

Development of the Passive and Active Meat-Animal Dissociation Scale (MADS)

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Supplementary Materials: Data, Materials, Preregistration



Abstract

Many individuals like eating meat but condemn causing harm to animals. Dissociating meat from its animal origins is one way to avoid the cognitive dissonance this ‘meat paradox’ elicits. While the significance of meat-animal dissociation for meat consumption is well-established, a recent literature review suggested that it consists of two distinct tendencies. First, people may differ in the degree to which they passively disassociate meat from its animal origins. Second, they may differ in the extent to which they actively dissociate to decrease dissonance. By developing and validating a scale in three pre-registered studies using samples of American and British meat-eaters, the present investigation aimed to quantitatively establish whether these two proposed tendencies constitute distinct constructs with different relations to dietary preferences, meat-related cognition, and affect. Study 1 ($n = 300$) provided initial support for a normally-distributed scale with two orthogonal dimensions that were systematically and differently related to a range of individual differences and dietary preferences. In Study 2 ($n = 628$), both dimensions were non-responsive to short-term cues that highlight the animal-meat link but predicted dietary preferences independent of them. Finally, Study 3 ($n = 231$) showed that the dissociation dimensions predict dietary preferences even in people working in the meat industry who have long-term exposure to cues that connect meat with its animal origins. Together, the results of the three studies supported the notion that people’s dissociation tendencies can be divided into two qualitatively distinct tendencies. Implications and avenues for future research are discussed.



Keywords

animals, consumer behavior, meat-animal dissociation, meat consumption, meat paradox

Many meat-eaters have an ambivalent relationship with the practice of slaughtering animals for food. They appreciate the positive aspects of meat but are opposed to the killing and harming of animals it implies. The phenomenon that individuals care about animals and wish for them to be treated humanely, yet still eat them has been termed the *meat paradox* (Loughnan et al., 2010). Because this apparent contradiction refers to the disparities between practice and ideals, the meat paradox represents a form of cognitive dissonance (Gradidge et al., 2021; Rothgerber, 2020).

Many different strategies have been identified as means to reduce this dissonance (e.g., Bastian et al., 2012; Leach et al., 2022; Piazza et al., 2015; Rothgerber, 2013; Rothgerber & Rosenfeld, 2021). However, people may also make use of a mechanism that preempts the need for such strategies. That is, they may suppress the thought that the meat they consume came from once-living beings, a process referred to as *dissociation* (Benningstad & Kunst, 2020; Kunst & Hohle, 2016; Rothgerber, 2013). Recent work suggested that dissociation can happen (a) passively or (b) be used actively as a strategy to minimize cognitive dissonance (Benningstad & Kunst, 2020). However, although Benningstad and Kunst (2020) indicated that dissociation may in fact represent two distinct tendencies, to our knowledge, this has never been examined empirically. In the present research, we therefore aimed to investigate the two potential tendencies by developing and testing a new psychometric scale.

Passive Dissociation

In contemporary Western societies, the structure of meat production is orchestrated in such a manner that many consumers remain oblivious of the animal origins of meat products (Bastian & Loughnan, 2017). We posit that the socialization of individuals within this societal framework cultivates a general propensity to dissociate meat from its animal sources. Given the infrequency with which this association is brought to the forefront of consumer consciousness, contemplation of the animal origins of meat does not typically arise during the act of consumption. We therefore term this tendency “passive dissociation,” emphasizing its acquisition through passive exposure to societal norms rather than through active deliberation or avoidance. Passive dissociation, thus, inversely reflects the degree to which the connection between animals and meat is chronically prominent, signifying not an active behavioral inclination but rather the absence thereof.

Generally, consumers struggle with making meat-animal connections, for instance in terms of articulating the animal origins of meat products (Kubberød et al., 2002) or even agreeing that a processed meat product is in fact meat (Simons et al., 2018). This lack of capacity to contemplate the animal origins of meat is facilitated by the presentation of meat, the quick speed of food shopping, and the language used for meat products (Evans

& Miele, 2012). Conversely, research has identified factors that interrupt this passive meat-animal dissociation, such as low degrees of processing, witnessing transportation of animals for slaughter, and cheap meat that may suggest to consumers that little resources were spent on animal welfare (Earle et al., 2019; Holm, 2018; Kunst & Haugestad, 2018; Kunst & Hohle, 2016). These processes can all be expected to shape consumers' degree of passive dissociation.

Active Dissociation

The second dissociation tendency can be described as an active strategy. In this process, people actively suppress the thought about the animal origins of meat, avoid products that remind them of it, and make a cognitive effort to not think about animals when eating meat (Benningstad & Kunst, 2020). In their qualitative research, Graça et al. (2014) reported that one of the main strategies the participants adopted when eating meat was to actively try to not think about the deaths or lives of the animals. Similarly, people frequently suppress ideas regarding meat production and killing (Schröder & McEachern, 2004). Concerns about farmed animals' welfare are often strategically separated from beliefs about meat consumption for consumers to be able to continue to enjoy eating meat (Simons et al., 2018).

Rothgerber (2013) developed the meat-eating justification scale, which measures justifications that are often used for eating meat. What in retrospect can be classified as active dissociation is measured by one of the scale's subscales. This subscale's three items assess whether people actively try to not connect meat with an animal, conceptualizing dissociation as a consciously driven, active, and strategic mechanism. Importantly, Rothgerber discovered that the more active dissociation someone exhibits, the less meat they consume. Furthermore, both omnivores and semi-vegetarians have been found to use active dissociation as a justification strategy (Cliceri et al., 2018), and active dissociation is used more if the food product is a defining part of a person's diet (Ioannidou et al., 2023). Kunst and Hohle (2016) found that individuals who actively dissociate are the most uncomfortable when reminded of the meat-animal link. These findings suggest that people who actively dissociate, struggle with eating meat and the thoughts of meats' animal origins.

The Present Research

Even though previous research suggests that dissociation could be divided into two distinct tendencies that may have different antecedents and outcomes, this has never been empirically tested. The aim of the present research was therefore to present the first comprehensive empirical test of the two dissociation tendencies. In developing and testing a new two-dimensional Meat-Animal Dissociation Scale (MADS) in three pre-registered studies, we aimed to, (a) identify the different psychological underpinnings

and meat-consumption related outcomes of both types of dissociation (Study 1), (b) experimentally test the extent to which both types of dissociation are responsive to short-term contextual cues that connect meat with its animal origins or whether they operate and influence dietary preferences independent of these cues (Study 2), and (c) investigate whether the dissociation mechanisms are associated with dietary preferences even in people with long-term exposure to the earlier stages of meat production in which meat still resembles the animal to a large extent (i.e., among people working in the meat industry; Study 3). In the third study, we also explored how dissociation is associated with different work-related variables (e.g., time in the industry, work tasks) and well-being (e.g., negative affect, stress, turnover intentions).

Theoretically, the present research provides novel insights into two, potentially orthogonal dissociation tendencies that may explain people's meat consumption in different ways. Practically, it can provide important information for future interventions aimed at reducing meat consumption.

Study 1

The first study had two primary objectives: 1) to develop a scale that measures meat dissociation tendencies, with two hypothesized major dimensions: active dissociation and passive dissociation; and 2) to test how both dimensions relate to various individual differences and demographic variables. The validation measures, selected based on previous research indicating their association to passive and active dissociation, can be found in Table 1. The inclusion of a range of measures and the investigation of their associations with the MAD-scale aimed to validate the scale and establish consistent measurement standards. Generally, we hypothesized that passive dissociation would correlate with dietary and psychological factors typically associated with higher meat consumption. Conversely, we anticipated that active dissociation would exhibit correlations with these factors in a manner suggestive of diminished meat consumption. Given the early development stage of our scale, we also explored its associations with key psychological variables such as personality traits. Due to space limitations, the full theoretical rationale for their inclusion is presented in Benningstad (2024a), Text S1. The hypotheses we tested in this and the remaining studies can be found in Table 1.

Table 1
Hypotheses, Exploratory Goals, and Materials for the Three Studies

Study	Hypotheses and Exploratory Goals	Overview of Materials
1	<p>H1: The higher people score on passive dissociation, the less disgust sensitive and empathic they are and the less they attribute mind to animals; and the higher in masculinity and speciesism they are and the more they endorse direct justification strategies (i.e., denying animal suffering) for eating meat.</p> <p>H2: The reverse pattern of results is predicted for people who score high on active dissociation.</p> <p>H3: Being right-leaning politically, older, male, living rural, and not a pet-owner is associated with higher score on passive dissociation and lower score on active dissociation.</p> <p>H4: People who are regularly exposed to unprocessed meat products that still resemble the animal's body and shape, either at markets, stores, or similar, or through their profession/work, and people who work with or have regular close contact with farm animals will score lower on active dissociation and higher on passive dissociation.</p> <p>H5: The higher people score on active dissociation and the lower they score on passive dissociation the lower is their frequency of meat consumption and the higher is their frequency of vegetarian/vegan meals, and the more motivated they are to reduce their meat consumption for animal welfare reasons.</p> <p>In addition, we explored differences in terms of personality, education level, occupation, and annual income.</p>	<p>Meat-Eating Justifications, Natural-, Necessary-, Normal-, and Nice-Rationalizations, Speciesism, Attribution of Animal Minds, Empathy, Disgust, Personality, Sex-Roles</p> <p>Political Orientation, Age, Gender, Rural living, Contact with Animals</p> <p>Exposure to Unprocessed Meat</p> <p>Diet, Meat Reduction Motivations</p>
2	<p>H1: Showing a pork roast with the head (compared to no head) will reduce intentions to eat the meat and increase intentions to choose a vegetarian alternative (main effect).</p> <p>H2: Showing the pork roast with the head will increase active dissociation.</p> <p>H3: Showing the pork roast with the head will decrease passive dissociation.</p> <p>H4: We expect the effect of the experimental manipulation to be more pronounced for active dissociation than passive dissociation.</p> <p>H5: Active dissociation will be negatively related to intentions to eat meat and positively related to choosing a vegetarian alternative. Passive dissociation will be positively related to intentions to eat meat and negatively related to choosing a vegetarian alternative.</p>	<p>Willingness to Eat Meat</p> <p>Preference for Vegetarian Option</p>

Study Hypotheses and Exploratory Goals	Overview of Materials
<p>H6: Based on the previous hypotheses, showing the pork roast with the head will indirectly lead to lower intentions to eat meat and higher intentions to choose a vegetarian alternative as mediated by the dissociation variables (indirect effect). The indirect effect through active dissociation is expected to be strongest.</p>	<p>Retrospective MAD, Diet Turnover Intentions, Perceived Job Mobility, Job Satisfaction, Perceived Job Autonomy, Work Conditions, Positive and Negative affect, Perceived Work Stress, Income Satisfaction</p>
<p>3 We aimed to explore how working in the meat industry (time in industry, tasks conducted, type of animal) is related to passive and active meat dissociation.</p> <p>We aimed to explore the role of dissociation for meat workers'</p> <ul style="list-style-type: none"> - Meat consumption - Job satisfaction (including the role of income satisfaction, job mobility, job autonomy, and work conditions) - Turnover intentions - Stress and affect at work <p>In terms of the cluster analyses, we also aim to include attribution of mind and sensation to animals as variables.</p>	

Method

All hypotheses, power analyses, and procedures were pre-registered at [Benningstad \(2020\)](#). For this and the remaining studies, the data, measures and materials, and Supplementary Online Materials are available at [Benningstad \(2024a\)](#).

Participants

A total of 303 omnivorous or flexitarian US Americans were recruited through Prolific, satisfying a rule of thumbs of 1:10 ratio of items to participants in factor analyses (see [Benningstad, 2024a](#), Text S2 for details on power analysis). Three participants failed both attention checks (see [Benningstad, 2024a](#), Text S3) and were excluded from the study as pre-registered, resulting in a final sample of 300 participants. Participants were on average 33.72 ($SD = 12.67$) years old, and men (50.3%) and women (49.3%) were close to equally distributed (0.3% other; see Table S1 in [Benningstad, 2024a](#) for detailed participant characteristics). Participants were compensated equivalent to £7/hour in all studies reported in this paper.

Procedure and Design

All studies were approved by the review board of the Department of Psychology, University of Oslo (Ref. Numbers: 10307350 [[Study 1](#) and [Study 2](#)] and 16831464 [[Study 3](#)]). We measured passive and active dissociation with the MAD-scale developed for this research, dietary patterns, motivations to reduce meat consumption, participants contact with non-human animals, exposure to unprocessed meat, meat-eating justifications and rationalizations, speciesism, attribution of mind and sensation to animals, general empathy and disgust, personality, masculinity, and femininity (see [Benningstad, 2024a](#), Text S3 and Table S2 for details about data collection, measures and [Benningstad, 2024a](#), Text S4 for the statistical details).

Scale Development

The 12-item MAD-scale was created following common procedures ([Boateng et al., 2018](#); [Carpenter, 2018](#)). Based on [Benningstad and Kunst \(2020\)](#), we identified passive and active dissociation as the domains of interest and generated an initial item pool for a scale that measures both tendencies, which was then reviewed and further revised. We developed the scale in this study with exploratory and confirmatory factor analyses, whereas we confirmed it in the consecutive studies via confirmatory factor analyses. The reliability and validity of the scale were assessed in each study. Its predictive validity was tested primarily in terms of whether it explained variance in dietary preferences. Convergent validity was tested with regard to a multitude of theoretically related measures. Importantly, to test the robustness of the hypothesized two-factor solution, we estimated its measurement invariance across different demographics, such as age, gender,

and political orientation in each study. The initial scale consisted of two clusters with 11 questions in each cluster (see Table 2).

Results

Factor Analysis

First, the structure of the 22 dissociation items was investigated with exploratory factor analysis using varimax orthogonal rotation, as the factors were not correlated (see Table 2). The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was .94. An inspection of the scree plot (see Benningstad, 2024a, Figure S1) showed a clear inflection point after two factors. All items had loadings of at least .50 on their primary factor and loadings below .30 on the other factor (see Table 2). As predicted, based on the item content, the factors tapped onto the two predicted dimensions: passive and active dissociation.

To create a convenient and brief, yet reliable scale, we sought to identify the fewest number of items for each domain that retain desirable internal consistency and achieve measurement invariance across age, gender, and political affiliations. In the first step, items for the final scale were included based on highest factor loading and low cross-loadings ($< .15$). Six items for each factor were selected, resulting in a scale of 12 items with each half of the items loading onto one of the two factors. Scores for these items were relatively normally distributed across the sample, with a mean of 4.07 ($SD = 1.63$) for passive dissociation and 3.36 ($SD = 1.53$) for active dissociation (see Benningstad, 2024a, Figure S2). The subscales were uncorrelated, $r(288) = -.01$, $p = .808$.

To examine the two-dimensional structure of the 12-item MAD-scale, we performed a confirmatory factor analysis (CFA) using robust maximum likelihood estimation. The model showed satisfactory fit, $\chi^2(66) = 1615.54$, $p < .001$, CFI = .97, TLI = .96, RMSEA = .07, 90% CI [0.05, 0.08], SRMR = .06 (see Benningstad, 2024a, Text S5 for details on cut-off values). We established measurement invariance across gender, age, and political orientation for this two-factor solution in all studies (see Benningstad, 2024a, Text S6 and Table S3). The final 6-item subscales of passive dissociation ($\alpha = .93$) and active dissociation ($\alpha = .89$) showed satisfactory reliability.

Table 2

Results of the Rotated Factor Matrix on the Initial Set of 22 MAD-Scale Items in Study 1

Item	Dissociation	
	1 Passive	2 Active
Animals rarely come to mind when I eat meat. ^a	.840	.010
I don't reflect on the connection between animals and meat. ^a	.829	-.014
I have almost never thought about an animal when consuming meat. ^a	.823	-.005
When I eat meat, I never think about the life of the animal I am eating. ^a	.816	.032
The thought of animals is totally irrelevant when I eat meat. ^a	.801	-.132
The animal origin of meat is something I seldom think about. ^a	.800	.035
The fact that meat comes from animals never crosses my mind.	.766	.100
I rarely think about meat and animals at the same time.	.753	.083
I never think that meat comes from an animal when I consume it.	.751	.204
Meat is first and foremost food for me, not an animal product.	.595	.025
I am usually unaware of the link between animals and meat.	.574	.138
I make a big effort not to think about animals when I consume meat. ^b	.015	.789
When I look at meat, I try hard not to connect it with an animal. ^b	.109	.784
To be able to eat meat, I suppress the thought that it came from an animal. ^b	.054	.760
I actively avoid meat that visibly reminds me of an animal. ^b	-.147	.759
I actively avoid food products that may remind me that meat actually comes from animals. ^b	-.109	.741
I try to ignore thoughts about animals when eating meat with visible blood, bones or skin. ^b	.096	.740
I try hard not to associate the meat I am eating with a living being.	.129	.734
Whenever possible, I choose meat products that hide the characteristics of an animal (e.g., blood, skin, bones, organs).	-.043	.724
Whenever I can, I choose highly processed meat (e.g., sausage, burger) so that I am not reminded of the animal.	.017	.690
When I eat meat, I try not to think about the life of the animal I am eating.	.142	.678
I try not to think about where the meat I eat comes from.	.297	.653
Eigenvalue	7.49	5.95
Explained variance	34%	27%

Note. The extraction method was maximum likelihood with an orthogonal (varimax with Kaiser normalization) rotation. Rotation converged in 3 iterations.

^a Items used in the final passive dissociation scale. ^b Items used in the final active dissociation scale.

Psychological Differences

Table 3 depicts the correlations between the two MAD-subscales and the psychological measures that form the basis of Hypotheses 1 and 2. As predicted, the passive dissociation subscale negatively correlated with both disgust sensitivity, empathy, and attribution of mind to non-human animals, and was positively related to speciesism and all the meat-eating justifications and rationalizations. The reverse pattern was largely reflected in the associations with active dissociation. Thus, Hypotheses 1 and 2 were mostly supported.

Table 3

Correlations Between the MAD-Subscales and Psychological Measures in Study 1

Measure	n	α/r	Passive Dissociation		Active Dissociation	
			r	p	r	p
MEJ Pro-Meat	3	.88	.42*	< .001	-.06	.341
MEJ Denial	3	.80	.43*	< .001	.01	.882
MEJ Hierarchical	3	.83	.36*	< .001	-.11	.069
MEJ Dichotomization	3	.53	.26*	< .001	.16	.007
MEJ Religious	3	.92	.30*	< .001	.04	.506
MEJ Avoidance	3	.71	.13*	.021	.50*	< .001
MEJ Health	3	.94	.31*	< .001	.04	.449
MEJ Human Destiny/Fate	3	.71	.28*	< .001	-.05	.400
4N Overall Scale	16	.75	.18*	.002	-.12	.044
4N Natural	4	.44	.03	.658	-.15*	.008
4N Necessary	4	.64	.12	.034	-.01	.881
4N Normal	4	.37	.21*	< .001	-.12	.032
4N Nice	4	.54	.17*	.003	-.07	.224
Speciesism	6	.86	.37*	< .001	-.12*	.043
AMSA Experience	5	.82	-.18*	.001	-.02	.669
AMSA Agency	5	.83	-.19*	.002	.21*	< .001
IRI Empathic Concern Scale	5	.87	-.23*	< .001	.22*	< .001
DPSS-R Propensity	8	.82	-.10	.085	.30*	< .001
DPSS-R Sensitivity	8	.77	-.19	.041	.33*	< .001
TIPI Extraversion	2	.50	.04	.526	.13	.020
TIPI Agreeableness	2	.26	-.09	.118	.10	.088
TIPI Conscientiousness	2	.43	.01	.829	-.12	.036
TIPI Emotional Stability	2	.58	.06	.321	-.13	.025
TIPI Openness	2	.31	-.17*	.003	-.05	.417
Masculine Sex-Role	10	.82	.09	.134	-.02	.711
Feminine Sex-Role	10	.83	-.07	.261	.20*	< .001

Note. n = number of items for each variable, α/r = Cronbach's alpha/correlation for each scale; MEJ = Meat Eating Justification Scale; 4N = Meat Eating Rationalization; AMSA = Attribution of Mind and Sensation to Animals; IRI = Interpersonal Reactivity Index; DPSS-R = Disgust Propensity and Sensitivity Scale, Revised; TIPI = Ten-Item Personality Inventory.

* $p < .05$ after family wise Holm-correction.

Exploratory analyses showed that active dissociation was negatively correlated with emotional stability and conscientiousness, and positively correlated with extraversion. Passive dissociation was negatively correlated with openness to experiences.

Differences in Demographics and Meat Consumption

As predicted in Hypothesis 3, the more politically conservative individuals were, the more they passively dissociated and the less they actively dissociated. However, contrary to expectations, no association was found between age or gender and dissociation. For correlations with other demographical variables, please see [Benningstad \(2024a\)](#), Text S7 and Table S4.

Hypothesis 4 could not be reliably tested due to a lack in variation in the relevant variables. As predicted by Hypothesis 5, passive dissociation was negatively, and active dissociation positively correlated with the frequency of vegetarian or vegan meals in an average week ([Table 4](#)). Also as expected, passive dissociation was positively correlated with the frequency of meals with red meat and poultry. There was a weak and positive correlation between active dissociation and consumption of fish/seafood as well as other meats such as game meat. Furthermore, passive dissociation was negatively, and active dissociation positively related to all three motivations to reduce meat intake.

Table 4
Correlations Between the MAD-Subscales, Gender, Age, Education, Political Orientation, Meat Consumption, and Meat Reduction Motivation in the Three Studies

Variable	Study 1						Study 2						Study 3					
	Passive			Active			Passive			Active			Passive			Active		
	r	p	r	r	p	r	r	p	r	p	r	r	p	r	p	r	p	
Gender	-.09	.107	.04	.491	-.19	< .001	.25	< .001	-.10	.137	.24	< .001	-.10	.137	.24	< .001	< .001	
Age	-.08	.172	-.05	.388	-.03	.414	.04	.341	.06	.331	-.16	.018	.06	.331	-.16	.018	.018	
Education	-.04	.496	.10	.075	-.09	.033	.02	.624	.34	.607	.05	.462	.34	.607	.05	.462	.462	
Political conservatism	.15	.008	-.15	.012	.13	.002	-.11	.005	.06	.404	-.09	.185	.06	.404	-.09	.185	.185	
Red meat consumption in an average week	.21	< .001	.09	.118	.30	< .001	-.17	< .001	.21	.001	-.16	.019	.21	.001	-.16	.019	.019	
Chicken, turkey and other poultry consumption in an average week	.17	.003	.05	.373	.18	< .001	-.02	.663	.16	.015	.07	.306	.16	.015	.07	.306	.306	
Fish and/or seafood consumption in an average week	.07	.213	.12	.038	.08	.048	-.10	.017	-.04	.530	.01	.885	-.04	.530	.01	.885	.885	
Other meat (e.g., reindeer, boar or other game meat) consumption in an average week	.08	.168	.21	< .001	.10	.009	-.03	.403	-.01	.939	.00	.952	-.01	.939	.00	.952	.952	
Vegetarian or vegan consumption in an average week	-.27	< .001	.12	.040	-.34	< .001	.24	< .001	-.19	.004	.25	< .001	-.19	.004	.25	< .001	< .001	
Environmental Motivations	-.32	< .001	.17	.003	—	—	—	—	—	—	—	—	—	—	—	—	—	
Animal Welfare Motivations	-.39	< .001	.32	< .001	—	—	—	—	—	—	—	—	—	—	—	—	—	
Health Motivations	-.12	.043	.10	.084	—	—	—	—	—	—	—	—	—	—	—	—	—	

Note. Gender was coded 1 = men, 2 = women, please note that one participant reported “other” gender and was excluded.

Preliminary Discussion

The analysis supported a two-dimensional structure, where active and passive dissociation formed distinct factors. Our validation hypotheses were mostly supported. The higher people scored on passive dissociation, the lower disgust sensitivity and empathy for animals they showed, the more speciesism and unapologetic justification strategies they indicated, and the less mind they attributed to the animals they eat regularly. By contrast, the higher they scored on active dissociation, the more disgust sensitivity, disgust propensity, and empathy they showed, the lower they scored on speciesism and unapologetic justification strategies, and the more they attributed experience-related capacities to the animals they eat regularly. This supported that the two tendencies are qualitatively different.

Contrary to our expectation, neither of the dissociation mechanisms was related to masculinity, but active dissociation was linked to femininity. Both theory and previous research (Adams, 1990; Rothgerber, 2013) link meat-related behavior and attitudes to masculinity and gender. Yet, several dissociation studies have failed to observe this link (e.g., Kunst & Hohle, 2016; Piazza et al., 2018; Zickfeld et al., 2018). Our study, thus, further supports that dissociation may be similarly prevalent among men and women, but future research is needed to test this.

As expected, the higher individuals scored on active dissociation, the more vegetarian or vegan meals they ate. By contrast, the higher they scored on passive dissociation, the fewer vegetarian or vegan meals they ate and the more red meat and poultry they consumed. This finding is consistent with previous research that also found that active dissociation was related to lower meat consumption (Rothgerber, 2013).

Passive dissociation was related to direct justifications for meat eating, which have repeatedly been found to be associated with higher meat consumption (e.g., Piazza et al., 2015). Moreover, active dissociation was positively correlated with animal welfare motivations to reduce meat consumption, whereas the passive dissociation subscale was moderately negatively linked with all three meat-reduction motivations. Our findings, thus, indicate that people who actively dissociate have a more conflicted relationship with meat, and might wish to reduce their meat consumption, whereas people who dissociate passively are more unmotivated to reduce their meat consumption generally.

Study 2

The purpose of **Study 2** was to experimentally investigate whether short-term exposure to unprocessed meat would affect the two dissociation tendencies assessed by the MAD-scale. In doing so, we aimed to replicate and extend findings of Kunst and Hohle (2016). We generally hypothesized that displaying meat-animal cues would lead to less willing-

ness to eat a meat dish and more willingness to choose a vegetarian alternative because it reduces (i.e., disrupts) passive dissociation and increase active dissociation (see Table 1).

Method

All hypotheses, power analyses, and procedures were pre-registered at Benningstad (2021).

Participants

Using the same approach as in Study 1, 636 omnivorous or flexitarian US Americans were recruited. A sample of 624 participants offers a 90% chance of detecting a small to moderate effect ($d = .26$) in a one-way ANOVA ($\alpha = .05$) and close to 100% power for indirect effects (see Benningstad, 2024a, Text S8 for details). We included the two attention checks used in Study 1. Eight participants failed both attention checks and were excluded from the analyses, resulting in a final sample of 628 participants ($M_{age} = 35.32$, $SD_{age} = 12.84$; 50.2% men, 49.8% women; see Table S5 in Benningstad, 2024a for detailed participant characteristics).

Procedure and Design

Participants were randomly assigned to one of two conditions. In both conditions, they were told that they were about to see a picture of a pork roast. In the head condition, the pig's head was visible, whereas it was removed with a photo-editing software in the beheaded condition (see Benningstad, 2024b for the stimuli used). Apart from this difference, the pictures were identical. We measured passive and active dissociation, willingness to eat the dish, and preference for a vegetarian alternative, with the picture presented on top of the survey page for all items (see Benningstad, 2024a, Text S9 for details about data collection and measures).

Results

Factor Analysis

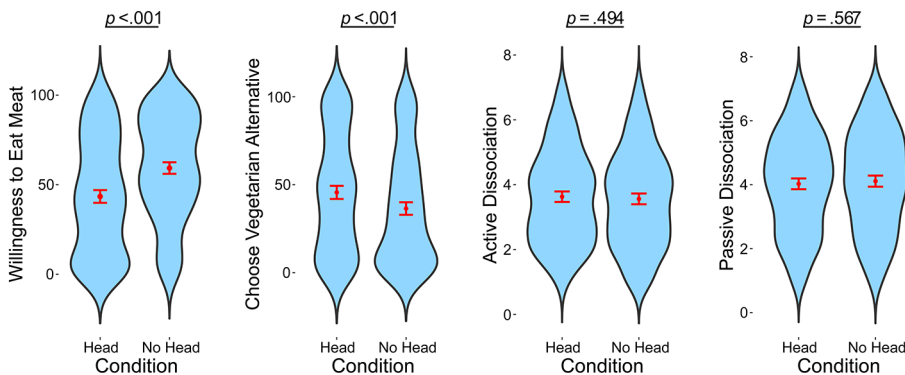
A CFA showed that the proposed two-factor solution of the MAD-scale showed satisfactory fit to the data, $\chi^2(52) = 164.37$, $p < .001$, CFI = .97, TLI = .96, RMSEA = .07, 90% CI [0.05, 0.08], SRMR = .085 (Benningstad, 2024a, Text S10). Different to Study 1, there was a small negative correlation between passive and active dissociation, $r(626) = -.14$, $p < .001$. Table 4 presents the correlations among the two dissociation subscales, demographics, and meat consumption, which were mostly consistent with Study 1 (for details on demographic differences see Benningstad, 2024a, Text S11). The reliability was satisfactory for both passive dissociation ($\alpha = .91$) and active dissociation ($\alpha = .88$).

Main Analyses

Supporting Hypothesis 1, the head condition produced a substantial decrease in willingness to eat meat compared to the beheaded condition, $t(626) = -6.51, p < .001, d = 0.52$, see Figure 1. Moreover, participants were significantly more likely to consider a vegetarian alternative in the head condition than in the beheaded condition, $t(626) = 3.49, p = .001, d = 0.28$. However, against the expectations of Hypotheses 2 and 3, no effect was observed on passive dissociation, $t(626) = -0.684, p = .494, d = 0.06$, and active dissociation, $t(626) = 0.574, p = .567, d = 0.05$. Considering the lack of effects, we did not proceed to test hypotheses 4 and 6 that build on the existence of these effects (i.e., mediations).

Figure 1

Plot of Willingness to Eat Meat, Choose Vegetarian Alternative, Passive Dissociation, and Active Dissociation by Condition in Study 2



Note. Violin plot with means and 95% confidence intervals indicated by red points and error bars.

Next, we conducted two hierarchical regression analyses to test whether active (passive) dissociation would be related to less (more) willingness to eat meat and more (less) willingness to eat the vegetarian alternative, controlling for the experimental manipulation (Hypothesis 5). All effects of passive dissociation (willingness to eat meat: $\beta = .31, p < .001$; preference for vegetarian alternative: $\beta = -.33, p < .001$) and active dissociation (willingness to eat meat: $\beta = -.50, p < .001$; preference for vegetarian alternative: $\beta = .44, p < .001$) were significant (Benningstad, 2024a, Text S12 and Tables S6–S7 for details).

In terms of a pre-registered secondary analysis, exposure to unprocessed meat did not significantly moderate the relationship between the experimental manipulation and passive dissociation, $b = .04, 95\% \text{ CI } [-0.11, 0.19], t(624) = 0.53, p = .599$, or active dissociation, $b = .01, 95\% \text{ CI } [-0.13, 0.15], t(624) = 0.19, p = .850$.

Preliminary Discussion

Replicating previous work (e.g., Earle et al., 2019; Kunst & Hohle, 2016), showing the pork roast with (vs. without) the head resulted in a significant drop in willingness to eat meat and participants were considerably more inclined to explore a vegetarian option. However, no significant effect of the experimental manipulation was observed on either of the mediator variables, passive and active dissociation. This finding indicates that the dissociation variables are more stable than we expected.

Nevertheless, both dissociation tendencies predicted dietary preferences over and above the experimental manipulation. This suggests that general individual differences in dissociation can predict dietary preferences beyond contextual cues. Nevertheless, it could be argued that short-term exposure to unprocessed meat may have been insufficient to alter how people dissociate. To address this, the next study investigated the role of long-term and regular exposure to unprocessed meat with a sample of people working in the meat industry.

Study 3

In this final study with preregistered exploratory goals (Table 1), we examined dissociation tendencies among people who work in the early stages of meat production, that is, people who directly assist with animal slaughter, and people handling larger pieces of meat that resemble the animal. We assessed their length of experience in the industry, the type of meat processing involved, and the animals they worked with, as these factors could influence their dissociation. For instance, the influence of dissociation on dietary preferences may be reduced through the continuous process of hedonic adaptation (Frederick & Loewenstein, 1999; Rozin, 2008), in which stimuli that once elicited negative affective responses gradually elicit less of a response the more an individual is exposed to them. Supporting this notion, individuals who are accustomed to meat processing and production tend to feel less discomfort when meat is connected with animal origins (Kunst & Haugestad, 2018). A recent study also found that when presented with meat products, butchers and deli workers reported feeling less disgust and less empathy for the slaughtered animal and were less inclined to think about the animal than did the average consumer (Piazza et al., 2021). The authors theorized that repeated meat handling over time leads to psychological adaptation or numbing. Additionally, we measured stress and affect related to working with meat and slaughter, considering that cognitive dissonance may be associated with negative work-related affect (Benningstad, 2024a, Text S13 for details).

Method

All exploratory goals, power analyses, and procedures were pre-registered at Benningstad (2022).

Participants

We initially aimed, and pre-registered, to recruit 523 participants, but this proved to be impossible as it exceeded the Prolific participant pool. A total of 259 omnivorous or flexitarians currently residing in the USA ($n = 57$) or UK ($n = 172$) were recruited (two participants did not indicate current place of residence). We recruited participants from both countries due to the low number of participants working in the meat industry on the platform. Using pre-screeners, only participants who reported working in the meat industry and describing their current diet as meat-eater/omnivorous or semi-vegetarian/flexitarian were invited to complete the main study.

We included the two attention checks from Study 1. In total, 28 participants failed both attention checks or were ineligible for the study, as they provided information that was inconsistent with their prescreening responses, and were excluded from the study, resulting in a final sample of 231 participants ($M_{age} = 33.13$, $SD_{age} = 9.55$; 66.2% men, 32.5% women, 0.4% other; see Table S8 in Benningstad, 2024a for detailed participant characteristics).

Procedure and Design

We measured passive and active dissociation, as well as a measure for retrospective passive and active dissociation (i.e., whether participants thought that they now passively and actively dissociated less than they used to before joining the meat industry), dietary patterns, turnover intentions, perceived job mobility, job satisfaction, job autonomy, work conditions, affect at work, work stress, and income satisfaction (see Benningstad, 2024a, Text S14 and Table S9 for details about data collection and measures).

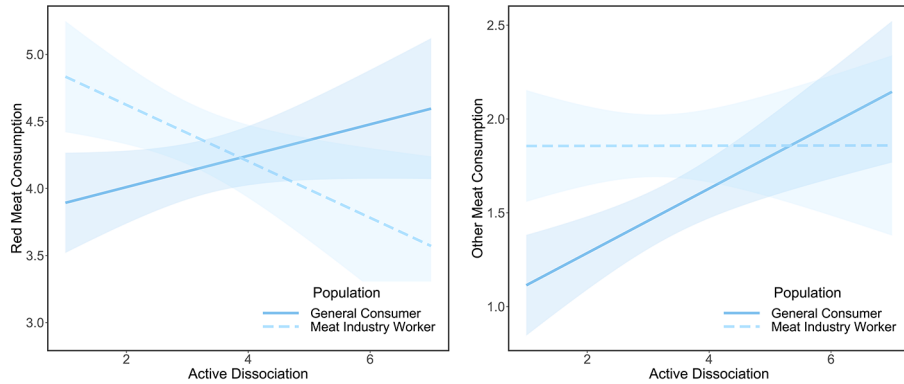
Results

Factor Analysis

A CFA again supported the MAD-scales' structure, $\chi^2(52) = 164.37$, $p < .001$, CFI = .95, TLI = .94, RMSEA = .07, 90% CI [0.05, 0.09], SRMR = 0.06 (Benningstad, 2024a, Text S15). The subscales were uncorrelated, $r(229) = .04$, $p = .529$. See Table 4 for correlations between the two dissociation subscales, demographic variables, and meat consumption, which mostly replicated findings from the previous studies. For details on demographic differences see Benningstad, 2024a, Text S16. The reliability was satisfactory for both passive dissociation ($\alpha = .90$) and active dissociation ($\alpha = .85$).

Figure 2

Graphical Illustration of the Interaction Effect Between Active Dissociation and Population Grouping of the Sample From Study 1 and Study 3



Note. Slopes are presented with a 95% confidence interval.

Dissociation and Dietary Preferences Among Meat Workers (Study 3) and Consumers (Study 1)

To estimate whether the effect of the dissociation variables on dietary preferences would be different for meat industry workers than for participants from the general population, we merged the sample of this study with that from Study 1. Moderation analyses showed that there was a significant interaction between active dissociation and grouping for red meat consumption, $B = -.33$, 95% CI $[-0.54, -0.11]$, $p = .002$, and other meat consumption, $B = -.17$, 95% CI $[-0.32, -0.02]$, $p = .025$. As displayed in Figure 2, there was a negative association between active dissociation and red meat consumption among meat industry workers, $B = -0.21$, $SE = 0.08$, $t = -2.56$, $p = .011$. The slope for general consumers was not significant, $B = 0.12$, $SE = 0.07$, $t = 1.73$, $p = .084$. There was a positive association between active dissociation and other meat consumption among general consumers, $B = 0.17$, $SE = 0.05$, $t = 3.54$, $p < .001$. The slope for meat industry workers was not significant, $B = 0.00$, $SE = 0.06$, $t = 0.01$, $p = .994$. All interactions fell below significance for poultry, fish, and vegetarian food consumption, $ps > .134$.

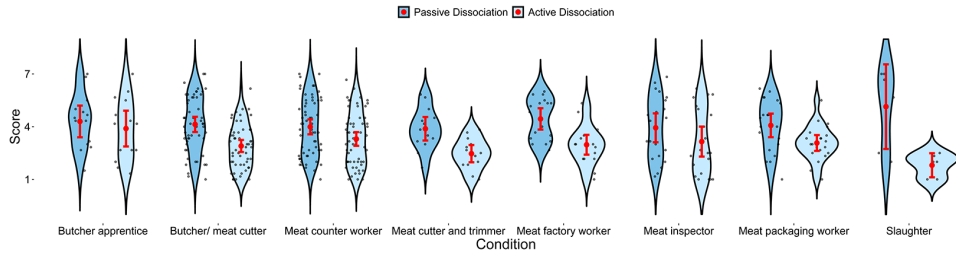
Dissociation and Work-Task Variables

No group differences were found between the specific professions of participants in passive dissociation $F(8, 222) = 0.68$, $p = .706$. However, there were significant differences in active dissociation $F(8, 222) = 2.20$, $p = .029$. As can be seen in Figure 3, slaughterers and meat cutters were amongst the professions that showed the lowest active dissociation

tendency. Please note that these findings need to be interpreted cautiously given the uneven distribution of participants in the different categories.

Figure 3

Passive and Active Dissociation for the Different Professions in Study 3



Note. Violin plot with means and 95% confidence intervals indicated by red points and error bars. Responses are presented as grey dots. Please note that for the comparison of different professions, people who reported more than one profession were excluded from the analysis ($n = 24$).

In terms of job tasks, the more often participants reported conducting “cutting and deboning” ($r = -.19$, $p = .004$) and “removing parts such as cartilage, bones, or fat from the meat” ($r = -.16$, $p = .016$), the lower they scored on active dissociation. In terms of the type of animals, working with cows was positively related to passive dissociation ($r = .16$, $p = .014$). By contrast, working with poultry was positively correlated to active dissociation ($r = .22$, $p < .001$). See Benningstad, 2024a, Table S10 for all correlations.

Dissociation and Work Environment-Related Variables

Active dissociation was negatively associated with overall job satisfaction ($r = -.13$, $p = .048$), and positively with turnover intentions ($r = .26$, $p < .001$), negative affect ($r = .29$, $p < .001$), and perceived work stress ($r = .36$, $p < .001$). There was a weak and negative correlation between passive dissociation and negative affect at work ($r = -.14$, $p = .031$).

Years in the meat industry was positively related to passive dissociation ($r = .17$, $p = .011$), but not with active dissociation. However, working part-time, which can be regarded as a proxy for less exposure to the meat industry, was positively related to active dissociation ($r = .17$, $p = .012$). See Benningstad, 2024a, Table S11 for all correlations.

The response distribution for both retrospective dissociation questions can be seen in Benningstad, 2024a, Figure S3. Simple students t -test was conducted to compare the mean to the midpoint of the scales (i.e., 0) which indicates no experienced change in dissociation from the start of participants’ involvement in the meat industry to the time of data collection. No significant difference was observed for the passive retrospective question, $M = 0.25$, $t(228) = 1.68$, $p = .094$, $d = 0.11$. However, the comparison was significant for the active dissociation scale, meaning that participants reported actively

dissociating more than when they first started out in the meat industry, $M = 0.73$, $t(230) = 4.97$, $p < .001$, $d = 0.33$.

We also tested whether the meat industry workers in this study showed similar dissociation patterns as the regular consumers from [Study 1](#). There was no statistically significant difference between meat industry workers ([Study 3](#)) and regular consumers ([Study 1](#)) on passive, $t(529) = -0.58$, $p = .560$, or active dissociation, $t(529) = 1.79$, $p = .074$.

Finally, we conducted a hierarchical regression analysis to test whether passive and active dissociation would be related to turnover intentions, controlling for common factors affecting turnover intentions, including job satisfaction, work autonomy, work conditions, positive and negative affect at work, years in the meat industry, and perceived job mobility, as well as gender and age. In this analysis, active dissociation was positively related to turnover intentions ($\beta = .15$, $p = .009$), whereas the effect of passive dissociation was not significant ($\beta = -.05$, $p = .419$), see [Benningstad \(2024a\)](#), Table S12 for full model details.

Preliminary Discussion

People who work in the meat industry seem to dissociate both actively and passively to a similar extent as normal consumers, despite being in regular contact with less processed meat that resembles the animal. This finding is in line with [Study 2](#), suggesting that dissociation is relatively stable to the exposure to unprocessed meat.

In terms of profession and exposure to early stages of meat processing, slaughterers and meat cutters used active dissociation the least. Similarly, individuals who perform cuts to remove typical animal traits scored lower on active dissociation. Interestingly, butcher apprentices were amongst the professions who scored highest on active dissociation. Apprentices are in the early stages of their career and therefore may not have lengthy experience with handling meat, which might influence their dissociation tendencies.

Working fewer hours in the industry was positively related to active dissociation, and longer time in the meat industry was positively related to passive dissociation. This corresponds with [Piazza and colleagues' \(2021\)](#) findings that showed an increase in passive dissociation among people who had worked for a long time in the meat industry (also see [Frederick & Loewenstein, 1999](#); [Rozin, 2008](#)). Working with cows was positively related to passive dissociation, whereas working with poultry was positively related to active dissociation. This finding was surprising, as poultry is phylogenetically more distant to humans than cows are. One explanation for this finding might be the level of processing of the different animals, as poultry often is left with more of the typical animal characteristics later in the processing stages and thereby may heighten the need for active dissociation. An alternative explanation may be that the sheer number of animal bodies one processes when working with poultry, as opposed to cows, leads to more dissonance and therefore more active dissociation.

Finally, there were interesting effects of dissociation on work-related well-being in the meat industry. Participants higher in active dissociation reported less job satisfaction, greater negative affect, and stress at work, and expressed a greater desire to leave or change their profession. This suggests that although active dissociation is one way to cope with the meat paradox, it may not be fully effective and may rather reflect an unresolved unease with working with and eating meat. Conversely, participants with a high score on passive dissociation reported less negative affect at work. When taking job satisfaction, turnover intentions, and work-related well-being into account, it seems that meat industry workers either adapt (by passive dissociation) or use active dissociation and are less happy with their jobs.

General Discussion

Our results suggest that dissociation can be separated into two distinct tendencies, which can be reliably measured. Both dimensions were validated as they showed mostly expected relationships with a range of individual psychological and demographical differences. [Study 2](#) indicated that the dissociation mechanisms are stable and associated with dietary preference beyond situational cues. The third and final study showed that people in the meat industry dissociate both passively and actively to comparable degrees as consumers, which in turn explained variance in their dietary patterns, as well as their well-being and stress at work.

Our results suggest that meat-animal dissociation may be more accurately characterized as a stable trait rather than a transient state influenced by direct exposure to the connection between meat and animals. Several factors could account for this observation. The data from [Study 1](#) imply that personality traits predominantly correlate with active dissociation, which may indicate that active dissociation stems primarily from relatively stable individual differences, thereby explaining its potential resistance to immediate external cues. Conversely, passive dissociation can be theorized to be largely a product of socialization within a societal framework that obscures the processes of meat production from consumers. This cultural entrenchment could contribute to the stability of passive dissociation as a trait rather than a fluctuating state. However, it is important to clarify that dissociation can also be assessed as a state. While the Meat-Animal Dissociation Scale in our study was not directly associated with the experimental stimuli (as a state measure would be), previous research has demonstrated significant temporary changes in dissociation levels in response to specific stimuli ([Earle et al., 2019](#); [Kunst & Hohle, 2016](#)).

As demonstrated in our study, both passive and active forms of dissociation operate concurrently and may be considered to coalesce into syndromes when combined with other variables from the psychological literature on the meat paradox. Specifically, the associations between the two facets of dissociation and related psychological

constructs were found to be theoretically coherent, while also exhibiting only weak to moderate magnitudes that substantiate their discriminant validity. Theoretically, what sets dissociation apart from other closely related dissonance-related mechanisms, such as justifications for meat consumption or attributions of mental states to animals, is its primary focus on the cognitive disconnection between meat and its animal origins. The passive dissociation subscale, in particular, is indicative of the absence of this cognitive connection. On the other hand, the active dissociation scale aligns more closely with mechanisms that consumers adopt to mitigate cognitive dissonance. Nevertheless, the operational strategies of active dissociation differ markedly from these existing mechanisms. While justifications for meat consumption and attributions of mental states to animals can be viewed as reappraisals of the link between meat consumption and animal suffering, active dissociation intervenes at an earlier stage, attenuating or even obliterating the connection entirely. Consequently, the MAD-scale emerges as a valuable instrument for elucidating this mechanism and its interactions and synergies with other related constructs, such as justifications for meat consumption (Rothgerber, 2013), rationalizations (Piazza et al., 2015), and the avoidance of information (Leach et al., 2022).

Passive Dissociation

People who passively dissociate generally reported a high meat consumption, high intentions to eat a meat dish both with and without animal reminders, low consumption of vegetarian meals, and all-over low motivation to reduce meat consumption—and could therefore be characterized by a love for meat. This interpretation is further supported by the pattern in justifications and rationalizations for eating meat. People scoring high on passive dissociation seem to use direct, unrepentant tactics that embrace and defend meat consumption. These strategies emphasize how eating meat is normal and natural, in terms of religion and faith, humans place in the hierarchy of nature, and societal norms, and also how meat is just too good to give up (Piazza et al., 2015; Rothgerber, 2013).

Passive dissociation is further positively related to speciesism, the idea that humans are innately more valuable than animals, which can be considered a form of prejudice against animals (Caviola et al., 2019). People who score high on passive dissociation also tended to attribute fewer mental capacities to the animals they frequently consume. Further supporting this connection, passive dissociation was negatively related to motivations to reduce meat consumption for animal welfare reasons, lower empathy and disgust sensitivity.

Studies have examined how gender influences dissociation and how consumers behave when dissociation is rendered difficult, but the findings have been inconclusive (Benningstad & Kunst, 2020). In this research, gender was only related to passive dissociation in Study 2 (see Table 4), with men reporting passive dissociation more than women. Thus, considering previous inconclusive results and the findings in the present series

of studies, it seems as if the role of gender in passive dissociation is limited, at least in Western contexts.

Active Dissociation

The three studies generally showed a reverse trend for people who reported using dissociation actively as a strategy to avoid discomfort due to eating meat. People who actively dissociate report eating less red meat (Study 2 and 3) and less willingness to eat the pork roast presented in Study 2, regardless of whether it was presented with or without the head. Throughout all three studies, active dissociation was related to eating more vegetarian and vegan meals, as well as a greater preference for a vegetarian option in Study 2. In terms of motivations for reducing meat consumption, actively dissociating was related to higher environmental and animal welfare motivations. Hence, people who actively dissociate generally report a higher consumption of vegetarian meals and vegetarian intentions, and higher motivation to reduce meat consumption—and could therefore be characterized as having a more conflicted relationship with eating meat.

Again, this interpretation is also reflected in the meat-eating justifications and rationalizations used by people who actively dissociate. People with high scores on active dissociation tend to use indirect, more apologetic tactics (e.g., avoidance) to deal with the meat paradox. There was a negative association between active dissociation and using arguments of how eating meat is natural and normal (Piazza et al., 2015). Thus, consistent with prior research (Rothgerber, 2013), these unapologetic justifications do not reason with the people who actively dissociate.

Those scoring high on active dissociation also tended to be less speciesist and attribute more mental capacities, such as self-control, emotion recognition, and morality, to the animals they consume the most (Bastian et al., 2012). Accordingly, active dissociation was also linked to higher general empathy and disgust sensitivity and propensity.

Gender was related to active dissociation both in Studies 2 and 3, with women reporting to actively dissociate more than men, which is in line with previous work (Rothgerber, 2013). Thus, this research might indicate that women show dissociation somewhat more actively (but not passively) than men.

People who work with meat handling seem to dissociate to a similar degree as regular consumers in their day-to-day lives. Interestingly, although we cannot establish causality, one may speculate that active dissociation may be an ineffective strategy to cope with the grim realities of meat processing. People who actively dissociate as a strategy to avoid discomfort report lower overall job satisfaction, higher intentions to quit their job, and more negative affect and stress in relation to their work.

Limitations and Future Directions

The findings of the present research should be interpreted in light of our reliance on non-representative samples that were recruited online. Key variables such as gender and political orientation were relatively normally distributed and only minor demographic differences were observed in the present research. Nevertheless, future research is needed to replicate our findings using representative samples, especially if the goal is to establish population estimates.

Another limitation is the lack of behavioral measures, which is a general limitation of the research field (Benningstad & Kunst, 2020). Responses such as the assessed dietary habits and preferences may be influenced by cognitive or motivational biases, faults in memory, or over- or underestimation of how much meat one actually consumes.

Recent research points to the confounding role of familiarity and dissociation (Possidónio et al., 2022)—a limitation that is particularly relevant for the second study. It is possible that some participants were less willing to eat the pork roast when the head was presented because they were unfamiliar with the presentation of the dish rather than because it reminded them of an animal. On the one hand, the finding that dissociation was unchanged by the experimental manipulation may suggest that effects were driven by other processes such as unfamiliarity. On the other hand, dissociation (measured by our instrument) still explained substantial variance (ca. 9%–25%) in people's meat consumption beyond these potential experimental primes of familiarity. Although it is hard to disentangle both constructs in an ecologically valid manner, future research may profitably identify the different effects of familiarity and dissociation as measured with the MAD-scale across situations and contexts.

Whereas the MAD-scale was conceptualized to measure active and passive dissociation, it should not be interpreted as corresponding to explicit and implicit measures. Nevertheless, it would be interesting for future research to test whether people who score differently on both dimensions show differential responses to corresponding implicit and explicit tasks.

Studies 1 and 3 were correlational as was the relationship between dissociation and consumer choices in the experiment of Study 2. Future studies would benefit from employing longitudinal designs, investigating whether the two dissociation tendencies predict meat consumption over time. Such research may investigate the interesting question of whether different dissociation trajectories may lead to dietary shifts (i.e., from meat eating to vegetarian or vegan) and the stability of active and passive dissociation over time.

Our studies focused specifically on meat consumption, but it is equally important to examine dissociation in other contexts. Indeed, Ioannidou et al. (2023) investigated the use of eating justifications related to meat, dairy, egg, and fish consumption across different dietary groups. They found differences between groups in dissociation tendencies towards these animal products, highlighting the need for further studies to explore

dissociation across a wider range of animal products to better inform interventions for behavior change in adopting a plant-based diet. Similarly, it would be advantageous to investigate the impact of various cues related to the meat-animal link beyond the stimuli employed in the second study on outcomes of interest. For example, experiments could test how different types of exposure experienced by participants to the various stages of meat production (as in [Study 3](#)) influence dissociation processes.

This research was conducted in a Western setting, where people are less regularly exposed to reminders of meat's animal origins, and where political and moral debates about meat consumption are relatively salient (i.e., in the UK and US). Given the strong influence of culture on dissociation in previous research ([Kunst & Haugestad, 2018](#)), more research is needed to identify the role of dissociation and the different dissociation profiles in non-Western cultures. An interesting inquiry arises as to whether passive dissociation, consistent with our conceptual framework, exhibits significant variation across cultures, provided that it indeed reflects the distinct societal structures consumers are socialized into. Cross-cultural research could also directly assess the relationship between how people perceive and respond to norms and discourse and their dissociation tendencies and how these potential culturally-bound mechanisms arise and develop in important developmental periods (i.e., childhood). A foundational review indicates that in Western societies, the socialization of children from a very early age is structured to cultivate a passive dissociation between animals and meat ([Piazza et al., 2023](#)).

The fact that the two dissociation subscales seem to be mostly uncorrelated opens interesting avenues for future research. People with low scores on both subscales might be characterized by not being bothered by the animal-meat link; these individuals embrace meat eating and likely have no qualms about eating animals (e.g., hunters and gastronomes). Conversely, understanding high scores on both subscales might again call for consideration of the societal context. In Western, industrialized nations, people are rarely reminded of meat's animal origins, enabling high passive dissociation. Yet when faced with occasional reminders these people may employ active dissociation strategies precisely because such reminders are so rare and therefore upsetting. Future research using techniques such as latent profile analysis could help elucidate these subsets.

Lastly, a deeper understanding of the dissociation mechanism might help inform and improve future interventions aimed at reducing meat consumption. One intervention might be effective for people falling into one dissociation profile while being ineffective for others. Specifically, people who use dissociation actively seem to have a more conflicted relationship with meat, less meat attachment, and value animals highly, and might therefore be more receptive to interventions utilizing animal welfare arguments for reducing meat consumption ([Carfora et al., 2019](#); [Ottersen et al., 2022](#)). People who passively dissociate might be harder to influence with informational campaigns, as they seem to be relatively attached to meat, and other approaches such as altering pricing and availability could be more effective.

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Competing Interests: The authors declare no conflict of interest.

Data Availability: The data, measures and materials, links to all pre-registrations, and Supplementary Online Materials for all studies are available at [Benningstad \(2024a\)](#).

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