n* = 248)	Cluster B (*n* = 236)	Cluster C (*n* = 271)	Cluster D (*n* = 88)	Cluster E (*n* = 59)	Sample (*n* = 1046)
New contractarian approach (CA = 0.704; CR = 0.794; AVE = 0.503)	**4.44**	**4.74**	**4.18**	**3.86**	**3.55**	**4.35**
If we use animals, we should ensure a good life for them. [G]	4.90[a] (±0.315)	4.95[a] (±0.231)	4.42[b] (±0.544)	4.03[c] (±0.615)	3.81[c] (±0.629)	4.60 (±0.586)
When using animals, people are committed to take best possible care of them. [G]	4.89[a] (±0.376)	4.92[a] (±0.359)	4.31[b] (±0.689)	3.99[d] (±0.669)	3.59[c] (±0.873)	4.54 (±0.700)
We may only use animals for our own purposes if we treat them well. [G]	4.16[a] (±1.162)	4.47[b] (±0.929)	3.89[c] (±0.789)	3.66[cd] (±0.843)	3.27[d] (±0.944)	4.06 (±1.015)
We may use animals for our purposes, but we should do our best to meet their needs. [G]	4.22[a] (±1.081)	4.60[b] (±0.779)	4.10[a] (±0.718)	3.76[c] (±0.830)	3.51[c] (±0.858)	4.18 (±0.914)
Animal rights (CA = 0.886; CR = 0.921; AVE = 0.744)	**4.70**	**4.64**	**3.62**	**3.55**	**2.46**	**4.09**
Animals, as well as humans, should have certain fundamental rights. [G]	4.68[a] (±0.569)	4.54[a] (±0.654)	3.49[b] (±0.779)	3.41[b] (±0.866)	2.17[c] (±0.931)	3.98 (±1.024)
We should also grant animals something similar to human rights. [G]	4.56[a] (± 0.665)	4.48[a] (±0.711)	3.39[b] (±0.836)	3.38[b] (±0.807)	2.12[c] (±0.892)	3.91 (±1.044)
Animals should also have the fundamental right to be treated with dignity. [G]	4.85[a] (±0.390)	4.86[a] (±0.355)	3.94[b] (±0.710)	3.82[b] (±0.751)	2.90[c] (±1.078)	4.34 (±0.861)
The right to physical integrity should also be granted to animals. [G]	4.70[a] (±0.650)	4.66[a] (±0.630)	3.67[b] (±0.835)	3.59[b] (±0.768)	2.64[c] (±1.110)	4.12 (±0.989)
Abolitionism (CA = 0.752; CR = 0.843; AVE = 0.573)	**3.72**	**3.62**	**2.93**	**3.17**	**2.22**	**3.32**
We must not deprive animals of their freedom. [S]	4.27[a] (±0.803)	4.17[a] (±0.854)	3.41[b] (±0.802)	3.44[b] (±0.756)	2.58[c] (±0.914)	3.81 (±0.961)
It is wrong to use animals for our purposes. [G]	3.34[a] (±1.112)	3.11[ab] (±1.117)	2.60[c] (±0.810)	2.89[bc] (±0.903)	1.68[d] (±0.860)	2.91 (±1.092)
Animals have a right to freedom. [S]	4.51[a] (±0.779)	4.46[a] (±0.740)	3.55[b] (±0.748)	3.76[b] (±0.802)	3.03[c] (±0.870)	4.04 (±0.927)
We must not, under any circumstances, use animals for our purposes. [G]	2.74[a] (±1.075)	2.72[a] (±1.114)	2.15[b] (±0.868)	2.60[a] (±0.878)	1.59[c] (±0.812)	2.50 (±1.059)

Note: Question "To what degree do you agree or disagree with the following statements?"; Mean values of the statements and the average mean values of animal-ethical intuitions (index), separated by clusters; Scale from 1 = "I totally disagree" to 5 = "I totally agree"; CA = Cronbach's alpha, CR = Composite Reliability, AVE = Average Variance Extracted; [a,b,c,d] Different letters signify a significant difference between groups (post hoc [G]Games–Howell (No homogeneity of variance) or [S]Scheffé (Homogeneity of variance) at a significance level of p ≤ 0.05.

Appendix D

Table A5. Results of classification based on the discriminant analysis.

		Predicted Cluster Allocation					
		A	B	C	D	E	Total
	A	98.0%	0.8%	1.2%	0.0%	0.0%	100.0%
Original	B	2.5%	96.2%	1.3%	0.0%	0.0%	100.0%
Cluster	C	1.5%	2.2%	95.2%	1.1%	0.0%	100.0%
Allocation	D	0.0%	0.0%	4.5%	93.2%	2.3%	100.0%
	E	0.0%	0.0%	3.4%	5.1%	91.5%	100.0%

Note: 95.8% of respondents (*n* = 902) were classified correctly in original allocation.

Appendix E

Table A6. Parameters of the canonical discriminant functions.

Functions	Eigenvalue	Explained Variance	Canonical Correlation	Wilks' λ	χ2	df	Significance
1	4.342	69.4%	0.902	0.049	2692.309	28	0.000
2	1.192	19.1%	0.737	0.264	1192.653	18	0.000
3	0.710	11.3%	0.644	0.578	490.217	10	0.000
4	0.012	0.2%	0.107	0.989	10.235	4	0.037

Appendix F

Table A7. Standardized canonical discriminant functions and average discriminant coefficients.

Variables	1	2	3	4	Average *
Original anthropocentrism	−0.431	0.274	0.838	0.079	0.4463
Anthropocentrism with indirect duties	0.356	0.109	0.192	−0.803	0.2912
Relationism	−0.117	0.836	−0.440	−0.126	0.2908
Utilitarianism	0.181	0.484	−0.074	0.355	0.2271
New contractarian approach	0.429	0.074	0.029	0.493	0.3161
Animal rights	0.482	0.153	0.272	0.090	0.3946
Abolitionism	0.292	−0.013	0.292	0.198	0.2385

Note: *Average discriminant coefficient by Backhaus et al. 2016 [32].

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