A Structured Literature Review of the Meat Paradox

Abstract

Many people wish to avoid harming animals, yet most people also consume meat. This theoretical 'meat paradox' is a form of cognitive dissonance and has grave negative consequences for animal welfare and the environment. Yet, despite these consequences, meat paradox literature is sparse. The current structured literature review (SLR) explores primary literature up to May 2020, supporting the paradox and uniquely reviewing all known triggers of the paradox (e.g., exposure to meat's animal origins), all known strategies to overcome the paradox (e.g., avoiding thinking about consumed animals) and how different people (e.g., those of different genders, occupations, ages, dietary preferences, cultures or religions) utilise varying strategies to overcome the paradox. For instance, the review uniquely demonstrates how dietary identity, dietary adherence and meat consumption frequency, among other demographic and psychographic factors, all affect moral (dis)engagement from animals. Overall, this paper has wide-ranging theoretical implications for the meat paradox and social psychological literature, and practical implications for meat reduction policies.

Keywords: meat paradox, cognitive dissonance, animal use, moral disengagement

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The 'meat paradox' (MP) is the phenomenon of people using animals in ways that harm them (e.g., meat consumption), despite caring for animals and wishing them no harm (Loughnan et al., 2014). This theoretical MP represents a form of *cognitive dissonance* (hereon dissonance), describing the discomfort arising from contradiction between one's beliefs and behaviours (Loughnan et al., 2014). For instance, most US participants (n=1024) are very or somewhat concerned about animal welfare across contexts (e.g., research, 67%; zoos, 57%; food production, 54%; Riffkin, 2015), indicating most people care about animals. In fact, people empathise more with dogs than adult human victims (Levin et al., 2017). Yet, even though care for animals sometimes exceeds care for humans, 90-97% of people consume meat (FSA, 2012; The Vegan Society [TVS], 2019).

Meat consumption is concerning and must urgently decrease due to its numerous detrimental consequences, such as animal welfare violations (Viva!, 2017) and environmental damage, including greenhouse gas emissions (Godfray et al., 2018), water pollution (Mekonnen & Hoekstra, 2012) and excessive energy and land use (de Vries & De Boer, 2010). If predominantly plant-based diets became common, projected greenhouse gas emissions could reduce by 52% (Springmann et al., 2018), yet global meat consumption is *rising* (FAO, 2018; Godfray et al., 2018). Therefore, understanding the MP is crucial for informing interventions to reduce meat consumption and its detrimental effects.

Given these grave consequences, MP literature is surprisingly sparse. Rothgerber's (2020) meat-related cognitive dissonance (MRCD) framework offers initial theoretical insights of how meat consumers prevent and reduce dissonance. It supports the MP and suggests it is elicited by triggers (e.g., reminders of meat originating from animals) and that people use strategies to block triggers *a priori* before experiencing dissonance or to reduce dissonance *post-hoc* if triggers are unavoidable. Further, Rothgerber (2020) explored some individual (gender) and social (culture) differences in responses to the MP.

However, the MRCD framework, alongside other theoretical MP papers (Bastian & Loughnan, 2017; Loughnan et al., 2014), is based only on narrative and not *systematic* structured literature review (SLR) and may therefore be limited. For instance, the SLR principle of 'coverage' (Pittaway, 2008) enables all relevant literature to be identified through systematic searches across databases and disciplines, whilst narrative reviews risk omitting relevant literature. Additionally, unlike narrative literature reviews, SLR principles of 'transparency' and 'clarity' (Pittaway, 2008) ensure clear description of steps implemented to find and evaluate literature for inclusion or exclusion, reducing selection bias and increasing replicability (Pae, 2015). Unlike narrative reviews, a SLR would therefore provide a systematic, comprehensive, and transparent overview of the MP. Yet, to the authors' knowledge, only one MP SLR has been published, which focussed only on one MP resolution strategy called dissociation (Benningstad & Kunst, 2019), omitting alternative strategies and hence leaving important aspects of MP unexplored.

A broader SLR would enable the MRCD framework to be evaluated against all available and relevant literature. Firstly, it would allow for testing if current literature supports the MP and its proposed triggers and strategies *directly*, through measuring indicators of dissonance (self-reported discomfort, negative affect and/or physiological arousal) typically succeeding a trigger and preceding a strategy. Secondly, it would allow for *indirectly* testing if data fits theory, whereby indirect support for the MP is determined by whether data can be interpreted within the dissonance framework even though dissonance is not measured directly. That is, data does not preclude dissonance and fits patterns congruent with MP theory. Finally, the MRCD framework would benefit from *extension* by reviewing triggers or strategies beyond those described within Rothgerber (2020) and to explore moderators beyond gender and culture.

Therefore, this paper uniquely addresses the above limitations by aiming to: 1) explore direct and indirect support for the MP and 2) extend understanding by investigating MP's a) triggers, b) resolution strategies (besides dissociation; Benningstad & Kunst, 2019), and c) moderators (demographic and psychographic variables). To address these aims, this paper investigates four research questions (RQs): Does literature directly and/or indirectly support the MP (RQ1)? What triggers the MP (RQ2)? How do people resolve the MP (RQ3)? And do people differ in how they experience the MP (RQ4)? To answer these RQs, this paper will firstly review debates around direct and indirect support for the MP, followed by reviewing MP's known triggers, strategies and moderators. The paper will close by discussing theoretical and practical implications for MP literature and meat reduction interventions.

The MP as Dissonance

Dissonance is discomfort arising from contradiction between one's values and behaviour (Festinger, 1962), and is triggered by any stimulus which makes the contradictory behaviour (Fointiat et al., 2011; e.g., meat consumption), values (Dossett, 2009; e.g., not wanting to harm animals) and/or behaviour-value link (Juvan & Dolnicar, 2014; e.g., how meat consumption harms animals) salient.

People reduce dissonance by, for example, avoiding triggers (Liang, 2016) or trivialising harmful consequences of their behaviour (Voisin et al., 2013). According to cognitive dissonance theory (CDT; Festinger, 1962), these strategies achieve consonance (parity between behaviour and values) and divide into three types: (1) changing values, (2) changing behaviour (*moral engagement*, hereon engagement) or (3) obscuring the behaviour-value contradiction (*moral disengagement*, hereon disengagement). As most meat consumers report caring for animals (Riffkin, 2015), they do not appear to change their values (e.g., do

not use Strategy One; Loughnan et al., 2014). Additionally, 90-97% of people continue to consume meat (FSA, 2012; TVS, 2019), indicating people either do not change their behaviour (e.g., do not use Strategy Two) or change their behaviour only partially by reducing meat consumption but still consuming meat occasionally (partially using Strategy Two).

By indirect process of elimination, many people, then, must *disengage* to some extent (e.g., utilise Strategy Three), obscuring the contradiction between their value/belief (to not harm animals) and their behaviour (consuming, and thus harming, animals), thereby perpetuating meat consumption. For instance, whilst some meat consumers partially use Strategy Two by reducing their meat consumption (e.g., 23% of Americans in 2019; McCarthy & Dekoster, 2020), even vastly reduced meat consumption still conflicts with caring for animals and thus elicits some dissonance. This residual dissonance must therefore be resolved via Strategy Three (disengagement). Additionally, most meat consumers (e.g., 75% of Americans; McCarthy & Dekoster, 2020) do not reduce their meat consumption, indicating they *fully* utilise Strategy Three. Indeed, current literature suggests dissonance is occurring (Rothgerber, 2020), and that people typically use disengagement strategies (Strategy Three) to reduce it. For example, people deny 'food' animals' ability to feel pain (Bratanova et al., 2011), rendering meat consumption harmless and morally permitting continued meat consumption. However, as stated above, this literature has not yet been assessed within an SLR. Thus, by reviewing direct and indirect support for the MP alongside its triggers, strategies and moderators, the current paper aims to critically consider applicability and validity of the above research.

Method

Only quantitative, qualitative or mixed-methods primary research was included in this review. Whilst not all articles included triggers, articles were required to directly and/or indirectly explore dissonance-reducing strategies utilised by animal consumers. Dissonance-reducing strategies refer to Strategies One, Two or Three: Any action which successfully resolves or obscures the contradiction between caring for animals (value) and consuming them (behaviour) and which thus reduces dissonance. Dissonance-reducing strategies may include: denying responsibility (Rothgerber, 2020), distancing oneself from harm caused to animals ('desensitisation'), denying harm or justifying meat consumption (Graça et al., 2016). Whilst the decision to only include literature which specifically investigates moral disengagement risks excluding relevant literature (e.g., literature exploring psychological perceptions of animals, e.g., Sevillano & Fiske, 2016; Wang & Basso, 2019; Zickfeld et al., 2018), more liberal searches risk including irrelevant literature. For instance, more liberal searches may have included behaviours not clearly related to MP, such as reactions to anthropomorphism (presenting animals as human-like; Wang & Basso, 2019) or animals' 'cuteness' (Zickfeld et al., 2018).

Overall, research was excluded if it was (1) not accessible in full-text, (2) not in English, (3) secondary or tertiary literature, (4) not peer-reviewed, (5) included in a prior search (duplicated citation) and/or (6) did not specifically test MP as stated above. The first four exclusion criteria were met through selecting English, full-text only and peer-reviewed primary research options via the **XX** University library search. The fifth criterion was met by excluding all duplicated articles and the sixth by assessing abstracts followed by full-texts to ensure research specifically answered the RQs. The review also included animal-use instances beyond meat consumption (e.g., hunting, bullfighting), as such occurrences

represent similar animal-related dissonance dilemmas to meat consumption. Articles from any country were included, as animal use is cross-cultural (Joy, 2011).

Multiple key terms and synonyms (see Tables 1 and 2 in Supplementary Materials) were employed in literature searches via the library's 'advanced search'. All searches referred to CDT, MP or related terms (e.g., 'moral disengagement'). The initial search (13th-14th October 2017) returned 432 articles. Four hundred were excluded for: irrelevance to aims (315), duplicated citations (78), non-primary literature (four), and insufficient information about dissonance-reducing strategies (three), leaving 32 articles. ProQuest, PubMed and Web of Science searches found no new articles. Google Scholar searches (15th-16th October 2017) were conducted only after exhausting other databases due to Google Scholar's limitations (e.g., excessive 'grey literature' and occasional exclusion of key literature; Haddaway et al., 2015), yielding three additional articles.

A follow-up search (7th May 2020) returned 159 articles published since 2017. Most (137) were excluded for: irrelevance to aims (111), duplicated citations (16), and non-primary literature (10), leaving 22 new articles. One additional article was found via PubMed, whilst Google Scholar searches returned 14 more articles. One final article was included on 21st May 2020 via a Google Scholar Alert. Overall, 73 primary research articles (47 quantitative; 19 qualitative; seven mixed-methods; see Table 3 in Supplementary Materials for all articles) are included within this review.

Findings and Discussion

Figure 1 (Supplementary Materials) demonstrates how our findings extend the MRCD framework (Rothgerber, 2020). We discuss detailed findings below.

Aim 1: Direct and Indirect Support for MP

Most articles within this review directly or indirectly supported the MP (70 articles; 95.89%[1]), reinforcing CDT and the MRCD framework (Rothgerber, 2020). Whilst most articles only provided *indirect* support for the MP, five articles (6.85%; Bastian et al., 2012; Buttlar & Walther, 2019; de Lanauze & Siadou-Martin, 2019; Rothgerber, 2014; Wenzel et al., 2020) provided *direct* support. For example, after considering meat's animal origins (trigger), people expecting (vs. not expecting) to consume meat were more likely to deny an animal having a 'mind' (deny it has mental human-like capacities, e.g., pain). Importantly, this denial of mind reduced dissonance, as measured by negative affect (Bastian et al., 2012). This example illustrates how triggers (e.g., thinking about meat's animal origins) elicit dissonance, necessitating dissonance-reducing strategies (e.g., denying mind) and thus supporting CDT.

All articles which measured dissonance directly supported the MP. However, three articles (4.11%) which explored the MP *indirectly* suggest the MP is not occurring and that meat consumers do not experience dissonance. Firstly, Panagiotou and Kadianaki (2019) proposed 'cognitive polyphasia theory', whereby people learn 'cultural knowledge representations' (ways of understanding phenomena within the world, which are learned from culture and expressed through language; hereon representations) of meat consumption. The authors suggest people interpret personal meat consumption with contradictory fluidity: holding simultaneous conflicting representations without discomfort. For example, participants demonstrated 'displacement' (biased negative representation of vegetarians,), 'selective prevalence' (using contradictory arguments in different settings; e.g., stating meat is sustainable when interviewed yet stating meat is unsustainable when in a focus group) and

[1]Percentages denote proportion of supporting articles out of the total articles included within this review (unless otherwise specified).

'hybridization' (using simultaneous differing representations; e.g., feeling moral concern for octopi yet none for kangaroos and ostriches). Together, these three discourses demonstrate how people hold conflicting representations without discomfort. These conflicting representations seemingly theoretically contradict CDT, as CDT suggests people experience behavioural inconsistency as uncomfortable and aim to rectify inconsistency.

Secondly, Scott et al. (2019) suggested environmental researchers (e.g., climate change scientists) provide coherent, rational explanations for meat consumption (*not* dissonance-reducing strategies). These explanations divide into four discourses: 1) 'optimism' (believing future technology will ease meat reduction and/or eliminate meat's negative consequences, allowing meat consumers to postpone meat reduction), 2) 'complexity' (valuing meat reduction whilst simultaneously continuing meat consumption due to belief that food decisions are more complex than consuming meat vs. not; e.g., some plant-based foods may cause equivalent harm to meat), 3) 'feebleness' (valuing meat reduction but simultaneously continuing meat consumption due to self-perceived lack of willpower) and 4) 'system-focus' (believing only systemic, not individual, change will have positive impact). Together, these discourses logically *explain* meat consumption, instead of dissonance-reducing strategies which *excuse* the behaviour.

Finally, Milford and Kildal (2019) suggest purported ignorance of meat's negative environmental and health consequences stems from genuine lack of knowledge, whereby people are genuinely unaware of the negative consequences without feigning ignorance. Consequently, 'ignorance is bliss' as people cannot experience dissonance if they are unaware of their behaviour contradicting their beliefs.

Together, these three articles provide alternative explanations to the MP, suggesting that people do not always value behavioural consistency (Panagiotou & Kadianaki, 2019),

present logical explanations for meat consumption (Scott et al., 2019) and can be ignorant of meat's negative consequences (Milford & Kildal, 2019). However, behaviours within the three articles can all equally be interpreted as dissonance-reducing strategies, and thus only debate MP *indirectly* instead of providing direct evidence against MP. For instance, Scott et al.'s (2019) rational discourses may seem rational (without actually being rational) to give environmental researchers coherent-seeming reasons not to reduce meat consumption. Secondly, Panagiotou and Kadianaki's (2019) displacement could be used intentionally to portray vegetarianism negatively, providing reasons for not becoming vegetarian. Thirdly, Milford and Kildal's (2019) ignorance could be intentional to avoid knowing about harm caused to animals and thus avoid meat consumption reduction.

Thus, whilst indirect MP data can be interpreted with explanations alternative to dissonance, direct measurements of dissonance support the MP. However, research measuring the MP directly is sparse and more research is required. Such research should include direct measures of dissonance (self-reported discomfort, negative affect, physiological arousal) as mediators between triggers and strategies to fully explore the MP framework (see 'limitations and directions for future research').

Aim 2a: Triggers

The articles highlight multiple triggers, describing any stimuli which causes dissonance and/or dissonance-reducing strategies (see Table 4 in Supplementary Materials for all triggers). Examples include reminding a person of their own meat consumption (highlighting their behaviour) or reminding people of animal suffering (highlighting harm caused). Forty-one articles (56.16%) did not explore triggers. Of the 32 articles that did explore triggers, the most frequently used trigger (eight articles; 25% of articles exploring triggers) was 'reminders of meat's animal origins', which can include displaying a

234 photograph of a consumed animal (Kunst & Haugestad, 2018; Kunst & Hohle, 2016) or
235 referring to meat by its animal name (e.g., 'pig'; Kunst & Hohle, 2016).

236 The current review provided strong support for two types of triggers from Rothgerber
237 (2020)[2]: reminder of animal origins (eight articles; 25% of articles exploring triggers) and
238 reminder of animal suffering (four articles; 12.5% of articles exploring triggers). The review
239 also found some more limited support for Rothgerber's (2020) three other triggers: reminder
240 of own meat consumption (two articles; 6.25% of articles exploring triggers), reminder of
241 own meat consumption *and* animal harm (two articles; 6.25% of articles exploring triggers)
242 and exposure to vegetarians (one article; 3.13% of articles exploring triggers). Additionally,
243 the current review highlights two novel categories: 1) purported edibility, whereby people
244 experience greater dissonance and disengage more when animals are described as 'edible'
245 (vs. 'non-edible'; seven articles; 21.88% of articles exploring triggers) and 2) threat, whereby
246 people experience greater dissonance and disengage more when exposed to threatening
247 stimuli (vs. not; e.g., rejection for their meat-eating beliefs; three articles; 9.38% of articles
248 exploring triggers). Further 'miscellaneous' triggers (e.g., actual meat consumption) arose
249 from the literature but were only evidenced in two articles or less (6.25% of articles exploring
250 triggers).

251 **Aim 2b: Strategies**

252 Findings from this SLR evidence how dissonance is resolved through engagement
253 (changing behaviour to match one's values e.g., reducing or stopping meat consumption) or
254 disengagement (obscuring the behaviour-value link and enabling continued meat
255 consumption), supporting and extending the MP (see Table 5 in Supplementary Materials for
256 all engagement and disengagement behaviours).

[2]Some names for triggers were developed by the current authors.

Engagement

Engagement describes humanising and empathising with animals (emotional engagement) and is commonly accompanied by behaviour change (behavioural engagement), such as reduced meat consumption or veg*nism (vegetarianism/veganism). Yet only 2% of people in the UK are vegetarian and 1% vegan (TVS, 2016, 2019), indicating little engagement. Indeed, most articles within this review (68 articles; 93.15%) demonstrated *dis*engagement in some form (discussed in more detail below). However, two articles (2.74%; Anderson & Barrett, 2016; de Lanauze & Siadou-Martin, 2019) seemingly demonstrate engagement. For instance, people consumed less meat when it is described as 'factory farmed' (vs. 'humanely farmed'; Anderson & Barrett, 2016), indicating the 'factory farmed' label encouraged engagement with the consumed animal and deterred people from consuming meat. However, the researchers did not measure participants' feelings towards 'food' animals across conditions, providing indirect evidence for engagement only.

Unfortunately, reduced meat consumption (and associated engagement) can be short-lived due to disengagement strategies. For instance, discomfort and willingness to reduce meat consumption decreased within two weeks of engagement due to two direct disengagement strategies: decredibilization (denying credibility of information) and trivialization (comparing meat consumption to worse scenarios; de Lanauze & Siadou-Martin, 2019). Alongside demonstrating the impact of disengagement strategies (discussed in detail below), this finding also suggests time dynamics influence the MP.

Disengagement

Disengagement describes dehumanising and lack of empathy for animals. Disengagement is the predominant response to dissonance and is upheld using dissonance-reducing strategies. These strategies enable continued meat consumption and prevent or

reduce dissonance by obscuring the contradiction between one's meat-consuming behaviour and wish to avoid harm to animals. This review evidences seven disengagement strategies[3] (see Table 5 in Supplementary Materials for all strategies), five strategies which could be classed as disengagement or engagement (e.g., reported reduced meat consumption[4]) and 'miscellaneous' strategies (e.g., comparing meat consumption to worse situations) supported by only three articles within this review (4.11%) or less. The three most common disengagement strategies were 'denial of qualities to animals' (e.g., denying positive traits to animals; 34 supporting or 46.58%; three against or 4.11%), the 4N's (whereby meat is 'natural', 'necessary', 'nice' and 'normal'; 31 supporting or 42.47%) and 'denial of adverse consequences' (whereby people deny and/or obscure meat's harm to animals; 20 supporting or 27.4%). Strategies can also co-occur. For example, people can state humans are hierarchically superior to animals (hierarchical justification) and deem this human superiority 'natural' ('natural' justification; Salonen, 2019).

The disengagement strategies evidenced within this review broadly align with previous categorisations of strategies (Graça et al., 2016; Rothgerber, 2013, 2020), including: 'animal-focussed', 'meat-focussed' and 'denial of responsibility' (Rothgerber, 2020), 'direct' (meat consumption justifications used after experiencing dissonance) and 'indirect' (avoiding thoughts about or exposure to treatment of animals to prevent dissonance; Rothgerber, 2013), and 'desensitisation' (emotional numbing from animal slaughter), 'means-ends justifications' (presenting meat as serving humanity's 'greater good'), 'diffused responsibility' (blaming others for meat consumption), 'lack of perceived choice' (stating meat-free diets damage

[3]Some strategies divide into substrategies.
[4]If meat consumption has actually reduced, reported reduced meat consumption indicates engagement (Hoogland et al., 2005), but, if meat consumption has not actually reduced, indicates underreporting and *dis*engagement (Rothgerber, 2014, 2019, 2020).

dietary freedom) and 'denial of adverse consequences' (denying harm to animals; Graça et al., 2016).

Linking our disengagement strategies to the above categorisations, our most common strategy, 'denial of qualities to animals', can be classed as *direct* and *animal-focussed*, which justifies meat consumption through denying positive traits to animals. Conversely, 'personal choice' (whereby people present meat consumption as their individual choice; five supporting or 6.85%), can be classed as *direct* and *meat-focussed*, which justifies meat consumption due to freedom of choice and broadly aligns with Graça et al.'s (2016) 'lack of perceived choice'. 'Inevitability' (whereby people present meat consumption as unavoidable; eight supporting or 10.96%), can be classed as *direct* and *denial of responsibility*, which justifies meat consumption based on its purported uncontrollability. Expanding beyond 'animal-focussed', 'meat-focussed' and 'denial of responsibility' (Rothgerber, 2020), this review also evidences 'veg*n-focussed' strategies. For instance, 'derogation of veg*nism' (representing vegetarians negatively to dismiss vegetarianism's benefits; 17 supporting or 23.29%; one against or 1.37%) focusses on veg*nism and/or veg*ns.

We now discuss differences between direct and indirect strategies in more detail below.

Direct Strategies

Direct strategies, constituting 45 out of 49 total disengagement strategies and substrategies within this review (91.84%), are theorised to reduce dissonance *directly* by justifying meat consumption post-trigger (Rothgerber, 2013). Examples include denying qualities to animals, derogating veg*nism, and the '4N's'. Denying qualities to animals, the most frequently emerging direct strategy, involves typically consumed (vs. non-consumed) animals being conceptualised as low status (denial of status), non-sentient (denial of mind),

incapable of pain (denial of suffering), too unintelligent to understand what is happening to them (denial of intelligence) and/or otherwise ascribed fewer human-like qualities. For example, meat consumers (vs. non-meat consumers) ascribe fewer secondary ('human-like') emotions to animals, especially consumed (vs. non-consumed) animals (Bilewicz et al., 2011), and sometimes also ascribe fewer primary ('animal-like') emotions (Bilewicz et al., 2011 Study Two; though not always, Bilewicz et al., 2011 Study One).

An alternative direct strategy is to *disregard*, not *deny,* animals' qualities. For instance, learning about pigs' intelligence does not inform their perceived moral status, whereas learning about fictional or typically non-consumed animals' intelligence *does* positively inform these animals' perceived moral status (Piazza & Loughnan, 2016). This finding occurs due to self-relevance (whether or how much someone uses an animal for personal benefit), whereby people are motivated to view self-relevant animals (animals they consume) negatively to alleviate discomfort ('motivated cognition'). As further evidence of disregarding, greater belief in animal mind (BAM) of pigs, chickens and fish does *not* inform decreased support for their use, despite greater BAM of other (non-'food') animals informing reduced support for these animals' usage (Higgs et al., 2020). However, disregarding and denial can co-occur, as denial of BAM for some 'food' animals was also evidenced (Higgs et al., 2020), demonstrating how direct strategies can occur simultaneously.

The '4N's', the second most common direct strategy, describe meat being justified as 'natural', 'normal', 'necessary' and/or 'nice' (Joy, 2011; Piazza et al., 2015). 'Natural' justifications emphasise meat's perceived 'naturalness', with arguments referring to human-animal hierarchy (Rothgerber, 2013), 'survival of the fittest' (Salonen, 2019) or the 'circle of life' (Bettany & Kerrane, 2018). 'Normal' justifications emphasise meat's perceived 'normality', with arguments referring to cultural (Oleschuk et al., 2019; Sahakian et al., 2020) and/or religious (Allcorn & Ogletree, 2018) norms. 'Necessary' justifications emphasise

perceived requirements for meat, such as health and/or survival (Hopwood & Bleidorn, 2019). Finally, 'nice' justifications emphasise meat's perceived 'tastiness' or pleasurability (Macdiarmid et al., 2016).

Beyond the 4N's, behaviours presented within two of the articles which explored the MP indirectly (Panagiotou & Kadianaki, 2019; Scott et al., 2019) can be interpreted as direct strategies. For instance, displacement could be used intentionally to present vegetarianism as illogical (Panagiotou & Kadianaki, 2019), thus reducing dissonance and avoiding behavioural change. Regarding Scott et al. (2019), environmental researchers may assert only more coherent-*seeming* dissonance-reducing rationalisations than other people due to their knowledge of meat's environmental harm. For instance, environmental students cannot use 'strategic ignorance' (deliberately avoiding and/or denying uncomfortable truths; indirect strategy) due to their knowledge of environmental damage caused by animal agriculture (Šedová et al., 2016). Thus, possessing knowledge of harm caused by meat consumption may necessitate direct (over indirect) strategies. We explore indirect strategies in further detail below.

Indirect Strategies

Indirect strategies, constituting four out of 49 total disengagement strategies and substrategies within this review (8.16%), are theorised to prevent dissonance *indirectly* by avoiding thoughts about or exposure to meat's harmful consequences *pre*-trigger (Rothgerber, 2013), thus avoiding triggers physically (e.g., avoiding slaughterhouse footage) or cognitively (e.g., avoiding thoughts about meat's origins). The most common indirect strategies involve dissociation and avoidance (Kunst & Hohle, 2016; 19 articles or 26.03%). For instance, people can avoid thinking about animal suffering and slaughter or meat's animal origins (Oleschuk et al., 2019). Animals may also be treated as an 'absent referent'

(Arcari, 2017), whereby meat is separated from animals using certain phrases (e.g., 'livestock'). Underreporting may also constitute an indirect strategy, whereby people avoid dissonance by misrepresenting and/or underestimating their meat consumption (Rothgerber, 2019).

Behaviour presented within one of the articles which explored the MP indirectly (Milford & Kildal, 2019) can also be interpreted as an indirect strategy: Whilst the authors suggest meat consumption arises from genuine ignorance of meat's harmful consequences, this self-proclaimed ignorance could be strategic. 'Strategic ignorance' prevents dissonance indirectly by intentionally disregarding meat's harmful consequences, preventing necessary behavioural change. However, despite falsely appearing indifferent, 'strategically ignorant consumers' (Onwezen & van der Weele, 2016) experience dissonance and only *appear* to not experience dissonance due to their strategic ignorance rendering dissonance undetectable. Thus, it may be difficult to distinguish between indirect strategies (e.g., 'strategic ignorance') and non-strategies (e.g., genuine ignorance).

Aim 2c: Demographic Differences

Gender

Twenty-two articles (30.14%[5]; see Table 6 in Supplementary Materials for all articles exploring each demographic and psychographic variable) investigated gender's role in the MP. Fifteen found consistent gender differences, supporting Rothgerber (2020). Overall, females (vs. males) typically disengage indirectly (vs. directly; Piazza et al., 2015; Rothgerber, 2013), display less disengagement (Graça et al., 2016), and demonstrate lower meat attachment (Dowsett et al., 2019; Graça et al., 2015), among other gender differences.

[5]The percentage reported for each demographic and psychographic variable is out of the total number of articles included within this review.

Yet, one article found no gender differences. Specifically, gender did not affect facial recognition for 'consumable' vs. 'non-consumable' animals and did not moderate the relationship between perceived animal edibility and its perceived ability to suffer (Bilewicz et al., 2016). However, the small sample size (n=18) may have rendered gender differences statistically undetectable (Button et al., 2013).

Adding complexity, six articles found contradictory results. For example, gender did *not* predict meat consumption moralization (how much meat consumption is viewed as a moral issue; hereon *moralization*) in Feinberg et al.'s (2019) first two studies, whereas females (vs. males) demonstrated greater moralization in Study Three. Gender also did not predict willingness to substitute meat and did not affect moral justification or moral concern about free-range or wild animal meat production (Hartmann & Siegrist, 2020). Yet males (vs. females) more greatly morally justify (direct disengagement strategy) and are less morally concerned about *conventional* meat production and *seafood* (Hartmann & Siegrist, 2020). This gender difference may arise from differing consumption levels of and attachment to conventional meat. For instance, males typically consume more meat (Rothgerber, 2013) and are more attached to meat (Dowsett et al., 2019) than females. Therefore, conventional meat production may elicit stronger dissonance for males due to greater behavioural investment, thus eliciting stronger, more direct, strategies (e.g., moral justification) in males but not females.

To conclude this section, the articles mostly evidence gender differences in MP, with greater engagement or indirect (vs. direct) disengagement in females (vs. males; supporting Rothgerber, 2020). Additionally, some strategies (moralization; denial) seemingly correlate less with gender than others (meat attachment).

Diet

This review expands upon Rothgerber (2020) by investigating diet's role in the MP. Nineteen articles (26.03%) investigated dietary preference, whereby meat consumers (vs. veg*ns) demonstrate more meat attachment (Graça et al., 2015), deny more emotions to animals (Bilewicz et al., 2011) and endorse the 4N's more (Piazza et al., 2015). However, even meat consumers differ. For example, greater meat consumption frequency correlates with greater disengagement (Graça et al., 2016; Hartmann & Siegrist, 2020) and carnistic defense (justifying meat consumption despite viewing animals positively; Monteiro et al., 2017). Similarly, 'restricted omnivores' (people who reduce meat consumption; vs. meat consumers) endorse the 4N's less and attribute animals as having greater mind (Piazza et al., 2015), whilst pescatarians (vs. vegetarians) more greatly deny fishes' ability to feel pain and demonstrate more speciesism (Rosenfeld & Tomiyama, 2019a).

However, even vegetarians who have occasionally consumed meat ('dietary violation') disengage from animals (Rosenfeld & Tomiyama, 2019b). Unlike meat consumers, these vegetarians use different strategies: highlighting past success at avoiding meat, resituating their vegetarianism motive as health-related (vs. ethics-related) and affirming future dietary adherence. Therefore, these vegetarians 'exceptionalise' dietary violations as one-off mistakes, move focus of their diet away from animal welfare and reaffirm future commitment. Self-relevance and motivated cognition (Piazza & Loughnan, 2016) can explain these findings, whereby, when people consume animals, they are motivated to view these animals negatively (for habitual meat consumers) or distance themselves from their meat consumption (for vegetarians with 'dietary violations').

However, not only does diet (and associated self-relevance) affect the strategies used, diet may constitute a strategy itself. For example, simply discussing animal welfare can

444 occasionally strengthen dissonance-reducing strategies (perhaps due to reminding people of
445 meat's animal origins) and increase meat consumption ('reactance'; Rothgerber, 2014, 2020).
446 Reactance describes people responding to self-perceived threatening instructions to do
447 something (consume less meat) by doing the opposite (consuming more meat; *behavioural*
448 *reactance*) and/or deeming the issue less important than they did before (moralizing meat
449 consumption less; *psychological reactance*). These deliberately opposing responses reinstate
450 sense of personal choice (Brehm, 1966). Three articles within this review (Dowsett et al., 2019;
451 Feinberg et al., 2019; Lindgren, 2020) evidence meat-related psychological reactance. For
452 example, after watching videos on animal suffering in meat production, 'decreasers'
453 demonstrate *reduced* meat consumption moralization over time and are less likely to reduce
454 meat consumption than 'slight changers' or 'moralizers' (Feinberg et al., 2019).

455 To conclude this section, dietary identity, adherence and meat consumption frequency
456 all inform moral (dis)engagement from animals, perhaps due to self-relevance and motivated
457 cognition. Additionally, diet may constitute a strategy itself, whereby people respond to
458 triggers by moralizing meat consumption *less* with psychological reactance.

459 ***Age***

460 Eleven articles (15.07%) investigated the role of age in the MP. Whilst older (vs.
461 younger) people typically consume less meat during snacking (de Backer et al., 2020),
462 morally justify conventional meat production and seafood less (Hartmann & Siegrist, 2020)
463 and show less vegaphobia (Vandermoere et al., 2019), they also endorse the 4N's more
464 (Piazza et al., 2020) and perceive animals as having lower capacities for boredom and hunger
465 (but not fear and pain; Peden et al., 2020). However, most articles found no relationship
466 between age and moral (dis)engagement: Age did not predict meat consumption moralization

(Feinberg et al., 2019), moral justifiability of free-range or wild animal meat production (Hartmann & Siegrist, 2020), nor 4N endorsement (Piazza et al., 2015).

Two articles (Bettany & Kerrane, 2018; Bray et al., 2016) investigated animal-meat perceptions among children and parents, demonstrating how parental attitudes impact childrens' perceptions of animals and meat. For example, Bettany and Kerrane (2018) explored children's attitudes and behaviours towards meat originating from animals raised by the family ('petstock'). Parents often influenced children to change from completely rejecting meat (abstention preference, indicating *engagement*) after first learning of petstock's animal origins to consuming petstock meat with respect (attributive, indicating *disengagement*) or consuming shop-bought meat only (avoidance, indicating partial disengagement).

To conclude this section, findings on age are currently either non-significant or contradictory. However, research on *children* indicates that childrens' perceptions of animals are informed by their parents and may fluctuate over time.

Occupation

Seven articles (9.59%) investigated the role of occupation in the MP. For instance, farmers (vs. animal rights supporters and urban public) view animals with greater instrumentality and less empathy (Hills, 1993). Additionally, slaughterhouse workers demonstrate diffusion of responsibility (e.g., blaming the market; Lundström, 2018), whilst dairy industry consultants and farmers present animal welfare as beyond their control (Taylor & Fraser, 2019).

This disengagement from animals seemingly contradicts the 'contact hypothesis' (Allport, 1954; Cook, 1985), whereby greater contact with an outgroup (e.g., animals) should encourage engagement towards the outgroup. However, greater closeness between human and animal may maximise dissonance, due to intensely caring for animals yet being strongly

involved in behaviours which harm them (e.g., slaughter), necessitating robust dissonance-reducing strategies. Additionally, people who work with 'food' animals profit from them (which could be termed 'financial self-relevance'). Thus, self-relevance research (Piazza & Loughnan, 2016) indicates those who financially benefit from 'food' animals (vs. those who do not) may disengage from 'food' animals more *despite* greater familiarity.

Similarly, veterinary students with greater familiarity and/or intention to work with livestock in the future view animals and their welfare less positively (Mariti et al., 2018), perhaps due to greater awareness that the animals will be slaughtered, eliciting disengagement. Yet greater familiarity and/or intention to work with *pets* improves perceptions of animals and their welfare (Mariti et al., 2018), perhaps due to lower salience of animal slaughter when working with pets (vs. livestock).

Other articles demonstrate how slaughterhouse workers treat animals as 'absent referents' (indirect strategy; Lundström, 2018), whilst dairy farmers openly acknowledge dairy cow slaughter, portraying slaughter as beneficial for cows (direct strategy). Additionally, dairy farmers consistently demonstrate ambivalence (love vs. cruelty) towards their cows (Taylor & Fraser, 2019). Combined, these results suggest slaughterhouse workers use more indirect strategies whilst farmers use more direct strategies. However, farmers do not always use direct strategies. For instance, pig farmers (vs. non-pig-farmers) do *not* deny pigs' mind (direct strategy) and rate pigs as *more* capable of experiencing hunger than cows, dogs and cats (Peden et al., 2020).

To conclude this section, findings on the relationship between occupation and the MP are contradictory. For instance, whilst some research suggests slaughterhouse workers use predominantly indirect strategies and farmers use predominantly direct strategies, other research evidences how farmers do not *always* use direct strategies. Farmers' disengagement

515 from animals also seemingly contradicts the 'contact hypothesis', whereby greater contact
516 with self-relevant animals may be theoretically *increasing* dissonance.

517 ***Culture***

518 Evidencing the MP as cross-cultural (Joy, 2011), the articles originated from at least
519 24 countries, although consisted mostly of US, Australian, UK or international samples (see
520 Table 7 in Supplementary Materials for number of articles per country). Three articles
521 (4.11%; Kunst & Haugestad, 2017; Peden et al., 2020; Tian et al., 2016) found cross-cultural
522 differences in the MP, supporting Rothgerber (2020). For instance, Americans dissociate
523 more than Ecuadorians (Kunst & Haugestad, 2018), whilst French (vs. Chinese) participants
524 are more likely to deny animals' mind (Tian et al., 2016). These cultural differences may
525 arise from differences in meat production (Kunst & Haugestad, 2018). For instance,
526 Ecuadorian meat is often served with the animal's head still attached, whereas US meat is
527 not, making dissociation harder for Ecuadorians to use than Americans. Similarly, people
528 within China are more likely to be exposed to animal slaughter than people within France.
529 The authors therefore suggest Chinese (vs. French) people are less shocked or disturbed by
530 animal slaughter, thus experiencing less dissonance and explaining why they deny animals'
531 mind less (Tian et al., 2016). A more puzzling cross-cultural difference is participants within
532 the Republic of Ireland (vs. Scotland or England) viewed animals as more capable of
533 experiencing pain (Peden et al., 2020), despite highly similar meat production processes.

534 Finally, two qualitative articles found spontaneous reference to culture within meat
535 justifications. Firstly, people used cultural repertoires to situate and explain their meat
536 consumption (Oleschuk et al., 2019), such as by presenting meat as part of one's cultural
537 identity. Secondly, people demonstrate cross-cultural meat consumption differences (Salonen,
538 2019). For example, a participant highly familiar with Aboriginal cultures believed in

honouring animals killed for meat, a viewpoint perceived by the participant as uncommon within Western cultures. Whilst not tested directly, honouring may be a disengagement strategy (e.g., presenting animals' deaths as purposeful and thus reducing dissonance). However, another participant living within Southeast Asia also demonstrated honouring yet had *reduced* meat consumption. Thus, honouring may sometimes represent *engagement*, whereby respecting animals links to *lower* meat consumption.

To conclude this section, culture seemingly plays an important role in the MP, supporting Rothgerber (2020). Additionally, culture may influence the treatment of 'food' animals (Salonen, 2019) and be used to justify meat consumption (Oleschuk et al., 2019).

Socioeconomic Status (SES)

Four articles (5.48%) investigated SES's role in the MP. Whilst those with higher (vs. lower) income viewed veganism as less tasty (Bryant, 2019), SES predicted neither moralization (Feinberg et al., 2019) nor disengagement (Hopwood & Bleidorn, 2019; Piazza et al., 2015). Therefore, SES does *not* appear to predict dissonance nor dissonance-reducing strategies.

Educational Status

Three articles (4.11%) measured relationships between educational status and the MP. People of higher (vs. lower) educational status consume less meat (de Backer et al., 2020; Vandermoere et al., 2019) and report greater intention to reduce animal product consumption (Bryant, 2019). Thus, people of higher (vs. lower) educational status may experience more engagement towards animals.

Religion

Three articles (4.11%) measured or demonstrated references to religion within disengagement strategies. Religion did not predict moralization (Feinberg et al., 2019), indicating no effect of religion on the MP. However, two articles qualitatively evidenced the role of religious justifications. For example, participants linked meat consumption to God's abundant provision of food (Salonen, 2019) and emphasised ethical animal slaughter within Islam (Oleschuk et al., 2019). Participants also emphasised meat's necessity within their religion (e.g., traditions; Salonen, 2019), again highlighting how disengagement strategies ('necessary' and religious justifications) co-occur. Together, these findings suggest religion informs the type of dissonance-reducing strategies used and meat practices and perspectives, yet does not inform moralization.

Ethnicity

One article (Feinberg et al., 2019) measured the role of ethnicity in the MP, considering one outcome (moralization) only. Within the first two studies, ethnicity did not predict moralization, but White (vs. non-White) people were more likely to be 'moralizers' within Study Three. Reasons for these contradictory findings are unclear, as ethnicity was measured identically throughout the studies by comparing White vs. non-White people.

Aim 2c: Psychographic Variables

Individual Differences

Six articles (8.22%) investigated links between individual differences and the MP. Most of these articles (supporting Rothgerber, 2020) found higher (vs. lower) social dominance orientation (SDO; believing some groups are naturally superior to others) correlated with greater disengagement, including greater denial of animal emotion (Bilewicz et al., 2011) and mind (Piazza et al., 2015), more 4N endorsement and lower moral concern

584 for animals (Piazza et al., 2015). Additionally, greater SDO mediated positive relationships
585 between meat consumption and both carnistic domination (belief in dominance of humans
586 over animals) and carnistic defence (Monteiro et al., 2017). However, contradicting
587 Rothgerber (2020), SDO could not explain differences in ascription of animal emotion in
588 veg*ns vs. meat consumers (Bilewicz et al., 2011) and did not always predict increased meat
589 consumption willingness nor reduced meat disgust (Earle et al., 2019).

590 Similarly, those higher in right-wing authoritarianism (RWA; believing in traditional
591 authorities and supporting societal norms) show less animal empathy and meat consumption
592 distress, and greater anti-veg*nism, 4N endorsement, meat consumption willingness (Earle et
593 al., 2019), and carnistic domination (Monteiro et al., 2017). The current articles evidence how
594 SDO and RWA correlate with negative perceptions of animals, aligning with general SDO
595 and RWA literature whereby these variables correlate with negative views of human
596 outgroups (Whitley, 1999).

597 ***Gender Attitudes***

598 Six articles (8.22%) explored effects of gender attitudes on the MP. For instance,
599 greater meat-eating-justification endorsement (supporting rationalisations which justify meat
600 consumption) correlated with greater hostile sexism (gender-based prejudice involving
601 explicit ill will towards people of a certain gender; Glick & Fiske, 1996, 1997), benevolent
602 sexism (gender-based prejudice seemingly involving good intentions towards people of a
603 certain gender yet undermining their competence; Glick & Fiske, 1996, 1997) and support for
604 traditional gender roles, and less gender role transcendence (the ability to ignore gender roles;
605 Allcorn & Ogletree, 2018). Conversely, men who value ‘new masculinity’ more (vs. less) are
606 less attached to and, consequently, consume less meat (de Backer et al., 2020).

These findings suggest gender differences in MP (males demonstrating greater disengagement and direct strategies than females; Graça et al., 2016; Rothgerber, 2013) can be explained by traditional gender attitudes. Indeed, four articles demonstrate how these gender differences arise from representations of masculinity. For example, military men and women perceive meat consumption as inherently masculine and linked to 'man as hunter' gender stereotypes (Kildal & Syse, 2017; Milford & Kildal, 2019). This masculinity is viewed as positive and important, motivating men and women to be 'ultra-masculine' to fit their military environment. Therefore, combined with de Backer et al.'s (2020) findings above, anyone (man *or* woman) who values 'traditional' masculinity more engages less with animals.

This research evidences how masculinity stereotypes necessitate males, and/or those wishing to be 'masculine', to disengage from consumed animals, perhaps explaining why females identify as veg*n more than males (63% female vs. 37% male vegans; TVS, 2016). Additionally, *within*-gender differences resulting from gender attitudes can occur (de Backer et al., 2020), whereby those who believe less in traditional masculinity demonstrate greater engagement with animals.

Political Ideology

Four articles (5.48%) explored links between political ideology and the MP. For instance, left-wing (vs. right-wing) participants viewed veg*nism more positively on aspects including ethicality and environmental benefit and demonstrated greater meat reduction willingness (Bryant, 2019). Similarly, supporting Rothgerber (2020), greater conservatism correlates with greater 4N endorsement, anti-veg*nism and meat consumption willingness, and lower animal empathy and meat distress (Earle et al., 2019). Veg*nism itself is also politicised as left-wing and 'politically correct', whilst meat consumption is deemed right-

631 wing (Lindgren, 2020). Yet, contradicting these articles, Feinberg et al. (2019) found no
632 relationship between political ideology and moralization. Thus, except for Feinberg et al.
633 (2019), political orientation seems to influence MP outcomes.

634 ***Values***

635 Two articles (2.74%) explored relationships between values and the MP. For instance,
636 those more (vs. less) concerned about the environment and animal welfare demonstrate lower
637 4N endorsement (Piazza et al., 2015). Conversely, those valuing excitement and recognition
638 demonstrate greater 'nice' justifications, those valuing obedience, national security, salvation,
639 excitement and recognition demonstrate greater 'necessary' justifications and those valuing
640 pleasure and comfort demonstrate greater 'natural' justifications (Hopwood & Bleidorn,
641 2019) Thus, different values correlate with different MP outcomes.

642 ***Religiosity***

643 One article (1.37%) explored religiosity's role in the MP, finding that, within Study
644 Three (but not Study Two), religiosity predicted greater moralization. Reasons for this
645 contradictory finding on moralization across studies is unclear. Additionally, it is unclear why
646 *religiosity* had a predictive effect within one study, whereas *religion* had no predictive
647 effects.

648 **Limitations and Directions for Future Research**

649 Whilst this review provides unique insight into direct and indirect support for the MP
650 alongside its triggers, strategies and moderators, it has some limitations: distinguishing
651 between direct vs. indirect support for MP, subjectivity in classifying behaviours, and
652 potential artificial inflation of frequency of triggers and strategies. We discuss these
653 limitations and provide suggestions for future research.

Firstly, whilst we have distinguished between direct and indirect support for the MP, most articles only provided *indirect* support. That is, most articles *inferred* dissonance instead of directly measuring it. Lack of direct measurement means that, whilst data may agree with MP theory, data could equally be interpreted with non-MP explanations (e.g., Milford & Kildal, 2019; Panagiotou & Kadianaki; 2019; Scott et al., 2019). Additionally, research which *does* provide direct support (through self-reported discomfort and/or negative affect) is sparse and has not yet measured physiological arousal. To overcome these limitations, future research should measure dissonance (including via physiological arousal), and its relation to triggers and strategies, directly (as seen within e.g., Bastian et al., 2012). For instance, research could alter whether a trigger is present vs. absent, test post-trigger dissonance using the Dissonance Affect Questionnaire (Harmon-Jones, 2000) and skin conductance response, and measure subsequent use of dissonance-reducing strategies followed by post-strategy dissonance. Theoretically, triggers should increase post-trigger dissonance, in turn increasing strategy usage and subsequently reducing post-strategy dissonance. Post-trigger dissonance should mediate the relationship between triggers and strategies, whilst strategies should mediate the relationship between post-trigger and post-strategy dissonance.

A second limitation is the inherent subjectivity of categorising behaviours (e.g., engagement vs. disengagement; direct vs. indirect disengagement). For instance, reported reduced meat consumption may be genuine engagement or (intentionally or unintentionally) underreported and thus disengagement (Rothgerber, 2014). Additionally, whilst direct and indirect strategies are *theoretically* used at different times (Kunst & Hohle, 2016; Rothgerber, 2013), this hypothesis has not yet been directly tested. Therefore, strategies commonly classed in the literature (and hence here) as direct strategies may instead be indirect and vice versa. Thus, whilst we hope that this review, alongside the MRCD framework, provides an initial structure to categorise behavioural indicators of MP, future research must test and

refine these categories. For example, research may directly detect underreporting by measuring meat consumption covertly through a food diary (vs. self-reported meat consumption), enabling categorisation of reported reduced meat consumption as engagement or disengagement. Future research should also measure different strategies across timepoints. For instance, Kunst and Hohle (2016) hypothesise dissociation is utilised *before* meat consumption to discourage thinking about consumed animals, as this thinking would elicit empathy and disgust and render meat consumption impossible. Conversely, denial of mind may be used *after* meat consumption, whereby active legitimisation of meat consumption becomes necessary to alleviate strong guilt. Research should therefore measure denial of mind, dissociation, disgust, empathy and guilt throughout the meat consumption process (before, during and after) to test differential uses and effects of dissociation vs. denial of mind.

Finally, as discussed within Rothgerber (2020), more (vs. less) common triggers and strategies within this review may simply have been included within (quantitative) studies more often instead of *naturally* occurring more often and/or being stronger triggers or strategies. For instance, quantitative articles pre-determine which triggers to include, and typically repeatedly utilise the same quantitative predetermined scales, artificially inflating frequency of triggers and strategies (Rothgerber, 2020). Conversely, qualitative studies enable participants to choose their own strategies. Thus, qualitative studies may more accurately determine how commonly strategies are used naturally. To overcome the limitation with quantitative studies, future research should directly contrast triggers to determine which ones elicit the strongest dissonance and contrast strategies to determine their effectiveness in reducing dissonance.

Conclusion and Implications

Extending current literature and the MRCD framework (Rothgerber, 2020; see Figure 1 for visual illustration), this review answers **RQ1** for the first time, predominantly supporting the MP indirectly and directly whilst also exploring alternative theoretical interpretations. Answering **RQ2**, this review also supports the framework by categorising triggers as 'reminder of animal suffering', 'reminder of meat's animal origins', 'reminder of own meat consumption', 'reminder of own meat consumption and animal harm' or 'exposure to vegetarians', alongside extending the framework by highlighting two novel triggers: 'purported edibility' and 'threat'. Aligning with Rothgerber (2013, 2020), this review also answered **RQ3** by reviewing engagement and disengagement strategies, whereby disengagement strategies mostly agreed with previously described categories (Graça et al., 2016; Rothgerber, 2013, 2020) alongside a new 'veg*n-focussed' strategy. Uniquely, this review also extended the MRCD framework by exploring moderators beyond gender and culture (**RQ4**), highlighting how some moderators (e.g., gender, culture, beliefs, occupation), yet not others (e.g., age, ethnicity), affect strategies used. This review also uniquely highlights how time dynamics influence MP, implying future MP models must consider time.

Utilising systematic literature searches, this review has theoretical implications for MP, CDT and social psychology literature, extending previous models (Rothgerber, 2020) and addressing gaps in the literature. For example, the current paper reviews all known MP triggers and strategies, supports the MP, devises new classifications for triggers and strategies and uniquely explores all currently researched MP moderators. The review also has implications for social psychological research on gender (e.g., gender attitudes; masculinity), speciesism (e.g., self-relevance) and culture(e.g., meat practices as cultural expression). Alongside contributing new knowledge, this review also highlights continuing gaps in the literature and provides extensive suggestions for future research.

Practically, expanding on Rothgerber (2020), this review uniquely suggests that some people are more likely to engage with animals than others (see Gradidge & Zawisza, 2019), including: females (Rothgerber, 2013), those who value masculinity less (Kildal & Syse, 2017; Milford & Kildal, 2019), have less traditional gender attitudes (Allcorn & Ogletree, 2018) and males who value 'new masculinity' (de Backer et al., 2020). Thus, people from these groups may be more responsive to meat reduction interventions.

To conclude, this review supports CDT and the MRCD framework (Rothgerber, 2020). Additionally, the review provides notable novel contributions and extensions to the MRCD framework by discussing alternative explanations to CDT, exploring all currently evidenced variations in how MP is triggered and resolved and by discussing all currently researched MP moderators. The review also offers novel and important directions for future research to seek clarity in MP literature. We hope it will inspire researchers to develop MP theory further and facilitate necessary and positive social changes regarding meat consumption.

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