

Supplementary Materials

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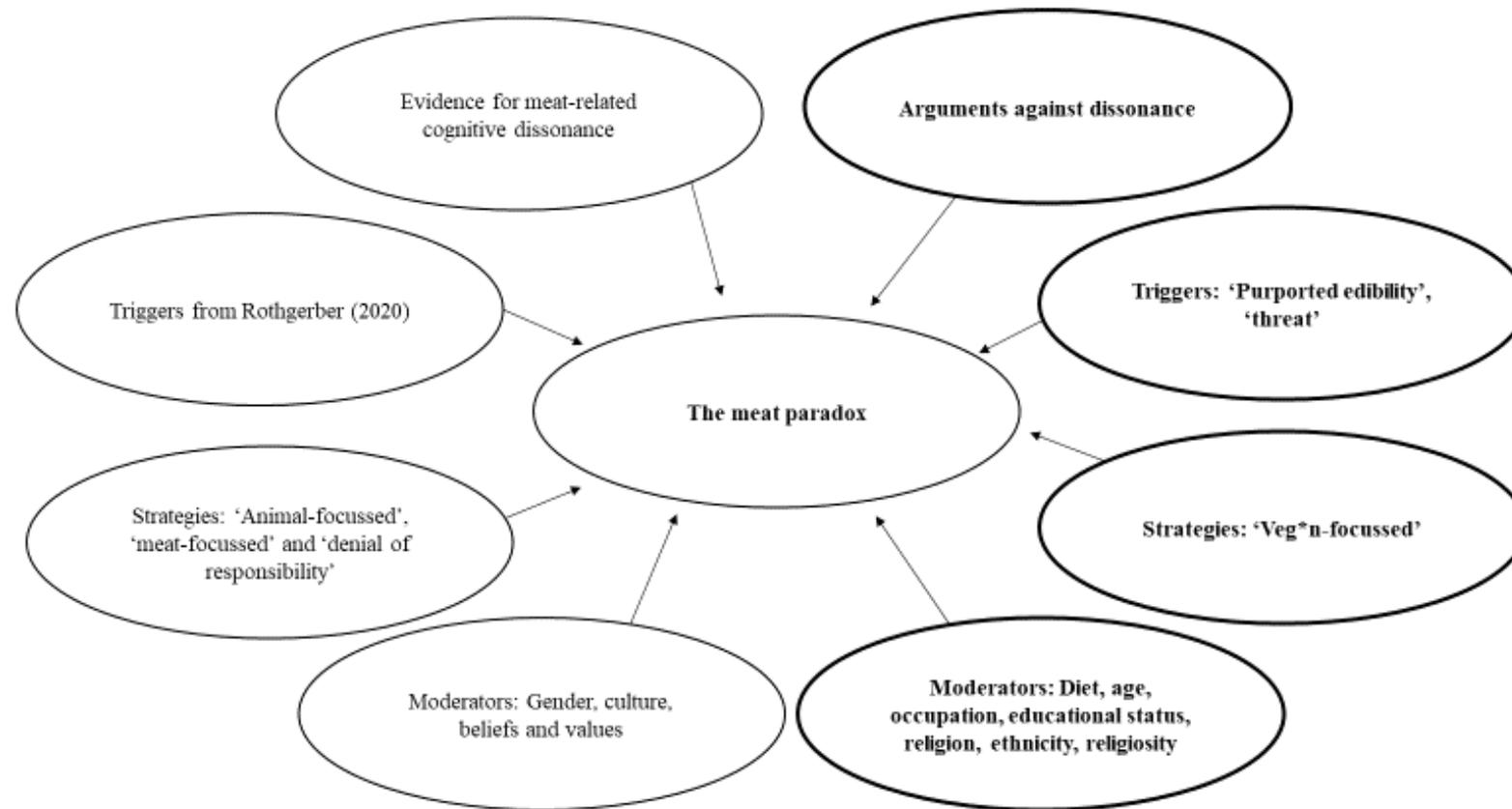
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Figures

Figure 1

Extension of MRCD Framework (Rothgerber, 2020)



Note. The non-bolded circles represent overlap between the current review and the MRCDF framework, whilst the bolded circles represent extension of the framework.

Tables

Table 1. List of searches conducted via the **XX** library database in the 2017 literature search.

Search criteria	Total articles	Included articles	Excluded articles
Is exact to “cognitive dissonance” and contains “meat-eater”	9	4	5 (3 irrelevant, 1 duplicated and 1 secondary literature)
Is exact to “meat paradox”	38	18	20 (13 irrelevant, 6 duplicated and 1 secondary literature)
Contains “dissonance” and contains “meat-eating”	131	5	126 (94 irrelevant, 27 duplicated, 3 lack of information and 2 secondary literature)
Contains “dissonance” and contains “carnism”	11	1	10 (2 irrelevant and 8 duplicated)

Contains “meat-eating justifications”	150	2	148 (126 irrelevant and 22 duplicated)
Is exact to “moral disengagement” and contains “meat”	93	2	91 (77 irrelevant and 14 duplicated)
Total	432	32	400

Table 2. List of searches conducted via the **XX** library database in the 2020 literature search.

Search criteria	Total articles	Included articles	Excluded articles
Is exact to “cognitive dissonance” and contains “meat-eater”	9	2	7 (4 irrelevant, 1 duplicated and 2 secondary literature)
Is exact to “meat paradox”	46	11	35 (30 irrelevant, 2 duplicated and 3 secondary literature)
Contains “dissonance” and contains “meat-eating”	51	5	46 (33 irrelevant, 8 duplicated, and 5 secondary literature)
Contains “dissonance” and contains “carnism”	8	1	7 (5 irrelevant and 2 duplicated)
Contains “meat-eating justification”	5	2	3 (2 irrelevant and 1 duplicated)

Is exact to “moral disengagement” and contains “meat”	40	1	39 (37 irrelevant and 2 duplicated)
Total	159	22	137

Table 3. Full list of articles included within this SLR.

Name of article	Type of article (all primary research)	Sample (all 18+ except where otherwise stated)	Main findings	Type of trigger	Type of strategy
Allcorn & Ogletree (2018)	Quantitative; correlational	Undergraduate students at a Texas university (n=744; 65.1% female)	Traditional gender role attitudes and benevolent and hostile sexism positively correlated with MEJ's; pro-animal attitudes and dissociation/avoidance positively correlated with gender transcendence and	No trigger	Correlational only: MEJ's e.g., dissociation, health, denial

negatively correlated
with benevolent and
hostile sexism

Amiot et al.
(2019)

Quantitative;
correlational

US residents
(Study 1
n=191, 34%
female; Study 2
n=211, 40.8%
female)

Greater
compartmentalization of
farm animals linked to
more positive emotions
when consuming meat
and lower status of farm
animals, mediated by
increased belief in
human superiority,
carnism and
vegetarianism threat

No trigger

Correlational only:
Lower status of farm
animals

Anderson & Barrett (2016)	Quantitative; experimental	Undergraduate students from Northeastern University (Study 1 <i>n</i> =117, 61.5% female; Study 3 <i>n</i> =114, 51.3% female) Anybody on Northeastern University campus (Study 2 <i>n</i> =248)	Less meat consumption of 'factory farmed' (vs. 'humane farm') meat	Use of language combined with reminder of animal origins: description of meat as 'factory farmed' or 'humane farm'	Actual reduced meat consumption
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Ang et al. (2019)	Quantitative; quasi- experimental	Singaporean meat consumers vs. non-meat- consumers (<i>n</i> =130, 66.15% female)	Meat consumers gave less mind to and more morally disengaged with ‘food’ (vs. ‘pet’) animals; meat consumers’ lower mind attribution linked to greater perceived edibility of food animals and less belief that killing animals for food is morally wrong	No trigger	Lower mind attribution
Arcari (2017)	Qualitative; discourse analysis	Australian research reports on	Animals dehumanised as ‘livestock’ or units of production for meat	No trigger	Various: Deindividualisation and classification as

		environmental effects of meat consumption			‘livestock’ or for meat production only; animals as ‘absent referent’; ‘necessary’ obfuscation of negative consequences of meat production
Bastian et al. (2012)	Quantitative; correlational (study one); experimental (studies two and three)	First-year psychology students at an Australian university who consume meat (Study 1 $n=71$, 83.1%)	Lower mental capacities ascribed to ‘consumed’ (vs. ‘non-consumed’) animals	‘Consumed’ vs ‘non-consumed’ animals; expected meat consumption in near future vs. none	Denial of animal mind

		Meat consuming students at an Australian university (Study 2 <i>n</i> =66, 65.15% female; Study 3 <i>n</i> =128, 64.06% female)			
Bettany & Kerrane (2017)	Qualitative; ethnographic, interviewing, netnographic engagement	Predominantly UK or US parents raising animals for food (‘petstock’) and	Parents gave their children strategies to relieve discomfort from consuming ‘petstock’	No trigger	Various from parents: Animal inferiority, ‘purpose’ Various from children: Spatial transgression

the parents’
 children under
 the age of 18
 (netnographic
 engagement
n=12; online
 discussions
n=90)

Bilewicz et al. (2011)	Quantitative; experimental	Meat consumers vs. veg*ns (Study 1 <i>n</i> =123; Study 3 <i>n</i> =325, 77.85% female)	Emphasis on human uniqueness	Typically edible vs. typically non- edible animals	Denial of human primary and secondary emotions to ‘edible’ animals
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		Meat			
		consumers vs.			
		veg*ns with			
		data collection			
		in Warsaw			
		(Study 2 <i>n</i> =74)			
Bilewicz et al. (2016)	Quantitative; experimental	Polish undergraduate students who consume meat (<i>n</i> =18; 33.33% female)	Less N170 potential when exposed to faces of edible (vs. non-edible) animals in people who perceive the animal as less capable of suffering	'Edible' vs. 'non-edible' animals	Denial of animal suffering

Bratanova et al. (2011)	Quantitative; experimental	American residents who had never visited Papua New Guinea (<i>n</i> =80; 57.5% female)	Reduced moral concern for an animal when classified as ‘food’, (even if the animal was not killed by humans), mediated by reduced perceptions of animal suffering	Animals as ‘food’ or ‘not food’	Denial of animal suffering
Bray et al. (2016)	Mixed methods; correlational and qualitatively coded responses	Australian primary carers of children (<i>n</i> =225, 64% female)	Parents justified animal use to their children, e.g., by emphasising humane treatment of animals	No trigger	Various: Humane treatment, ‘necessary’, ‘natural’ (e.g., evolution), focussing on ethical meat e.g., not factory-farmed

Bryant (2019)	Quantitative; correlational	UK meat consumers (<i>n</i> =1000; 49.8% female)	Veg*n diets as infeasible, despite agreeing with these diets' ethical and environmental benefits	No trigger	Correlational only: Veg*n diets seen as difficult, unenjoyable and costly, especially vegan
Buttler & Walther (2018)	Quantitative; quasi- experimental	Meat consumers (<i>n</i> =32; 81.25% female) vs. non-meat- consumers (<i>n</i> =32, 78.13% female) at a	Greater meat-related ambivalence and moral disengagement in meat consumers (vs. non- meat-consumers); the greater meat consumers' ambivalence, the more strategies	No trigger	Denial of animal emotion and mind; 4N's

		German university			
Buttlar & Walther (2019)	Quantitative; experimental	Meat consumers at a German university (Study 1 <i>n</i> =92; 50% female; Study 2 <i>n</i> =74, 72.97%)	Meat consumers hide meat endorsement by evaluating plant dishes more positively and meat dishes more negatively after induced threat	Threat induction (mortality salience)	Underreporting or obscuring meat endorsement; fewer MEJ's when disguising endorsement of meat
Camilleri et al. (2020)	Quantitative; correlational	Australian residents (<i>n</i> =302, 55.3% female)	Higher empathy for animals linked to decreased moral disengagement in turn	No trigger	Correlational only: Means-ends justifications, denying negative outcomes,

			linked to decreased meat consumption		desensitisation, lack of perceived personal choice, blaming others
de Backer et al. (2020)	Quantitative; correlational	Male meat consumers (<i>n</i> =309)	Men identifying more with ‘new masculinity’ consume less meat, are less attached to meat, more willing to reduce meat consumption and view vegetarians more positively	No trigger	Correlational only: Less identification with ‘new masculinity’ linked to viewing vegetarians more negatively
de Lanauze & Siadou-	Quantitative; experimental	French meat consumers (Study 1	Greater psychological discomfort after reading article, in turn	Article about negative environmental	Trivialization; dcredibilization; motivation to change

Martin (2019)		<i>n</i> =501, 49% female; Study 2 <i>n</i> =236, 63.98% female)	increasing motivation to change behaviour; trivialization and decredibilization linked to reduced discomfort	and health effects of meat	
Dowsett et al. (2018)	Mixed- methods; experimental and qualitative follow-up questions	English- proficient meat consumers (<i>n</i> =460, 59.6% female)	Exposure to information about a lamb (vs. nutritional benefits of meat) increased negative affect but did not affect attitudes towards animals or meat attachment	Animal-meat link	Various: Dissociation, reactance, neutralisation, 4N's, acknowledgement, personal choice/right, reported reduced meat intake or only consuming 'ethical' meat e.g., free- range, perceived inability to change or lack of options

Earle et al. (2019)	Quantitative; experimental	US meat consumers (Study 1 <i>n</i> =299, 55.9% female; Study 2 <i>n</i> =280, 57.1% female)	Reminder of animal origins (vs. meat alone) decreased willingness to consume meat due to increased empathy, distress about personal meat consumption and meat disgust	Reminder of animal origins	Less willingness to consume meat
Feinberg et al. (2019)	Quantitative; correlational	First-year psychology students at University of Toronto (Study	‘Moralizers’, ‘existent moralizers’, ‘non- changers’, ‘decreasers’ and ‘slight changers’; certain variables positively (e.g.,	Correlational only: Emphasised animal suffering due	Correlational only: Various: Positive behavioural intentions for moralizers (e.g., intentions to become vegetarian, reduce meat

1 <i>n</i> =611, 68.74% female)	perceived animal suffering) or negatively (e.g., tastiness of meat)	to meat consumption	consumption or engage in activism); reactance in decreasers
US meat consumers (Study 2 <i>n</i> =239, 43.51% female)	predicted moralization with meat emotions (e.g., disgust, sadness) and moral piggybacking as mediators; more dissonance-reducing		
Self-identified frequent meat consumers (Study 3 <i>n</i> =350 47.14% female)	strategies linked to less moralization		

Graça et al. (2014)	Qualitative; focus groups	From university and training centres (<i>n</i> =40, 62.5% female)	Moral disengagement when own meat consumption is highlighted	Reminder of own meat consumption	Various: Avoidance and dissociation from consumed animals; diffusion of responsibility; denial of adverse consequences
Graça et al. (2016)	Quantitative; quasi- experimental	Portuguese residents (Study 1 <i>n</i> =1016, 57% female) US residents (Study 2)	Five strategies of moral disengagement; men showing more moral disengagement than women	No trigger	Various: Denial of adverse consequences; diffusion of responsibility; desensitization; reduced perceived choices; means-ends justifications

		<i>n</i> =318, 41.8% female)			
Graça et al. (2015)	Quantitative; correlational	Portuguese internet users (<i>n</i> =410, 69.9% female)	MEJ's in response to the meat paradox; indirect options more desirable	No trigger	Various: 'Necessary'; 'nice'; self-exoneration; emphasise difficulties of not eating meat
Hartmann & Siegrist (2020)	Quantitative; correlational	German residents (<i>n</i> =973, 51% female)	The more endorsement of 'unapologetic' MEJ's (e.g., health justification), the greater likelihood of deeming conventional meat production morally justifiable and	Correlational only: Descriptions of meat production	Correlational only: Moral justification of meat production

lower willingness to
consume substitute
meat; opposite findings
for greater endorsement
of 'apologetic' MEJ's
(e.g., dissociation)

Higgs et al. (2020)	Quantitative; experimental	No target sample ($n=317$, 70.35% female)	Greater endorsement to use and less mind attributed to some animals (fish, chickens, pigs, rabbits, rats, frogs, pigeons, snakes, parrots) over others (chimps, dogs, dolphins)	Purpose and species of animal	Endorsement of use; denial of animal mind
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Hills (1993)

Quantitative;
correlational

Farmers from
the Western
Australian
Farmers
Federation vs.
animal rights
supporters from
Animal
Liberation and
The Humane
Society of
Western
Australia vs.
urban public
from Perth,

Urban public had
similar views of animals
to farmers, whereby
animals were viewed
instrumentally

No trigger

Instrumentality

		Western Australia (<i>n</i> =160, 48.75% female)			
Hoogland et al. (2005)	Quantitative; experimental	Customers of two Rotterdam supermarkets who buy meat (<i>n</i> =313, 68% female)	Bought less meat or more free range/organic meat after exposure to animal origins	Exposure to animal origins	Reported reduction in purchases of meat or reported greater purchases or free-range/organic meat
Hopwood & Bleidorn (2019)	Quantitative; correlational	No target sample (<i>n</i> =1004, 46.91% female)	Men (vs. women) more likely to view meat as 'normal' and 'nice';	No trigger	Correlational only: 4N's

4N's linked to
personality and values

Hyers (2006)	Mixed methods; correlational and interviews	Adults attending a pork roast festival in the US (pilot study <i>n</i> =26, 30% female) US college students (<i>n</i> =226, 66.67% female)	Legitimizing myths used for both luxury and non-luxury animal usage	No trigger	Various: 'Necessary'; 'nice'; human superiority and animal inferiority; 'normal'; religious justification; inevitability; denial of animal suffering/intelligence
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Jackson & Gibbings (2016)	Quantitative; experimental	Introductory psychology undergraduate students at an Ontario university (<i>n</i> =82, 59.76% female)	Endorse more legitimizing myths for using cows when animal origins are made salient among those high in SDO	Reminder of animal origins	Legitimizing myths
Jaskari et al. (2015)	Qualitative; content analysis	Finnish online news articles, discussion forums and blogs, and Finnish	Emphasis on horse welfare and respect for the animal	No trigger	Denial of adverse consequences; emphasised horse welfare

		magazine articles			
Kildal & Syse (2017)	Qualitative; focus groups	Norwegian Armed Forces (<i>n</i> =61; 22.95% female)	Meat consumption linked to masculinity	Correlational only: Meat reduction scheme	Masculinity justification; ‘normal’
Knight & Barnett (2008)	Qualitative; interviews	No target sample (<i>n</i> =8, 50% female)	Denial of animal mind; actions redefined as necessary (e.g., hunting as controlling population)	No trigger	Denial of animal mind; ‘necessary’

Kunst & Haugestad (2017)	Quantitative; experimental	US (<i>n</i> =201, 42% female) vs. Ecuadorian (<i>n</i> =202, 58% female) meat consumers	Dissociation from animal origins more common in US than in Ecuador	Reminder of animal origins	Dissociation; desensitisation
Kunst & Hohle (2016)	Quantitative; experimental	Native Norwegians (Study 1 <i>n</i> =288, 61.1% female) US residents (Study 2a <i>n</i> =168, 43.5%)	Exposure to hog roast with head still attached lead to greater willingness to have a vegetarian meal and lower willingness to consume a meat dish, due to decreased dissociation and	Reminder of animal origins	Greater willingness to have vegetarian meal

		female; Study 2b <i>n</i> =101, 60.4% female; Study 3 <i>n</i> =187, 56.7% female; Study 4 <i>n</i> =292, 52.5% female)	increased empathy and disgust		
		No target sample (Study 5 <i>n</i> =190, 52.1% female)			
Leitsberger et al. (2016)	Qualitative; evaluation of an advertisement	Austrian TV advertisement	Objectification and deindividuation of the	No trigger	Deindividuation; objectification (animal inferiority)

			animals (e.g., referred to as 'cattle')		
Lindgren (2020)	Qualitative; focus groups	Students (under 18) from an upper- secondary private Swedish school	Politicisation of animal product consumption e.g., not consuming meat seen as left-wing, female, 'politically correct' and feminist; risk of being an 'outcast' as a male vegan	Qualitative: School 'vegan month'	Vegans/veganism portrayed negatively; protestation and aggression (wearing red to symbolise protest); personal right to choose what to consume
Loughnan et al. (2010)	Quantitative; experimental	No target sample ($n=108$, 79.63% female)	Cows viewed as less worthy of moral concern after beef consumption, and in	Actual meat consumption	Denial of animal suffering; lack of evidence for denial of animal intelligence

			turn viewed as less able to suffer		
Lundström (2018)	Qualitative; ethnographic case study	Workers in Brazil's Landless Rural Workers' Movement (MST)	Absence of animals within discussion; slaughterhouse workers used dark humour; blame put onto the market: "We do this because the market demands it"	No trigger	'Absent referent'; dark humour; blame others
Macdiarmid et al. (2016)	Qualitative; focus groups and interviews	Scottish residents (<i>n</i> =87, 54% female)	People utilised moral disengagement to avoid behaviour change	No trigger	Various: Diffusion of responsibility; 'nice'; presenting information regarding negative effects

of meat consumption as
fake

Mariti et al. (2018)	Quantitative; correlational	Veterinary students in Italy (<i>n</i> =876, 75.5% female)	More positive perceptions of animals and their welfare predicted by being female, greater familiarity with pets (dogs or cats), greater intention to work with pets, diet free from animal products and animal rights association membership; less	Correlational only: 'Livestock' vs. pets	Certain freedoms deemed less important for 'livestock'
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positive perceptions
 predicted by greater
 intention to work and/or
 familiarity with
 livestock; freedoms
 from fear/distress and to
 exhibit normal
 behaviour deemed less
 important for livestock
 (vs. pets)

Mertens et al. (2020)	Quantitative; correlational	No specific sample, but survey in German	Men (vs. women) used more direct justification and less likely to be vegans/vegetarians; gender effect mediated	No trigger	Correlational only: Pro- meat attitude, hierarchical justification, fate justification
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		(<i>n</i> =657, 61% female)	by Machiavellianism but not narcissism or psychopathy; more MEJ's in turn associated with more meat consumption		
Milford & Kildal (2019)	Mixed methods; interviews and correlational	Norwegian Armed Forces (interview <i>n</i> =10; quantitative survey <i>n</i> =2848, 20% female)	Meat associated with masculinity, power and reward; greater exposure to Meatless Monday scheme correlated with more positivity to vegetarian food	Correlational only: Meatless Monday campaign	Masculinity justification; more positive towards vegetarian food but not more willing to consume it (correlational only); denial that meat is unsustainable and/or unhealthy and that

vegetarian diets can be
healthy

Monteiro et al. (2017)	Quantitative; correlational	American undergraduate students and general US residents (Study 1 <i>n</i> =302, 75.2% female; Study 2a <i>n</i> =781; Study 2b <i>n</i> =478; Study 3 <i>n</i> =373)	Carnistic defence and domination predicted frequency of meat consumption and identifying as a meat- eater, mediated by SDO	No trigger	Correlational only: Carnistic defence (4N's); denial of animal suffering; human superiority and animal inferiority; denial of animal intelligence
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Oleschuk et al. (2019)	Qualitative; interviews	Canadian meat consumers (<i>n</i> =77, 51.95% female)	Respondents aware of inhumane treatment of animals and health risks of meat; emphasised health benefits of meat, often simultaneously with health risks; meat consumers viewed as primitive, masculine, unrefined, and unintelligent	No trigger	Various: Health justification; lip service; masculinity justification; cultural justification; religious justification; dissociation; avoidance; inevitability (linked to avoidance); inability to change anything on one's own; personal choice
Onwezen & van der Weele (2016)	Quantitative; correlational	Dutch residents (<i>n</i> =3290, 52.7% female)	'Indifferent consumers', 'struggling consumers', 'coping consumers' and	Health (antibiotics) or ethical (fast-growing	Dissociation; strategic ignorance; reduced meat consumption

			‘strategically ignorant consumers’	chicken) consequences of meat production	
Panagiotou & Kadianaki (2019)	Qualitative; interviews and focus groups	Cypriot vegetarians and meat consumers (n=12; 41.67% female)	Proposed cognitive polyphasia as opposed to cognitive dissonance theory to highlight sociocultural influences on the meat paradox	No trigger	Various: Displacement; ‘purpose’; vegetarian diets as unhealthy; reported meat reduction and supporting vegetarian ideas; selective prevalence; human superiority; benefits of meat; hybridization; dissociation/avoidance

Peden et al. (2020)	Quantitative; experimental	Pig farmers (vs. pig veterinarians and those with no experience with pigs) within England, Scotland or the Republic of Ireland (<i>n</i> =194, 49.48% female)	Pig farmers viewed pigs (vs. cows, dogs and cats) as more capable of experiencing hunger, and did not view pigs as being less able to suffer (as compared to non-pig farmers); dogs higher pain (vs. cows and pigs), higher fear (vs. cows and cats), and higher boredom (vs. cats, cows and pigs); pigs higher boredom (vs. cows)	Pigs vs. cows vs. dogs vs. cats	No evidence for denial of animal suffering with self-relevance – instead <i>enhanced</i> perceptions of ability to experience hunger
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Persson et al. (2019)	Mixed methods; experimental and open- ended answers	Residents of Switzerland, Germany or Austria (<i>n</i> =126)	Most participants indicated willingness to reduce their meat consumption only if they had to face the consequences	Fictional scenario (but not manipulated by authors)	Health justification; animal welfare in organic farming portrayed positively; denial of intelligence/thought
Piazza & Loughnan (2016)	Quantitative; experimental	US workers (Study 1 <i>n</i> =59, 35.59% female) UK residents (Study 2 <i>n</i> =143, 51.05% female; Study 3	Disregard intelligence of pigs when evaluating their moral status	Pigs vs. tapirs vs. 'trablans'	Disregarding of animal intelligence

n=117, 57.26%

female)

Piazza et al. (2020)	Mixed methods; experimental and qualitatively coded responses	No target sample (Study 1 <i>n</i> =84, 80.95% female; Study 2 <i>n</i> =82, 78.05% female)	Evidence for the 4N's and additional justifications across many different types of animal usage; people with greater support for using animals for household products and clothes (but not horse racing or culling) had lower belief in animal mind	Type of animal usage	4N's; human superiority and greater importance of human (vs. animal) lives; animal usage acceptable if animals given 'humane' treatment; positive sustainability of animal products; belief in animal mind
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Piazza et al. (2020)	Quantitative; experimental	UK butchers and deli workers (<i>n</i> =56, 48.21% female; vs. those without experience of frequent meat handling; <i>n</i> =103, 63.11% female)	Reductions in disgust, empathy for an animal (cow, sheep and fish) and associations between meat and the animal within first few years of meat handling; duration of time handling meat and age both positively correlated with 4N's, human supremacy, and endorsement of 'humane' treatment and slaughter; more time handling meat was also	Reminders of animal origin differing in intensity (e.g., whole carcass vs. fully processed meat)	4N's; belief in human supremacy; humane treatment and slaughter justifications
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			linked to restrictive moral circles		
Piazza et al. (2015)	Quantitative; correlational	University of Pennsylvania students (Study 1a <i>n</i> =176, 64.77% female) US residents (Study 1b <i>n</i> =107, 45.79% female; Study 3 <i>n</i> =192, 52.08% female; Study 5	Greater endorsement of 4N's predicted reduced moral concern and mind attribution for animals, independently of SDO; 4N's also positively correlate with direct strategies, but not indirect strategies, and 'necessary' and 'nice' predict increased meat consumption	Correlational only: Prompted for justifications for consuming meat	Correlational only: 4N's

n=236, 31.36%

female)

University of
Melbourne
students (Study
2 *n*=171,
61.99% female)

People with
ambivalence
towards meat
consumption
(Study 4
n=215, 55.35%
female)

Pohjolainen et al. (2015)	Quantitative; correlational	Finnish meat consumers (<i>n</i> =1890, 56.3% female)	Stated that meat is necessary for health and presented vegetarian diets as having many barriers	Correlational only: Prompted about barriers to reducing meat consumption	‘Necessary’; alternatives (e.g., vegetarianism) presented as being too difficult
Prunty & Apple (2013)	Quantitative; experimental	Introductory psychology university students who consume meat (<i>n</i> =62, 45.16% female)	Desire to consume less meat and help more after agreeing to avoid unnecessary suffering against animals and finding out about	Reminder of animal suffering; personal involvement	Reported reduction in willingness to eat meat

			factory farmed conditions		
Rodrigues & Achino (2017)	Qualitative; discourse analysis	Social media and formal letters from Portuguese bull-fighting organisations	Bullfighting supporters condemned the condemners (animal rights advocates) through ‘othering’ and recharacterized the bull as wanting to fight	No trigger	Othering of animal rights advocates
Rosenfeld & Tomiyama (2019a)	Quantitative; quasi- experimental (Study 1 only)	US pescatarians vs. vegetarians (<i>n</i> =239, 63% female)	Pescatarians (vs. vegetarians) demonstrated more speciesism, prioritised health over ethical	No trigger	Denial of fish’ ability to feel pain; health justification

motives for reducing
meat consumption,
rated fish' ability to feel
pain as lower and were
more likely to see fish
as healthy to consume

Rosenfeld & Tomiyama (2019b)	Qualitative; written narratives	US vegetarians who consumed meat since becoming vegetarian (<i>n</i> =243)	Variety of strategies used by vegetarians after violating diet	No trigger	Various: Beyond personal control e.g., 'cravings', fatigue, pregnancy; health justification; taste justification; intention to avoid meat in future; 'normal', 'natural' and 'nice'; aligning with
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health motivation (vs. ethical); denial of intelligence; hierarchy (e.g., seafood as lower than mammals); denial of animal suffering; dissociation; focusing on success of past behaviour

Rothgerber (2013)	Quantitative; correlational	Introductory psychology undergraduate students at a US university (n=89, 50.56% female)	Male participants more likely to use direct strategies and females more likely to use indirect strategies	No trigger	Direct strategies (denial of animal suffering; hierarchy; religious justifications; ‘necessary’); indirect strategies (dissociation)
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Rothgerber (2014)	Quantitative; experimental	No target sample (Study 1 <i>n</i> =90, 50% female; Study 2 <i>n</i> =77, 61% female; Study 3 <i>n</i> =77, 57% female; Study 4 <i>n</i> =68, 50% female; Study 5 <i>n</i> =78, 54% female)	Exposure to vegetarian or vegetarian ideas lead to denial of animal mind and capacity for pain, greater likelihood of viewing emotions as uniquely human and greater MEJ's	Presence of vegetarian or vegetarian ideas	Various: Denial of animal mind; animal inferiority and human superiority; 'necessary'; denial of animal suffering; dissociation; perceived and actual behavioural change; reduced perceived choice; religious justifications; overreporting vegetarian meal consumption and underreporting beef (but not chicken or fish) consumption
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Rothgerber (2015)	Quantitative; quasi- experimental	Vegetarians vs. conscientious omnivores (<i>n</i> =196, 63% female)	Conscientious omnivores reduce guilt by describing their diet as difficult	No trigger	Portray reducing meat consumption as difficult
Rothgerber & Mican (2014)	Quantitative; quasi- experimental	Childhood pet owners vs. non- owners (<i>n</i> =273, 61% female)	Childhood pet owners consumed as much meat as non-owners but used more indirect strategies instead (mediated by empathy for animals)	No trigger	Dissociation; meat avoidance

Sahakian et al. (2020)	Qualitative; articles and focus groups	Switzerland organizations and articles in Swiss media (Stage 1) Various different focus groups, all from Switzerland (Stage 2; <i>n</i> =39)	Consistent theme of focussing on responsibility to animals and their quality of life, instead of obscuring the animal origins of meat	No trigger	Focusing on responsibility and quality of life (e.g., ‘happy’ animals) instead of hiding animal origins; avoiding buying meat from ‘untrusted’ sources (e.g., supermarkets) and buying from ‘trusted’ sources (e.g., butchers); vegetarianism/veganism as extreme; national belonging/cultural tradition
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Salonen (2019)	Qualitative; interviews	Residents of Ottawa, Canada who do not identify as ethical consumers (<i>n</i> =24, 62.5% female)	Lack of need to strongly justify their meat consumption and strong belief in hierarchy (dominion), responsibility towards animals (stewardship) and reconciliation of values by respecting animals	No trigger	Various: Religious justifications; superiority; ‘natural; inevitability; ‘nice’; personal choice; lip service; animals as commodities; negatives of vegetarianism; stewardship; ethical meat; reported reduction in meat consumption; links to family (e.g., ‘farming family’); avoiding waste and eating offal; emphasise respect toward animals
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Scott et al. (2019)	Mixed methods; Q- methodology	Pro- environmental researchers who consume meat from ICTA-UAB (<i>n</i> =42, 43% female)	Argue that people have logical consistent reasons for their behaviours as opposed to experiencing cognitive dissonance	No trigger	Optimism, system-focus, complexity and feebleness discourses; lip service and ‘admiration’ for vegetarians; taste; distance from animal suffering; intention to reduce future meat consumption; little evidence for denial of suffering or not giving animals moral status
Šedová et al. (2016)	Qualitative; interviews	Environmental studies graduate	Unable to rely on functional ignorance due to knowledge of	No trigger	‘Necessary’; emphasise difficulties of vegetarianism;

		students from Charles University and Masaryk University (<i>n</i> =13)	environmental impacts of meat production		dissociation; delay reducing meat consumption for the future
Taylor & Fraser (2019)	Qualitative; interviews	Australian dairy industry consultants or dairy farmers (<i>n</i> =29)	Portrayed animals' lives in a way to avoid their own discomfort and asserting harmful animal practices to be necessary	No trigger	Various: Diffusion of responsibility; denial of injury; inevitability; anger/blame towards animal advocates; greater good; milking and slaughter as unavoidable and to help the cows,

despite acknowledgement
of cows' slaughter

Te Velde et al. (2002)	Qualitative; interviews	Farmers vs. meat consumers in the Netherlands (<i>n</i> =15)	Refused to take responsibility and blamed others	No trigger	Diffusion of responsibility; dissociation
Tian et al. (2016)	Quantitative; experimental	French and Chinese meat consumers (Study 1 <i>n</i> =520, 79.23% female; Study 2	Less desire to consume meat when reminded of animal origins; French, but not Chinese, participants attributed less mind	Reminder of animal origins	Less desire to consume meat; denial of animal mind

		<i>n</i> =518, 66.99% female)			
Tian et al. (2019)	Quantitative; experimental	Chinese meat consumers (Study 1 <i>n</i> =458, 55.89% female) Chinese vegetarians (Study 2 <i>n</i> =267, 54.68% female)	In meat consumers, more frequent meat consumption and/or more 4N's linked with more negative and fewer positive views of veg*ns, more positive views of meat consumers and fewer negative views of meat consumers and conscientious omnivores	Evaluation of dietary group	Viewing vegetarians/vegans negatively and meat consumers positively

Trethewey & Jackson (2019)	Quantitative; quasi-experimental	Australian meat consumers vs. vegetarians vs. vegans (<i>n</i> =336)	Vegans then vegetarians then meat consumers showed greater animal welfare and environmental values; veg*ns showed same levels of personal health values, with meat consumers showing lower levels; cognitive mechanisms sole predictor of increased meat consumption	Reminder of own meat consumption (to all participants, so was not manipulated)	Correlational only: Various: Avoiding thinking about consequences of meat production, denying animal intelligence and pain, 4N's
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Vandermoere et al. (2019)	Quantitative; correlational	Residents of Belgium (<i>n</i> =996, 50.1% female)	Greater meat consumption, age, being male, lower education and absence of vegetarian in social circle all linked to increased vegaphobia	No trigger	Correlational only: Vegaphobia
Wenzel et al. (2020)	Quantitative; experimental (Study 2 only)	Student meat consumers at an Australian university (<i>n</i> =143, 69% female)	Threat to self and values linked to defensiveness (higher implicit guilt with lower explicit guilt) when participants unable to affirm their values; in turn, this implicit guilt	Unethical meat and egg production documentary; acceptance or rejection of participant and their beliefs	Less willingness to donate money to animal welfare organization

in this condition
negatively correlated
with moral engagement
(mediated by explicit
guilt) and less money
willing to be donated to
animal welfare
organization (mediated
by moral engagement)

Table 4. Triggers of the meat paradox identified from this SLR.

Type of trigger	Number of supporting articles
No trigger (qualitative methods)	17 (23.29% of all articles)
No trigger (correlational quantitative measures)	16 (21.92% of all articles)
Reminder of animal origins	8 (10.96% of all articles; 25% of trigger articles only)
No trigger (quasi-experimental) e.g., vegetarians vs. others; farmers vs public	8 (10.96% of all articles)
‘Consumable’/‘edible’ vs. ‘non-consumable’/ ‘non-edible’ animals	7 (9.59% of all articles; 21.88% of trigger articles only)

Reminder of animal suffering	4 (5.48% of all articles; 12.5% of trigger articles only)
Threat	3 (4.11% of all articles; 9.38% of trigger articles only)
Actual or expected meat consumption	2 (2.74% of all articles; 6.25% of trigger articles only)
Reminder of own meat consumption	2 (2.74% of all articles; 6.25% of trigger articles only)
Meat reduction scheme	2 (2.74% of all articles; 6.25% of trigger articles only)

Reminder of own meat consumption and animal harm	2 (2.74% of all articles; 6.25% of trigger articles only)
Presentation of meat (vs. plant-based) dish	2 (2.74% of all articles; 6.25% of trigger articles only)
Perceptions of dietary groups e.g., omnivores vs. vegetarians	1 (1.37% of all articles; 3.13% of trigger articles only)
‘Humane’ vs ‘factory-farmed’	1 (1.37% of all articles; 3.13% of trigger articles only)
Presence of vegetarian	1 (1.37% of all articles; 3.13% of trigger articles only)

Personal involvement by agreeing that animals should not suffer	1 (1.37% of all articles; 3.13% of trigger articles only)
Prompt to list barriers in reducing meat consumption	1 (1.37% of all articles; 3.13% of trigger articles only)
Exposure to information about negative health and environmental consequences of meat	1 (1.37% of all articles; 3.13% of trigger articles only)
Fictional decision scenario	1 (1.37% of all articles; 3.13% of trigger articles only)

Note: Six articles utilised more than one trigger, whilst some articles did not include any.

Table 5. Behaviours identified from this SLR which may either be moral disengagement strategies or moral engagement.

Behaviour	Subtypes	Moral disengagement (D) or engagement (E)	Moral disengagement strategy type	Specific demographics	Number of supporting articles per subtype	Number of rebutting articles per subtype
Denial of qualities to animals 34 (46.58%) articles supporting, and three (4.11%) against, at least one subtype	a) Denial of status	D	Direct	N/A	15 (20.55%)	1 (1.37%)
	b) Denial of mind	D	Direct	N/A	11 (15.07%)	None (0%)
	c) Denial of capacity to feel pain/suffer	D	Direct	N/A	11 (15.07%)	2 (2.74%)
	d) Denial of intelligence	D	Direct	N/A	6 (8.22%)	1 (1.37%)
	e) Denial of individuality	D	Direct	N/A	3 (4.11%)	None (0%)
	f) Denial of emotions	D	Direct	N/A	3 (4.11%)	None (0%)

	g) Denial of rights or freedoms	D	Direct	Veterinary students	1 (1.37%)	None (0%)
4N's	a) 'Necessary'	D or E	Direct	N/A for all subtypes	24 (32.88%)	None (0%)
31 (42.47%)	b) 'Nice'	D	Direct	though more common in	18 (24.66%)	None (0%)
articles supporting at least one subtype	c) 'Natural'	D	Direct	males	16 (21.92%)	None (0%)
	d) 'Normal'	D	Direct		16 (21.92%)	None (0%)
Denial of adverse consequences	a) Direct denial	D	Direct	N/A	10 (13.7%)	None (0%)
20 (27.4%) articles	b) Reduction	D	Direct	N/A	10 (13.7%)	None (0%)
supporting at least one subtype	c) Obscuring	D	Indirect	N/A	2 (2.74%)	None (0%)

Avoidance and dissociation, including strategic ignorance	None	D	Indirect	N/A though more common in females	19 (26.03%)	None (0%)
19 (26.03%) supporting articles						
Change in meat consumption behaviour	a) Reported reduced meat consumption	D or E	Indirect	N/A	8 (10.96%)	None (0%)
18 (24.66%) articles supporting at least one subtype	b) Reduced willingness to consume meat in the future	D or E	Indirect	N/A	7 (9.59%)	None (0%)
	c) ‘Trusted’ (vs. ‘untrusted’) sources	D or E	Direct	N/A	3 (4.11%)	None (0%)
			N/A	N/A	2 (2.74%)	None (0%)

	d) Actual reduction in meat consumption	E although may be short-lived	Direct	N/A	2 (2.74%)	None (0%)
	e) 'Free-range' (vs. conventional) meat	D or E	Direct	N/A	1 (1.37%)	None (0%)
	f) Avoiding waste	D or E	N/A	Children	1 (1.37%)	None (0%)
	g) Refusal to consume animals	E				
Derogation of veg*nism	a) Difficulty	D or E	Direct	N/A	12 (16.44%)	1 (1.37%)
	b) Vegaphobia	D	Direct	N/A	6 (8.22%)	None (0%)
	c) Misrepresentation	D or E	Direct	N/A	1 (1.37%)	None (0%)
17 (23.29%)	articles supporting, and one (1.37%) against, at least one subtype					

Diffusion of responsibility	None	D	Direct	N/A	10 (13.7%)	None (0%)
(13.7%) supporting articles						
Inevitability	a) Futility	D or E	Direct	N/A	5 (6.85%)	None (0%)
8 (10.96%) articles supporting at least one subtype	b) Fate/‘purpose’	D	Direct	N/A	3 (4.11%)	None (0%)
Religious justifications	None	D or E	Direct	People of religious backgrounds	7 (9.59%)	None (0%)
7 (9.59%) supporting articles						

Positive reported perceptions of veg*nism 6 (8.22%) supporting articles	None	D or E	Direct	N/A	6 (8.22%)	None (0%)
Personal choice 5 (6.85%) supporting articles	None	D	Direct	N/A	5 (6.85%)	None (0%)
Masculinity justifications 4 (5.48%) supporting articles	None	D	Direct	N/A though more common in males	4 (5.48%)	None (0%)
Other	a) Desensitisation	D	Direct	N/A	3 (4.11%)	None (0%)

b) Reactance	D	Direct	N/A	3 (4.11%)	None (0%)
c) Comparison to worse situations	D	Direct	N/A	2 (2.74%)	None (0%)
d) Delaying meat consumption reduction for the future	D	Direct	N/A	2 (2.74%)	None (0%)
e) Disregard of animal qualities	D	Direct	N/A	2 (2.74%)	None (0%)
f) Emphasising benefits of meat	D or E	Direct	N/A	2 (2.74%)	None (0%)
g) Acknowledgement	E	N/A	N/A	1 (1.37%)	None (0%)
h) Affirmation of meat consumer ingroup	D	Direct	N/A	1 (1.37%)	None (0%)
i) Anthropomorphism of animals	D	Direct	Children	1 (1.37%)	None (0%)

j) Avoiding repair behaviour	D	Direct	N/A	1 (1.37%)	None (0%)
k) Beyond personal control	D	Direct	Vegetarians	1 (1.37%)	None (0%)
l) Changing motivation from ethical to health	D	Direct	Vegetarians	1 (1.37%)	None (0%)
m) Dark humour					
n) Disguise meat endorsement	D	Direct	Slaughterhouse workers	1 (1.37%)	None (0%)
o) Enhanced perceptions of ability to experience hunger	D	Direct	N/A	1 (1.37%)	None (0%)
p) Hybridization					
q) Moral justifiability	D	Direct	N/A	1 (1.37%)	None (0%)

r) Presenting animal	D	Direct	N/A	1 (1.37%)	None (0%)
usage as beneficial for animals	D	Direct	N/A	1 (1.37%)	None (0%)
s) Recategorization of 'food' animal as a pet	E	N/A	Children	1 (1.37%)	None (0%)
t) Resisting parents					
u) Selective prevalence					
v) Spatial transgression	E	N/A	Children	1 (1.37%)	None (0%)
w) Focus on success of past behaviour	D	Direct	N/A	1 (1.37%)	None (0%)
	E	N/A	Children	1 (1.37%)	None (0%)
x) Unique opportunity to try new meat	D	Direct	Vegetarians	1 (1.37%)	None (0%)
	D	Direct	Vegetarians	1 (1.37%)	None (0%)

Note: Some articles identified more than one strategy

Table 6. Number of articles exploring each demographic or psychographic variable

Variable	Articles
Gender	Bilewicz et al. (2016) – no effect
22 articles (15 articles demonstrate consistent gender differences, six find contradictory results and one found no effect of gender as indicated)	Bray et al. (2016) - consistent
	Bryant (2019) - contradictory
	Camilleri et al. (2020) - consistent
	Dowsett et al. (2019) - consistent
	Feinberg et al. (2019) - contradictory
	Graça et al. (2015) - consistent
	Graça et al. (2016) - consistent
	Hartmann & Siegrist (2020) - contradictory
	Higgs et al. (2020) - consistent
	Hills (1993) - consistent

Hopwood & Bleidorn (2019) - consistent

Kildal & Syse (2017) - consistent

Kunst & Hohle (2016) - contradictory

Mariti et al. (2018) - consistent

Mertens et al. (2020) - contradictory

Milford & Kildal (2019) - consistent

Peden et al. (2020) - contradictory

Piazza et al. (2015) - consistent

Rothgerber (2013) - consistent

Rothgerber & Mican (2014) - consistent

Vandermoere et al. (2019) - consistent

Diet

19 articles

Ang et al. (2019)

Bilewicz et al. (2011)

Bray et al. (2016)

Graça et al. (2015)

Hartmann & Siegrist (2020)

Higgs et al. (2020)

Hopwood & Bleidorn (2019)

Mariti et al. (2018)

Monteiro et al. (2017)

Onwezen & van der Weele (2016)

Persson et al. (2019)

Piazza et al. (2015)

Rosenfeld & Tomiyama (2019a)

Rosenfeld & Tomiyama (2019b)

Rothgerber (2013)

Rothgerber (2015)

Tian et al. (2019)

Trethewey & Jackson (2019)

Vandermoere et al. (2019)

Age

11 articles

Bettany & Kerrane (2018)

Bray et al. (2016)

Bryant (2019)

de Backer et al. (2020)

Feinberg et al. (2019)

Hartmann & Siegrist (2020)

Hopwood & Bleidorn (2019)

Peden et al. (2020)

Piazza et al. (2015)

Piazza et al. (2020)

Vandermoere et al. (2019)

Occupation

Seven articles

Hills (1993)

Lundström (2018)

Mariti et al. (2018)

Peden et al. (2020)

	Piazza et al. (2020)
	Scott et al. (2019)
	Taylor & Fraser (2019)
Socioeconomic status	Bryant (2019)
Four articles	Feinberg et al. (2019)
	Hopwood & Bleidorn (2019)
	Piazza et al. (2015)
Educational status	Bryant (2019)
Three articles	de Backer et al. (2020)
	Vandermoere et al. (2019)
Religion	Feinberg et al. (2019)
Three articles	Oleschuk et al. (2019)
	Salonen (2019)

Ethnicity

Feinberg et al. (2019)

One article

Individual differences

Bilewicz et al. (2011)

Six articles

Earle et al. (2019)

Hyers (2006)

Jackson & Gibbings (2016)

Monteiro et al. (2017)

Piazza et al. (2015)

Gender attitudes

Allcorn & Ogletree (2018)

Six articles

de Backer et al. (2020)

Kildal & Syse (2017)

Lindgren (2020)

Milford & Kildal (2019)

	Oleschuk et al. (2019)
Political ideology	Bryant (2019)
Four articles	Earle et al. (2019)
	Feinberg et al. (2019)
	Lindgren (2020)
Values	Hopwood & Bleidorn (2019)
Two articles	Piazza et al. (2015)
Religion	Feinberg et al. (2019)
One article	

Table 7. Number of articles with data collection within and/or assessment of residents of each country

Country	Number of articles
US	21 (29.17%)
International (conducted online)	13 (18.06%)
Australia	9 (12.5%)
UK	7 (9.72%)
Germany	4 (5.56%)
Portugal	4 (5.56%)

Norway	3 (4.11%)
The Netherlands	3 (4.11%)
Austria	2 (2.78%)
Canada	2 (2.78%)
China	2 (2.78%)
Finland	2 (2.78%)
France	2 (2.78%)
Poland	2 (2.78%)

Switzerland	2 (2.78%)
Brazil	1 (1.39%)
Belgium	1 (1.39%)
Cyprus	1 (1.39%)
Czech Republic	1 (1.39%)
Ecuador	1 (1.39%)
Italian	1 (1.39%)
Republic of Ireland	1 (1.39%)

Singapore	1 (1.39%)
Spain	1 (1.39%)
Sweden	1 (1.39%)
Unspecified	1 (1.39%)

Note: The total number of articles within this table exceeds the number of articles included within the current review as some articles collected data from more than one country.
