

THE INFLUENCE OF BELIEFS ABOUT ANIMAL AGENCY
ON MORAL JUDGMENTS ABOUT HARMING ANIMALS

by

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(Under the Direction of Leonard Martin)

ABSTRACT

Animal welfare depends on moral judgments about harming animals. The Theory of Dyadic Morality (TDM) predicts people judge it more morally wrong to harm animals when they perceive intentional harm and believe animals can suffer. However, the TDM ignores the agency of harmed animals. In this dissertation, I conducted two online survey experiments that manipulated agency beliefs about harmed animals (i.e., free will beliefs about sea turtles harmed by plastic pollution, and intelligence beliefs about pigs harmed by eating them) to test whether people use animal agency beliefs to rationalize and reduce their moral concern about harming animals. Since the TDM predicts less judged moral wrongness when one perceives less intentional harm, I tested whether people rationalize they are less morally responsible because (a) the animals have free will and are causally responsible for harming themselves, or (b) they (the humans) did not intend to do the harmful action or cause the animal suffering.

In the first experiment, I found evidence of the first rationalization. Framing sea turtles as having free will increased free will beliefs about sea turtles, and, amongst political conservatives, reduced moral concern for sea turtles in terms of moral judgments

and behavioral intentions (but not feelings of guilt), and it increased agency beliefs that sea turtles intended and are responsible for the self-harming behavior of eating plastic straws. Amongst political conservatives, framing sea turtles as lacking free will also increased these agency beliefs and decreased moral concern, suggesting free will salience suffices for conservatives.

In the second experiment, I failed to find evidence of the second rationalization. I replicated prior findings that framing pigs as more intelligent than dogs increases wrongness judgments about eating pigs from the imagined perspective of others, and not from one's own perspective. However, I failed to find evidence that framing pigs as more intelligent caused people to rationalize that they did not intend to harm pigs. Self-affirmation theory predicts rationalizations decrease after affirming the self, but I found no evidence of this. Moreover, I found that perceived pig intelligence weakly predicts perceived pig suffering. I discuss its implications for future research.

INDEX WORDS: mind perception, moral judgment, animal welfare, guilt, self-affirmation

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A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial
Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2021

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DEDICATION

I would like to dedicate my dissertation to my grandfather, Conrad L. Allgood Jr., the person most responsible for socializing me to value questions more than answers, and then to ask them. When I was in kindergarten, I lived with my grandparents. My grandfather and I would sit on the back porch and watch the doves, sparrows, and squirrels quarrel for seeds. We “philosophized” about life and the lives of animals. We wondered about the minds of gorillas, chimpanzees, elephants, dolphins and border collies – the “intelligent” animals. What were these animals thinking and feeling? Was human behavior like that of other animals? He took me to zoos, pet shops, and farms to observe the creatures of his imagination. He bought me Wildlife Treasury cards, which I collected and would resort into different piles. After I finished my undergraduate degree in philosophy, his questions continued, but now about his own life and death. What is after this life if anything? Does God really exist? Does heaven await me? I remember the day before he died – he was immobile and could not speak a word. We could no longer ask questions together. I believed in those final hours that he could still feel, but I wondered and worried whether he could still think, choose and act. In his memory and my loving memory of him as a boldly skeptical and curious mind, I now ask in this dissertation whether our moral concern about harming animals depends on how we perceive animal minds as having agency.

ACKNOWLEDGEMENTS

I would like to thank my research advisor, Dr. Leonard Martin, for his generous intellectual and creative guidance. He has been a role model for me, both as an academic and as an ethical human being. According to our delayed-return society, I would be forever in his debt, but he welcomed me to join the hunt, and by observing him, I gathered some clues on how to return to our immediate-return nature. In this way, he taught me the virtue of freedom. I would also like to thank my other committee members for each teaching me about the discipline of psychology and how it can lead to virtue. I appreciate Dr. Ardoin for teaching me how to navigate the field of educational psychology, including how to teach it; from him, I learned the virtue of organization. I appreciate Dr. Stewart for teaching me about environmental psychology and the virtue of consuming less of our environment so we all can survive and thrive. I appreciate Dr. Neuharth-Pritchett for teaching me about developmental psychology and the virtue of leading by listening. And I appreciate Dr. Rosenzweig for teaching me about theories of motivation and the epistemic virtue of clarity as she motivated me to always specify what is meant by motivation – in this case, increasing my self-efficacy to do so.

And I would like to thank my very good friends Walter Kim and Guoguo Zheng for teaching me about love and kindness; they gave me so much of it throughout these many lonely years at UGA. They picked me up when I fell down and cheered me onward. They listened and questioned with their hearts wide open. I would also like to thank my therapist Dr. Tara Weiszer for teaching me how to remain steady and focused. And I

would like to thank my mother, father, stepmother, sister, brother-in-law, aunts, uncles, and cousins for giving me food, shelter, money, and emotional support over many years and throughout the pandemic. They helped me when I was homeless and kept me out of the rain. I would also like to thank the UGA Graduate School and the Department of Educational Psychology for their financial support, and the Department of Psychology for access to research participants. Finally, I would like to thank the research participants whose responses made this research possible.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Introduction

People often consider it is morally wrong to intentionally harm others (Schein & Gray, 2018). One reason why people judge that it is morally wrong to intentionally harm others is because they believe that the harm involves causing a victim to suffer and that suffering is bad (Schein & Gray, 2018). Suffering is often conceptualized as physical or emotional pain of high magnitude and duration (Regan, 2004). Thus, one might expect that telling people that their behaviors harm animals and that the animals they harm have minds that can experience suffering would increase their moral concern about engaging in those behaviors. Yet many people intentionally engage in behaviors that harm animals directly (e.g., hunting) and indirectly (e.g., eating meat) even when they know they can perform alternative behaviors that cause less suffering to animals (e.g., eating plant-based proteins). Moreover, even after learning that their behaviors harm animals and that these harmed animals have minds which can suffer, some people still do not increase their moral concern about doing these harmful behaviors (Piazza & Loughnan, 2016). They do not judge these harmful behaviors to be more morally wrong and feel no more guilt about doing them (Piazza & Loughnan, 2016). Why might people not increase their moral

concern about harming animals after learning that the animals they harm have minds which can suffer?

People also rationalize or justify their moral judgments (Haidt, 2001). They may do this defend their attitudes and beliefs about themselves as consistent and moral people (Festinger, 1957; Haidt, 2001; Steele & Liu, 1983; Steele & Spencer, 1992). So, one possibility is that when people learn that they are causing suffering to a more complex animal mind, they maintain or decrease their moral concern about harming this animal by defensively rationalizing that they are not morally responsible for the suffering the animal experiences. Since an action is judged less immoral when one does not clearly perceive one entity intentionally causing harm to another entity (Schein & Gray, 2018), people may rationalize that they are not morally responsible for the suffering the animal experiences because they did not intentionally harm animals. There are at least two ways people may do this.

When a harmed animal is framed as having greater agency, it is plausible that people defensively rationalize that they are not morally responsible for harming the animal because (a) the harmed animal used its agency to harm itself, or because (b) they (i.e., the human) unintentionally harmed the animal. Agency is the “exercise or manifestation” of “the capacity to act” and an agent is a “being with the capacity to act” (Schlosser, 2019, para. 1). In the first case, people may rationalize that they are not morally responsible for the suffering the animal experiences because the animal is largely causally responsible for harming itself. This is plausible since people sometimes morally

disengage by diffusing causal responsibility and people sometimes blame victims for the suffering they experience (Bandura, 1996).

In the second case, people may rationalize that they never intended to harm the animals they believe they harmed. This is plausible because moral responsibility is sometimes thought to require intentionality and foreknowledge (Alicke, 2000), and people, like lawyers, may rationalize that they are not culpable by denying that they intended to harm others (Schein & Gray, 2018). With this defense, people render the agentic mental capacities and mental states of the animals they harm less morally relevant than the agentic capacities and states of their own minds. To deny intentional harm, they either may they did not intend the harmful action or that they did not intend its harmful outcome (i.e., animal suffering). In either case, it is plausible that they judge that their harmful action to the animal was not immoral even though they accept that it caused a harmful outcome to the animal (i.e., animal suffering), and that the magnitude of harm was greater due to the more complex mind of the harmed animal.

This dissertation examines whether each of these rationalizations helps explain why people do not increase their moral concern for harming animals after learning that animals have greater agency (e.g., free will or intelligence) and learning that their behaviors may have indirectly caused animals to suffer. In Chapter 2, I describe an experiment that tests the first rationalization. In the experiment, I attempt to increase the agency people perceive in sea turtles (by framing sea turtles as having free will) to test whether it causes people to increase their belief that these animals intended to engage in

(and are more causally responsible for engaging in) the self-harming behavior of eating plastic straws. I describe this tendency to attribute morally relevant agentic capacities (such as intentionality) to animals as responsabilizing animals. I also test whether such free-will framing decreases moral concern about harming these animals in terms of moral judgments, feelings of guilt, and behavioral intentions. Responsibilizing and reducing one's moral concern for sea turtles when they are framed as having free will supports the view that people are rationalizing that they are not morally responsible for indirectly harming sea turtles with plastic pollution because the sea turtles harmed themselves by eating plastic straws.

In Chapter 3, I describe an experiment that tests the second rationalization – whether, when animals are framed as more intelligent, people defensively rationalize that they are not morally responsible for harming them because they did not intend to harm them. I describe an experiment that induces greater perceived intelligence in pigs by framing them as more intelligent than dogs, and tests whether this causes people to rationalize that indirectly harming more intelligent pigs (i.e., by eating them) was less morally wrong because they believed they had to harm the pig (i.e., eating meat is necessary and natural) or because they do not intend for the harmed pig to suffer when they eat pigs. In addition, I test whether people are making such rationalizations because they are trying to defend their sense of self as an adequately moral and effective person.

Before examining these two experiments in more detail, it may be helpful to first consider how people perceive the minds of animals and how mind perception may relate

to their moral concern about harming them, especially with respect to moral judgments about harming animals, feelings of guilt about harming animals, and behavioral intentions to harm animals. Additional background is covered in the introductions of the two experiments described in Chapters 2 and 3.

Literature Review

Beliefs about Animal Minds

Humans often believe other entities, including animals, have minds. Such beliefs are thought to emerge from a psychological process called mind perception (Epley & Waytz, 2010). Social psychologists define mind perception as the process of attributing mental capacities or mental states to agents, where agents broadly defined are entities believed to act (Epley & Waytz, 2010). Agents may be human or non-human entities (e.g., animals, corporations, robots, spirits, and God; Epley & Waytz, 2010).

Perceived mental capacities include a general sense that an entity has a mind, and more specific senses that entities have specific cognitive capacities (Epley & Waytz, 2010). Gray et al. (2007) found people tend to perceive two kinds of cognitive capacities: experience-related capacities, or those which permit a person to consciously experience the world around them (e.g., “hunger, fear, pain, pleasure, rage, desire, personality, consciousness, pride, embarrassment, and joy”; p. 619), and agency-related capacities, or those that permit the person to make decisions and act on the world (e.g., “self-control, morality, memory, emotion recognition, planning, communication, and thought”; p. 619). Similarly, Epley and Waytz (2010) describe these two factors as conscious experience

and intentional agency, where conscious experience includes “metacognitive capacities, including secondary emotions (e.g., regret, rage, sympathy, pride, or joy ...), consciousness of one’s environment, and basic psychological states (e.g., fear, hunger, thirst, or pain)” (p. 499), and intentional agency includes capacities for “reasoned action, self-control, strategic planning, or goal-directed behavior” (p. 499), which they claim implies that that one also has “conscious preferences, beliefs, and explicit knowledge” (p. 499). Sentience is the cognitive “capacity to have at least some feelings” (DeGrazia, 2002, A type of equality for animals? section, para. 2), where feelings include both sensations (e.g., pain, hunger) and emotions (e.g., fear, boredom; Paul & Podberscek, 2000). Thus, one can be sentient without having other kinds of more agentic mental states, like beliefs and goals that involve abstract concepts. In general, mental states include desires, beliefs, intentions, goals, attitudes, sensations, and emotions (Epley & Waytz, 2010; DeGrazia, 2002, A type of equality for animals? section, para. 2).

Attributing mental capacities or mental states to entities is thought to help people simplify how they interpret and predict behaviors associated with the entity, especially those behaviors which cannot be easily explained by external forces and those behaviors which are unexpected (Epley & Waytz, 2010). For example, if a rock suddenly floated into the air and began to follow a person around, it would be unexpected and difficult to attribute to external forces; in this case, one might attribute mental capacities like intelligence or mental states like goals to the animated rock.

Mind perception has also been found to emerge more often when people are asked to explain negative events versus positive events (Waytz et al., 2010). Morewedge (2009) found that when people receive money in ultimatum games and are told that the offer came from either a human or a computer, if people experienced the negative event of being offered an unusually low amount of money (versus an even split or an unusually high amount of money), they are more likely to attribute the offer to computers than humans, more likely to spontaneously describe the other player as a human, and more likely to describe the other player using language that indicates intentionality. In this case, experiencing negative events (compared to experiencing neutral or positive events) leads people to perceive minds with greater agency (in terms of intentionality).

There are several kinds of mind perception. Perceiving non-human entities as having minds like humans is a kind of mental anthropomorphizing (Epley & Waytz, 2010). In general, anthropomorphizing involves attributing humanlike qualities (either physical or mental) to non-human entities based on their appearance or behaviors, but in the context of social psychology, it often refers to the attribution of mental states (Waytz et al., 2010). Kids anthropomorphize animals more than adults, and such anthropomorphizing of animals is thought to occur in kids more than adults because kids have less knowledge about others and are more likely to rely on knowledge about themselves to make sense of new information (Waytz et al., 2010). Anthropomorphism of pet animals occurs more often in lonely people, and by people who are experimentally induced to feel lonelier, which suggests anthropomorphism is motivated by a need for

social connection (Waytz et al., 2010). Anthropomorphism also appears to be motivated by the need to feel competent and effective at understanding, predicting, and controlling of one's environment (Waytz et al., 2010). In one experiment, Waytz et al. (2010, Study 4) found that people are more likely to attribute human-like qualities to robots that offer less predictable responses to participant-generated yes-no questions than to robots that offer more predictable responses.

Perceiving humans as lacking minds like humans is called dehumanization (Haslam & Loughnan, 2014). Animalistic dehumanization involves denying humans mental qualities that humans have, but not denying them those mental qualities which animals also have (Haslam, 2006). The set of qualities that distinguish humans from animals is called human uniqueness (Haslam & Loughnan, 2014). These qualities tend to be related to agency, intelligence, rationality, and secondary emotions (Haslam, 2006; Haslam & Loughnan, 2014). Infra-humanization is a variety of animalistic dehumanization, whereby people tend to deny people from outgroups, even non-agonistic outgroups, mental qualities considered uniquely human, like secondary emotions (Haslam & Loughnan, 2014; Leyens et al., 2007). Mechanistic dehumanization involves denying humans mental qualities that both humans and animals have, but not those which robots or inanimate objects have. The set of qualities that distinguish humans from robots and inanimate objects is called human nature. These qualities tend to be related to feelings and primary emotions. Perceiving entities (both human and non-human) as

lacking mind in general or certain mental qualities is called mind denial (Haslam & Loughnan, 2014). Dehumanization is a kind mind denial about humans.

To research how people perceive the minds of humans and animals, researchers ask participants to rate the mental capacities and mental states of humans and different animals. Humans are generally rated as having higher mental ability compared to other animals (Gray et al., 2007). Amongst different types of humans, mind perception for humans generally increases with human development from fertilization to adulthood and decreases with illness and bodily harm that dramatically prevents social communication and interaction. Human children are rated as having lower agency-related cognitive capacities than adult humans, but similar experience-related cognitive capacities as human adults (Gray et al., 2007). Human fetuses and humans in persistent vegetative states are rated as having lower agency-related and experience-related cognitive capacities than adult humans (Gray et al., 2007).

Mind perception also varies by how people focus on the bodies of targets (Gray et al., 2011; Khalid et al., 2016). Looking at the faces and eyes of targets increases perception of agency-related cognitive capacities. Gray et al. (2011, Experiment 1) found that when people perceive humans as having more agency-related cognitive capacities when shown photos of faces with bodies (versus faces without bodies), and that people perceive humans as having more experience-related cognitive capacities when shown photos of faces without bodies (versus faces with bodies). Khalid et al. (2016, Study 1) found that people perceive greater agency-related cognitive (but not experience-related

capacities) in human faces when they view eyes that are directly gazing at them versus averting their gaze. Khalid et al. (2016, Study 2) found that the effect of looking at eyes that are directly gazing at the perceiver on agency-related mind perception was mediated by expectations that the target is interested in social interaction with the perceiver.

There is additional evidence that mind perception depends on how targets are socially perceived. As infra-humanization studies show, mind perception for humans (with respect to mental qualities thought to be uniquely human) decreases with perceived outgroup membership (Leyens et al., 2007). In this case, humans from outgroups are perceived to have minds more like animals.

While animals are generally perceived as having lesser minds than humans, mind perception for animals varies by species (Bastian et al., 2012, Study 1; Gray et al., 2007; Phillips & McCulloch, 2005). Animals whose actions are easier for humans to perceive are attributed more mind. For example, animals that move at speeds more similar to human movement speeds (e.g., rats, dogs, cats) are perceived by humans to have more mental capacity than animals that move much slower (ex. sloths, moles) or much faster than humans (e.g., humming birds; Morewedge et al., 2007; Wegner & Gray, 2016). In addition, animals that physically appear more similar (and often are more genetically similar) to humans are often perceived to have more complex minds. For example, chimpanzees are attributed greater experience-related mental capacities than frogs (Gray et al., 2007); gorillas and monkeys are attributed greater minds than turtles, frogs, snails, and houseflies (Bastian et al., 2012, Study 1). However, non-primate animals with which

humans view as companions, like dogs and cats, are also attributed mental capacities at levels similar to primates (Gray et al., 2007; Bastian et al., 2012, Study 1). In addition, companion animals (e.g., dogs and cats) tend to have higher attributions of mind, than animals that humans use for non-social purposes, like food (e.g., pigs, cows, chickens; Bastian et al., 2012, Study 1). Companion animals like dogs also tend to be attributed higher levels of mind than genetically similar wild animals, like foxes and wolves (Bastian et al., 2012, Study 1). It is not clear whether these differences are due to lack of social interaction with these wild animals, or due to perceived behavioral differences, such as a companion animal's greater friendliness with humans.

While beliefs about animal minds are often factored into agency-related and experience-related mental capacities, research has found that perceptions of these types of mental capacities in animals are sometimes highly correlated (Bastian et al., 2012; Piazza et al., 2014). Piazza et al. (2014) re-examined agency-related and experience-related mental capacities data by Gray et al. (2007), and found that that these two kinds of mental capacities highly positively correlate ($r(11) = .90, p < .001$), and that when non-natural entities are removed (e.g., robots, dead people, God), the positive correlation increases further ($r(8) = .98, p < .001$). After conducting a principle components analysis on both agency-related and experience-related mental capacities in animals, Bastian et. al. (2012, Study 1) found that they loaded onto one dimension that explained between 24% to 48% of the variation. In another study, Bastian (2012, Study 2) had participants rate a broader range of mental capacities in lambs and cows, including “pleasure, fear, rage, joy,

happiness, desires, wishes, planning, goals, pride, pain, hunger, tasting, seeing, hearing” (p. 250), and found they had a high reliability (Cronbach’s alpha between 0.82 and 0.86 depending on the animal species).

However, there is also some evidence that agency-related and experience-related capacities are weakly correlated. Loughnan et al. (2010) asked people to rate the extent to which cows experience two sets of cognitive states, those related to “sensation (i.e., seeing, hearing, tasting, pain, hunger, pleasure, fear, happiness, and rage) and intellect (i.e., thinking, imagining, wishing, needing, desiring, intending, planning, choosing, and reasoning)” (p. 157), and found that the two types each had high reliability (Cronbach’s alpha > 0.84), but only a modest correlation ($r(99) = 0.32, p = 0.001$). Overall, these findings suggest that humans sometimes perceive animal minds using a general mental capacity, and sometimes perceive animal minds as having two kinds of mental capacities (i.e., agency-related and experience-related).

Moral Concern about Harming Animals

Humans routinely engage in behaviors and activities that harm animals. Fraser and MacRae (2011) identify four kinds of human activities which harm animals: “keeping animals” (p. 582) in captivity (e.g., raising them for food, companionship, and experimentation), “causing deliberate harm to animals” (p.582; e.g., hunting and slaughtering them for food, pest control), “causing direct but unintended harm to animals” (p.583; e.g., ploughing the land and accidentally killing animals in the fields, roadkill accidents), and “harming animals indirectly by disturbing ecological systems and

the processes of nature” (p. 585; e.g., introducing invasive species and polluting animal habitats).

These categories suggest two dimensions of harmful behaviors towards animals: intentional versus unintentional harm, and direct versus indirect harm (Fraser & MacRae, 2011). Some care must be taken when considering what is meant by intentionally harming animals. There is a difference between intending to do a behavior and intending the outcome of the behavior. One can intend a behavior that harms animals without intending the harm that results from the behavior. One may not even know that the behavior causes harm to animals. But if one believes that the behavior is harmful to animals, and intentionally does the behavior, in part, because of this belief, it is reasonable to assert that they intended to harm animals, and furthermore, if their behavior also harmed animals, then it is reasonable to assert that they intentionally harmed animals.

Humans often intentionally engage in behaviors and activities that harm animals to achieve valued outcomes, including food, clothing, entertainment, and biomedical research (Knight et al., 2004). Sometimes they know that these behaviors and activities are harming animals (e.g., when they shoot deer), which would count as intentional harm, and sometimes they do not know that these behaviors are harming animals (e.g., when they buy tickets to the circus), which would count as unintentional harm.

Whether or not people know that they are harming animals may be influenced by whether the harmful behavior they are doing is directly or indirectly harming the animal.

The notion of direct and indirect harm is somewhat vague, but it correspondingly suggests more or less perceived causal proximity between the harmful behavior and the outcome of harm to the animal. People both directly harm animals (e.g., shooting deer, feeding poison to ants, castrating piglets, slaughtering cows, trapping beavers, drowning fish in nets, restricting the movement of chickens in small cages, vivisecting mice, socially isolating orcas, kicking dogs, euthanizing feral cats) and indirectly harm animals (e.g., eating meat, building roads and houses, buying leather shoes, buying tickets to animal shows, buying medicine that required animal testing, using disposable plastic, burning fossil fuels).

Since moral responsibility for an action is thought to involve forethought and some awareness of what one intended (Alicke, 2000; Rudy-Hiller, 2018), it is plausible that as people come to perceive their intentional behaviors as directly or indirectly causing harm to animals, they may begin to believe that were they to continue doing these actions, they would not be accidentally harming animals, but intentionally harming animals. Given that intentionally harming others is often judged as immoral (Schein & Gray, 2018), they may then begin to express greater moral concern about their harmful behaviors to animals.

Moral concern about harming animals can manifest in many ways, including moral judgments about the harmful behaviors, feelings of guilt about the harmful behaviors, intentions to stop doing the harmful behaviors, and actually not doing the harmful behavior (Piazza & Loughnan, 2016; Schwitzgebel & Rust, 2014). In this

dissertation, I consider the first three forms of moral concern about harming animals. Together, they form a plausible motivational pathway for behavior change (Bamberg & Möser, 2007). If people judge that their behaviors which harm animals are morally wrong, they may feel more guilty about doing them (Haidt, 2001; Piazza & Loughnan, 2016). To reduce this guilt, they may intend to stop doing those behaviors (Bamberg & Möser, 2007). Intending to stop doing the harmful behaviors may lead to actual reductions in those behaviors (Bamberg & Möser, 2007). However, this motivational pathway may be disrupted at the outset if people judge that their harmful behaviors are not morally wrong.

Moral Judgments

From a philosophical perspective, a moral judgment is “the activity of thinking about whether a given object of moral assessment (be it an action, person, institution or state of affairs) has a particular moral attribute, either general (such as rightness or badness) or specific (insensitivity, integrity),” or “the state of judging that the object has the attribute” (Cullity, 2005, p. 692). If an entity having a right or an obligation counts as a moral attribute, then amongst philosophers of animal ethics, in addition to judging the wrongness of how one treats animals, moral judgments about animals also include attributions of certain rights to animals or certain obligations of humans to animals, often in the context of considering issues of animal welfare.

Utilitarian philosophers, such as Peter Singer (2015), have argued that the interests of animals should be granted equal consideration as humans when forming

moral judgments about how humans treat animals. According to Singer, the disutility of suffering for animals should be considered equal to the disutility of suffering in humans, when evaluating the utility of each possible way humans could treat animals. Singer views speciesism as a violation of the principle of equal consideration. He defines speciesism as “a prejudice or attitude of bias in favor of the interests of members of one’s own species and against those members of another species” (Singer, 2015, Chapter 1, para. 16). Singer compares speciesism to racism and sexism, which also violate a principle of equal consideration, but amongst humans by race and gender. He emphasizes that the moral principle of equality embedded in the principle of equal consideration does not generally assume or seek equality of facts (circumstances or outcomes) but seeks equality of treatment given the same facts or circumstances. Importantly, as a utilitarian, Singer does not categorically prohibit harming animals since it may turn out that harming animals in some cases maximizes overall utility; Singer’s point is that animals also have interests like humans and that when these interests are the same, as with suffering, they should count equally towards the calculus of overall utility. Thus, Singer judges that animals have the moral right to equal consideration of their interests by humans.

DeGrazia (2002) views the right of equal consideration as the second of three types of animal rights. According to DeGrazia, the first type of animal right is that animals have “moral status” (Moral status section, para. 2), or that their interests have “moral importance” (Moral status section, para. 2) intrinsically and independently of the interests of humans, and that those interests should not be “overridden without good

reason” (Moral status section, para. 6). For example, suppose a farmer believes that it is wrong to scare pigs during the slaughtering process only because it produces a stress hormone that reduces the flavor of the pig meat. While refraining from scaring pigs would increase their welfare, the farmer’s reasons for believing it wrong to do so suggests that he has or would make the moral judgment that pigs lack moral status because he only values the pig’s interests (e.g., its interest to not suffer from fear) instrumentally with respect to human interests (e.g., the flavor of the meat). Similarly, suppose a farmer believes it is wrong to scare pigs only because it would cause empathic distress to himself. This too suggests that he has or would make a moral judgment that pigs lack moral status because his reasons exclusively concern human interests and not those of pigs. In this case, reducing the pigs’ distress only has value to the extent that it reduces the farmer’s emotional distress. Both moral judgments are examples of an “indirect-duty view” about not harming animals. On this view, one morally judges that humans only have moral duties to humans and that humans are morally obligated to not harm animals only when doing so conflicts with their moral duties towards humans; if harming animals does not violate any moral obligation to any human, then, by this view, it would be morally permissible (DeGrazia, 2002, Moral status section, para. 12).

In contrast, suppose a farmer believes it is wrong to scare pigs during the slaughtering process because he believes that suffering from fear is intrinsically bad for both animals and humans, and he believes that scaring pigs is bad whether or not it serves or hinders any human interest, like improving the flavor of the meat or increasing the cost

of pork meat. However, judging that pigs have moral status does not logically imply equal consideration of the animal's interests; a person may judge that fear in pigs is not as morally relevant as fear in humans. One may even believe that humans have a greater moral status than pigs – that the interests of humans matter more than the interests of pigs. For example, a person may believe that it is intrinsically bad that pigs suffer from fear, and take this into account in their moral calculus, but when making the moral judgment about whether to scare pigs during the slaughter process, consider that the badness of the pig suffering is outweighed by the goodness of making humans happy with less expensive pork.

According to DeGrazia (2002), the third type of animal right is a utility-trumping right. If one judges that an animal has a utility-trumping right, then they believe that one has a duty or obligation to not violate some interest of an animal even if refraining from such a violation leads to less overall utility and is “disadvantageous to society as a whole” (DeGrazia, 2002, Moral status section, para. 7). For example, one may judge that pigs have a utility-trumping right by judging that it is always wrong to scare pigs during the slaughtering process even if causing such fear would lead to more overall happiness in the universe, including all the happiness produced by eating ham, bacon, and BBQ pork sandwiches with friends and family. In each of these examples, people make moral judgments about the rights of pigs and the obligations of humans to pigs. They attribute a right to an animal or kind of animal, and these rights, while perhaps leading to the same outcome of not scaring pigs during the slaughtering process, are distinguished by

different moral principles and justifications. From this perspective, to claim that an animal has a right or that a human has a moral obligation to an animal is to make a moral judgment about the moral status of that animal.

Moral psychologists have looked at the moral status of animals but measure it in a looser sense than that outlined by DeGrazia (2002) and sometimes call it “moral regard” (Graham et al., 2017, p. 63). In particular, when measuring moral regard, they often do not rule out the instrumental value of animals when asking people to report the extent to which they believe animals have rights or report that humans have duties towards animals.

For example, moral psychologists have used the metaphor of a moral circle to look at how humans differentially rank the moral regard of different entities based on the perceived proximity of the entity to the self (Graham et al., 2017). The moral circle is a series of concentric rings with categories extending outward from the self, such as “immediate family, extended family, friends, local community, nation, world area, all humans, all mammals, all animals, all living things on Earth, all living things in the universe, and finally all things including inanimate matter” (Graham et al., 2017, p. 59).

In one study, participants are shown 16 numbered concentric circles that correspond to a list of categories similar to those mentioned above, starting with “all of your immediate family” (Waytz et al., 2019, Supplementary Materials, 129) and extending to “all things in existence” (Waytz et al., 2019, Supplementary Materials, 144). Participants were told “By moral circle, we mean the circle of people or other entities for

which you are concerned about right and wrong done toward them” (Waytz et al., 2019, Supplementary Materials, 123-124). Waytz et. al. (2019) found that when asked to allocate “moral units” (p. 6) to these different categories of entities after being told the categories do not overlap, or when asked to pick the “extent of your moral circle” (Waytz et al., 2019, Supplementary Materials, 146) after the categories are framed as progressively inclusive and overlapping, political conservatives allocated more moral units to human categories than liberals, and liberals expressed moral regard that extended further into nonhuman categories than conservatives. These nonhuman categories included the following in the following order: “all mammals”, “all amphibians, reptiles, mammals, fish, and birds”, “all animals on earth including paramecia and amoebae”, “all animals in the universe, including alien lifeforms”, “all living things in the universe including plants and trees”, “all natural things in the universe, including inert entities such as rocks”, and “all things in existence” (Waytz et al., 2019, Supplementary Materials, 138-144).

Measuring the extent to which people are concerned about the right or wrong done to an animal does not suggest a commitment to any theory of intrinsic moral value for the interests of animals, and thus the moral circle paradigm is not explicitly committed to the notion of moral status or animal rights by DeGrazia (2002), but it also does not rule out the possibility that the moral circle paradigm is measuring judgments about moral status. Other moral psychology studies about animals come closer to the

mark of measuring DeGrazia's notion of moral status with the use of moral language (Laham, 2009).

In a series of studies about how people report moral regard for animals, Laham (2009) tells people: "When we think about entities (animals) in the world, we might feel a moral obligation to show concern for the welfare and interests of some of those entities (animals). Below is a list of entities (animals)" (p. 251). He then either asks people to either "circle those [animals] that you feel morally obligated to show concern for" (the inclusive mindset condition) or "cross out those [animals] that you do not feel morally obligated to show concern for" (the exclusive mindset condition; Laham, 2009, p. 251). Laham finds that people include more animals in the exclusive mindset condition than the inclusive mindset condition (Laham, 2009, Studies 1a and 1b). In a similar follow-up experiment, he asks people to "rate the extent to which they 'feel a moral or ethical obligation to show concern for the welfare and interests'" for different outgroups (Laham, 2009, Study 2, p. 251). He found that inclusive mindsets had greater moral concern for outgroups, that a larger moral circle size (i.e., number of animals granted moral regard) predicts greater moral concern for outgroups, and that moral circle size partially mediates the effect of mindset on moral concern for outgroups. In these experiments, Laham calls the moral circle size a measure of moral regard and the ratings about felt ethical obligations to outgroups as measuring moral concern, and he classifies both as "related moral judgments" (p. 251).

The conceptual distinction by Laham (2009) between moral regard and moral concern is unclear since the language of the items he uses to measure moral regard and moral concern both explicitly mention feelings of moral obligation and concern. Moreover, the item language indicates that moral judgments are also sometimes measured by psychologists as felt beliefs or *feelings-that*. Laham asked participants to indicate whether they feel that they are morally obligated, which suggests both a belief that they are obligated and a peculiar feeling or affect attending that belief.

In addition to conceptualizing moral judgments as moral status (or moral regard), moral psychologists also often conceptualize moral judgments as the perceived general rightness or wrongness of an action or the perceived goodness or badness of a person. According to Haidt (2001), moral judgments are “evaluations (good vs. bad) of the actions or character of a person that are made with respect to a set of virtues held to be obligatory by a culture or subculture” (p. 817). By virtue, Haidt means a “culturally normative ideal” action or character trait, like the kind of action representing “fairness,” or the kind of character trait where one tends to act with “kindness” (Graham et al., 2013, pp. 68-69). Haidt’s definition of moral judgment suggests that different cultural groups have different virtues, and so make different moral judgments. In the context of harming animals, it suggests that different cultural groups may make different moral judgments about harming animals because they have different beliefs about how to ideally treat animals. For example, it suggests that vegans may judge that it is more morally wrong to eat meat than non-vegans because they imagine a different ideal way to interact with

animals. What is missing from Haidt's conception are vices – that is prototypes for the least ideal actions or least ideal character traits. This perspective suggests that vegans may judge that it is more morally wrong to eat meat than non-vegans because they imagine a different least ideal way to interact with animals. In other words, Haidt's definition of moral judgments appears to involve prototypical prescriptions (i.e., virtues) instead of prototypical prohibitions (i.e., vices).

Other moral psychologists view moral judgments as focused more on prohibitions than prescriptions. Malle (2021) proposes that there are four types of moral judgments about events (including behaviors and actions): evaluations, norm judgments, wrongness judgments, and blame judgments. He claims that all types of moral judgments are “evaluative responses to a norm-violating event,” but that the information about the event varies by type (Malle, 2021, p. 311). Evaluations are attributions of good or bad, or positive or negative. They target any entity and are the quickest moral judgments. Electrophysiological responses to evaluations onset within around 300 and 600 milliseconds, while the reporting of badness judgments occur at around 1600 milliseconds (Malle, 2021). Malle suggests that evaluations may not always be moral per se, but he argues they are preparatory for all moral reasoning.

According to Malle (2021), norm judgments are judgments about whether actions are permissible, obligatory, or forbidden. He argues that norm judgments are different than moral evaluations, like judgments of badness, because they “invoke the standards against which evaluations are measured,” where these standards are understood as moral

rules (p. 297). Nichols and Malle (2006) claim that “an action is judged to be morally impermissible if the action violates a moral rule that is embraced by the judge” (p. 533). Presumably, by invoking moral rules, Nichols and Malle mean that norm judgments bring into conscious awareness moral rules when determining whether an action is morally permissible, obligatory, or forbidden. Nichols and Malle do not fully define a moral rule but suggest that they may include necessary and sufficient criteria for classifying conduct as morally permissible, obligatory, or forbidden. For example, one might have the moral rule that it is morally impermissible to kill a human; such a rule offers a sufficient condition to classify any action as morally impermissible, namely if that action involves killing. Moral rules may also be more abstract and not describe a specific action, but involve mental states, values and virtues as criteria, such as: never do anything that induces severe suffering, always do that which maximizes your utility in accordance with your preferences and values, or it is permissible to be gentle with the children of one’s enemies. According to Malle (2021), norm judgments tend to only apply to intentional actions and tend to be applied prospectively for potential actions that have not yet occurred. He also claims that the attributions of norm judgments are binary and are not conceived of as a matter of degree; something is either morally permissible or it is not morally permissible.

Wrongness judgments, according to Malle (2021), are judgments about the rightness or wrongness of intentional actions. He claims that wrongness judgments rely on evaluations and norm judgments. However, unlike norm judgments, Malle claims that

wrongness judgments typically occur retrospectively after the action has occurred, and also consider reasons or justifications for why a person has violated the norm. So, Malle suggests that moral wrongness judgments not only bring to mind certain moral rules, but reasons why violating those moral rules is justified or reasons why one may have not violated those rules. While Malle does not make this inference or analogy, his definition for wrongness judgments suggests that wrongness judgments include information for both a prosecution and a defense; they have a set of moral rules and evidence of their violation which initially prosecutes the case of a moral violation, and another set of moral rules and evidence which later defends against this case, either by introducing new rules or new evidence that exclude the violation. Moreover, Malle suggests that moral judgments, unlike norm judgments, tend to consider the mental states of those involved in the event. This alleged tendency suggests that the moral rules of norm judgments tend to not involve criteria based on mental states, but instead tend to rely on more objective descriptions of behavior. For example, Malle suggests that a norm judgment would be more likely to have a behavioral moral rule, like people must not do actions which make people cry, instead of an emotion-based moral rule, like people must not do actions which make people feel sad. However, it is not clear that the moral rules of norms typically lack emotional criteria or criteria related to mental states. For example, imperative expressions like “Don’t worry. Be happy.” or “chill out” offer moral rules for conduct that mainly include emotional criteria without any explicit behavioral criteria.

According to Malle (2021), blame judgments rely on all three former types of moral judgments, but unlike the former moral judgments, they target the person for their action and not the action itself. For example, from Malle's perspective, people are more likely judge that Fred deserves blame for confining a chicken in small cage, than to judge that the action of confining a chicken in a small cage deserves blame for Fred confining a chicken in a small cage. Moreover, according to Malle, unlike norm judgments or wrongness judgments, blame judgments occur for both intentional and unintentional actions. Finally, according to Malle, unlike wrongness judgments, blame judgments incorporate more information about the agent's mental states, including specific information about their motivations for action if it was intentional and counterfactual possibilities if it was unintentional.

Moral judgments are different than moral decisions and moral behaviors. One can judge that it is morally wrong to eat meat without deciding whether or not to eat meat in the future, and without acting to eat vegetables instead of meat the next time one eats dinner. This discrepancy is sometimes viewed as a gap between moral attitudes and moral behaviors. In this case, moral judgments are viewed as attitudes about some action where the attribution of moral badness or moral wrongness indicates a negative evaluation of the action.

One study looking at the relationship between moral attitudes and moral behavior amongst university professors found that moral attitudes of moral badness about eating the meat of mammals, including beef and pork, only modestly positively correlated with

the self-reported behavior of eating the meat of mammals ($r = 0.24, p < 0.001$; Schwitzgebel & Rust, 2014). Moreover, further analysis revealed that differences in this correlation between the subgroups of ethics professors, non-ethics professors, and non-philosophy professors did not reach statistical significance. The same study also found that ethics professors (compared to other professors) did not have greater overall consistency between a range of moral attitudes and associated moral behaviors, even when each group's measure of consistency compared its behaviors with the general moral attitude of ethics professors. In addition to the moral issue of vegetarianism (i.e., not eating mammal meat), the attitudes and behaviors related to moral issues such as: academic society membership, charitable donations, voting, organ and blood donations, responding to student emails, and honesty in survey responses. Assuming that ethics professors are more knowledgeable about moral rules, this suggests that philosophical expertise about moral rules does not decrease the gap between moral attitudes and moral behaviors.

The extent to which moral judgments involve moral reasoning is debated by moral psychologists. Historically, moral psychologists from the cognitive-developmental and educational psychology traditions, like Piaget, Kohlberg, and Turiel, emphasize that moral judgments depend on moral reasoning, and that humans can become more virtuous as they become more skilled at moral reasoning (Kohlberg & Hersh, 1977; Piaget, 2013; Turiel, 2002). They emphasize that moral development largely depends on learning moral

concepts about welfare and justice and believe moral judgments help track progress in moral reasoning with respect to these concepts.

Piaget and Kohlberg conceptualized moral judgments as products of moral reasoning, which they considered to be conscious rational inferences about the moral rightness of an action (or the moral goodness of a person's character) based on its logical alignment with the moral principles (or standards/rules) of valued virtues, especially rules related to justice/fairness and welfare/care (Graham et al., 2013; Haidt, 2008). They were especially interested in how the rationality of moral judgments shifted during childhood from determining mere obedience to rules of conduct received from one's society (especially one's parents and peers) to autonomously creating and choosing moral rules of justice and welfare, which tend to actually facilitate social cooperation, and thereby confer individual control over one's environment through organized social interactions (Kohlberg & Hersh, 1977; Piaget, 2013).

Piaget (2013) argued that the development of moral judgment, especially its antecedent moral reasoning about rules, could be understood by studying how children come to respect the rules of games. After observing and interviewing children playing marbles, Piaget claimed that children initially unconsciously follow the rules they discover or witness being played. Later, children verbally receive a game rule from a more experienced and powerful player (a parent or older child). Respecting authority and lacking experience using the rule, the child believes the rule is "sacred", and that conformity to it is morally right and deviance is morally wrong (Piaget, 2013, p. 17).

Finally, as the child develops co-equal relationships with their peers in the activity of playing games, they recognize game rules as useful co-constructions between peers, and they begin to deliberately revise the rules with their peers; they revise the rules by cooperative principles, like “mutual consent”, which practically constitute an emerging form of justice (Piaget, 2013, p. 17). Thus, Piaget’s model of moral judgment conceptualizes moral rules as evolving social constructions of ideal or virtuous social interactions, where such ongoing co-constructions involve individuals freely reasoning that the rules will be perceived to fairly balance power between them.

The stage model of moral development by Kohlberg and Hersh (1977) also focuses on justice, conceptualizing moral judgments as applying “increasingly adequate conceptions of justice” (p.56) at different stages of moral development, where these conceptions developed by rationally considering the perspectives of those involved in a moral conflict and recognizing the rights of each individual. In the preconventional stage, people empathize with others’ physical pain and pleasure to avoid it themselves, believe that might makes right, and inadequately conceive justice as physical punishment for insubordination. In the postconventional stage, people also empathize with others by recognizing their rights and duties, adequately conceive justice as abstract principles of universal fairness between individuals, and believe right action involves deciding to act in accordance with such abstract principles (Colby et al., 1983).

Unlike Piaget (2013), or Kohlberg and Hersh (1977), Turiel (2002) viewed principled moral judgments as available to young children, and not just to adults. Turiel

argued that children can make principled moral judgments because young children can and do resist some of the received norms of right and wrong from their parents and peers if those norms are perceived as reducing “welfare, justice, ... [or] rights” (“Distinctions in Judgments” section, para. 3). According to Turiel, moral reasoning is available across the lifespan and often critical of society. For example, Turiel argues that children as young as 5 years old judge certain acts, like theft and physical harm, as wrong, even if it is commanded by adults with authority.

Nucci and Turiel (1978) argue against Piaget and Kohlberg’s notion that moral concepts supplant social conventions when making moral judgments. Nucci and Turiel argue that judgments about violations of social conventions are not moral judgments, and that humans develop knowledge about social conventions and morality concurrently in different conceptual domains. According to Nucci and Turiel, moral rules do not vary by social context, while social regulations that enforce social conventions, do vary by social context. In one study, they interviewed preschool children about events they had witnessed in the classroom, asking them whether there was “a rule in your school about” the event, and whether “if there weren’t a rule in your school, would it be right to do it then?” (Nucci & Turiel, 1978, p. 403). They coded the events as moral transgressions if they indicated that it would not be right to do the event even if there were no rule, and as violations of social conventions if the event were right if there was a rule. They then had independent adult judges code those events as moral transgressions or violations of social conventions using a different set of criteria. Events were coded as violations of social

conventions if they were about “behavioral uniformities which coordinate” and regulate “social interactions and social order” without any “intrinsically prescriptive basis” (Nucci & Turiel, 1978, p. 400 and p. 402). Events were coded as moral transgressions if they were about “the justice, welfare, or [the] rights of individuals or groups” (Nucci & Turiel, 1978, p. 402). Nucci and Turiel found that 83% of the events were coded the same between children and adults using these two criteria, which they argue suggests that the moral domain universally focuses on harm in the situation while the conventional domain focuses on rules related to social organization which varies across cultural contexts.

Moral psychologists from the disciplines of social psychology and evolutionary psychology, such as Haidt, Schein, and Gray, have challenged the centrality of moral reasoning in the formation of moral judgments (Haidt, 2001; Schein & Gray, 2018). They think that moral judgments are often initially made intuitively with less reflection or moral reasoning. For example, the social-intuitionist model (SIM) by Haidt (2001) holds that moral judgments are largely intuitive and involve little moral reasoning except when challenged in social discourse. Haidt claims moral judgments are initially caused by moral intuitions, where moral intuitions are automatic, effortless, and quick moral judgments the formation of which is unconscious. According to Haidt, after these initial moral intuitions are formed, people search for beliefs that support and defend them, what he defines as moral reasoning, or “post hoc reasoning” (p. 818). Moral reasoning, on this account is an “intentional, effortful, and controllable” activity that “consists of transforming given information about people in order to reach a moral judgment”, often

the one in the initial moral intuition (Haidt, 2001, p. 818). According to Haidt such post-hoc moral reasoning involves some step-based thinking process, including steps like gathering evidence, recalling theories and making inferences used to justify and rationalize. Finally, the SIM also suggests that people share their moral judgments and justifications with other people, and that people also start to recognize and are influenced by the moral judgments made by others, even if they do not attend to their justifications (Haidt, 2001). Haidt's SIM assumes that the central information in moral intuitions is information about people, which raises the question of how moral intuitions apply to non-human animals and whether moral judgments or post-hoc reasoning about animals involve anthropomorphizing animals as people or demoralizing them.

Haidt also challenged the centrality of welfare and justice in the formation of moral judgments (Graham et al., 2013). For example, Haidt's moral foundations theory (MFT), which builds on the SIM, argues that that many intuitive moral judgments about human conduct and character are not fundamentally about reducing harm (i.e., welfare) or increasing fairness (i.e., justice), but include other moral domains relevant for human cooperation and survival, such as remaining loyal, respecting authority, and avoiding contamination (Graham et al., 2013; Haidt, 2001). Accordingly, the MFT includes foundations for care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and sanctity/degradation (Graham et al., 2013). Iyer et al. (2012) found that conservatives across cultures tend to support all of these foundations relatively equally, while liberals tend to value the care/harm and fairness/cheating foundations more than conservatives

and value the other foundations less than conservatives; they found that libertarians valued the care/harm and fairness/cheating foundations like conservatives and the other foundations like liberals. That moral values seem to vary by political ideology suggests that political ideology may also influence moral judgments, including moral judgments about animals.

Other moral psychologists in the intuitionist camp, such as Schein and Gray (2018), have defended the centrality of harm perception in moral judgments. Much of this dissertation relies on Theory of Dyadic Morality (TDM) by Schein and Gray (2018), a harm-centric theory of moral judgment. The TDM holds that moral judgments about actions are caused by perceiving actions as intentionally harmful (Schein & Gray, 2018). It holds such harm perception involves using a specific cognitive template of dyadic harm (Schein & Gray, 2018). The cognitive template of dyadic harm consists of one mind (the moral agent) intentionally causing suffering to another mind (the moral patient; Schein & Gray, 2018). The cognitive template of harm represents an “intentional agent damaging a vulnerable patient”, where a patient is understood as the target of the action (Schein & Gray, 2018, pp. 32-33). The more an action is perceived to fit this cognitive template of dyadic harm, the more the action is judged as immoral (i.e., morally wrong; Schein & Gray, 2018).

According to the TDM, harm perception is subjective, continuous, and intuitive (Schein & Gray, 2018). Schein and Gray (2018) find some evidence that harm perception is intuitive and continuous. For example, they find that reaction times for judging both

the harm and immorality of immoral act terms (e.g., rape, murder, bestiality, stealing, gossip), and even acts that were thought to be harmless (e.g., porn), are both fast (less than a millisecond), linearly related (even when controlling for the participants political leanings and judgments of unpleasantness for the acts), and take longer to decide for less harmful actions (e.g., gossip takes longer than rape; Schein & Gray, 2015). One limitation of these findings for assessing the perception of dyadic harm is that the experiment only tested general act terms (e.g., “murder”), but not specific act sentences involving two minds (e.g., “Adolf Hitler murdered Edith Stein”), which is required by the TDM (Schein & Gray, 2015, p. 9). Moreover, it may lack ecological validity by not measuring such judgments in situ (e.g., asking participants to judge the harm and immorality of “KFC killed the chicken you just ate”).

The TDM also predicts that moral judgments are “proportional to the agency of agents, the experience of patients, and the clarity of causation between them; acts with obviously intentional agents who cause obvious damage to obviously vulnerable patients should seem both most harmful and immoral” (Schein & Gray, 2018, p.38). Agency and experience are understood by the TDM as “general mental capacities”, where agency involves “being a thinker-doer”, including “planning, intention, and forethought”, while experience involves the ability to sense and feel, “the ability to suffer”, and “being a vulnerable feeler” (Schein & Gray, 2018, p.38). In addition, the TDM predicts that immorality depends on perceiving the specific instances of intentionality and suffering involved in the act (Schein & Gray, 2018).

According to the TDM, harm perception involves two directional categorization processes: dyadic comparison and dyadic completion (Schein & Gray, 2018). Dyadic comparison is a bottom-up process whereby perceiving harm in an action (i.e., more similarity between the action and the cognitive template for dyadic harm) causes a more negative moral judgment about the action (i.e., more immorality; Schein & Gray, 2018). Dyadic completion is a top-down process, whereby believing that an act is morally wrong (perhaps by hearing that it is wrong or suspecting it based on partial information) causes one to perceive dyadic harm in the act by completing or filling in missing or ambiguous elements of the cognitive template for dyadic harm (i.e., the intentionality of a moral agent, the suffering of a moral patient, the causal process linking agent's intentionality to the patient's suffering; Schein & Gray, 2018). The dyadic loop is the circular feedback of alternating dyadic comparison and dyadic completion (Schein & Gray, 2018).

The dyadic loop helps explain the emergence of differences in moral judgments between individuals and groups, including polarization on moral issues (Schein & Gray, 2018). It does this by explaining the process of moralization, which Rozin (1999) defines as changing non-moral preferences into moral values either at the psychological level of the individual or the cultural level of groups across history. Rozin argues that people moralize by either adopting new moral principles and applying them – what he calls moral expansion – or they identify and apply new morally relevant information about the events/entities they prefer (or don't prefer) to extant moral principles – what he calls moral piggybacking. Rozin claims that the moral principle of not causing “unwarranted

harm” is universal, while other moral principles like purity vary across cultures (Rozin, 1999, p. 220). He suggests piggybacking on the moral principle of unwarranted harm explains many personal and historical shifts from perceived preferences to perceived moral violations (Rozin, 1999). For example, as people learned that smoking cigarettes was harmful to their health, there was a cultural shift from viewing smoking cigarettes as a personal preference to a moral violation (Rozin, 1999). Rozin also argues that both moral expansion and moral piggybacking can occur through a more cognitive route or a more affective route. As an example of moral expansion, he notes how people may adopt the moral principles of ethical vegetarianism by either reading philosophical arguments in animal ethics (i.e., cognitive route) or by watching a graphic documentary film on how animals are killed in slaughterhouses (affective route; Rozin, 1999). Once one has become an ethical vegetarian, they may morally piggyback and apply some moral principles of ethical vegetarianism to their preferred foods. For example, an ethical vegetarian may stop eating his two favorite condiments, Caesar salad dressing and Worcestershire sauce, when he learns they include anchovies.

Like Rozin’s concept of moral piggybacking, the TDM holds that people can transform a judgment that they prefer (or don’t prefer) an activity (e.g., smoking cigarettes) into a judgment of that the activity is immoral (e.g., it is morally wrong to smoke around babies) by applying their concept of dyadic harm to new information (Rozin, 1999; Schein & Gray, 2018). The TDM suggests that this can occur when new information updates their concept of dyadic harm or how their concept of dyadic harm is

applied in the looping processes of dyadic completion and dyadic comparison (Schein & Gray, 2018).

For example, people may read from trusted scientists that second-hand smoke causes cancer and update their concept of harm. In particular, they may update their belief about a new injunctive social norm to not smoke around people. Then when they see a man smoking around a baby, they notice a norm violation. This in turn causes them to engage in dyadic comparison, where they perceive many of the elements of dyadic harm – namely an agent (i.e., the man), a vulnerable patient (i.e., the baby), and the causing of damage (i.e., lung damage). This perception of dyadic harm results in an intuitive moral judgment that the man’s smoking is morally wrong. The moral judgment may be modest because they may be uncertain about whether the smoking man intends to harm the baby by smoking; perhaps he does not know that smoking causes cancer. This may trigger a process of dyadic completion, where one quickly recruits other prior knowledge, like perhaps the belief that most people know that smoking causes cancer, to conclude that the man intended to smoke despite knowing it caused cancer to the baby, and thus concludes that the man intended to harm the baby by smoking. Consequently, their moral judgment becomes stronger and they believe the man’s smoking was even more immoral. If they had not found such a rationalization, then their moral judgment may have remained modestly negative.

It is easy to imagine analogous dyadic loops for the moralization of how humans treat animals. Suppose people believe that it is morally wrong to keep large pets inside

apartments alone. Imagine how one might move from thinking that someone owning a large dog in a small apartment is a mere personal preference to an immoral act that harms the welfare of the dog. Imagine how the dyadic loop might work when one sees a German Shepherd barking from the window of a small apartment after learning from a veterinarian that keeping large dogs alone all day inside a small apartment causes them to become distressed and destructive.

Like the SIM, the TDM views moral judgments as primarily intuitive, but unlike the MFT, the TDM views moral intuitions as principally about harm perception (Graham et al., 2013; Haidt, 2001; Schein & Gray, 2018). Moreover, unlike Haidt's definition of moral judgments, which involves matching conduct against prototypical prescriptions (i.e., virtues), the TDM views moral judgments as matching conduct against prototypical proscriptions, namely the vice of intentional harm through a dyadic schema (Haidt, 2001; Schein & Gray, 2018). Moreover, like the SIM, the TDM holds that moral judgments can be modified through post-hoc reasoning, but unlike the MFT, the TDM holds that moral reasoning can also happen concurrently with moral intuitions, and that such reasoning would primarily pertain to classifying instances of dyadic harm (Haidt, 2001; Schein & Gray, 2018). Schein and Gray (2018) argue that "intuitions and reasoning often operate in tandem" that, like defense attorneys arguing elements of legal harm, the "initial intuitive perceptions of harm can be modified by additional conscious reasoning" (p. 41).

Like Piaget (2013), the TDM adopts a constructionist orientation to moral development (Schein & Gray, 2018). Unlike Piaget, who views moral development as

converging one's schema of virtue towards some universal form of justice, the TDM does not posit any substantive or progressive essence or objectivity to the vice of dyadic harm, and instead views it structurally as a fuzzy functional category (either a prototype or set of exemplars of dyadic harm), or cognitive template, which varies subjectively and continuously between individuals and cultures (Piaget, 2013; Schein & Gray, 2018). However, through the dyadic loop process, the TDM does suggest a logic that seeks to fill in the gaps of the schema in ways that make harm perception and moral judgments more extreme given information that fits the schema (Schein & Gray, 2018).

Like Nucci and Turiel (1978), the TDM recognizes that harm perception can distinguish between moral and non-moral judgments, the former distinguished by harm (Schein & Gray, 2018). Unlike Nucci and Turiel, the TDM holds that harm (or welfare/justice) is not a fixed universal concept into which all have some partial knowledge, but instead views it as socially constructed and fluid concept with some fixed, universal aspects (like the dyadic structure of the harm template) and some variable, non-universal aspects (like different beliefs about minds; Schein & Gray, 2018).

The TDM does not frame the ideal conduct/character of moral judgments in terms of prescriptive norms as Haidt (2001) does, where "virtues are obligatory in that everyone [within the relevant subculture or role]... is expected to strive to attain them" (p. 817), but in terms of proscriptive norms or forbidden actions (Schein & Gray, 2018). Instead of a *virtue* which outlines what one should do, the TDM relies on harm as the central *vice* outlining what one should not do (Schein & Gray, 2018). According to the TDM, moral

judgments are causally influenced by perceiving “norm violations, negative affect, and dyadic harm”, where perceiving dyadic harm itself counts as a norm violation, other norm violations make it more likely to perceive dyadic harm, and negative affect makes it more likely to perceive norm violations, including dyadic harm (Schein & Gray, 2018, p.35).

According to Schein and Gray (2018), proscriptive norms are “most frequently tied to behaviors and to moral judgment” (p.36) and they cite Janoff-Bulman et al. (2009) to make this case. However, Janoff-Bulman et al. do not find this; in their third study, Janoff-Bulman et al. asked participants to rate how strongly they felt a person “should or should not” (p.24) do (or become) a set of morally relevant actions (or character traits). These morally relevant actions and character traits were either described as proscriptive vices (e.g., “lie, sleep around, steal, be selfish, ...”) or prescriptive virtues (e.g., “be honest, be loyal/faithful, work hard, ... be generous...”; Janoff-Bulman et al., 2009, p. 26). They found no statistically significant differences in ratings between these proscriptive or prescriptive framings these ratings, which suggests that each has no difference in “moral weight” (Janoff-Bulman et al., 2009, p. 26). Janoff-Bulman et. al. also find that prescriptive norms more strongly related to approach motivation, choice, abstract language, and moral credit, while proscriptive norms are more strongly related to avoidance motivation, no choice, concrete language, and moral blame. Thus, the TDM seems to neglect the possibility that many moral judgments mainly concern the moral rightness/goodness of an action/character trait instead of its wrongness/badness.

The TDM predicts that judgments of immorality (i.e., judgments of wrongness) increase when the agent is perceived to have a greater capacity for intentionality and when it is perceived to have more strongly intended the action (Schein & Gray, 2018). Moreover, it predicts that the more the target of the action is perceived to be vulnerable in terms of its perceived capacity to experience suffering, and in terms of the amount of suffering it is perceived to have experienced by the action, the more the action will be judged as immoral (Schein & Gray, 2018).

In the case of harming animals, the TDM predicts that people would judge it more immoral to harm animals perceived to have a greater capacity to experience suffering. It also predicts that people will judge it more immoral for humans to intentionally cause animals to suffer. In this way, the TDM theoretically connects mind perception in animals and humans with moral judgments about humans harming animals.

However, the TDM does not explicitly account for the perceived agency of the target of the harmful action, and thus does not account for the perceived agency of the harmed animal (Schein & Gray, 2018). If people tend to perceive greater sentience with greater agency, then the TDM predicts that perceiving greater animal agency would increase moral concern through greater perceived sentience. But there is mixed evidence that perceived agency in animals strongly relates to perceived sentience in animals (Bastian et al., 2012, Study 2; Loughnan et al., 2010).

Still, there is some evidence that people who perceive animals to have more complex minds also make moral judgments that harming animals is immoral. Bastian et

al. (2012, Study 1) had adults rate the 10 mental capacities for 32 animals and found that the more people perceive animals to have mental capacities, the more they judge eating them is morally wrong ($r = .80, p < .001$). Of the 32 animals judged, 20 were mammals. The other animals included 3 birds, 3 crustaceans, 2 fish, 1 reptile, 1 amphibian, 1 mollusk, and 1 insect. Some of the mental capacities were described as agency-related, including “self-control, morality, memory, emotion recognition, and planning”, while others were described as experience-related, including “hunger, fear, pleasure, pain, rage” (Bastian et al., 2012, p. 249). Bastian et al. combined the mental capacity ratings into one scale since they were found to load onto a single factor.

Children also seem to make moral judgments based on how they perceive the minds of animals. Hawkins and Williams (2016) found that sentience beliefs about animal minds in children aged 6 to 12 predicted more negative attitudes towards animal cruelty, although the correlation was weak ($r(1081) = 0.14, p < 0.001$). The children were asked to measure whether they thought humans and each of 7 other animals (i.e., badger, dog, cow, robin, frog, chimpanzee, goldfish) is clever or can experience pain, happiness, sadness, or fear (Hawkins and Williams, 2016). Most of these mental capacity measures were related to sentience. Since humans were included in the measure, its construct validity as measure of beliefs about non-human animals may be threatened. However, it still had high internal validity (Cronbach’s alpha = 0.92) with a preponderance of nonhuman animals, suggesting it may still be a valid measure of beliefs about nonhuman animal (Hawkins and Williams, 2016). Animal cruelty included items for intentional

animal cruelty (e.g. purposefully hurting, kicking, frightening, annoying, teasing, and killing), unintentional animal cruelty (e.g. accidentally kicking, hurting, or leaving alone), and animal neglect (e.g. forgetting to give water or forgetting to feed; Hawkins and Williams, 2016). In the animal cruelty items, participants were asked the extent to which they thought it was “acceptable” to do the behavior (Hawkins & Williams, 2016, p. 507). Thus, these items arguably measure a moral judgment of wrongness or permissibility.

Attributions of mind to animals also predicted the moral standing of animals across different animal species, where the species itself is the unit of analysis. Piazza et al. (Piazza et al., 2014) found that across 34 species of animals, the typical moral standing of an animal (a measure that included whether “harming” an animal was “morally wrong”; p. 113) was predicted independently by both the typical overall perceived mental capacity of the animal ($\beta = 0.99$, $t(31) = 10.50$, $p < .001$) and the typical overall perceived harmfulness of the animal ($\beta = -0.30$, $t(31) = -3.16$, $p < .01$). Perceived mental capacities included “can experience pleasure, can experience pain, can suffer, sensitive, intelligent, inquisitive, clever, creative, sophisticated, active, and energetic” (Piazza et al., 2014, p. 113). Perceived harmful dispositions included perceiving the animal as “hostile, violent, dangerous, aggressive, mean, vulnerable (reverse scored), potent, powerful, and vigorous” (Piazza et al., 2014, p. 113).

Feelings of Guilt

According to Haidt (2003), guilt is as a negative self-conscious moral emotion. Guilt is considered a self-conscious emotion in the sense that it emerges after reflecting

on a past or potential behavior and recognizing that the behavior has or may violate one's values, including one's moral values (Tangney et al., 2007). In particular, guilt emerges when one believes that they have harmed their close relationships and their social relationship with their community (Haidt, 2003). Guilt that emerges when considering potential behaviors in the future is called anticipatory guilt (Wang & Basso, 2019). As a negative emotion, people are motivated to reduce guilt and engage in reparative behaviors to reduce it (Cryder et al., 2012; Tangney et al., 2007). For example, guilt sometimes motivates people to apologize for harmful behaviors to their victims, which may help restore the relationship (Haidt, 2003; Tangney et al., 2007). Haidt argues that guilt that helps people remain members of social groups (Haidt, 2003).

There is some evidence that people who perceive animals to have more complex minds also feel more guilt about harming animals. In their study on the relationship between pig intelligence and the moral standing of pigs, Piazza and Loughnan (2016) found that after reading that pigs were more intelligent than dogs (compared to reading the pigs were less intelligent than dogs), people reported greater "moral standing" (p. 867) for pigs, where the moral standing measure included items for feelings of guilt about eating pigs. However, Piazza and Loughnan did not report guilt by itself. In addition, the finding applied to how people imagined other people would feel were they to have written and read about pig intelligence. And moral standing was not found to increase with intelligence when people made judgments from their own perspective (Piazza & Loughnan, 2016).

There is some evidence that anthropomorphizing animals can increase anticipatory guilt for eating their meat and decrease behavioral intentions to purchase meat (Wang & Basso, 2019). In a series of experiments, Wang and Basso (2019) showed participants different websites for a fictional meat brand called “Mr. Piggy’s” (p. 158); these websites had different descriptions of living pigs whose meat was to be sold. Wang and Basso (2019, Study 3b) found that anthropomorphizing the pigs as friends with each other (e.g., “playing games with each other, which keeps them in good emotional and physical health. ... [as] social animals”; p. 158), compared to a control condition where pigs are described as being “raised in a free range environment, which keeps them in good emotional and physical health” (p. 157) and which has the “highest welfare standards” (p.157), increased anticipatory guilt for eating the pig meat, decreased attitudes about the meat (with respect to imagined taste and enjoyment), and decreased the intentions to purchase the meat. Moreover, anticipatory guilt about eating meat was found to mediate anthropomorphism of pigs and behavioral intentions to purchase meat. One problem with this experiment is that the anthropomorphism condition does not include language for the highest welfare standards and so it is possible that the guilt increases due to differences in descriptions the physical environment and not differences due to anthropomorphism.

Behavioral Intentions

Intentions are mental states that causally contribute to an intentional action (Schlosser, 2019). It consists of a goal or desire for a certain outcome, and a belief about

the means to attain that goal/desire (Schlosser, 2019). Such a “desire-belief” conception of intention is thought to provide a reason to act (Schlosser, 2019, “Conceptions, theories” section, para. 4). Behavioral intentions are “intention[s] to perform a given behavior” (Ajzen, 1991, p. 181). So unlike other kinds of intentions which may focus on the non-behavioral outcomes of behaviors, such as subsequent feelings or other mental states, the desired outcome of behavioral intentions is the intended behavior itself. Behavioral intentions are found to predict behaviors, and used in behavior change theories, such the Theory of Planned Behavior (Ajzen, 1991). Behavioral intentions represent motivational states (Ajzen, 1991). In the Theory of Planned Behavior, they represent “how hard people are willing to try” to do the behavior and “how much effort they are planning to exert” (Ajzen, 1991, p. 181). These two aspects of motivation suggest expectations for effort instead of actual effort or current beliefs about one’s actual effort. From this perspective, having a strong behavioral intention to eat vegetables instead of meat means expecting to put forward a lot of effort to eat more vegetables than meat but it does not mean that one has actually put forth any effort to this end other than the effort involved setting and maintaining the goal itself, and it does not imply that one believes they are currently putting forth such effort. Ajzen (1991) claims that behavioral intentions do not imply “volitional control” (p.181) over the behavior, or the ability to “decide at will to perform or not perform the behavior” (p. 182) since one may lack the “required opportunities and resources” (p. 182). Thus, according to Ajzen, behavioral intentions do not imply actual behavioral control, or one’s actual ability to perform the

behavior. For example, if one lacks access to the resource of vegetables – perhaps there is no more meat in the refrigerator, one may intend to eat vegetables instead of meat without having the actual ability to eat vegetables instead of meat.

Behavioral intentions, according to Azjen (1991), also do not imply perceived behavioral control, or one’s perceived ability to perform the behavior, which Azjen argues jointly predicts behavior with intentions. Azjen defines perceived behavioral control as the perceived “ease or difficulty of performing the behavior of interest”, which he suggests is equivalent to Bandura’s concept of self-efficacy (p. 183). Thus, according to the Theory of Planned Behavior, both behavioral intentions and perceived behavioral control predict intentional behaviors.

There is some evidence that people who perceive animals to have more complex minds are more likely to intend to reduce behaviors which harm them, such as eating them and socially isolating them (Bastian et al., 2012; Díaz, 2016; Butterfield et al., 2012, Study 2). Using 32 animals, Bastian et al. (2012, Study 1) found that people are less willing to choose to eat animals that they perceive as having more mind. Díaz (2016) found that people who perceive more mind in animals also are more likely to intend to become vegetarians or vegans within the next two years, albeit mind perception is a weak predictor of these behavioral intentions. Butterfield et al. (2012, Study 2) found that when people are shown pictures of dogs and then asked to rate dogs with anthropomorphic traits (e.g., “has a good sense of humor, is a good listener, gets along with others”; p. 2) or the non-anthropomorphic traits (e.g., “has a good sense of smell, listens to commands,

is good with other dogs”; p. 2), rating the anthropomorphic traits increases their intentions to help the dog get adopted. While not explicitly measured, it is plausible that dog adoption is perceived as a way to help the reduce the harm that humans have caused to dogs by neglecting them and sending them to animal shelters, where they may be perceived to be socially isolated and psychologically suffer from loneliness and confinement.

Defensively Rationalizing Harming Animals

When people judge whether it is morally wrong to harm animals, people sometimes rationalize or justify that harming animals is not immoral (Piazza et al., 2015). For example, Piazza et al. (2015) found that people rationalize that it is morally permissible to eat meat because they believe that eating meat is necessary, natural, normal, and nice (4N beliefs). This may permit them to continue harming animals in valued ways without feeling as much guilt about harming animals and allow them to enjoy the outcomes of harming animals (e.g., enjoy eating meat) (Piazza et al., 2015). Haidt (2001) suggests that moral rationalizations largely occur after intuitive moral judgments, and that such post-hoc reasoning tends to support these initial moral intuitions. Moreover, moral rationalizations may be motivated by a need to defend one’s beliefs and attitudes that one is a consistent and moral person (Festinger, 1957; Haidt, 2001; Steele & Liu, 1983; Steele & Spencer, 1992).

Schein and Gray (2018) note that defense lawyers often appeal to elements of the dyadic harm schema to rationalize that an act was not morally wrong. For example, they

claim that “defense attorneys argue that no damage was caused, that the plaintiff is not vulnerable and suffered little, and that their client did not intend any wrongdoing” (Schein & Gray, p. 39). If such defensiveness applies more generally outside the courtroom, then the TDM suggests that people may rationalize that harming animals is less immoral by denying that humans are intentionally harming animals (Schein & Gray, 2018). People may do this in at least three ways.

Firstly, people may deny that they are harming animals because those animals either lack minds that can experience suffering, a type of mind denial, or they lack mental states that are currently experiencing suffering from the intentional damage (Bastian et al. (2012, Study 2). For example, one might imagine someone rationalizing that they are not morally responsible for harming cows when they eat beef because (they believe) the cow died quickly without experiencing any pain during the slaughtering process.

Secondly, people may deny that they hold causal or moral responsibility for the animal being harmed by blaming the animal for self-harm. Diffusing causal responsibility and blaming victims for self-harm are two ways to morally disengage (Bandura, 1996). For example, it is plausible that people rationalize that they are not morally responsible for indirectly harming sea turtles via plastic pollution when they use plastic straws because (they believe) the sea turtle chose to eat the plastic straw and caused itself to suffer. As part of this rationalization, one might imagine that people also believe that the sea turtle had a mind capable of freely making choices and that it made more proximate choices which harmed itself, which diffused causal responsibility for the

sea turtle suffering from the plastic straw away from humans who use plastic straws and onto the sea turtles that eat them.

Thirdly, people may accept that animals have minds that can experience suffering but deny that they or other humans intentionally caused the negative outcome of animal suffering. Since moral responsibility is thought to require both causal responsibility and intentionality (Alicke, 2000), they may accept causal responsibility for animal suffering, but deny moral responsibility. For example, a person that eats pork may rationalize that they did nothing morally wrong when they ate pork because they did not intentionally cause pigs to suffer. In this case, they may believe themselves or other humans to lack certain agentic mental states necessary for moral responsibility, namely intentions to cause the outcome of animal suffering.

Mind Denial of Animals

Sometimes people rationalize that harming animals is morally permissible by denying that animals have minds that can experience suffering. There is some evidence that when animals are framed as food, people deny them minds. Bastian et al. (2012, Study 2) found that when sheep and cows were described as living on a farm and then moving to pasture to eat grass (versus going to a slaughterhouse for to produce meat for consumption), people expressed less confidence that they possessed mental capacities.

However, there is also evidence that when animals are framed as food, they are denied moral concern, but not minds. Loughnan et. al. (2010) found that when participants were asked to eat beef-jerky (versus asked to eat nuts) prior to answering

question about mind perception and moral concern for animals, people expressed moral obligations to fewer animals and expressed less moral concern for cows in particular, but they did not find mind denial for cows, neither for intellect-related (i.e., agency-related) nor sensation-related (i.e., experience-related) cognitive states.

There is mixed evidence that mind denial may be learned as one interacts with harmed animals. One cross-sectional study found that veterinarian students their second year perceive less animal sentience (based on average ratings for hunger, pain, fear boredom), in cats, dogs, and cows than veterinarian students in their first year (Paul & Podberscek, 2000). Interestingly, no difference was found for pigs (Paul & Podberscek, 2000). Compared to first year students, second-year students perceived less boredom for cats, dogs, and cows, and they perceived less hunger and pain in dogs (but not in cats or cows; Paul & Podberscek, 2000).

One might expect that those who raise animals for slaughter might be motivated to deny the minds of the animals they raise for slaughter. However, compared to other occupations (including applied animal science students, other agriculture students, students not involved with agriculture, pig veterinarians), pig farmers did not attribute less capacity for suffering to pigs in terms of pain, hunger, fear, or boredom (Peden et al., 2020). Moreover, pig farmers perceived greater hunger in pigs than dogs, cats, and cows, suggesting greater attribution for the possibility of suffering in animals they help raise for slaughter (Peden et al., 2020).

Harm without Suffering

People may rationalize that it is not morally wrong to harm animals in certain ways because, while animals may have the capacity to experience suffering, they did not actually experience suffering when they were intentionally damaged. For example, American veterinarians, through their professional association, judge that it is more ethical or humane to quickly render livestock animals unconscious and insentient before killing them for meat because it reduces their mental states of pain and suffering (Leary & American Veterinary Medical Association, 2016). They argue that if one is going to harm animals, they ought to damage its nervous system so that it causes “rapid loss of consciousness and the associated loss of brain function” (Leary & American Veterinary Medical Association, 2016, p. 7). Such slaughtering guidelines and moral reasoning suggest that many veterinarians judge that it is morally wrong to slaughter animals in ways that do not quickly render the animal unconscious. However, given the conditional nature of their prescription, it does not suggest that most veterinarians think it is morally right to slaughter animals. Such a perspective is supported by their disclaimer that their guidelines “do not venture into the morality of killing animals for food” and that “they ... focus on what should happen to animals when slaughter is their ultimate fate” (Leary & American Veterinary Medical Association, 2016, p. 7).

Hunting educators also argue that it is more ethical to kill animals quickly by shooting it in its vital organs (e.g., heart and lungs; Alaska Department of Fish and Game, 2021; IHEA-USA, 2020). They also argue it is morally wrong to take risky shots that

may only wound the animal because it causes unwarranted animal suffering (Alaska Department of Fish and Game, 2021). Thus, hunter educators rationalize that killing animals for food is not morally wrong in many cases because hunters can shoot it in a manner which reduces animal suffering.

Blaming Animals for Self-Harm

One way people may rationalize harming animals is to blame the animal for self-harm. For example, one can imagine a person blaming a dog for choking itself when it pulls on its tight leash or shocking itself when it barks while wearing a shock collar. Since blame and moral responsibility for an action is sometimes thought to require causal responsibility for that action (Alicke, 2000), blaming an animal for self-harm may be thought to involve perceiving the animal to be at least partially causally responsible for the suffering it experiences after the alleged harmful human behavior. If the animal is perceived as more causally responsible, then humans are perceived as less causally responsible, and thus humans are judged as less morally responsible for the suffering of the animal.

This view is compatible with the TDM, which holds that judgments of immorality decrease as one less clearly perceives an agent to cause damage to a patient (Schein & Gray, 2018). It is also compatible with Bandura's proposed mechanisms of moral disengagement, including diffusion of responsibility and attributions of blame (Bandura et al., 1996). Bandura (1996) argues that moral disengagement can occur through the mechanism of diffusion of responsibility, a social mechanism, such as the division of

labor or group decision-making, whereby causal responsibility is divided between agents. Bandura thought that by diffusing causal responsibility, one obscures individual moral responsibility and thus makes it less likely to attribute moral responsibility to individuals. Thus, in the case of humans harming animals, people may rationalize that they have less moral responsibility for an animal suffering because both they and the animal are partially causally responsible for that suffering.

The idea that humans justify harming animals by holding them causally responsible for humans harming may find expression in hunting ethics. For example, some hunters think it is morally wrong to hunt deer with technologies that enhance human agency since it does not give prey a fair chance to evade being shot (Su & Cheon, 2017). However, it is not clear whether such concerns over fair chase are associated with concerns about reducing animal suffering, especially since being hunted may increase experiences of fear in prey animals and since self-handicapping with more difficult-to-use hunting technologies (e.g., recurve bows versus rifles) may increase the risk of only wounding animals. Another possibility is that by adopting a handicapping technology (e.g., a muzzleloader), adopting rules prohibiting using agency-enhancing technologies (e.g., decoys), or adopting rules about not fully using the capacities of technologies (e.g., trail cams), helps hunters rationalize that harming the animal for sport was fair and not morally wrong. By using the metaphor of a fair competition between humans and prey animals, hunters may convince themselves that when they do harm an animal, it was the animal's fault because it made the wrong choices and lost the game.

While I could not find any psychological studies that test whether people morally disengage by blaming animals for self-harm, there is evidence that judgments of immorality decrease when additional agents are introduced into a causal chain leading to harming the environment with pollution (Paharia et al., 2009). Harming the environment with pollution is one way to harm both humans and animals. Paharia et al. (2009) found that when people were either told to judge how unethical it is for a company to reduce their factory's pollution controls by 25% or told to judge how unethical it is for a company to sell their factory to another company which in turn would reduce their pollution controls by 75%, people reported less unethicity for the indirect option than the direct option, and that this occurs even though the indirect option leads to greater harm in terms of pollution. However, Paharia et al. found the indirect option was judged more unethical when people were presented with both the direct and indirect options. In this joint case, the authors suggest that participants made a more reflective and less intuitive moral judgment, which attended to the different magnitudes of harm more than the indirectness of causation. Thus, it is plausible that when people are making less reflective and more intuitive moral judgments about harming animals, people may invoke a more indirect and diffuse conception of causality, where the harmed animal is causally responsible for its harm, to help rationalize or justify that their behaviors were not morally wrong.

Moreover, since moral responsibility also implies control over one's behaviors, people may be motivated to attribute greater agency to animals in order to hold them both

causally and morally responsible. This is compatible with the moral disengagement mechanism of attributions of blame, but incompatible with the mechanism of dehumanization (Bandura et al., 1996). Bandura (1996) suggests that people blame victims to exonerate themselves, and this blaming leads to greater derogation of the victim, including dehumanization.

Bandura (1996) thinks that people also dehumanize their victims in order to reduce the distress they feel by empathizing with their victims and to prevent or undo the negative moral judgments they make about themselves for harming their victims. Since dehumanization often involves comparing humans to animals (Haslam, 2006), it is unclear whether humans would derogate animals in a similar way; it is unclear whether harmed animals would be compared with simpler animals and attributing to them their simpler mental capacities. Moreover, the TDM (Schein and Gray, 2016) suggests that if people strip harmed animals of too much agency, the harmed animals would not be in a position to be blamed. So, it remains plausible that people may blame animals for self-harm by attributing them more agency.

As mentioned, blaming animals requires attributing causal responsibility and attributions of agency, but it also suggests attributions of moral responsibility and attributions of moral agency. One might think that the forest fire is causally responsible for the death of a herd of deer, without holding the forest fire morally responsible for the death of the herd of deer. In contrast, one might think that a careless camper is both

causally and morally responsible for the death of the herd of deer when we learned that they threw their lit cigarette into bushes near the forest.

Moral agency is defined differently than agency. Moral agency is the capacity to act in ways that “meet the demands of morality” (Haksar, 2016, Article summary section, para. 1). Gray et al. (2007) define moral agents as entities “whose actions can be morally right or wrong” (p. 619). However, philosophers disagree about which mental capacities are required of moral agency and how they relate to agency and moral responsibility (Haksar, 2016; Talbert, 2019). For example, must a moral agent have the capacity to believe that their action is morally right or wrong, or does it suffice that they can perform an action which others believe is right or wrong? Shapiro (2006) identifies two definitions of moral agency, the first more demanding than the second in terms of cognitive capabilities: “the capability to understand and act on moral principles” (p.358), and “the capacity for virtuous behavior” (p.358). Shapiro argues that according to the second definition, some animals (e.g., wolves, dolphins, apes) have moral agency for virtues like “courage, compassion, and loyalty” (p. 360). He claims that moral agency requires “at least minimal degrees of intentionality, reasoning, and responsiveness to circumstances” in order to act in accordance with virtue, and some animals have these cognitive abilities (Shapiro, 2006, p. 363). Piaget and Kolberg assume that behavioral conformity to moral values is insufficient evidence of moral agency; to them, reasoning about the moral principles of conduct is also needed (Saltzstein, Herbert D., 2008).

The TDM defines moral agency as the capacity for “moral responsibility” and agency as “being a thinking doer” (Schein & Gray, 2018, p. 38). Schein and Gray (2018) holds that agency suffices for moral agency in that it “qualifies one as a moral agent” (p.38), which concurs with Shapiro (2006). However, for moral judgment predictions, the TDM only requires perceived agency, which presumably includes the perceived capacity for intending harmful actions (Schein & Gray, 2018).

Unintentionally Harming Animals

The TDM holds that people judge that harmful actions to be less immoral if one does not intentionally cause harm (Schein & Gray, 2018). Hester et al. (2020) found that people rate actions described by sentences with ambiguous, nonsense verbs as more immoral when the actions are described as intentional instead of accidental (e.g., “‘John intentionally/willfully/purposefully pelled Mary’... [vs.] ‘John accidentally/unintentionally/inadvertently pelled Mary’”; p. 5). Thus, it is plausible that people may rationalize that it is not wrong for them to engage in behaviors which harm animals because they are not intending to cause the animal suffering. For example, a person may rationalize that they are not intending to cause cows to suffer when they eat hamburgers, even though they know that eating hamburgers indirectly causes more cows to be slaughtered and even though they know they are intending to buy and eat hamburgers. In this case, they are rationalizing that it is not morally wrong for them to eat meat because when they eat meat, they lack the mental state of an intention to cause an animal to have a kind of negative mental state, namely suffering.

Hester et al. (2020) also found that people rate actions described by sentences with ambiguous, nonsense verbs as more immoral when the actions are described as intentional instead of accidental (e.g., “John pelled Mary, who cried/shuddered/screamed/yelled/sobbed’... [vs.] ’John pelled Mary, who laughed/smiled/grinned/beamed/nodded’”; p. 7). Thus, it is also plausible that people may rationalize that it is not wrong for them to engage in behaviors which harm animals because they lack control over their intentions to engage in these behaviors. In this case, they may view the harmful behavior as necessary for meeting their basic needs, or even automatic and instinctual. For example, in the case of eating meat, people commonly report that eating meat is morally permissible because it is natural, necessary, normal, and nice (Piazza et al., 2015).

CHAPTER 2

THE EFFECTS OF FREE WILL FRAMING ON BELIEFS ABOUT SEA TURTLE MINDS AND MORAL CONCERN ABOUT USING PLASTIC STRAWS

Introduction

Humans harm animals both directly, like hunting, and indirectly, like by polluting animal habitats (Fraser & MacRae, 2011). Animal welfare advocates publish imagery of animals suffering to morally persuade the public to refrain from engaging in certain behaviors they perceive to harm animals, and they expect that if the public learns that their behaviors are causing animal suffering, they will feel guilty about those behaviors and refrain from doing them (Wen, 2016).

For example, The Leatherback Trust posted a video on YouTube of an olive ridley sea turtle with a plastic straw being pulled from its nostril by a human in order to persuade the public to stop using disposable plastic, which indirectly harms sea turtles and other marine animals since they eat it once it pollutes their habitats. In the video description, the organization pleaded with the public to “Please say no to all disposable plastic” because “Every plastic straw, plastic bag, or plastic bottle that ends up in the oceans could mean the difference between life or death for any number of marine animals” (The Leatherback Trust, 2015). The sea turtle video had over 39 million views,

over 68 thousand comments, and multiple derivative videos, including the one I used in this study.

As evidenced by YouTube comments about the video, such rhetoric seems to convince some members of the public: that sea turtles experience pain and suffering (e.g., “I can almost feel the pain thru the screen” and “I could really see the suffering in the turtle's eyes, it hurt me so bad”); that it is morally wrong to use plastic straws (“Its human wrong doing..”); to feel guilty for using plastic straws (“I was watching this with a straw in my mouth. I feel guilty <downcast face with sweat emoji>” and “i felt sorry and guilty while watching the video because to be honest, i am also a sh*t person who always use plastic without disposing it properly. <loudly crying face emoji> I'm sorry!”); and that they should reduce their use of plastic straws (“I cried watching this. I pledge not to use plastic straw anymore”; The Leatherback Trust, 2015).

In other comments about the sea turtle video, the public expressed more skepticism, anger, derision, and amusement about such moral rhetoric. For example, one commenter expressed doubt that people will feel personally guilty about using plastic straws after watching the video, but still expressed collective guilt for using straws (“Well its not like the person knows it was their straw. It could be your straw for all anyone knows. But it is a terrible thing the animals have to endure these things just so we can sip our soda”; The Leatherback Trust, 2015). Another commenter expressed anger and defiance at public pressure to reduce their use of straws, including announcing their lack of moral concern for the welfare of sea turtles, suggesting straw use is a personal

preference and not a universal moral duty (“FUCK THE TURTLES IM DRINKING THROUGH A STRAW IF YOU LIKE IT OR NOT”; The Leatherback Trust, 2015).

Some commenters found the video amusing and reacted with jokes or intentions to bring about the negative outcomes of the immoral behavior (“This made me laugh alot and throw alot of trash in water”; The Leatherback Trust, 2015). One commenter blamed the turtle instead of humans because the turtle made a stupid choice, suggesting it had high agency in terms of free will, but low agency in terms of intelligence (“Dumbass turtle for thinking that’s food lmfaoooooooooo”; The Leatherback Trust, 2015).

The aforementioned comments about sea turtles suggest that beliefs about the minds of sea turtles (including beliefs about their ability to feel pain and make intelligent choices) may reduce moral concern about using plastic straws. In particular, they suggest it is plausible that people may reduce their moral concern about using plastic straws by viewing the sea turtle as making choices (even “Dumbass” choices) and rationalizing that it is less wrong to use plastic straws because sea turtles are more causally responsible for eating the plastic straws and harming themselves (The Leatherback Trust, 2015).

People tend to think of having free will as having the capacity to make choices (Feldman et al., 2014). Some theories of blame and moral responsibility hold that attributing moral responsibility for an action involves attributions of causal responsibility and intentionality for that action (Alicke, 2000). And people sometimes morally disengage by blaming victims for the suffering they experience and by diffusing causal responsibility (Bandura, 1996). Thus, it is plausible that people who believe that sea

turtles have greater free will also believe that sea turtles are causally responsible for self-harm, and it is plausible that coming to believe that sea turtles have free will leads one to responsabilize sea turtles.

By responsabilize, I mean to come to believe that sea turtles have agentic mental capacities or states that tend to be perceived as necessary for causal responsibility and moral responsibility, like intentionality. So, it is also plausible that when people responsabilize sea turtles (in terms of attributing to sea turtles causal responsibility for eating plastic straws and perceiving intentionality in sea turtles when eating plastic straws), they hold humans (including themselves) less morally responsible for harming sea turtles. So, it is plausible that if one reads a comment about the minds of sea turtles and comes to believe that sea turtles have free will, they may rationalize that humans (including themselves) are not morally responsible for harming sea turtles by using plastic straws because sea turtles have the ability to choose how to act and they chose to eat plastic straws, which caused them to suffer. In this way, it is plausible that framing animals as having free will leads people to rationalize that they are not morally responsible for indirectly harming animals and leads them to express less moral concern about indirectly harming animals. Moreover, such a rationalization process suggests that it is plausible that framing animals as lacking free will leads people to refrain from rationalizing that they are not morally responsible for harming animals for these reasons, and then express more moral concern about indirectly harming animals.

However, there are also reasons to think that framing animals as lacking free will leads people to rationalize that they are not morally responsible for indirectly harming animals, and for them to then express less moral concern about indirectly harming animals. In the history of animal ethics, Descartes argued that dogs and other animals were merely machines, and thus lacked consciousness and the capacity to suffer (Singer, 2015). Descartes and his contemporaries used these beliefs about animal minds to morally rationalize vivisectioning animals in their physiology experiments (Singer, 2015). If animals were conceptualized as merely machines or mechanisms, then they would presumably lack the agentic capacity of making choices, or free will. Thus, Descartes suggests that perceiving animals as lacking agency (including free will) leads people to believe that they also lack the capacity to suffer. So, it is plausible that framing animals as lacking free will leads people to objectify animals, or deny them all kinds of mental capacities simultaneously, including other agentic capacities, such as intentionality, and the capacity to feel pain and suffer.

Some mind perception research suggests that people who perceive animals as less agentic also perceive them as having less of a capacity to suffer (Piazza et al., 2014). There is also research that suggests that people are willing to deny animals mental capacities for agency and suffering when they are reminded of how harming the animal is instrumental in achieving some valued behavior, like eating, or some valued outcome, like food (Bastian et al., 2012, Study 2). Thus, coming to believe animals lack free will in the context of a valued behavior, like using plastic straws, may lead people to objectify

animals - denying them minds altogether as if they were mere mechanisms. If animals are perceived as mere mechanisms, then it is plausible that people believe that they not only lack the capacity to consciously make choices but lack all forms of consciousness or sentience, and thus, cannot experience harm in terms of pain and suffering. If they cannot experience harm as pain or suffering, then it is plausible that people may have less moral concern for actions alleged to harm them with pain and suffering (e.g., using plastic straws). So, it is also plausible that framing animals as lacking free will leads to the objectification of animals and the rationalization that one is not morally responsible for harming animals because animals lack mental capacities for agency and the capacity to suffer. Moreover, if free will increases perceptions that animals have both agentic capacities and the capacity to suffer, then it is plausible framing animals as having free will would increase moral concern about harming the animal.

It is also possible that free will beliefs about animals have no influence on moral concern for harming animals, or that they only influence moral concern for harmful behaviors under certain circumstances, such as when free will is made salient in the course of moral discourse about harming animals, or when free will beliefs interact with political ideology.

Political conservatives are less likely to hold negative moral attitudes about some pro-environmental behaviors, like recycling plastic bottles, which reduce indirect harm to animals (Feinberg & Willer, 2013). Political conservatives are also more likely to rationalize that some behaviors that harm animals indirectly are morally permissible, like

eating meat (Piazza et al., 2015). Thus, it is plausible that rationalizations for harming animals depends on political conservatism.

From the perspective of animal welfare education and advocacy, it may be useful to understand how beliefs about animal minds (e.g., beliefs about animals' mental capacities and mental states) empirically relate to moral concern for harming them (e.g., moral judgments and feelings of guilt for behaviors that harm them, as well as intentions to reduce those harmful behaviors), and in particular, whether perceiving greater agency induces moral rationalizations for harming them.

Research Questions

In this paper, I used the aforementioned sea turtle video and the context of humans indirectly harming sea turtles through their use of plastic straws to help test whether and how people rationalize that they are not morally responsible for indirectly harming animals.

Research Question 1: Does framing animals as having free will induce people to rationalize that they are not morally responsible for indirectly harming them because the animal has agency and harmed itself?

Research Question 2: Does framing animals as lacking free will induce people to rationalize that they are not morally responsible for indirectly harming them because the animals lacks minds with which to suffer?

Research Question 3: When animals are neither framed as having nor lacking free will, does perceiving them as having greater free will predict less moral concern for indirectly harming them?

Background

Mind Perception and Moral Judgments according to The Theory of Dyadic Morality

Harm-centric psychological theories of moral judgment, such as the Theory of Dyadic Morality (TDM), claim that harm perception is central to predicting all moral judgments, including moral judgments about humans harming animals, and that mind perception, including beliefs about human and animal minds, is central to predicting harm perception, including beliefs about whether animals are harmed (Schein & Gray, 2018). The TDM holds that all moral judgments involve applying a peculiar cognitive template of interpersonal or dyadic harm where one perceives a moral agent to intentionally damage a moral patient (Schein & Gray, 2018).

A moral agent is an entity believed to have some moral responsibility for their actions, and a moral patient is an entity believed to deserve some moral concern (Schein & Gray, 2018). For example, a person may believe babies are moral patients, but not moral agents, because they believe babies deserve moral concern (e.g., believing it would be morally wrong for babies to be hit by their parents), but are not morally responsible for their actions (e.g., believing babies are not morally blameworthy for hitting their parents). In the case of moral judgments about humans harming animals, humans are the moral agents and the harmed animals are the moral patients.

In addition, the TDM holds that the degree of judged wrongness of a behavior increases with the degree of intentional harm perceived in that instantiated behavior (Schein & Gray, 2018). Thus, it links moral judgments about a behavior with harm perception in that behavior. Compatible with this view, Schein and Gray (2015) find evidence that prototypical immoral behaviors are believed to be more harmful. In one study, Schein and Gray (2015, Study 1) found that when participants were asked to report the first immoral act they can recall and then later indicate whether the act was “harmful, unfair, disloyal, disobedient... [or] gross” (p. 6), most participants recalled dyadic behaviors (i.e., behaviors involving one entity acting on another; 90%) and clearly harmful behaviors (44% murder, 4% rape, 7% abuse), and most participants rated the first behavior as harmful (68%).

In another study, Schein and Gray (2015, Study 2) find that when participants are asked to pretend to be anthropologists and rate the immorality, wrongness, and punish-worthiness of various vague actions described as “harmful, unfair, disloyal, disobedient... [or] impure” (p. 6), participants rated actions described as “harmful” (p.6) with a higher combined index of immoral, wrong, and punish-worthy ratings. Both studies assume that the most accessible and prototypically recalled immoral behavior (either in general or in more specific contexts) is also the strongest form of it, but it is logically possible that less accessible or more unusual immoral actions are judged equally or more immoral and that these cases involve less perceived harm.

The TDM permits harm perception and mind perception to occur either directly through the senses or indirectly via symbolic interpretation and the imagination (Schein & Gray, 2018). Thus, one may make moral judgments about interpersonal behaviors never witnessed, but only symbolically described by and imagined through texts, including those encountered in hearsay, fictional novels, and hypothetical vignettes.

In a series of experiments, Hester et al. (2020) found that people judge ambiguous non-sense behaviors described as dyadic (e.g., “James gished Brian” vs. “James gished”), intentional (e.g., “James intentionally gished Brian” vs. “James accidentally gished Brian”), and involving suffering (e.g., “James gished Brian, who cried” vs. “James gished Brian, who laughed”) as more immoral, and those performing the behaviors judged to have more negative character traits (e.g., “aggressive, “offensive”, “unpleasant”; p. 5). However, this study did not examine moral judgments about behaviors involving non-human animals or groups of humans.

The TDM contends that harm perception and mind perception depend on culturally learned beliefs about harm and minds (Schein & Gray, 2018). Such perceptual pluralism is consistent with historical and anthropological evidence. For example, some indigenous cultures in North America perceive animals as having high levels of agency and perceive animals as accepting harm from hunting (Hill, 2011; Nadasdy, 2007). The TDM holds that the degree of perceived wrongness of a harmful action from a moral agent to a moral patient increases with the perceived agency of the moral agent and the perceived patiency of the victim, where perceived agency includes beliefs about mental

capacities to think, plan, and intend, while perceived agency includes beliefs about mental capacities to experience the world and feel pain and suffering (Schein & Gray, 2018). These capacities may be general across situations (like generally being able to think) or specific to certain evaluated situations (like specifically being able to think while driving a car into a deer after drinking alcohol; Schein & Gray, 2018).

In the case of humans harming animals, the TDM predicts that people judge humans harming animals to be more immoral if they perceive greater patiency (e.g., capacity for feeling pain and experiencing suffering) in animal victims, and if they perceive greater agency (e.g., capacity for intelligence or intentionality) in the human perpetrators of animal harm (Schein & Gray, 2018).

Several studies support TDM's predictions about the relationships between agency and patiency beliefs about entities and moral judgments about harming them (Gray et al., 2007; Schein & Gray, 2018). Gray et al. (2007) found that when participants were asked to rate the relative level to which entities (including humans and animals) were more deserving of punishment for "causing a person's death" (p. 619), the correlation between deserved punishment and perceived agency ($r = .82, p < .05$) was greater than the correlation between deserved punishment and perceived patiency ($r = .22, p < .05$). While believing that an entity deserves punishment for a behavior is not equivalent to explicitly judging the behavior as morally wrong or explicitly judging the actor as lacking moral character, it does suggest a negative moral judgment. In the same study, Gray et al. found that when participants were asked to rate the relative level of pain

they would feel if “forced to harm” each of two different entities (including humans and animals), the correlation between such pain and perceived agency ($r = .26, p < .05$) was lower than the correlation between such personal pain and perceived patiency ($r = .85, p < .05$). Again, while the reported pain is vague and not equivalent to moral judgment for a behavior or actor, it is compatible with moral concern and judged moral wrongness about that behavior or moral character of that actor. For example, it is possible that the reported pain reflects a negative feeling of guilt and that the guilt reflects a negative moral judgment. Thus, there is some empirical support for TDM’s contention that moral judgments of wrongness for a harmful action directly relates to the perceived agency of the harming actor and perceived patiency of the harmed target (Schein & Gray, 2018).

Some mind perception studies not only support the TDM prediction that people believe it is more wrong to harm animals that they perceive to have greater patiency, but going beyond the predictions of the TDM, these same studies find that people believe it more wrong to harm animals they perceive to have greater agency (Bastian et al., 2012; Knight et al., 2004). Knight et al. (2004) found that general beliefs about animal minds (including beliefs that animals are self-aware, feel emotions, make decisions, problem solve, and do not only act on instinct) is negatively related to attitudes about using animals (in ways that harm them) for scientific experimentation, food, entertainment, and killing them as part of animal management practices.

Bastian et al. (2012) also find evidence that people judge eating animals they perceive to have more mind as more morally wrong. Bastian et. al. found that mental

attributions of agency and patiency to animals form a single dimension and that this dimension is negatively correlated with their edibility ($r = -.42, p < .001$), positively correlated with judging eating the animal as wrong ($r = .80, p < .001$), and positively correlated with feeling bad about eating the animal ($r = .77, p < .001$).

Some circumstantial evidence in psychopathology is also consistent with the TDM's prediction that moral judgments about harming animals depends on perceiving greater patiency in animal victims. Gray et al. (2011) found that psychopathy was negatively correlated with perceived patiency (including pain) in humans and animals, that autism was negatively correlated with perceived agency in adult humans, and that schizotypy is positively correlated with perceived agency and perceived patiency in allegedly mindless entities, like dead people, trees, and God. This study did not examine moral judgments and did not examine whether psychopathy is negatively related to judged immorality for harming animals via perceived agency (Gray et al., 2011). However, Kavanagh et al. (2013) found that psychopathy is negatively correlated with positive attitudes about animals ($r = -.30, p < .001$) and positively correlated with self-reported behavioral cruelty towards animals in terms of both intentionally torturing animals ($r = .19, p < .01$) and intentionally killing wild, feral, or stray animals without a legitimate reason ($r = .19, p < .01$).

Perceived Agency and Suffering

The TDM ignores several important theoretical possibilities about the relationship between beliefs about animal minds and moral judgments and moral emotions about

harming animals. First, the TDM makes no prediction about the relationship between perceived agency in animals and moral judgments about harming them, even though perceived agency is conceptually connected to suffering and has been empirically found to correlate with perceived suffering (Bastian et al., 2012; Loughnan et al., 2010; Piazza et al., 2014; Schein & Gray, 2018). As Piazza et al. (2014) note, suffering often involves thinking about negative past and future mental states, such as pain and fear, and thus, suffering may increase with the victim's capacity for imagination, intelligence, or thinking.

This idea that perceived capacity for suffering increases with perceived capacity for agency is consistent with correlational evidence in several mind perception studies involving animals (Bastian et al., 2012; Gray et al., 2007; Piazza et al., 2014). In their mind perception study on different types of entities (including a dog, a frog, a chimp, a human fetus, a dead woman, a robot, and God), Gray et al. (2007) found that attributions of different mental capacities load onto two dimensions, "Agency" (p. 619) and "Experience" (p. 619). The agency dimension involved mental capacities for "self-control, morality, memory, emotion recognition, planning, communication, and thought," whereas the experience dimension involved mental capacities for "hunger, fear, pain, pleasure, rage, desire, personality, consciousness, pride, embarrassment, and joy" (Gray et al., 2007, p. 619). However, Piazza et al. (2014) report that Gray et al.'s agency and experience dimensions are strongly positively correlated ($r(11) = .90, p < .001$),

especially when unnatural entities, like God and robots, are excluded from the analysis ($r(8) = .97, p < .001$).

Moreover, in their study on the relationship between beliefs about animal minds and moral concern for animals, Piazza et al. (2014) found that patency beliefs (including perceived pain and suffering) and agency beliefs (including perceived intelligence), were highly correlated ($r = .86, p < .001$) and loaded via a factor analysis on the same dimension; this shared patency/intelligence dimension predicted greater moral concern for that animal, even after controlling for the perceived harmfulness of the animal. Bastian et al. (2012, Study 1) also found a strong relationship between agency and patency beliefs in their study on mind perception for multiple animals, including a turtle (albeit not a sea turtle); they found a single dimension across multiple general mental capacities associated with agency beliefs (i.e., “self-control, morality, memory, emotion-recognition, planning”, p. 249) and patency beliefs (i.e., “hunger, fear, pleasure, pain, rage”, p. 249).

In their study on the effects of eating dried meat (versus dried nuts) on how people perceive the minds of cows, Loughnan et al. (2010) found that subscales for sensation-related mental states (including “seeing, hearing, tasting, pain, hunger, pleasure, fear, happiness, and rage”; p. 157) and intellect-related mental states (including “thinking, imagining, wishing, needing, desiring, intending, planning, choosing, and reasoning”, p. 157) had high internal reliability scores (Cronbach’s alpha scores > 0.84)

and were weakly correlated ($r(99) = 0.32, p < .001$). However, these statistics involve data across manipulation conditions and not analyzed within condition.

Free Will Belief and Motivated Mind Perception via Objectification and Responsibilization

Second, the TDM does not consider beliefs about free will as an aspect of perceived agency, or how free will beliefs in animal victims may be used to morally rationalize harming animals through responsibilization and objectification (Schein & Gray, 2018). However, there is both philosophical and empirical support for the view that free will beliefs about animal victims are agency beliefs related to causal and moral responsibility, and that people may use these free will beliefs to rationalize that they are not morally responsible for harming animals because animals are more causally responsible for self-harm.

Moral responsibility for an action is defined by some philosophers as being “susceptible to being blamed or praised for ... [the action]” (Rudy-Hiller, 2018, para. 1). Those held morally responsible are thought to be perceived as having some capacity to control the action and some capacity of awareness about the action (Rudy-Hiller, 2018). Free will is defined by some philosophers as “the control in action needed for moral responsibility” (Caruso, 2018, Arguments for Moral Responsibility Skepticism, para. 1). So, having free will is arguably philosophically necessary (albeit not sufficient) to be morally responsible for an action. Moreover, many philosophical and psychological models of blame and moral responsibility assume that attributions of blame or moral

responsibility depend on attributions of causal responsibility, intentionality, and foresight (Alicke, 2000).

Empirically, people tend to associate having free will with the capacity to choose, which is an aspect of control (Feldman et al., 2014). People with stronger free will beliefs are more likely to spontaneously associate the word “choice” with the word “freedom” (Feldman et al., 2014, p. 240). People who more strongly believe that they have free will are more likely to believe they have the ability to choose (Feldman et al., 2014). If personal free will beliefs function similarly to free will beliefs about others, then those who more strongly believe that others have free will, would also more strongly believe that others, including harmed animals, have the ability to choose.

Based on these philosophical perspectives and psychological tendencies (Alicke, 2000; Caruso, 2018; Feldman et al., 2014; Rudy-Hiller, 2018), it is plausible that people believe that if an entity, including a harmed animal, cannot choose how they behave, then that entity cannot be morally responsible or blamed for that behavior. Conversely, if an entity, including a harmed animal, is perceived to have a greater capacity to choose, then people may be more likely to blame it or hold it morally responsible for acting in ways that violated valued moral principles, such as not harming itself or others.

Moreover, if an entity, including a harmed animal, is perceived to have a greater capacity to choose (i.e., having free will), then people may be more likely to hold it causally responsible for actions. This possibility is supported by the finding that people who more strongly believe they have free will are more likely to view their actions as

choices (Feldman et al., 2014). Thus, it is plausible that if people strongly believe that others, including harmed animals, have free will, they may also be more likely to view intervening and more proximate animal behaviors that result in self-harm (e.g., eating plastic straws) as actions chosen by those animals. Coming to believe that animals chose their actions may involve responsabilizing animals, or attributing to them agentic capacities and mental status perceived as necessary for causal and moral responsibility, including a general capacity of intentionality and specific intentions for self-harming behaviors. If people believe harmed animals are making choices about an event in which they are harmed, they may also believe that the animal is more causally responsible for the outcome, and consequently, be more likely to hold those animals causally responsible for the harm they experience and blame them for self-harm. Moreover, by viewing animals as more causally responsible for self-harm, people may rationalize or justify that they are less morally responsible for indirectly harming animals. Thus, it is plausible that perceiving animals as having free will may be used to responsabilize animals for self-harm and rationalize that one is not morally responsible for harming animals.

However, some people have rationalized that they are not morally responsible for harming animals because, as they believe, animals lack free will. For example, Descartes and other scientists during the Enlightenment argued that it was morally permissible to vivisect dogs and other animals because they are merely machines or automata, which lack consciousness, and thus cannot feel pain or suffer (Singer, 2015). If people believe that free will is an agentic mental capacity to choose, and that greater agentic mental

capacities tend to be accompanied by greater capacities to feel pain and suffer, then they may believe that animals that lack free will also have a lower capacity to feel pain and suffer. So, it is also plausible that framing animals as lacking free will reduces moral concern for harming animals by leading people to objectify an animal.

There is mixed empirical support for whether and how free will beliefs in animal victims help humans rationalize or justify harming animals through responsabilization or objectification. Cognitive dissonance theory (CDT) suggests people are motivated to perceive animal minds in ways that permit them to continue valued behaviors that harm animals, such as eating meat, without the negative feeling of dissonance that arises from discrepancies between their perceptions, moral judgments, and behaviors (Rothgerber, 2020). Thus, it is possible that perceiving more or less animal agency in terms of free will (i.e., the capacity to freely choose) or intentionality, or perceiving more or less animal sentience in terms of the capacity to feel pain, is motivated by and thus causally connected to how those perceptions help justify and make morally permissible the maintenance of valued behaviors which harm animals. To reduce cognitive dissonance between moral attitudes against harming animals and valued behaviors that harm animals, like eating meat or using plastic straws, it is plausible that humans may either (a) use their belief that animals have free will to responsabilize the animal, including perceiving the animal as intending self-harm, and thereby hold the harmed animal more causally responsible for self-harm and hold humans (including themselves) less causally and morally responsible for indirectly harming animals, or (b) use their belief that a harmed

animal lacks free will to objectify the harmed animal, including denying it mental capacities for agency (e.g., intentionality) and sentience (e.g., the capacity to feel pain and suffer), and thereby hold humans (including themselves) less morally responsible for harming the animals by denying that the harmed animal can experience suffering due to that harm.

Haslam and Loughnan (2014) conceptualize objectification as a kind of mechanical dehumanization, where one perceives another human as lacking “human nature” (p.403) - those attributes, including mental capacities, typical of the human species. These typical attributes and capacities of humans may also be perceived as typical of other animal species, and includes “emotionality, warmth, and vitality” (Haslam & Loughnan, 2014, p. 403). Haslam and Loughnan also identifies another type of dehumanization – animalistic dehumanization, which involves perceiving people as non-human animals lacking “human uniqueness” (p.403), or those attributes that humans perceive unique to humans, such as secondary emotions, like guilt.

Dehumanization is sometimes thought to only target humans, but the general perceptual process, in what is called mind denial, also applies to other types of targets, such as animals (Haslam & Loughnan, 2014). Moreover, mind denial has an inverse process, anthropomorphism, where human-like attributes are assigned to non-humans, including animals (Haslam & Loughnan, 2014). Anthropomorphism has been found to be motivated by the need for social connection and the need to explain and control uncertain situations (Epley et al., 2008). Epley et al. found (2008) that people who feel lonelier are

more likely to attribute mental capacities to mechanical gadgets. Specifically, loneliness was found to be positively correlated with an index of mind attributions for these gadgets ($r(18) = .53, p < .05$), including attributions of “free will” (Epley et al., 2008, p. 115). However, Epley et al. did not report the disaggregated relationship between anthropomorphized free will attributions and felt loneliness.

In another anthropomorphism experiment, Waytz et al. (2010) found evidence that when participants received predictable (mostly yes or mostly no responses in a random order) or unpredictable random responses (an equal number of yes and no responses in a random order) from a robot named Asimo, which was described as able to answer any yes-no question posed, participants were more likely to anthropomorphize the robot when it gave unpredictable responses. Participants anthropomorphized this robot with attributions about having a “mind of its own, intentions, free will, consciousness, desires, beliefs, and the ability to experience emotions” (Waytz et al., 2010, p. 420).

Responsibilization may be conceptualized as a kind of anthropomorphism that makes entities, including animals, morally accountable for their behaviors. I define responsibilization as the attribution of mental capacities or mental states that are typically believed to be required for one to be held causally and morally responsible for their actions. For example, responsibilization may involve attributions of intentionality. The TDM assumes that attributions of intentionality are required to be perceived as a moral agent since it holds that harm perception requires perceiving intentional damage from an actor to a target (Schein & Gray, 2018).

Responsibilization may also be involved in attributions of other morally relevant mental capacities and mental states, such feelings of guilt. For example, humans appear to responsabilize their pets when they frame them as moral agents that can feel guilty for their actions. In their study of mind perception in pets by pet owners, Morris et al. (2008) found 74% of dog owners perceived guilt in their dogs, 36% horse owners perceived guilt in their horses, 35% of cat owners cats perceived guilt in their cats, and 24% of bird owners perceived guilt in their birds. In addition, Brown and McLean (2015) found that people who are more prone to guilt are more likely to perceive guilt in dogs for ambiguous behaviors, suggesting that humans perceive dogs as moral agents.

There is some empirical evidence, in the case of eating animals, that cognitive dissonance motivates people to objectify animals by denying them minds in general, including agency beliefs related to free will (Bastian et al., 2012). Specifically, people have been found to deny animal minds, including mental capacities and states related to free will, in order to harm animals in useful ways, such as killing them for food (Bastian et al., 2012). In one mind denial experiment, Bastian et al. (2012, Study 2) found that describing cows and sheep as food reduces mind perception of cows and sheep, including choice-related mental states involving planning, desires, and wishes, and sentience-related mental states, like pain and pleasure. In a related mind denial experiment, Bastian et al. (2012, Study 3) found that amongst meat eaters, expecting to eat meat (versus expecting to eat fruit) reduces mind perception in cows and sheep, including items closely related to free will, like “choosing” (p. 251), “desiring” (p. 251), “wishing”

(p. 251), and “intending” (p. 251), as well as items related to sentience, like pain and pleasure. While Bastian et al. (2012) found that mind denial also reduces negative affect, they did not measure the moral wrongness of harming animals.

In the case of eating meat, there is also competing empirical evidence that cognitive dissonance motivates reducing moral judgments about harming animals, but does not always motivate the denial of perceived agency in animal victims, like denying that animals have free will (Loughnan et al., 2010). In a mind denial experiment, Loughnan et al. (2010) found that eating beef jerky (versus eating dried nuts) before making moral judgments and rating the minds of cows, decreases moral concern for animals in general and moral concern for cows in particular, but does not change how participants view the minds of cows, neither in terms of intellect-related mental states, which include free-will related mental states like “choosing” (p.157), “desiring” (p.157), “wishing” (p.157), “intending” (p.157), and “planning” (p.157), nor sensation-related mental states. However, the study did find that eating meat marginally indirectly decreases perceived sensation-related mental states (but not intellect-related states) through moral concern for animals in general. No analysis was reported for a marginal effect of eating meat on mind perception through moral concern for cows specifically. This study suggests that people may be motivated to change their moral judgments about harming animals without changing their beliefs about the minds of the animals they harm, and that if they do, they may tend to change patiency related beliefs instead of agency related beliefs to accord with their moral judgments.

There are also instances where the link between motivated mind perception is surprisingly lacking. One might expect that farmers who routinely harm animals would be motivated to deny them the capacity to suffer. However, in a study looking at whether pig farmers are motivated to perceive farm animals as lacking the capacity to suffer, Peden et al. (2020) found no statistically significant difference in the perception of pigs' capacity to suffer (in terms of pain, fear, hunger, or boredom) between pig farmers who raise pigs for slaughter and the general public who do not raise pigs for slaughter. However, the study does not examine moral judgments or mind perception proximate to harmful behaviors, such as when farmers slaughter pigs (Peden et al., 2020).

None of the aforementioned studies attempt to manipulate free will beliefs to determine whether free will beliefs increase or decrease moral judgments about animals. However, some studies have attempted to manipulate agency beliefs in terms of intelligence to see whether they directly influence moral concern. In three experiments, Piazza and Loughnan (2016) found that the perceived intelligence of food animals can be manipulated, and that this manipulation increases moral concern for the food animal, however in the last two experiments it found that intelligence manipulation did not influence moral concern when the moral judgments and moral emotions involved their personal or collective identity. In their first experiment, they found that when they described a hypothetical space expedition involving scientists encountering herbivore aliens called "trablans" as intelligent and inquisitive problem-solvers (versus being neither intelligent nor inquisitive, and unable to solve problems), people rated the trablans

as more intelligent, and they increased their moral concern for the trablans in terms of greater judged wrongness to eat them when “enough food” was already available (Piazza & Loughnan, 2016, Study 1, pp. 6-7). When explicitly asked to imagine themselves as a scientist voting to hunt the trablans, the intelligence manipulation increased participants’ decision to vote against hunting trablans (Piazza & Loughnan, 2016, Study 1).

In their second experiment, Piazza and Loughnan (2016, Study 2) found that when pigs, tapirs, and trablans were described as having more intelligence than dogs (versus less intelligence than dogs), the manipulation increased perceived intelligence for all animals, but that moral concern only increased for tapirs and trablans, which were not eaten by participants and not as culturally relevant to them as pigs. Specifically, their index for moral concern – what they call “moral standing” – includes five items, including how much personal guilt they would feel for eating the animal, how “bad” they would feel for eating the animal, how much collective guilt they would feel for how the animal were mistreated on factory farms, how “bad” they feel about how the animal was mistreated on factory farms, and how morally wrong it is to eat the animal (Piazza & Loughnan, 2016, Study 2, p. 11). The items in the index had high internal reliability ($\alpha = .88$; Piazza & Loughnan, 2016, Study 2, p. 11). After the intelligence manipulation, but before answering the first two items, participants read about how the animal was first hunted and then farmed (Piazza & Loughnan, 2016, Study 2). Then before answering the second two items, participants read about how the animal was “abused by industrial farmers”, including “solitary confinement their whole lives”, barely

being able to “turn around”, and being physically harmed by being “beaten, castrated, and have their tails cut off” (Piazza & Loughnan, 2016, Study 2, p. 11). While the intelligence manipulation in this experiment does not specifically test free will, one part of the description does mention how the animal “frees itself from cages”, suggesting that the animal makes choices and values its freedom (Piazza & Loughnan, 2015, p. 3).

In their third experiment, Piazza and Loughnan (2016, Study 3) found that perceived intelligence manipulations for food animals increased moral concern for harming food animals when making moral judgments about other people eating animals, but not about oneself eating animals. After reading that pigs were more intelligent than dogs (versus reading that dogs were more intelligent than pigs), participants then either answered questions from the other-oriented perspective of a fictional meat eater named John, or from the self-oriented perspective as themselves (Piazza & Loughnan, 2016, Study 3). In both the self and other-oriented conditions, the high-intelligence manipulation increased intelligence, suggesting that perceived intelligence could be manipulated (Piazza & Loughnan, 2016, Study 3). However, the high-intelligence manipulation only increased moral concern for pigs in the other-oriented condition; it made no significant difference in the self-oriented condition, suggesting that the perceived intelligence became morally irrelevant when about one’s own behaviors (Piazza & Loughnan, 2016, Study 3). The moral standing items were the same as those used in their second experiment, except the items were either posed with respect to John in the other-oriented condition or oneself in the self-oriented, and only focused on pigs

(Piazza & Loughnan, 2016). The passages that participants read and the procedure was also similar, except they focused on how Americans mistreat pigs (Piazza & Loughnan, 2016).

Mind Perception and Feelings of Guilt

Third, the TDM makes no prediction about the relationship between beliefs about animal minds and feelings of guilt for harming animals, even though the moral emotion of guilt is theorized to result from negative moral judgments about one's own behaviors and the behaviors of fellow ingroup members (Schein & Gray, 2018). Guilt is theorized as a negative self-conscious moral emotion related to recognizing that one has or may violate their values, including moral values, and has been associated with motivating reparative behaviors – often to reduce the negative feeling of guilt - and theorized as an evolved adaptation to help people to remain members of social groups (Haidt, 2003; Tangney et al., 2007). Guilt has also been conceptualized as a negative feeling associated with the belief that one has caused unjustified harm (Wohl et al., 2006).

Guilt can take multiple forms, including personal and collective guilt. Personal guilt is felt guilt for behaviors that one perceives to have personally done or may personally do and depends on one's personal identity, while collective guilt is felt guilt for behaviors that one's ingroup as a whole is perceived to have done or may do and depends on one's collective identity (Ferguson & Branscombe, 2010; Wohl et al., 2006).

Piazza and Loughnan (2016, Study 2) found that intelligence manipulations of animals can increase both personal guilt for indirectly harming animals, collective guilt

for their society harming animals, and explicit moral judgments about indirectly harming animals (e.g., tapirs and fictional animals), but not when those animals are relevant to one's personal or collective identities (e.g., for pigs). Moreover, Piazza and Loughnan found that items for personal guilt, collective guilt, and explicit moral judgments about harming animals are highly correlated as evidenced by their high internal reliability on a moral standing index (Cronbach's alpha = 0.88).

Mind Perception of Sea Turtles

Finally, it should be noted that sea turtles may be good candidates for testing free will manipulations. Manipulating perceptions of turtle minds with alleged scientific testimony may be easier since few people routinely encounter sea turtles or have much knowledge about their minds. Evidence about how people perceive turtle minds is compatible with this view. People tend to perceive the minds of turtles near the middle of unidimensional mind perception scales, which may indicate uncertainty about turtle minds, and from a measurement perspective, also prevents hitting upper or lower boundaries of mind perception with ceiling and floor effects (Bastian et al., 2012; Piazza et al., 2014). Moreover, turtles are not viewed as having high levels of harm, which might make the findings less generalizable across animals (Piazza et al., 2014). Piazza et al. (2014) found that that on average, using a 7-point Likert-like scale (1=Not at All to 7=Extremely), turtles (albeit not specifically sea turtles) were perceived as having about a 3.5 intelligence/patency rating similar to frogs and chickens, and about a 2 harmfulness rating similar to fish and rabbits; for comparison, chimpanzees were perceived to have

about a 6 intelligence/patency rating and a 4 harmfulness rating. Bastian et al. (2012) found that people tend to rate turtles between 3 and 4 on a 7-point mental capacity scale, which measures whether turtles possess ten different mental capacities. Turtles were rated slightly lower than those chickens and pigeons, and slightly higher than fish and frogs (Bastian et al., 2012).

Hypotheses

The hypotheses are identified as primary or secondary hypotheses.

Hypotheses for Research Question 1

The first research question asks whether framing animals as having free will induces people to rationalize that they are not morally responsible for indirectly harming them because the animals have agency and harmed themselves. The TDM predicts that people judge it is more immoral to intentionally cause damage to animals (i.e., intentionally harm animals), and that people, like lawyers, may rationalize that their alleged harmful actions are not immoral by denying that they are causally responsible for harming animals (Schein & Gray, 2018). Free will is associated with the agentic capacity to choose (Feldman et al., 2014) and the capacity to choose is positively related to the agentic capacity to intend (Loughnan et al., 2010). Moreover, people sometimes morally disengage by diffusing causal responsibility and blaming victims for their suffering (Bandura, 1996). So, it is plausible that framing animals as having free will may induce people to rationalize that humans, like themselves, are not morally responsible for indirectly harming animals by attributing to the harmed animals greater agency in terms

of intending self-harming behaviors and greater causal responsibility for doing these self-harming behaviors. If the data are congruent with this general hypothesis, they would also support several specific hypotheses.

If people are engaging in this self-harm rationalization, then framing sea turtles harmed by plastic straws as having free will (by reading a comment from an alleged scientist) should increase one's belief that sea turtles have free will (Hypothesis 1, Primary). Some of the aforementioned research supports the view that having people read a comment from an alleged scientific expert that an animal has free will (i.e., can making choices) will manipulate free will beliefs about that animal. Firstly, free will is commonly understood as the ability to make choices (Feldman et al., 2014). Secondly, free will is an agentic attribution and mind perception research has manipulated other agency related attributions, like intelligence, with textual descriptions of animal minds from alleged scientists (Piazza & Loughnan, 2016, Study 3).

Moreover, under the self-harm rationalization, framing sea turtles as having free will should increase the responsabilization of sea turtles and increase their relative causal responsibility for harming themselves. Specifically, framing sea turtles as having free will should cause people to perceive sea turtles as more intentionally eating plastic straws (Hypothesis 2, Primary), cause people to attribute to sea turtles greater causal responsibility for eating plastic straws (Hypothesis 3, Primary), and cause people to attribute to humans less causal responsibility for sea turtles eating plastic straws (Hypothesis 4, Primary).

Finally, under the self-harm rationalization, framing sea turtles as having free will should decrease one's moral concern about using plastic straws in terms of moral judgments (Hypothesis 5, Primary), feelings of guilt (Hypothesis 6, Secondary), and behavioral intentions to reduce using plastic straws (Hypothesis 7, Secondary).

Hypotheses for Research Question 2

The second research question asks whether framing animals as lacking free will induces people to rationalize that they are not morally responsible for indirectly harming them because the animals lack minds with which to suffer. Some mind denial research has found that when people are reminded of what animals are used for, like food, that they deny animals mental capacities, including the capacity to intend and the capacity to feel pain (Bastian et al., 2012), while other mind denial research (Loughnan et al., 2010) does not find that people deny animals minds when are reminded that animals are useful, even though reduce their moral concern for animals. So, it is plausible that when animals (e.g., sea turtles) are framed as a lacking free will in the context of some useful human behavior (e.g., using plastic straws) that indirectly harms them (e.g., via plastic pollution), people use this information to objectify animals - denying them minds (including the capacities to intend and feel pain), and then rationalizing that they are not morally responsible for harming animals because the animal lacks a mind with which can suffer. If the data are congruent with this general hypothesis, they would also support several specific hypotheses.

If people are engaging in this painless-harm rationalization, framing sea turtles harmed by plastic straws as lacking free will (by reading a comment from an alleged scientist) should decrease one's belief that sea turtles have free will (Hypothesis 8, Secondary). This is plausible for the same reasons that framing sea turtles as having free will should increase beliefs that they have free will.

Moreover, under the painless-harm rationalization, framing sea turtles as lacking free will should increase the objectification of sea turtles. Specifically, framing sea turtles as lacking free will should cause people to perceive sea turtles as less intentionally eating plastic straws (Hypothesis 9, Secondary), cause people to attribute to sea turtles less causal responsibility for eating plastic straws (Hypothesis 10, Secondary), and cause people to perceive sea turtles as feeling less pain when they eat plastic straws (Hypothesis 11, Secondary).

Finally, under the painless-harm rationalization, framing sea turtles as lacking free will should decrease one's moral concern about using plastic straws in terms of moral judgments (Hypothesis 12, Secondary), feelings of guilt (Hypothesis 13, Secondary), and behavioral intentions to reduce using plastic straws (Hypothesis 14, Secondary).

Hypotheses for Research Question 3

The third research question asks whether greater free will predicts less moral concern for indirectly harming animals when animals are neither framed as having nor lacking free will. People sometimes rationalize their moral judgments (Haidt, 2000) and some motivated mind perception research suggests they adopt beliefs about animal minds

to facilitate these moral judgments when the purpose of animal harm (e.g., food) is made salient (Bastian, 2012). Thus, it is plausible that when animals are neither framed as having nor lacking free will, people may still use their beliefs about whether animals have or lack free will to rationalize that they are not morally responsible for indirectly harming animals. If people use the self-harm rationalization or the painless-harm rationalization when animals are neither framed as having or lacking free will, different hypotheses about moral concern follow in the context of sea turtles indirectly harmed by plastic straws.

If people are engaging in the self-harm rationalization when sea turtles are neither framed as having nor lacking free will, then people who believe that sea turtles have free will should also have less moral concern about using plastic straws in terms of moral judgments (Hypothesis 15, Secondary), feelings of guilt (Hypothesis 16, Secondary), and behavioral intentions to reduce using plastic straws (Hypothesis 17, Secondary). Moreover, people who perceive sea turtles as having free will should perceive greater agency in sea turtles in terms of intentionality to eat plastic straws and greater responsibility for eating plastic straws (Hypothesis 18, Secondary). These hypotheses are plausible for the same reasons they are plausible in Research Question 1.

If people are engaging in the painless-harm rationalization when sea turtles are neither framed as having nor lacking free will, then believing that sea turtles have free will should predict more moral concern about using plastic straws in terms of moral judgments (Hypothesis 19, Secondary), feelings of guilt (Hypothesis 20, Secondary), and

behavioral intentions to reduce using plastic straws (Hypothesis 21, Secondary). Moreover, people who perceive sea turtles as having free will should perceive greater agency in sea turtles in terms of intentionality to eat plastic straws and greater responsibility for eating plastic straws (again Hypothesis 18), and they should perceive sea turtles as feeling more pain when they eat plastic straws (Hypothesis 22, Secondary). These hypotheses are plausible for the same reasons they are plausible in Research Question 2.

In both cases, the relationship between free will beliefs and moral concern for indirectly harming animals suggests a series of relationships between these different forms of moral concern. Given that the moral emotion of guilt is theorized to depend on self-conscious evaluations of one's own behaviors with respect to one's own values (Haidt, 2003; Tangney et al. 2007), including moral values, I hypothesize that people who judge it more morally wrong to use plastic straws (i.e., the harmful behavior to an animal) have stronger feelings of guilt for using plastic straws (Hypothesis 23, Secondary). Moreover, since feelings of guilt predict intentions for restorative behaviors (Haidt, 2003; Tangney et al. 2007), including pro-environmental behaviors, like recycling (Bamberg & Möser, 2007), I predict that people who feel more guilt about using plastic straws will have stronger intentions to reduce using plastic straws (Hypothesis 24, Secondary).

Across Hypotheses

In the context of harming sea turtles with plastic pollution, the aforementioned hypothesized relationships between different forms of mind perception (e.g., free will, intentionality) and moral concern (e.g., moral judgments, feelings of guilt, behavioral intentions) may also be influenced by other factors, such as political ideology. Political conservatives are less likely to support pro-environmental behaviors, like recycling plastic bottles, and less likely to respond to persuasive messages for environmental behaviors that emphasize harm (Feinberg & Willer, 2013). Thus, I will explore whether and how political conservatism predicts mind perception and moral concern.

Method

To answer my research questions and test my hypotheses, I conducted an online survey experiment using a 3-condition between-subjects design where participants learn about ocean plastic and watch a soundless clip of the aforementioned sea turtle video. Prior to watching the video, participants either read a comment from an anonymous scientist about whether sea turtles have or lack free will, or they read no comment.

The hypotheses of my first and second research questions were tested with multiple linear regressions using data across all conditions. These hypotheses predict the effects of reading comments about sea turtles having or lacking free will on mind perception in sea turtles and on moral concern about using plastic straws, which indirectly harm them. In particular, they include predictions about how free will manipulations may facilitate moral disengagement about using plastic straws by

responsibilizing and objectifying sea turtles. These regressions compare responses in the experimental conditions (a comment from a scientist about whether sea turtles have or lack free will) with the control condition (no framing), while controlling for main effects and interaction effects with political conservatism.

The hypotheses related to my third research question, which predict relationships between free will beliefs, mind perception, and moral concerns about harming sea turtles in the context of watching an sea turtle suffer without any free will framing, were tested by multiple linear regressions using only the control condition data (i.e., no comment from a scientist about whether sea turtles have or lack free will).

Participants

To better understand how U.S. adults morally respond to watching online videos of sea turtles harmed by plastic pollution, I sampled adults reporting to be at least 18 years old and residents in the U.S from Amazon's MTurk community, whose members are paid money to complete online tasks. MTurkers are assumed to be familiar with using computers and navigating websites. Participants were recruited using TurkPrime on Amazon Mechanical Turk within 5 consecutive days. TurkPrime was configured to only include people at least 18 years old who reside in the U.S. The sample is not a random sample since participants opted to take the survey after seeing an advertisement for it, and the advertisement for it is not shown to a random sample of MTurkers, but to a pseudo-random sample of MTurkers that happened to be online when the survey was advertised.

Participants were offered and paid \$1.45 for completing an online survey that was advertised as taking approximately 12 minutes.

During recruitment, 327 participants initiated the survey, but only 299 passed the attention check, which asked participants to confirm that they were U.S. residents, at least 18 years old, and that they have not already completed the survey. Participants were randomly assigned to one of three conditions (control, free will, no free will). Ultimately, the analyzed sample included 104 participants in the control condition, 100 participants in the free will condition, and 95 participants in the no free will condition.

Participants had a median age of 33 years old (minimum age of 19 years old and the maximum age of 77 years old). Most participants identify as male (193 participants or about 65% male, and 99 participants or 33% female). Most participants identified as White (223 participants or about 75%), followed by those who identified as Black (28 participants or about 7%) and Asian (22 participants). Using a scale from 0 to 100 (where 0=Very Liberal and 100=Very Conservative), participants skewed more liberal than conservative on both social issues (median score of 37) and economic issues (median score of 47). The median pre-tax total annual household income level of participants was between \$35,000 and \$49,999. The majority of participants were not religious (153 participants, or 51%, indicated religion was “Not At All Important” to their life). The majority of participants viewed religion as unimportant to their lives (153 participants, or 51%, indicated religion was “Not At All Important” to their lives). The majority of participants indicated spirituality was unimportant or only slightly important to their lives

(155 participants, or about 52%, indicated spirituality was “Not At All Important” or only “Slightly Important” to their life). The majority of participants believed that humans had spirits or souls (193, or about 64%, indicated they strongly, moderately, or slightly agree that humans have spirits or souls). The majority of participants believed that sea turtles have spirits or souls (153, or about 51%, indicated they strongly, moderately, or slightly agree that sea turtles have spirits or souls), while nearly half as many believed that sea turtles lacked spirits or souls (86, or 28%, indicated they strongly, moderately, or slightly disagree that sea turtles have spirits or souls).

Procedure

In this study, I conducted an online experiment using a soundless derivative of the aforementioned sea turtle video to test hypotheses about the psychological mechanism of moral judgments and moral emotions about using plastic straws (Ocean Life Matters, 2016). Participants were first shown a presentation about ocean plastic pollution and then watched the sea turtle having a plastic straw removed from its nostril by a human.

For the presentation, they read the following text:

“Plastic trash includes disposable plastic bags, cups, bottles, forks, straws, and packaging. The wind and rain carry plastic trash from the land into the waterways, and eventually into the ocean. Sunlight and ocean waves slowly break plastic trash into smaller pieces.” Underneath this text, they are shown three pictures of disposable plastic trash (a trash can on land filled with disposable plastic, plastic covering a beach, and plastic floating in the ocean). Then participants read about one way in which disposable

plastic can harm sea turtles: “Plastic in the ocean can harm sea turtles if they eat it. For example, disposable plastic straws can clog their noses.”

Then participants saw the approximately 2-minute silent YouTube video of a sea turtle getting a plastic straw pulled from its nostril by a human (Ocean Life Matters, 2016). The video focuses on the turtle’s face. A human hand uses a pair of pliers to pull the straw from the nose of the turtle. The turtle appears to be wincing in pain during the procedure. After the straw is pulled from the nose of the turtle, some blood flows from the turtle’s nose. The instructions for watching the video are as follows:

“Below is a silent video of a disposable plastic straw being pulled out of a sea turtle's nose. Please watch the entire video and then click the Next button.”

Before watching the sea turtle video, those in one of two experimental conditions were also asked to “Please read the following comment from a scientist with knowledge about sea turtles,” where the comment suggests that sea turtles either have free will or lack free will. The scientist was unnamed and their degree of scientific expertise was unspecified. In fact, the unnamed scientist was one of the experimenters who is a psychologist with some, but relatively little, biological knowledge about sea turtles. In the free-will condition, participants were presented with the following:

"When I watch sea turtles in their natural environment, I get the sense that they know what they are doing. They seem to have what we might call free will. I've seen sea turtles approach some objects, but not others, and it's not always the same objects over and over. They seem to make decisions about the types of food they eat. And their

preferences seem to change from time to time. As near as I can tell, when sea turtles eat plastic floating in the ocean, they do so on purpose. They don't have to eat it, but they actively choose to eat it."

In the lack-free-will condition, participants were presented with the following:

"When I watch sea turtles in their natural environment, I get the sense that they do not know what they are doing. They do not seem to have what we might call free will. I've seen sea turtles approach some objects, but not others, and it's always the same objects over and over. They do not seem to make decisions about the types of food they eat. As near as I can tell, when sea turtles eat plastic floating in the ocean, they never do so on purpose. In a sense, they have to eat it. It's instinctive."

Participants were then asked to answer a series of survey questions as indicated in the measures below. Participants answered the questions in sections, where items in each section were randomly ordered. The sections were answered in the following fixed order: perceived responsibility for sea turtles eating plastic straws, perceived intentions for sea turtles eating plastic straws, perceived pain in sea turtles, guilt for using plastic straws, behavioral intention to reduce use of plastic straws, behavioral intention to reduce using plastic bags and plastic bottles, pride for humans removing plastic straws from sea turtles and for reducing use of plastic straws, moral judgments about using and removing plastic straws, moral judgments about using plastic bags and plastic bottles, free will beliefs about sea turtles, free will beliefs about humans, beliefs about humans and sea turtles having spirits or souls, and demographic questions. Demographic questions included

questions about race/ethnicity, gender, age, religion, pretax annual household income, political conservatism, and importance of religion and spirituality.

Measures

Free Will Beliefs about Humans and Sea Turtles

Using a 7-point Likert-like scale (*1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=neither agree nor disagree, 5=slightly agree, 6=moderately agree, 7=strongly agree*), participants rated the extent to which they agree or disagree with the following statements:

[Belief in Human Free Will]

“Humans have free will.”

“Humans are in charge of the decisions they make.”

“Humans actively choose what to do from among the options they have.”

[Belief in Sea Turtle Free Will]

“Sea turtles have free will.”

“Sea turtles are in charge of the decisions they make.”

“Sea turtles actively choose what to do from among the options they have.”

Items were adapted from the Personal Will subscale of the Free Will and Determinism Scale for species-specific scores (Rakos et al., 2008). Indexes for free will beliefs about sea turtles and humans were each computed as the mean rating of their respective items.

Beliefs Sea Turtles and Humans Have Spirits or Souls

Using a 7-point Likert-like scale (*1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=neither agree nor disagree, 5=slightly agree, 6=moderately agree, 7=strongly agree*), participants rated the extent to which they agree or disagree with the following statements:

“Humans have spirits or souls.”

“Sea turtles have spirits or souls.”

Perceived Pain in Sea Turtles

Similar to Gray and Wegner’s Study 1a on the relationship between perceived pain sensitivity and perceived agency (2009), participants used a discrete 7-point scale (*1=no pain at all to 7=extreme pain, where intermediate values lack anchor labels*) to rate:

“How much pain do sea turtles feel after they eat disposable plastic straws?”

Moral Judgments about Using and Removing Disposable Plastic

Using a 7-point Likert-like scale (*1=extremely bad, 2=moderately bad, 3=slightly bad, 4=neither bad nor good, 5=slightly good, 6=moderately good, 7=extremely good*), participants rated the following questions about their intentions to reduce their use of different types of disposable plastic:

“In your opinion, how good or bad is it to use disposable plastic straws?”

“In your opinion, how good or bad is it to use disposable plastic bags?”

“In your opinion, how good or bad is it to use disposable plastic bottles?”

“In your opinion, how good or bad is it to remove disposable plastic straws from the noses of sea turtles?”

Perceived Intentionality for Sea Turtles to Eat Plastic Straws

Similar to Gray and Wegner’s Study 1a on the relationship between perceived pain sensitivity and perceived agency in terms of intention and responsibility (2009), participants used a discrete 7-point scale (*1=completely unintentional to 7=completely intentional, where intermediate values lack anchor labels*) to rate:

“To what extent do humans intend for sea turtles to eat disposable plastic straws?”

“To what extent do sea turtles intend to eat disposable plastic straws?”

Perceived Responsibility for Sea Turtles Eating Plastic Straws

Similar to Gray and Wegner’s Study 1a (2009) on the relationship between perceived pain sensitivity and perceived agency in terms of intention and responsibility, participants used a discrete 7-point scale (*1=not at all to 7=fully, where intermediate values lack anchor labels*) to rate:

“How responsible are humans for sea turtles eating disposable plastic straws?”

“How responsible are sea turtles for themselves eating disposable plastic straws?”

Perceived Agency in Sea Turtles

I computed a measure of perceived agency in sea turtles as the mean of the sea turtles’ perceived intentionality and perceived responsibility ratings for eating plastic straws. Since I aim to investigate the relationship between free will beliefs and other agency beliefs, I did not include free will belief in this measure.

Political Conservatism

Participants used a discrete 101-point scale (*0=very liberal to 100=very conservative, where intermediate values lack anchor labels except for quantitative only labels for 25, 50, and 75*) to rate:

“In general, how liberal (left-wing) or conservative (right-wing) are you on social issues?”

“In general, how liberal (left-wing) or conservative (right-wing) are you on economic issues?”

Items were drawn from YourMorals.org (Ditto et al., 2019). The political conservatism score was computed as the mean of the two items.

Guilt for Using Plastic Straws

Using a 5-point Likert-like scale (*1=not at all guilty, 2=slightly guilty, 3=somewhat guilty, 4=moderately guilty, 5=extremely guilty*), participants rated the following questions about their personal and collective guilt for using disposable plastic straws:

[Collective Guilt]

“How guilty do you feel about humans using disposable plastic straws?”

[Personal Guilt]

“How guilty do you feel about yourself using disposable plastic straws?”

These ratings represent feelings of guilt. I computed a guilt index as the mean of the collective and personal guilt ratings.

Pride for Reducing Use of Plastic Straws and Removing Plastic Straws

Using a 5-point Likert-like scale (*1=not at all proud, 2=slightly proud, 3=somewhat proud, 4=moderately proud, 5=extremely proud*), participants rated the following questions about how proud they are of humans who remove disposable plastic straws from the noses of sea turtles and how proud they are of reducing their use of plastic straws:

“How proud are you of humans who remove disposable plastic straws from the noses of sea turtles?”

“How proud are you of humans who reduce their use of disposable plastic straws in order to protect sea turtles?”

Behavioral Intention to Reduce Using Disposable Plastic

Using a 7-point Likert-like scale (*1=extremely unlikely, 2=moderately unlikely, 3=slightly unlikely, 4=neither likely nor unlikely, 5=slightly likely, 6=moderately likely, 7=extremely likely*), participants rated the following questions about their intentions to reduce their use of different types of disposable plastic:

“How likely is it that you will reduce your use of disposable plastic straws?”

“How likely is it that you will reduce your use of disposable plastic bags?”

“How likely is it that you will reduce your use of disposable plastic bottles?”

Analysis

Descriptive Statistics

I computed summary statistics (i.e., mean, standard deviation, median) across conditions and within each condition on all measures. I also computed Pearson correlations between pairs of variables. Moreover, I computed internal reliability scores for computed scales using Cronbach's alpha.

Multiple Linear Regressions on Free Will Manipulations and Political Conservatism

To understand the effects of the experimental manipulation of reading a comment from an anonymous scientist on whether sea turtles have or lack free will prior to watching the sea turtle video, I conducted multiple linear regressions where the predictors are the manipulation condition and political conservatism (as well as their interaction), and the response variables for each regression are: free will belief in sea turtles, free will belief in humans, perceived responsibility of sea turtles for eating plastic, perceived responsibility of humans for sea turtles eating plastic, perceived intention of sea turtle to eat plastic straws, perceived intentions of humans for sea turtles to eat plastic straws, perceived agency of sea turtles (which is the mean of the previous two variables), moral judgments about using plastic straws, collective guilt for humans using plastic straws, personal guilt for using plastic straws, and intentions to reduce use of plastic straws. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

response_variable ~

turtle_has_free_will_manipulation * political_conservatism +

turtle_lacks_free_will_manipulation * political_conservatism

Hypothesis 1 implies a positive main effect of the have-free-will manipulation on free will belief about the sea turtle. Hypothesis 1 may also be supported in a more limited sense if there is a positive interaction effect involving the have-free-will manipulation. Hypothesis 2 implies a positive main effect of the have-free-will manipulation on the perceived intentionality of sea turtles to eat plastic straws. Hypothesis 2 may also be supported in a more limited sense if there is a positive interaction effect involving the have-free-will manipulation. Hypothesis 3 implies a positive main effect of the have-free-will manipulation on the perceived responsibility of sea turtles for themselves eating plastic straws. Hypothesis 3 may also be supported in a more limited sense if there is a positive interaction effect involving the have-free-will manipulation. Hypothesis 4 implies a negative main effect of the have-free-will manipulation on perceived responsibility of humans for sea turtles eating plastic straws. Hypothesis 4 may also be supported in a more limited sense if there is a negative interaction effect involving the have-free-will manipulation.

Hypothesis 5 implies a positive main effect of the have-free-will manipulation on moral judgments about using plastic straws (where more positive judgments indicate it is less immoral). Hypothesis 5 may also be supported in a more limited sense if there is a positive interaction effect involving the have-free-will manipulation. Hypothesis 6

implies a negative main effect of the have-free-will manipulation on feelings of guilt about using plastic straws. Hypothesis 6 may also be supported in a more limited sense if there is a negative interaction effect involving the have-free-will manipulation.

Hypothesis 7 implies a negative main effect of the have-free-will manipulation on intentions to reduce the use of plastic straws. Hypothesis 7 may also be supported in a more limited sense if there is a negative interaction effect involving the have-free-will manipulation.

Hypothesis 8 implies a negative main effect of the lack-free-will manipulation on free will belief about the sea turtle. Hypothesis 8 may also be supported in a more limited sense if there is a negative interaction effect involving the lack-free-will manipulation.

Hypothesis 9 implies a negative main effect of the lack-free-will manipulation on the perceived intentionality of sea turtles to eat plastic straws. Hypothesis 9 may also be supported in a more limited sense if there is a negative interaction effect involving the lack-free-will manipulation. Hypothesis 10 implies a negative main effect of the lack-free-will manipulation on the perceived responsibility of sea turtles for themselves eating plastic straws. Hypothesis 10 may also be supported in a more limited sense if there is a negative interaction effect involving the lack-free-will manipulation. Hypothesis 11 implies a negative main effect of the lack-free-will manipulation on the perceived pain in sea turtles. Hypothesis 11 may also be supported in a more limited sense if there is a negative interaction effect involving the lack-free-will manipulation.

Hypothesis 12 implies a positive main effect of the lack-free-will manipulation on moral judgments about using plastic straws (where more positive moral judgments indicate it is less immoral). Hypothesis 12 may also be supported in a more limited sense if there is a positive interaction effect involving the lack-free-will manipulation.

Hypothesis 13 implies a negative main effect of the lack-free-will manipulation on feelings of guilt about using plastic straws. Hypothesis 13 may also be supported in a more limited sense if there is a negative interaction effect involving the lack-free-will manipulation. Hypothesis 14 implies a negative main effect of the lack-free-will manipulation on intentions to reduce the use of plastic straws. Hypothesis 14 may also be supported in a more limited sense if there is a negative interaction effect involving the lack-free-will manipulation.

Multiple Linear Regressions on Control Condition

I conducted multiple linear regressions on the control condition data to test hypotheses related to my third research question. To test Hypothesis 18, I regress the perceived agency in sea turtles (a measure of other perceived agency beliefs about sea turtles, including sea turtles' intentions to eat straws and responsibility for eating straws) on free will belief about sea turtles, political conservatism, and all interactions between these predictors. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
turtle_agency_eating_plastic_straw ~  
    turtle_free_will * political_conservatism
```

Hypothesis 18 implies that there should be a positive main effect for free will belief about sea turtles on perceived agency in sea turtles, then. Hypothesis 18 may also be supported in a more limited sense if there is a positive interaction effect involving free will belief about sea turtles.

To test Hypothesis 22, I regress the perceived pain in sea turtles after they eat plastic straws on free will belief about sea turtles, political conservatism, and all interactions between these predictors. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
turtle_pain_eating_plastic_straw ~  
    turtle_free_will * political_conservatism
```

Hypothesis 22 implies that there should be a positive main effect for free will belief about sea turtles on perceived pain in sea turtles. Hypothesis 22 may also be supported in a more limited sense if there is positive interaction effect involving free will belief about turtles.

To test Hypotheses 15 and 19, I regress moral judgment about using plastic straws on free will belief about sea turtles, perceived agency in sea turtles, patience in sea turtles, political conservatism, and all interactions between these predictors. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
morality_use_plastic_straw ~
```

```
  turtle_free_will * turtle_agency_eating_plastic_straw *
```

```
  turtle_pain_eating_plastic_straw * political_conservatism
```

Hypothesis 15 implies a positive main effect of free will belief about sea turtles on moral judgments about using plastic straws (where more positive moral judgments signify less moral wrongdoing). Hypothesis 15 may also be supported in a more limited sense if there is a positive interaction effect involving free will belief about sea turtles. Hypothesis 19 implies a negative main effect of free will belief about sea turtles on moral judgments about using plastic straws (where more positive moral judgments signify less moral wrongdoing). Hypothesis 19 may also be supported in a more limited sense if there is a negative interaction effect involving free will belief about sea turtles.

To test Hypotheses 16, 20, and 23, I regress felt guilt about using plastic straws on free will belief about sea turtles, perceived agency in sea turtles, patiency in sea turtles, political conservatism, moral judgments for using plastic straws, all interactions between these predictors, as well as moral judgments about using plastic straws and its interaction with political conservatism. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
guilt_use_plastic_straw ~
```

```
  turtle_free_will * turtle_agency_eating_plastic_straw *
```

```
  turtle_pain_eating_plastic_straw * political_conservatism +
```

```
  morality_use_plastic_straw * political_conservatism
```

Hypothesis 16 implies a negative main effect of free will belief about sea turtles on feelings of guilt about using plastic straws. Hypothesis 16 may also be supported in a more limited sense if there is a negative interaction effect involving free will belief about sea turtles. Hypothesis 20 implies a positive main effect of free will belief about sea turtles on felt guilt about using plastic straws. Hypothesis 20 may also be supported in a more limited sense if there is a positive interaction effect involving free will belief about sea turtles. Hypothesis 23 implies a negative main effect of positive moral judgments about using plastic straws on felt guilt about using plastic straws. Hypothesis 23 may also be supported in a more limited sense if there is a negative interaction effect involving positive moral judgments about using plastic straws.

To test Hypotheses 17, 21, and 24, I regress intention to reduce using plastic straws on free will belief about sea turtles, perceived agency in sea turtles, patience in sea turtles, political conservatism, moral judgments for using plastic straws, all interactions between these predictors, as well as moral judgments about using plastic straws and its interaction with political conservatism, and felt guilt about using plastic straws and its interaction with political conservatism. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

$$\begin{aligned} & \text{intention_reduce_using_plastic_straw} \sim \\ & \quad \text{turtle_free_will} * \text{turtle_agency_eating_plastic_straw} * \\ & \quad \text{turtle_pain_eating_plastic_straw} * \text{political_conservatism} + \\ & \quad \text{morality_use_plastic_straw} * \text{political conservatism} + \\ & \quad \text{guilt_use_plastic_straw} * \text{political conservatism} \end{aligned}$$

Hypothesis 17 implies a negative main effect of free will belief about sea turtles on intention to reduce the use of plastic straws. Hypothesis 17 may also be supported in a more limited sense if there is a negative interaction effect involving free will belief about sea turtles. Hypothesis 21 implies a positive main effect of free will belief about sea turtles on intention to reduce the use of plastic straws. Hypothesis 21 may also be supported in a more limited sense if there is a positive interaction effect involving free will belief about sea turtles. Hypothesis 24 implies a positive main effect of feelings of guilt about using plastic straws on intention to reduce using plastic straws. Hypothesis 24 may also be supported in a more limited sense if there is a positive interaction effect involving feelings of guilt about using plastic straws.

Results

Descriptive Statistics Results

Summary Statistics Results

In aggregate (i.e., combining data from all conditions), participants tended to be less politically conservative (see Table 2.1). While mean political conservatism varied by

condition, running t-tests between pairs of conditions found no statistically significant differences in means for an alpha level of .05 (all p-values > .05).

In aggregate, participants tended to either be uncertain or slightly believe that sea turtles have free will (see Table 2.1). Participants tended to strongly believe that humans have free will (see Table 2.1). They tended to believe that sea turtles feel a high amount of pain after eating plastic straws (see Table 2.1). Participants tended to slightly believe that sea turtles have spirits or souls and tended to moderately believe that humans have spirits or souls (see Table 2.1). Participants tended to believe that sea turtles did not intend to eat plastic straws, and that humans did not intend for sea turtles to eat plastic straws (see Table 2.1).

In aggregate, participants tended to hold humans responsible for sea turtles eating plastic straws (i.e., the median rating corresponds to fully responsible), but not the sea turtles themselves (the median rating corresponds to not at all responsible; see Table 2.2). They tended to hold similar moral judgments about using plastic straws, plastic bags, and plastic bottles, which is that using them is slightly to moderately bad (see Table 2.2). Participants tended to hold very positive moral judgments about removing plastic straws from the noses of sea turtles, with a median rating of 7, which corresponds to believing that action is extremely good (see Table 2.2).

In aggregate, participants tended to report that they feel somewhat to moderately personally guilty for using plastic straws, and that they feel somewhat to moderately collectively guilty for humans using plastic straws (see Table 2.3). Moreover, they tended

to report that they feel moderately to extremely collectively proud of humans reducing their use of plastic straws to help protect sea turtles, and that they feel moderately to extremely collectively proud of humans removing plastic straws from the noses of sea turtles (see Table 2.3).

In aggregate, participants tended to report that they are slightly to moderately likely to reduce their use of plastic straws, plastic bags, and plastic bottles (see Table 2.4).

Correlation Statistics Results

The correlation results for the experiment reveal multiple relationships that are statistically significant (see Tables 2.5 to 2.30). Some of the relationships between these variables will also be considered in subsequent regression analyses. However, it is worth reflecting on several notable simple correlations now.

For example, across all conditions, political conservatism is positively related to judging that it is morally good to use plastic straws ($r = 0.21, p < .001$ in the control condition; $r = 0.44, p < .001$ in the have-free-will condition; $r = 0.53, p < .001$ in the lack-free-will condition), plastic bags ($r = 0.36, p < .001$ in the control condition; $r = 0.35, p < .001$ in the have-free-will condition; $r = 0.50, p < .001$ in the lack-free-will condition), and plastic bottles ($r = 0.39, p < .001$ in the control condition; $r = 0.34, p < .001$ in the have-free-will condition; $r = 0.49, p < .001$ in the lack-free-will condition). Moreover, these positive correlations tend to remain similar or become more positive when sea turtles are framed as having or lacking free will.

Similar patterns of moral disengagement amongst political conservatives were found for feelings of guilt about using straws and behavioral intentions to reduce using plastic straws. Political conservatism and behavioral intentions to reduce using plastic straws was not found to be related in the control condition ($r = 0.03, p > 0.1$ in the control condition), but becomes negative with similar magnitudes when sea turtles are framed as having or lacking free will ($r = -0.28, p < .01$ in the have-free-will condition; $r = -0.32, p < .01$ in the lack-free-will condition), and a similar pattern seems to occur for plastic bags ($r = -0.06, p > 0.1$ in the control condition; $r = -0.22, p < .05$ in the have-free-will condition; $r = -0.26, p < .001$ in the lack-free-will condition) and plastic bottles ($r = -0.08, p > 0.1$ in the control condition; $r = -0.19, p < 0.1$ in the have-free-will condition; $r = -0.28, p < .001$ in the lack-free-will condition).

With respect to feelings of guilt for using plastic straws, political conservatism was only found to be negatively related in the control the have-free-will conditions ($r = 0.26, p < .01$ in the control condition; $r = 0.25, p < .05$ in the have-free-will condition); in the lack-free-will condition, no statistically significant relationship was found ($r = 0.17, p > 0.1$).

Internal Reliability Statistics Results

When pooling data across all conditions, high internal reliability was found for all scales used in this experiment, including political conservatism (standardized Cronbach's alpha = 0.93), free will in sea turtles (standardized Cronbach's alpha = 0.92), free will in humans (standardized Cronbach's alpha = 0.89), perceived agency in sea turtles to eat

plastic straws (standardized Cronbach's alpha = 0.83), and feelings of guilt for eating plastic straws (standardized Cronbach's alpha = 0.86).

Multiple Linear Regressions on Free Will Manipulation and Political Conservatism

Results

Regressions on the free will manipulations for sea turtles (i.e., have-free-will or lack-free-will) and political conservatism are indicated in Tables 2.31 to 2.34.

Free Will Manipulation Checks (Hypotheses 1 and 8) Results

Consistent with Hypotheses 1 and 8, compared to the control condition, the have-free-will condition increases perceived free will in sea turtles and the lack-free-will condition decreases perceived free will in sea turtles, respectively (see Table 2.31). Moreover, consistent with Hypotheses 1 and 8, neither experimental condition influences perceived free will in humans (see Table 2.31). While political conservatism positively predicts sea turtle free will, no interaction effects were found between free will manipulation conditions and political conservatism on free will beliefs about sea turtles (see Table 2.31).

Sea Turtles Have Free Will Manipulation and Responsibilization of Sea Turtles

(Hypotheses 2, 3, 4, 5, 6 and 7) Results

In support of Hypothesis 2, a positive main effect was found for the have-free-will manipulation on the perceived intentionality of sea turtles to eat plastic straws (see Table 2.31). No interaction effect was found between the have-free-will manipulation and political conservatism on the perceived intentionality of sea turtles to eat plastic straws,

but there was a positive main effect of political conservatism on the perceived intentionality of sea turtles to eat plastic straws (see Table 2.31).

In support of Hypothesis 3, a positive main effect was found for the have-free-will manipulation on the perceived responsibility of sea turtles for themselves eating plastic straws (see Table 2.31). No interaction effect was found between the have-free-will manipulation and political conservatism on the perceived responsibility of sea turtles for themselves eating plastic straws, but there was a positive main effect of political conservatism on the perceived responsibility of sea turtles for themselves eating plastic straws (see Table 2.31). Also, a positive main effect was found for have-free-will manipulation on the perceived agency of the sea turtle to eat plastic straws (see Table 2.31).

In support of Hypothesis 4, a negative main effect was found for the have-free-will manipulation on perceived responsibility of humans for sea turtles eating plastic straws (see Table 2.31). No interaction effect was found between the have-free-will manipulation and political conservatism on perceived responsibility of humans for sea turtles eating plastic straws, but there was a negative main effect of political conservatism on perceived responsibility of humans for sea turtles eating plastic straws (see Table 2.31).

No main effect was found for the have-free-will manipulation on moral judgments about using plastic straws, which is inconsistent with Hypothesis 5 (see Table 2.32). However, in support of a more limited sense of Hypothesis 5, a positive two-way

interaction effect was found between have-free-will manipulation and political conservatism (see Table 2.32). Thus, amongst political conservatives, framing sea turtles as having free will makes it less morally wrong to use plastic straws.

No main effect or interaction effect was found for the have-free-will manipulation on feelings of guilt for using plastic straws, neither for personal guilt nor collective guilt, which is inconsistent with Hypothesis 6 (see Table 2.33). While no hypothesis was made about the relationship between political conservatism and feelings of guilt for using plastic straws, a negative main effect of political conservatism was found for feelings of guilt for using plastic straws - both personal guilt and collective guilt (see Table 2.33).

No main effect was found for the have-free-will manipulation on intentions to reduce the use of plastic straws, which is inconsistent with Hypothesis 7 (see Table 2.34). However, in support of a more limited sense of Hypothesis 7, a negative two-way interaction effect was found between have-free-will manipulation and political conservatism on intentions to reduce the use of plastic straws (see Table 2.34). Thus, amongst political conservatives, framing sea turtles as having free will decreases intentions to reduce the use of plastic straws.

No main effects or interaction effects were not found for the have-free-will manipulation on intentions to reduce the use of other forms of disposable plastic, like plastic bags and plastic bottles (see Table 2.34).

Sea Turtles Lack Free Will Manipulation and Objectification of Sea Turtles

(Hypotheses 9, 10, 11, 12, 13, and 14) Results

Contrary to Hypothesis 9, which expects a negative main effect of the lack-free-will manipulation on the perceived intentionality of sea turtles to eat plastic straws, a marginal positive main effect ($p = 0.08$) was found for the lack-free-will manipulation on the perceived intentionality of sea turtles to eat plastic straws (see Table 2.31). Moreover, a positive interaction effect was found between the lack-free-will manipulation and political conservatism on the perceived intentionality of sea turtles to eat plastic straws, which is also contrary to Hypothesis 9 (see Table 2.31). A positive main effect was found for political conservatism on the perceived intentionality of sea turtles to eat plastic straws (see Table 2.31).

Contrary to Hypothesis 10, which expects a negative main effect of the lack-free-will manipulation on the perceived responsibility of sea turtles for themselves eating plastic straws, a marginal positive main effect ($p = 0.052$) was found for the lack-free-will manipulation on the perceived responsibility of sea turtles for themselves eating plastic straws (see Table 2.31). Moreover, a positive interaction effect was found between the lack-free-will manipulation and political conservatism on the perceived responsibility of sea turtles for themselves eating plastic straws, which is also contrary to Hypothesis 9 (see Table 2.31). A positive main effect was found for political conservatism on the perceived responsibility of sea turtles for themselves eating plastic straws (see Table 2.31).

And a positive main effect was found for the lack-free-will manipulation on the perceived agency of the sea turtle (see Table 2.31). Moreover, a positive interaction effect was found between the lack-free-will manipulation and political conservatism on the perceived agency of the sea turtle (see Table 2.31).

Hypothesis 11 expects a negative main effect of the lack-free-will manipulation on the perceived pain in sea turtles, but no main effect was found for the lack-free-will manipulation on perceived pain in sea turtles (see Table 2.31). Moreover, no interaction effect was found between the lack-free-will manipulation and political conservatism, which is another failure to find support for Hypothesis 11 (see Table 2.31). A negative main effect was found for political conservatism and perceived pain in sea turtles (see Table 2.31).

No main effect was found for the lack-free-will manipulation on moral judgments about using plastic straws, which is inconsistent with Hypothesis 12 (see Table 2.32). However, in support of a more limited sense of Hypothesis 12, a positive two-way interaction effect was found between lack-free-will manipulation and political conservatism (see Table 2.32). Thus, amongst political conservatives, framing sea turtles as lacking free will makes it more morally permissible to use plastic straws.

No main effect or interaction effect was found for the lack-free-will manipulation on feelings of guilt for using plastic straws, neither for personal guilt nor collective guilt, which is inconsistent with Hypothesis 13 (see Table 2.33).

No main effect was found for the lack-free-will manipulation on intentions to reduce the use of plastic straws, which is inconsistent with Hypothesis 14 (see Table 2.34). However, in support of a more limited sense of Hypothesis 14, a negative two-way interaction effect was found between have-free-will manipulation and political conservatism on intentions to reduce the use of plastic straws (see Table 2.34). Thus, amongst political conservatives, framing sea turtles as having free will decreases intentions to reduce the use of plastic straws.

Multiple Linear Regressions on Control Condition Results

Regression results using control condition data are in Tables 2.35 to 2.39.

Free Will Beliefs and Perceived Agency in Sea Turtles (Hypothesis 18) Results

There is a positive main effect for free will belief about sea turtles on perceived agency in sea turtles (see Table 2.35), which is consistent with Hypothesis 18. Thus, there is evidence that people with stronger free will beliefs about a harmed animal (i.e., the sea turtle) perceive more agency in the animal in terms of its intentionality and responsibility for engaging in more proximate behaviors that contribute to its harm (e.g., the sea turtle eating the plastic straw). Greater political conservatism also predicts greater perceived agency in sea turtles (see Table 2.35). No interaction effect was found between political conservatism and free will beliefs about sea turtles on perceived agency in sea turtles (see Table 2.35).

Free Will Beliefs and Perceived Pain in Sea Turtles (Hypothesis 22) Results

No main effect was found for free will belief about sea turtles on perceived pain in sea turtles (see Table 2.36), which is inconsistent with Hypothesis 22. Moreover, there is a negative interaction effect between free will belief about sea turtles and political conservatism, which is also inconsistent with Hypothesis 22 (see Table 2.36). Thus, no evidence was found that people with stronger free will beliefs about a harmed animal (i.e., the sea turtle) perceive more pain in the animal (e.g., the sea turtle eating the plastic straw), and moreover, to the contrary, some evidence was found that for more politically conservative people, free will beliefs about sea turtles predicts less perceived pain in sea turtles.

Moral Judgments about Using Plastic Straws (Hypotheses 15 and 19) Results

Hypothesis 15 implies a positive main effect for free will belief in sea turtles on moral judgments about using plastic straws, but no main effect was found for free will belief about sea turtles on moral judgments about using plastic straws (see Table 2.37). However, there was a marginal positive main effect for free will beliefs about sea turtles ($0.05 < p < 0.1$); a positive interaction effect between perceived agency in sea turtles and free will belief about sea turtles on moral judgments about using plastic straws; and a marginal positive interaction effect ($0.05 < p < 0.1$) between perceived pain in sea turtles and free will belief about sea turtles (see Table 2.37). Thus, Hypothesis 15 is supported in the more limited sense, such that free will beliefs about sea turtles make it more morally permissible to use plastic straws amongst those who believe sea turtles have greater

agency (i.e., greater intentionality and responsibility) in eating plastic straws. Moreover, these findings are contrary to Hypothesis 19, since Hypothesis 19 implies a negative main effect of free will belief about sea turtles on moral judgments about using plastic straws (see Table 2.37).

No main effect or interaction effect was found for political conservatism on moral judgments about using plastic straws (see Table 2.37).

Feelings of Guilt for Using Plastic Straws (Hypotheses 16, 20, and 23) Results

Contrary to Hypothesis 16, which implies a negative main effect for free will belief about sea turtles on feelings of guilt for using plastic straws, a positive main effect was found for free will belief about sea turtles on feelings of guilt for using plastic straws, when controlling for moral judgments, perceived agency, perceived pain, and political conservatism (see Table 2.38). Moreover, with respect to predicting feelings of guilt for using plastic straws several positive interaction effects were found, including: a positive two-way interaction effect between free will belief about sea turtles and political conservatism; a positive three-way interaction effect between free will belief about sea turtles, political conservatism, and perceived agency of sea turtles in eating plastic straws; and a positive four-way interaction effect between free will belief about sea turtles, political conservatism, perceived agency of sea turtles in eating plastic straw, and perceived pain in sea turtles after they eat plastic straws (see Table 2.38) Thus, free will beliefs about sea turtles not only appears to predict greater feelings of guilt for using plastic straws, but this tendency seems stronger amongst political conservatives and those

who perceive sea turtles to have agency at eating plastic straws. Moreover, since Hypothesis 20 implies a positive main effect or interaction effect for free will on feelings of guilt, Hypothesis 20 is supported.

In support of Hypothesis 23, a negative main effect was found for positive moral judgments about using plastic straws on feelings of guilt about using plastic straws (see Table 2.38). Moreover, a negative interaction effect was found between positive moral judgments about using plastic straws and political conservatism on feelings of guilt about using plastic straws (see Table 2.38).

A negative main effect was found for political conservatism on feelings of guilt for using plastic straws (see Table 2.38).

A positive main effect was found for perceived pain in sea turtles after they eat plastic straws on feelings of guilt for using plastic straws (see Table 2.38).

Intentions to Reduce Use of Plastic Straws (Hypotheses 17, 21, and 24) Results

Hypothesis 17 implies a negative main effect for free will belief in sea turtles on intention to reduce using plastic straws was found, but no main effect for free will belief in sea turtles on intention to reduce using plastic straws was found (see Table 2.39). Moreover, a marginal positive main effect was found for free will belief in sea turtles on intention to reduce using plastic straws (see Table 2.39). And in contrast with Hypothesis 17, a positive two-way interaction effect was found between free will belief in sea turtles and perceived agency in sea turtles for eating plastic straws on intentions to reduce using plastic straws (see Table 2.39). Thus, amongst those who perceive sea turtles as more

intentional and responsible for eating plastic straws, free will belief predicts greater intentions to reduce plastic straws.

In addition, contrary to Hypothesis 17, a positive three-way interaction effect was found between free will belief in sea turtles, perceived pain in sea turtles for eating plastic straws, and political conservatism on intentions to reduce using plastic straws (see Table 2.39). Thus, amongst political conservatives who perceive greater pain in sea turtles for eating plastic straws, free will beliefs in sea turtles predicts greater intentions to reduce their use of plastic straws.

Since Hypothesis 21 implies a positive main effect or positive interaction effect of free will belief about sea turtles on intention to reduce the use of plastic straws, and as mentioned, such positive interaction effects and a positive marginal main effect was found, Hypothesis 21 is supported (see Table 2.39).

A negative main effect was found for perceived pain in sea turtles after they eat plastic straws on intentions to reduce using plastic straws (see Table 2.39). Thus, people who perceive more pain in sea turtles after they eat plastic straws are less likely to indicate they are willing to reduce their use of plastic straws.

In support of Hypothesis 24, a positive main effect was found for feelings of guilt for using plastic straws on intentions to reduce the use of plastic straws (see Table 2.39). Notably, no main effect for moral judgments was found on intentions to reduce using plastic straws when controlling for feelings of guilt for using plastic straws (see Table 2.39).

No main effect was found between political conservatism and intentions to reduce the use of plastic straws (see Table 2.39). However, a negative two-way interaction effect was found between political conservatism and feelings of guilt on intentions to reduce using plastic (see Table 2.39). Thus, being more politically conservative, predicts a lower positive relationship between feelings of guilt for using plastic straws and intentions to reduce the use of plastic straws.

Discussion

In this study, I have examined how beliefs about the minds of sea turtles predict moral concern for indirectly harming sea turtles when sea turtles are framed as having or lacking free will, and when no such free will framing occurs (i.e., neither framing sea turtles as having nor lacking free will). This analysis has several theoretical and practical implications. It offers theoretical implications for mind perception and moral judgments about harmed animals. It also offers several practical implications for the design of moral education materials about animal welfare.

Theoretical Implications

Mind Perception of Harmed Animals is not Unidimensional and Depends on Philosophical and Political Beliefs

Prior mind perception research found that attributions of mind to animals are highly positively correlated and unidimensional (Piazza et al., 2014). However, my analysis of the relationship between free will belief and mind perception in sea turtles – at least after seeing them harmed - suggests otherwise; it suggests that mind perception of

animals depends on prior philosophical and political beliefs, and that these beliefs influence some kinds of mind perception, like perceived agency, but not others, like perceived patiency.

I found that free will belief in harmed animals predicts more perceived agency in animals from all participants and, amongst political conservatives, less perceived patiency in animals. More specifically, without free will framing (e.g., when people are not told about whether sea turtles have or lack free will before watching a video of sea turtles suffering from plastic straws), those who more strongly believe sea turtles have free will appear to more strongly believe that sea turtles are intentional and responsible for eating plastic straws (Hypothesis 18). Moreover, without free will framing, amongst those who are more politically conservative, those who more strongly believe sea turtles have free will appear to less strongly believe that sea turtles suffer after eating plastic straws (contrary to Hypothesis 22). This suggests that agency and patiency beliefs about harmed animals may vary independently and in different directions based on free will beliefs about the harmed animal and political ideology.

Framing sea turtles as having or lacking free will influences agency and patiency beliefs about sea turtles independently. When sea turtles are framed as having free will, compared to no framing, agency beliefs about sea turtles increase, but patiency beliefs that sea turtles suffer with pain after eating plastic do not change significantly (see Table 2.31). Similarly, when sea turtles are framed as lacking free will, compared to no framing, they also increase agency beliefs (albeit less than when framed as having free

will), but patiency beliefs do not change (see Table 2.31). While political conservatism was not manipulated, in both cases, political conservatism predicts greater agency beliefs in sea turtles and less patiency beliefs (see Table 2.31). However, when sea turtles are framed as lacking free will, people who are more politically conservative have even greater agency belief, which seems to reduce the gap in perceived agency between the having-free-will and lacking-free-will framing conditions (see Table 2.31).

That perceived free will increases when sea turtles are framed as lacking free will (compared to no framing) may be due to reactance and more active resistance to the idea that humans, like sea turtles, are merely instinctual. Most participants believed that humans have free will (see Table 2.1). If people think sea turtles are somewhat similar to humans, believe that humans have free will (again, which most participants did), and are told by a scientist that sea turtles are merely instinctual (as they were told in the lacking-free-will condition), it may induce them to infer that the scientist is suggesting that humans are also merely instinctual, and this may produce some uncomfortable cognitive dissonance. To reduce that cognitive dissonance, participants may have reacted to and resisted the notion that both humans and sea turtles lack free will and other forms of agency, and consequently, report higher agency beliefs in sea turtles, and it is possible for this to occur even if on average, people tend to reduce their belief that sea turtles have free will when told by a scientist they lack free will.

Further within-subject research with pre-post test measures for free will and agency beliefs is needed to test whether such reactance occurs - whether a decrease in

free will belief predicts a decrease in agency belief. It is possible that most people react strongly to suggestions that animals lack free will by increasing their agency beliefs while decreasing their free will beliefs about the animal. It is also possible that most people decrease both their free will belief and agency beliefs, but some subgroup reacts by more dramatically increasing their agency beliefs than the rest of the group, and unlike the rest of the group, does not decrease their free will beliefs, and may even reactively increase their free will beliefs.

Nonetheless, the aforementioned findings contribute to mind perception research by suggesting that theories of mind perception about animals may need to take into account philosophical beliefs about animal minds (e.g., beliefs about free will in sea turtles) and political ideology (e.g., political conservatism) since they interact to influence how humans perceive agency in sea turtles.

Without Free-Will Framing, Free Will Belief in Harmed Animals Predicts Moral Concern for Harming Them

Without free will framing (i.e., without framing animals as having or lacking free will), those who believe sea turtles have free will appear to have less moral concern for using plastic straws (Research Question 3) in terms of moral judgments about using plastic straws (Hypothesis 15), which is consistent with self-harm rationalization, but more moral concern in terms of feelings of guilt about using plastic straws (Hypothesis 20), and in terms of behavioral intentions to reduce the use of plastic straws (Hypothesis 21).

There are differences in how believing harmed sea turtles have free will predicts different types of moral concern for behaviors which harm them. Free will belief appears to only have a main effect on feelings of guilt for the harmful behavior (i.e., using plastic straws), although it has marginally statistically significant main effects on moral judgments about and behavioral intentions to reduce the harmful behavior.

With respect to moral judgments about using plastic straws and behavioral intentions to reduce plastic straw use, free will belief interacts with agency beliefs about the sea turtle (i.e., intentionality and responsibility for eating plastic straws). However, agency beliefs lack main effects on those forms of moral concern. This suggests moral judgments and moral intentions about behaviors that harm animals (i.e., humans using plastic straws) may rely on the conjunction of believing an animal is able to choose behaviors upon which the harm causally depends (e.g., eating plastic straws) and believing that the animal intended and enacted those behaviors. In other words, this suggests if people believe an animal cannot choose actions that harm themselves (e.g., cannot choose eating plastic straws), their intention and action to harm themselves does not predict more or less moral judgment or behavioral intention for the antecedent and causally distal harmful behavior (e.g., humans using plastic straws); and conversely, if people believe an animal did not control its harmful behavior via intention or enactment, then believing that they chose (or preferred) via free will the harmful behavior does not predict more or less moral concern for the antecedent harmful human behavior in terms of moral judgment or behavioral intention.

That free will belief predicted less moral concern in terms of moral judgments about using plastic straws (Hypothesis 15), but greater feelings of guilt for using plastic straws (Hypothesis 20) when controlling for moral judgment is also somewhat surprising since feelings of guilt are normally theorized to emerge from moral judgments that one has violated their moral values or standards (Tangney et al., 2007).

However, it is possible that people who more strongly believed that sea turtles have free will used this belief to morally justify using plastic straws while still acknowledging and focusing on the fact that they helped cause negative outcomes to sea turtles (e.g., suffering) in ways which violated their values. In other words, perceived causal responsibility for negative outcomes that violates one's values may suffice for feelings of guilt, and in particular, perceived moral responsibility may not be necessary for feelings of guilt. For example, a soldier who accidentally shot a civilian may feel less morally responsible (and less morally wrong) when he discovers that the civilian chose to ignore warning signs to not walk in his line of fire, but still feel guilty for shooting the civilian because he values protecting civilians from suffering and the shooting the civilian violates that value. Similarly, a person may feel less morally responsible for using plastic straws when they believe the sea turtle chose to eat the straw, but still feel guilty that they may have helped cause the sea turtle to eat the straw and intend to alleviate that guilt by reducing their use of plastic straws.

If free will belief in sea turtles reduces the moral wrongness of harming the animal by reducing perceived causal responsibility, one might predict less felt guilt, but

more felt guilt was found. However, it is possible that free will beliefs decreased causal responsibility, and that such decreased causal responsibility decreased felt guilt but was offset by a greater increase in felt guilt due to some other factor, such as increased attention to or appreciation of the costs associated with the negative outcome. In particular, perhaps those who perceive greater free will in sea turtles are more likely to also contemplate the negativity of the animal losing its ability to exercise that agency because of its injury. There is some evidence that feelings of guilt are not fully explained by moral violations. For example, both free will belief in the sea turtle and perceived pain in sea turtles after they eat plastic straws have positive main effects on feelings of guilt for using plastic straws, even after controlling for moral judgments about using plastic straws (see Table 2.38).

When sea turtles are neither framed as having nor lacking free will, free will belief does appear to increase perceived agency (Hypothesis 18). Thus, the findings are consistent with the possibility that when sea turtles are neither framed as having nor lacking free will, people tend to: rationalize that they are less morally responsible for indirectly harming the sea turtles by using plastic straws because they believe sea turtles are more causally responsible for harming themselves by eating plastic straws; feel greater guilt about using plastic straws because it causes suffering, and increase their intentions to reduce their use of plastic straws in order to reduce their guilt.

Finally, feeling guilty about negative outcomes that one did not cause or marginally partially caused may be generally adaptive because it may generally motivate people to search for less negative outcomes and facilitate social cooperation.

Free Will Framing Changes Free Will Belief about Harmed Animals

Experimentally manipulating whether people are told that sea turtles have or lack free will – at least by an alleged scientist - prior to watching a video of a sea turtle suffering appears to increase and decrease free will beliefs, respectively (Hypotheses 1 and 8).

Free Will Framing Induces the Responsibilization, but not the Objectification, of Harmed Animals

It appears that people, across the political spectrum, who read that sea turtles have free will tend to responsabilize sea turtles in terms of perceiving greater agency in sea turtles, and in particular, perceiving sea turtles as more intentional and more responsible for eating plastic straws (Research Question 1, see Table 2.31).

However, it does not appear that people who read that sea turtles lack free will tend to objectify sea turtles, since they do not appear to reduce their mind perception of sea turtles in general – neither in terms of reduced perceived agency for sea turtles nor in terms of reduced perceived pain in sea turtles (Research Question 2, see Table 2.31). Moreover, it appears that reading that sea turtles lack free will, compared to not reading any comment about free will in sea turtles, tends to increase perceived agency in sea turtles, albeit not as much as reading that sea turtles have free will (see Table 2.31). Thus,

people may be responsabilizing sea turtles for eating plastic straws even after being told that sea turtles lack free will, albeit less so.

This also suggests that making free will attributions salient – even when free will is explicitly denied by alleged experts - in moral discourse tends to strengthen reported free will beliefs about sea turtles. However, it is unclear whether this uptick in free will belief is the recall of extant beliefs or the formation of new beliefs. Moreover, in the case framing sea turtles as lacking free will, it is unclear whether the uptick in free will belief is partially due to reactance, which may abate if received with less assertive description or from more trustworthy sources.

Moreover, people who identify as politically conservative are more likely to responsabilize (and not objectify) harmed animals. Amongst people who are more politically conservative, framing sea turtles as lacking free will, increases their perceived agency of sea turtles to eat plastic straws, but it did not decrease perceived pain in sea turtles after they eat plastic straws (see Table 2.31). This is compatible with the notion that any moral disengagement about using plastic straws following free will framing is due to the responsabilization, but not objectification, of sea turtles.

Amongst Political Conservatives, Free Will Framing Decreases Moral Concern about Harmed Animals

While this study finds evidence that making free will in animals salient via free will framing (i.e., framing sea turtles as having or lacking free will) increases responsabilization of harmed animals in both liberals and conservatives, only amongst

conservatives did such framing decrease moral concern. Amongst political conservatives, framing sea turtles as either having or lacking free will decreased moral concern about harmful behaviors to animals in terms of moral judgments about harming the animal and behavioral intentions to reduce the behavior (see Tables 2.32 and 2.34). However, it did not increase moral concern in terms of guilt about the harmful behavior (see Table 2.33). Still, this is consistent with the possibility that free-will framing causes political conservatives, but not political liberals, to rationalize that they are not morally responsible for indirectly harming sea turtles because sea turtles have agency and harmed themselves.

Moral Disengagement for Using Plastic Straws from Free Will Framing Does Not Spill-over for Other Kinds of Disposable Plastic

While free will framing may reduce moral concern amongst political conservatives about using plastic straws, the effects do not extend to other forms of disposable plastic that were not seen and closely associated with the suffering of the sea turtle. In particular, framing sea turtles as having or lacking free will did not influence moral concern about using plastic bags or plastic bottles in terms of moral judgments about use (see Table 2.32) or behavioral intentions to reduce use (see Table 2.34). Feelings of guilt about using plastic bags and plastic bottles were not measured in this study, so it is possible that framing sea turtles as having or lacking free will may increase feelings of guilt for using plastic bags or plastic bottles, but if it does, it would not be clear why it does not also increase feelings of guilt for plastic straws.

Educational Implications

The study has several implications for the design of moral education materials about animal welfare, like online videos depicting animal suffering. First, if animal welfare advocates aim to change beliefs about animal minds, they should consider including expert testimony about animal minds prior to watching the animal suffering since such testimony in this study was able to influence agency beliefs about sea turtles. Second, if animal welfare advocates aim to change beliefs about animal minds, they should consider targeting underlying philosophical beliefs about animal minds, like whether animals have free will, since framing sea turtles as having free will was shown to increase agency beliefs about sea turtles. However, animal welfare advocates should consider that the effects of targeting philosophical beliefs about animal minds, since it appears to depend on the political ideology of the audience. Being more politically conservative was found to predict greater agency beliefs in sea turtles, even when sea turtles were framed as lacking free will (see Table 2.31).

Third, if animal welfare advocates aim to increase moral concern about behaviors that harm animals (especially behaviors which harm animals indirectly by pollution or by dangerous habitats for animals), they should consider not emphasizing and making salient the free will of the harmed animal (i.e., its ability to choose) to political conservatives, since framing sea turtles as having or lacking free will prior to watching a video of a sea turtle suffering was shown to make political conservatives even more likely to think it is

morally right to engage in the harmful behavior of using plastic straws (see Table 2.32) and to decrease their behavioral intentions to reduce using plastic straws (see Table 2.34).

While in this study, emphasizing free will in sea turtles (i.e., framing sea turtles as having or lacking free will) did not result in less felt guilt (see Table 2.33), amongst people who did not encounter any free will framing, people who found it more morally right to use plastic straws were found to feel less guilt about using plastic straws (Hypothesis 23; see Table 2.38), and those found to feel less guilt about using plastic straws were found to be less likely to intend to reduce their use of plastic straws (Hypothesis 24; see Table 2.39). Thus, for a general audience with political conservatives, animal welfare advocates should consider not emphasizing that a harmed animal has the capacity to make choices. Instead, they may consider emphasizing that harmed animals feel more pain since those who perceived more pain in the sea turtle tended to also feel more guilt about using plastic straws and be more likely to intend to reduce their use of plastic straws (see Tables 2.38 and 2.39).

Finally, since free will framing did not appear influence moral concern beyond the displayed kind of plastic (i.e., plastic straws) and have a spill over effect for other kinds of plastic pollution (i.e., plastic bags and plastic bottles), it may be important to display or make explicit how different kinds of disposable plastic can harm sea turtles. More generally, mind perception interventions (such as free will framing) may be more effective at inducing moral disengagement (e.g., via rationalizations) when they display

or make clear how similar behaviors (i.e., using plastic bags and using plastic bottles) also indirectly harm animals.

Limitations

The study has multiple limitations. Firstly, the study only examines free will manipulations on one type of animal, sea turtles. Free will manipulations may be less effective on other animals about which people have stronger beliefs. Such beliefs may come from prior knowledge about the animal or experience with it. For example, if people believe entities with less complex brains lack free will and that oysters lack complex brains while dolphins have extremely complex brains, people may be less willing to believe oysters have free will, and less willing to believe that dolphins lack free will.

Secondly, the study only considers one video of animal suffering, albeit one that may be prototypical in terms of audience views. Different videos may introduce factors which interact in ways that alter the findings of this study.

Thirdly, the study does not vary the level of animal suffering perceived. It is possible that participants' responses would be different, including more variation in moral judgments and moral emotions, if participants had not answered questions immediately after seeing a high level of animal suffering.

Fourthly, the items used for responsibility are ambiguous as to whether they refer to moral responsibility or merely causal responsibility. Some participants may have

reported that sea turtles are causally responsible for eating straws, but not morally responsible for eating straws.

Fifthly, some participants may have underreported their intentions to avoid using plastic straws because behavioral intentions were only measured for reducing the use of disposable plastic straws, but behavioral intentions were not measured for using disposable plastic straws. Several participants contacted the researcher and said that they already do not use disposable plastic straws and so they cannot intend to reduce using it any further. This potential ceiling/floor effect in how behavioral intentions were measured may help explain the counterintuitive finding that people who perceive more pain in sea turtles are less likely to reduce their use of plastic straws (see Table 2.39); this could be because those who are more empathetic to sea turtles suffering from plastic straws have already stopped using plastic straws and cannot reduce their use of plastic straws anymore.

Sixthly, the items used to measure moral judgments do not explicitly qualify the words “good” and “bad” as moral; they do not for example explicitly ask whether an action is “morally right” or “morally wrong”. It is possible that some participants understood “good” or “bad” in non-moral terms, as when saying they think some aspect of an action, such as its costs (e.g., discomfort, inconvenience, pain, etc.), is bad while considering the action as a whole to be morally right and good. For example, participants might think it is morally permissible to use plastic straws in general if it is used in a

certain way, but that using plastic straws is also currently bad in the sense that it currently is used in ways that lead to bad outcomes, like pollution and harming sea turtles.

Seventhly, the study only examines moral concern in terms of moral judgments about using plastic straws, feelings of guilt about using plastic straws, and behavioral intentions for reducing the use plastic, but not actual behaviors to use or reduce the use of plastic straws. Intentions for pro-environmental behaviors have only been found to moderately correlate (95%-confidence interval $r = 0.42$ to 0.61) with pro-environmental behaviors (Bamberg & Möser, 2007). Thus, it is possible that people report intending to reduce their plastic straw use, but later reduce that intention (perhaps forgetting the free will framing) and fail to reduce their use of plastic straws. Moreover, feelings of moral obligation (i.e., moral norms) to engage in pro-environmental behaviors have only been found to modestly to moderately correlate (95%-confidence interval $r = 0.12$ to 0.61) with pro-environmental behaviors (Bamberg & Möser, 2007). And feelings of guilt about not doing pro-environmental behaviors have been found to modestly correlate (95%-confidence interval $r = 0.21$ to 0.38) with pro-environmental behaviors (Bamberg & Möser, 2007). Thus, it is plausible that participants may report feelings of guilt and negative moral judgments about using plastic straws but continue to use plastic straws.

Eighthly, the study only examines one animal behavior that may be construed as causing self-harm (i.e., the sea turtle eating plastic straws). It is possible that participants moral judgments about eating straws may vary were they to have considered multiple actions by sea turtles and humans that causally contribute to sea turtle ultimately eating

the plastic straw and being harmed by it. For example, if they study had also asked participants to rate the responsibility of sea turtles for humans using a plastic straw and the responsibility of humans for plastic straws falling into the ocean, it may draw more causal attention to humans and reduce the responsabilizing effect of free-will framing on sea turtles.

Finally, the study only examines free will framing prior to watching video. When watching online videos, many people read comments afterwards. It is possible that free will framing would also work after watching the video; in the case of reading comments with free will framing, it may in practice, moderate the effects of antecedent framing.

Future Research

Future research should replicate the findings: using more explicit moral language using terms like “morally responsible” and “morally wrong” in the responsibility and moral judgment items; measures of behavioral intentions to use plastic, and not just intentions to reduce the use of plastic, since such framings may help avoid possible floor or ceiling effects in measurement.

Future research should test free will framing on other scenarios where humans may rationalize that animals are morally responsible for self-harm due to their choices. For example, a similar study could be replicated about animals that die from being hit by cars when deciding to cross a highway.

Future research should also consider varying the level of animal suffering perceived, both in terms of magnitude and duration. One way to reduce magnitude, would

be to replicate the experiment, but not show the video of animal suffering. One way to vary duration is to show a shorter or longer clip of the same video or show the same video multiple times. Magnitude may vary with duration since people may become desensitized.

Given that people who watch online videos of animals suffering also may read comments about the video after they watch it, and those comments may influence framing effects, future research should consider testing free will framing after watching the video. This may inform animal welfare advocates whether they should attempt to add free will framing messages to comments. For example, it may be helpful to immediately post a comment with framing information, and not just rely on framing within the video or within the video description. Moreover, it also may be helpful to offer counter-comments to dispute and reframe mental attributions of animals. Future research may be able to help motivate such commenting and counter-commenting strategies.

Given that political conservatism predicted both mind perception and moral concern about sea turtles, future research should consider testing whether making political ideology salient motivates mind perception and moral concern about animals.

Tables

Table 2.1

Summary of Political Conservatism and Mind Perception Variables

<u>Variable</u>	<u>All Conditions</u> <u>(N=299)</u>		<u>Control Condition</u> <u>(N=104)</u>		<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>		<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>	
	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>
political conservatism	41.80 (31.25)	42.50	45.15 (32.55)	48.50	37.93 (29.59)	34.25	42.23 (31.38)	49.50
sea turtles have free will	4.37 (1.86)	4.67	4.39 (1.91)	5.00	4.97 (1.55)	5.00	3.72 (1.90)	4.00
humans have free will	6.55 (0.83)	7.00	6.52 (0.95)	7.00	6.51 (0.90)	7.00	6.62 (0.59)	7.00
sea turtles' agency to eat plastic straws	2.36 (1.72)	1.5	1.89 (1.41)	1.00	2.90 (1.81)	2.5	2.31 (1.81)	1.00
sea turtles' intentions to eat plastic straws	2.43 (1.92)	1.00	1.88 (1.58)	1.00	3.14 (2.06)	3.00	2.28 (1.89)	1.00
humans' intentions for sea turtles to eat plastic straws	2.24 (1.80)	1.80	2.25 (1.76)	1.00	2.22 (1.77)	1.00	2.24 (1.87)	1.00
sea turtles' responsibility for eating plastic straws	2.28 (1.81)	1.00	1.89 (1.57)	1.00	2.65 (1.84)	2.00	2.33 (1.96)	1.00
humans' responsibility for sea turtles eating plastic straws	6.43 (1.06)	7.00	6.63 (0.94)	7.00	6.30 (1.08)	7.00	6.35 (1.15)	7.00
sea turtles' pain after eating plastic straws	5.97 (1.14)	6.00	6.04 (1.25)	7.00	5.86 (1.11)	6.00	6.00 (1.03)	6.00
sea turtles have spirits or souls	4.40 (2.20)	5.00	4.15 (2.29)	4.00	4.13 (2.08)	4.00	4.96 (2.15)	6.00
humans have spirits or souls	5.09 (2.26)	6.00	5.04 (2.37)	6.00	4.89 (2.22)	6.00	5.36 (2.18)	6.00

Table 2.2

Summary of Moral Judgment Variables

<u>Variable</u>	<u>All Conditions</u> (N=299)		<u>Control</u> <u>Condition</u> (N=104)		<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> (N=100)		<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> (N=95)	
	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>
morality of using plastic straws	2.51 (1.73)	2.00	2.45 (1.75)	2.00	2.57 (1.73)	2.00	2.49 (1.73)	2.00
morality of using plastic bags	2.53 (1.67)	2.00	2.54 (1.70)	2.00	2.57 (1.62)	2.00	2.46 (1.69)	2.00
morality of using plastic bottles	2.52 (1.69)	2.00	2.58 (1.75)	2.00	2.56 (1.65)	2.00	2.42 (1.67)	2.00
morality of removing plastic straws from noses of sea turtles	6.33 (1.26)	7.00	6.24 (1.47)	7.00	6.37 (1.14)	7.00	6.38 (1.14)	7.00

Table 2.3

Summary of Moral Emotion Variables

<u>Variable</u>	<u>All Conditions</u> <u>(N=299)</u>		<u>Control Condition</u> <u>(N=104)</u>		<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>		<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>	
	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>	<u>Mean</u> <u>(SD)</u>	<u>Median</u>
guilt for using plastic straws	3.72 (1.24)	4.00	3.55 (1.19)	3.5	3.76 (1.24)	4.00	3.86 (1.28)	4.00
collective guilt for humans using plastic straws	3.83 (1.26)	4.00	3.68 (1.20)	4.00	3.85 (1.28)	4.00	3.96 (1.27)	4.00
personal guilt for using plastic straws	3.61 (1.40)	4.00	3.42 (1.39)	3.50	3.66 (1.39)	4.00	3.76 (1.40)	4.00
collective pride for humans reducing use plastic straws to protect sea turtles	4.17 (1.08)	5.00	4.16 (1.12)	5.00	4.12 (1.12)	5.00	4.23 (1.00)	5.00
collective pride for humans removing plastic straws from turtles' noses	4.30 (1.01)	5.00	4.31 (1.11)	5.00	4.32 (0.95)	5.00	4.26 (0.98)	5.00

Table 2.4

Summary of Behavioral Intention Variables

<u>Variable</u>	<u>All Conditions</u> (N=299)		<u>Control Condition</u> (N=104)		<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> (N=100)		<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> (N=95)	
	<u>Mean</u> (<u>SD</u>)	<u>Median</u>	<u>Mean</u> (<u>SD</u>)	<u>Median</u>	<u>Mean</u> (<u>SD</u>)	<u>Median</u>	<u>Mean</u> (<u>SD</u>)	<u>Median</u>
intention to reduce use plastic straw	5.71 (1.62)	6.00	5.68 (1.63)	6.00	5.74 (1.58)	6.00	5.72 (1.66)	6.00
intention to reduce use plastic bag	5.43 (1.67)	6.00	5.36 (1.62)	6.00	5.42 (1.72)	6.00	5.52 (1.67)	6.00
intention to reduce use plastic bottle	5.52 (1.67)	6.00	5.46 (1.71)	6.00	5.49 (1.64)	6.00	5.60 (1.66)	6.00

Table 2.5

Correlations Part 1

		All Conditions (N=299)	Control Condition (N=104)	Sea Turtles Have Free Will Condition (N=100)	Sea Turtles Lack Free Will Condition (N=95)
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
1	2	0.17**	0.19#	-0.01	0.36***
1	3	0.01	0.11	-0.03	-0.12
1	4	0.36***	0.29**	0.32**	0.58***
1	5	0.33***	0.25**	0.32**	0.55***
1	6	0.22***	0.09	0.22*	0.37***
1	7	0.34***	0.26**	0.27**	0.54***
1	8	-0.19***	-0.32***	-0.05	-0.26*
1	9	-0.12*	-0.18#	-0.06	-0.11
1	10	0.16**	0.02	0.12	0.36***
1	11	0.32***	0.28**	0.31**	0.37***

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.6

Correlations Part 2

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
1	12	0.38***	0.21*	0.44***	0.53***
1	13	0.40***	0.36***	0.35***	0.50***
1	14	0.40***	0.39***	0.34***	0.49***
1	15	-0.07	-0.06	-0.14	0.01
1	16	-0.23***	-0.26**	-0.25*	-0.17
1	17	-0.25***	-0.28**	-0.26**	-0.20#
1	18	-0.19**	-0.20*	-0.22*	-0.13
1	19	-0.19***	-0.21*	-0.08	-0.30**
1	20	-0.06	-0.10	0.05	-0.12
1	21	-0.18**	0.03	-0.28**	-0.32**

Note. Uses Pearson's r. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.7

Correlations Part 3

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
1	22	-0.18**	-0.06	-0.22*	-0.26**
1	23	-0.18**	-0.08	-0.19#	-0.28**
2	3	0.09	0.20*	0.28**	-0.26*
2	4	0.43***	0.24*	0.43***	0.60***
2	5	0.39***	0.16	0.40***	0.56***
2	6	0.22***	0.05	0.27**	0.38***
2	7	0.41***	0.27**	0.39***	0.57***
2	8	-0.16**	-0.18#	-0.12	-0.20#
2	9	-0.09	-0.15	-0.01	-0.06
2	10	0.27***	0.37***	0.29**	0.31**

Note. Uses Pearson's r. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.8

Correlations Part 4

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
2	11	0.20***	0.27**	0.15	0.25*
2	12	0.25***	0.14	0.23*	0.40***
2	13	0.25***	0.08	0.26**	0.44***
2	14	0.25***	0.13	0.23*	0.42***
2	15	-0.04	0.00	-0.05	-0.08
2	16	0.02	0.18#	0.03	-0.13
2	17	0.01	0.21*	-0.01	-0.15
2	18	0.02	0.14	0.05	-0.09
2	19	-0.04	0.09	0.05	-0.27**
2	20	-0.02	0.12	-0.02	-0.20#

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.9

Correlations Part 5

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
2	21	0.00	0.20*	-0.06	-0.17#
2	22	-0.01	0.12	0.03	-0.18#
2	23	0.00	0.10	0.10	-0.16
3	4	-0.17**	-0.26**	0.02	-0.40***
3	5	-0.14*	-0.23*	0.05	-0.35***
3	6	-0.14*	-0.09	-0.07	-0.35***
3	7	-0.18**	-0.23*	-0.03	-0.40***
3	8	0.21***	0.25*	0.21*	0.21*
3	9	0.16**	0.18#	0.12	0.19#
3	10	0.11#	0.14	0.18#	-0.10

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.10

Correlations Part 6

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
3	11	0.25***	0.36***	0.34***	-0.10
3	12	-0.18**	-0.16	-0.11	-0.36***
3	13	-0.20***	-0.20*	-0.12	-0.36***
3	14	-0.19***	-0.24*	-0.09	-0.27**
3	15	0.26***	0.31**	0.20*	0.23*
3	16	0.12*	0.04	0.21*	0.12
3	17	0.13*	0.07	0.20*	0.12
3	18	0.09	0.00	0.18#	0.11
3	19	0.31***	0.30**	0.31**	0.32**
3	20	0.26***	0.20*	0.32**	0.32**

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.11

Correlations Part 7

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
3	21	0.06	-0.02	0.14	0.08
3	22	0.13*	0.05	0.20*	0.14
3	23	0.10#	0.06	0.18#	0.07
4	5	0.93***	0.89***	0.93***	0.94***
4	6	0.49***	0.51***	0.47***	0.55***
4	7	0.92***	0.89***	0.92***	0.94***
4	8	-0.35***	-0.39***	-0.35***	-0.27**
4	9	-0.17**	-0.17#	-0.09	-0.24*
4	10	0.17**	0.11	0.20*	0.25*
4	11	0.18**	0.10	0.25*	0.23*

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.12

Correlations Part 8

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
4	12	0.52***	0.43***	0.51***	0.64***
4	13	0.54***	0.43***	0.53***	0.70***
4	14	0.51***	0.36***	0.53***	0.69***
4	15	-0.26***	-0.25**	-0.39***	-0.22*
4	16	-0.17**	-0.07	-0.27**	-0.21*
4	17	-0.21***	-0.10	-0.32**	-0.24*
4	18	-0.11#	-0.03	-0.18#	-0.16
4	19	-0.24***	-0.26**	-0.19#	-0.29**
4	20	-0.18**	-0.17#	-0.21*	-0.20*
4	21	-0.16**	0.06	-0.25*	-0.29**

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.13

Correlations Part 9

<u>Variable 1</u>	<u>Variable 2</u>	<u>All Conditions (N=299)</u>	<u>Control Condition (N=104)</u>	<u>Sea Turtles Have Free Will Condition (N=100)</u>	<u>Sea Turtles Lack Free Will Condition (N=95)</u>
4	22	-0.13*	0.02	-0.20*	-0.19#
4	23	-0.14*	-0.05	-0.18#	-0.19#
5	6	0.42***	0.42***	0.39***	0.53***
5	7	0.71***	0.59***	0.71***	0.77***
5	8	-0.26***	-0.31**	-0.25*	-0.19#
5	9	-0.18**	-0.13	-0.13	-0.26*
5	10	0.15**	0.09	0.20*	0.24*
5	11	0.15*	0.08	0.21*	0.21*
5	12	0.44***	0.37***	0.40***	0.60***
5	13	0.48***	0.45***	0.40***	0.66***

Note. Uses Pearson's r. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#p < .10 *p < .05, **p < .01, ***p < .001

Table 2.14

Correlations Part 10

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
5	14	0.46***	0.37***	0.41***	0.66***
5	15	-0.20***	-0.13	-0.31**	-0.23*
5	16	-0.13*	-0.06	-0.23*	-0.15
5	17	-0.18**	-0.08	-0.30**	-0.19#
5	18	-0.07	-0.03	-0.14	-0.10
5	19	-0.21***	-0.19#	-0.19#	-0.27**
5	20	-0.12*	-0.05	-0.17#	-0.18#
5	21	-0.14*	0.05	-0.21*	-0.27**
5	22	-0.11#	0.00	-0.20#	-0.13
5	23	-0.12*	-0.04	-0.17#	-0.16

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.15

Chapter 2 Correlations Part 11

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
6	7	0.49***	0.50***	0.48***	0.51***
6	8	-0.06	-0.08	-0.09	-0.02
6	9	0.01	0.11	-0.08	0.00
6	10	0.19**	0.20*	0.24*	0.13
6	11	0.11#	0.08	0.17#	0.09
6	12	0.49***	0.32***	0.58***	0.57***
6	13	0.43***	0.27**	0.43***	0.62***
6	14	0.40***	0.18#	0.48***	0.55***
6	15	-0.18**	-0.23*	-0.21*	-0.08
6	16	0.09	0.11	-0.01	0.16

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.16

Correlations Part 12

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
6	17	0.06	0.09	-0.05	0.15
6	18	0.09	0.11	0.03	0.15
6	19	-0.03	-0.03	0.05	-0.12
6	20	-0.10#	-0.09	0.08	-0.28**
6	21	0.10#	0.21*	0.11	-0.03
6	22	0.16**	0.29**	0.17#	0.01
6	23	0.14*	0.27**	0.13	0.02
7	8	-0.38***	-0.39***	-0.40***	-0.31**
7	9	-0.14*	-0.17#	-0.03	-0.20#
7	10	0.17**	0.10	0.17	0.24*

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.17

Correlations Part 13

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
7	11	0.18**	0.11	0.26*	0.21*
7	12	0.52***	0.41***	0.55***	0.59***
7	13	0.52***	0.32**	0.59***	0.66***
7	14	0.49***	0.27**	0.58***	0.64***
7	15	-0.29***	-0.32**	-0.41***	-0.19#
7	16	-0.18**	-0.06	-0.26**	-0.24*
7	17	-0.21***	-0.09	-0.29**	-0.26*
7	18	-0.13*	-0.02	-0.20*	-0.20#
7	19	-0.23***	-0.27**	-0.17#	-0.28**
7	20	-0.22***	-0.25**	-0.22*	-0.20#

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.18

Correlations Part 14

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
7	21	-0.16**	0.06	-0.24*	-0.28**
7	22	-0.13*	0.03	-0.18#	-0.23*
7	23	-0.14*	-0.05	-0.17#	-0.20#
8	9	0.32***	0.45***	0.18#	0.32**
8	10	-0.03	0.11	-0.03	-0.14
8	11	0.02	0.02	0.14	-0.10
8	12	-0.27***	-0.20*	-0.36***	-0.25*
8	13	-0.33***	-0.31**	-0.41***	-0.29**
8	14	-0.35***	-0.41***	-0.37***	-0.30**
8	15	0.31***	0.24*	0.53***	0.22*

Note. Uses Pearson's r. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.19

Correlations Part 15

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
8	16	0.32***	0.33***	0.25*	0.44***
8	17	0.36***	0.36***	0.28**	0.48***
8	18	0.25***	0.25*	0.20#	0.36***
8	19	0.38***	0.46***	0.33***	0.37***
8	20	0.28***	0.27**	0.47***	0.14
8	21	0.34***	0.21*	0.44***	0.37***
8	22	0.38***	0.36***	0.37***	0.45***
8	23	0.40***	0.37***	0.40***	0.44***
9	10	0.13*	0.21*	0.20*	-0.05
9	11	0.12*	0.17#	0.22*	-0.09

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.20

Correlations Part 16

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
9	12	-0.10#	0.03	-0.08	-0.29**
9	13	-0.20***	-0.16	-0.14	-0.31**
9	14	-0.21***	-0.19#	-0.15	-0.30**
9	15	0.10#	0.18#	0.03	0.04
9	16	0.36***	0.30**	0.27**	0.56***
9	17	0.35***	0.34***	0.28**	0.46***
9	18	0.33***	0.22*	0.23*	0.59***
9	19	0.37***	0.36***	0.30**	0.46***
9	20	0.22***	0.25*	0.20#	0.21*
9	21	0.22***	0.11	0.21*	0.40***

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.21

Correlations Part 17

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
9	22	0.29***	0.32**	0.23*	0.33***
9	23	0.28***	0.26**	0.29**	0.29**
10	11	0.73***	0.68***	0.69***	0.85***
10	12	0.14*	0.09	0.07	0.28**
10	13	0.11#	0.03	0.01	0.31**
10	14	0.11#	0.08	-0.02	0.32**
10	15	-0.03	0.04	-0.04	-0.13
10	16	0.14*	0.19#	0.31**	-0.10
10	17	0.16**	0.28**	0.25*	-0.11
10	18	0.12*	0.08	0.33***	-0.09

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.22

Correlations Part 18

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
10	19	0.15*	0.23*	0.27**	-0.13
10	20	0.12*	0.18#	0.27**	-0.09
10	21	-0.03	0.07	0.12	-0.28**
10	22	0.09	0.20*	0.17#	-0.14
10	23	0.08	0.14	0.28**	-0.20*
11	12	0.14*	0.11	0.08	0.26**
11	13	0.11#	0.06	0.03	0.27**
11	14	0.12*	0.13	0.03	0.24*
11	15	0.01	0.04	0.04	-0.08
11	16	0.05	0.04	0.22*	-0.14

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.23

Correlations Part 19

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
11	17	0.06	0.09	0.18#	-0.10
11	18	0.03	0.00	0.23*	-0.16
11	19	0.19***	0.23*	0.37***	-0.09
11	20	0.17**	0.17#	0.35***	0.00
11	21	-0.01	0.08	0.14	-0.25*
11	22	0.07	0.15	0.20*	-0.16
11	23	0.05	0.09	0.25*	-0.21*
12	13	0.78***	0.66***	0.82***	0.87***
12	14	0.73***	0.60***	0.81***	0.81***
12	15	-0.16**	-0.10	-0.29**	-0.12

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.24

Correlations Part 20

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
12	16	-0.29***	-0.21*	-0.42***	-0.25*
12	17	-0.29***	-0.18#	-0.43***	-0.27**
12	18	-0.25***	-0.20*	-0.35***	-0.20*
12	19	-0.36***	-0.29**	-0.32**	-0.50***
12	20	-0.21***	-0.21*	-0.14	-0.27**
12	21	-0.31***	-0.10	-0.38***	-0.47***
12	22	-0.23***	-0.02	-0.31**	-0.37***
12	23	-0.26***	-0.12	-0.32**	-0.36***
13	14	0.89***	0.89***	0.93***	0.87***
13	15	-0.20***	-0.10	-0.33***	-0.22*

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.25

Correlations Part 21

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
13	16	-0.35***	-0.24*	-0.52***	-0.28**
13	17	-0.35***	-0.22*	-0.55***	-0.29**
13	18	-0.30***	-0.22*	-0.42***	-0.25*
13	19	-0.37***	-0.26**	-0.40***	-0.45***
13	20	-0.22***	-0.02	-0.33***	-0.37***
13	21	-0.28***	-0.03	-0.38***	-0.45***
13	22	-0.28***	-0.07	-0.41***	-0.38***
13	23	-0.31***	-0.16	-0.43***	-0.35***
14	15	-0.20***	-0.14	-0.32**	-0.17#
14	16	-0.35***	-0.30**	-0.47***	-0.28**

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.26

Correlations Part 22

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
14	17	-0.36***	-0.28**	-0.51***	-0.29**
14	18	-0.30***	-0.28**	-0.36***	-0.25*
14	19	-0.34***	-0.25*	-0.37***	-0.42***
14	20	-0.16**	0.01	-0.27**	-0.28**
14	21	-0.27***	-0.01	-0.38***	-0.46***
14	22	-0.26***	-0.10	-0.33***	-0.35***
14	23	-0.32***	-0.20*	-0.45***	-0.31**
15	16	0.18**	0.16	0.18#	0.21*
15	17	0.17**	0.09	0.19#	0.23*
15	18	0.18**	0.20*	0.15	0.17#

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.27

Correlations Part 23

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
15	19	0.25***	0.17#	0.37***	0.22*
15	20	0.43***	0.44***	0.50***	0.35***
15	21	0.17**	0.04	0.35***	0.18#
15	22	0.19***	0.04	0.41***	0.16
15	23	0.18**	0.09	0.36***	0.11
16	17	0.93***	0.91***	0.92***	0.95***
16	18	0.94***	0.93***	0.94***	0.96***
16	19	0.56***	0.44***	0.65***	0.61***
16	20	0.33***	0.35***	0.47***	0.18#
16	21	0.60***	0.48***	0.64***	0.68***

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.28

Correlations Part 24

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
16	22	0.59***	0.53***	0.61***	0.63***
16	23	0.62***	0.59***	0.65***	0.64***
17	18	0.75***	0.70***	0.73***	0.82***
17	19	0.56***	0.42***	0.64***	0.64***
17	20	0.34***	0.34***	0.49***	0.19#
17	21	0.54***	0.33***	0.60***	0.68***
17	22	0.51***	0.40***	0.52***	0.60***
17	23	0.57***	0.46***	0.59***	0.66***
18	19	0.49***	0.39***	0.58***	0.53***
18	20	0.29***	0.31**	0.39***	0.16

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.29

Correlations Part 25

<u>Variable 1</u>	<u>Variable 2</u>	<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
		<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
18	21	0.58***	0.55***	0.59***	0.61***
18	22	0.59***	0.56***	0.61***	0.61***
18	23	0.60***	0.62***	0.62***	0.57***
19	20	0.62***	0.63***	0.76***	0.47***
19	21	0.50***	0.42***	0.53***	0.56***
19	22	0.51***	0.44***	0.61***	0.47***
19	23	0.48***	0.42***	0.58***	0.46***
20	21	0.24***	0.22*	0.33***	0.18#
20	22	0.31***	0.24*	0.43***	0.29**
20	23	0.29***	0.21*	0.43***	0.26*

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.30

Correlations Part 26

		<u>All</u> <u>Conditions</u> <u>(N=299)</u>	<u>Control</u> <u>Condition</u> <u>(N=104)</u>	<u>Sea Turtles</u> <u>Have Free Will</u> <u>Condition</u> <u>(N=100)</u>	<u>Sea Turtles</u> <u>Lack Free Will</u> <u>Condition</u> <u>(N=95)</u>
<u>Variable 1</u>	<u>Variable 2</u>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
21	22	0.72***	0.71***	0.74***	0.71***
21	23	0.77***	0.76***	0.76***	0.78***
22	23	0.85***	0.82***	0.88***	0.87***

Note. Uses Pearson's *r*. Variables: 1= political conservatism, 2= sea turtles have free will, 3= humans have free will, 4= sea turtles' agency to eat plastic straws, 5= sea turtles' intentions to eat plastic straws, 6= humans' intentions for sea turtles to eat plastic straws, 7= sea turtles' responsibility for eating plastic straws, 8= humans' responsibility for sea turtles eating plastic straws, 9= sea turtles' pain after eating plastic straws, 10= sea turtles have spirits or souls, 11= humans have spirits or souls, 12= morality of using plastic straws, 13= morality of using plastic bags, 14= morality of using plastic bottles, 15= morality of removing plastic straws from noses of sea turtles, 16= guilt for using plastic straws, 17= collective guilt for humans using plastic straws, 18= personal guilt for using plastic straws, 19= collective pride for humans reducing use plastic straws to protect sea turtles, 20= collective pride for humans removing plastic straws from turtles' noses, 21= intention to reduce use plastic straw, 22= intention to reduce use plastic bag, 23=intention to reduce use plastic bottle
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.31

*Mind Perception Regressions on Free Will Manipulations and Political Conservatism
(N=299)*

	<u>HFW</u>	<u>LFW</u>	<u>PC</u>	<u>HFW * PC</u>	<u>LFW * PC</u>	<u>Intercept</u>	
<u>Predicted</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>Adj. R²</u>
sea turtles have free will	0.327 (0.133)*	-0.350 (0.134)**	0.188 (0.089)*	-0.196 (0.134)	0.179 (0.131)	-0.007 (0.093)	0.115***
humans have free will	-0.007 (0.141)	0.131 (0.143)	0.119 (0.095)	-0.155 (0.143)	-0.202 (0.140)	-0.045 (0.099)	-0.006
sea turtles' agency to eat plastic straws	0.651 (0.125)***	0.257 (0.126)*	0.224 (0.084)**	0.130 (0.126)	0.381 (0.123)**	-0.296 (0.087)***	0.281***
sea turtles' intentions to eat plastic straws	0.720 (0.125)***	0.222 (0.127)#	0.201 (0.084)*	0.157 (0.127)	0.335 (0.124)**	-0.306 (0.088)***	0.207***
humans' intention for sea turtles to eat plastic straws	2.13e-02 (1.38e-01)	-6.85e-05 (1.39e-01)	8.83e-02 (9.23e-02)	1.42e-01 (1.39e-01)	2.91e-01 (1.36e-01)*	-2.46e-03 (9.62e-02)	0.049**
sea turtles' responsibility for eating plastic straw	0.476 (0.129)***	0.253 (0.130)#	0.214 (0.086)*	0.080 (0.130)	0.370 (0.127)**	-0.238 (0.090)**	0.168*
human responsibility for turtle eating plastic straw	-0.342 (0.137)*	-0.288 (0.138)*	-0.276 (0.092)**	0.224 (0.138)	-0.0002 (0.136)	0.215 (0.096)*	0.056***
sea turtles' pain after eating plastic straws	-0.186 (0.141)	-0.053 (0.142)	-0.196 (0.094)*	0.129 (0.142)	0.095 (0.139)	0.084 (0.098)	0.007
sea turtles have spirits or souls	0.007 (0.137)	0.363 (0.138)**	0.025 (0.092)	0.098 (0.138)	0.325 (0.136)*	-0.115 (0.100)	0.058***
humans have spirits or souls	0.004 (0.134)	0.167 (0.136)	0.284 (0.090)**	0.033 (0.135)	0.070 (0.133)	-0.053 (0.094)	0.092***

Note. HFW = Sea turtles have free will condition. LFW = Sea turtles lack free will condition. PC = political conservatism. All coefficients are standardized.
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.32

Moral Judgment Regressions on Free Will Manipulations and Political Conservatism (N=299)

	<u>HFW</u>	<u>LFW</u>	<u>PC</u>	<u>HFW *</u> <u>PC</u>	<u>LFW *</u> <u>PC</u>	<u>Intercept</u>	
<u>Predicted</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>Adj. R²</u>
morality use plastic straw	0.147 (0.123)	0.039 (0.131)	0.200 (0.087)*	0.264 (0.131)*	0.324 (0.129)*	-0.052 (0.091)	0.153***
morality use plastic bag	0.101 (0.130)	-0.014 (0.131)	0.356 (0.087)***	0.001 (0.131)	0.154 (0.128)	-0.030 (0.091)	0.155***
morality use plastic bottle	0.075 (0.130)	-0.058 (0.131)	0.384 (0.087)***	-0.029 (0.131)	0.103 (0.128)	-0.008 (0.091)	0.156***
morality remove plastic straw from noses of sea turtles	0.079 (0.142)	0.103 (0.143)	-0.066 (0.094)	-0.070 (0.143)	0.072 (0.140)	-0.062 (0.099)	-0.007

Note. HFW = Sea turtles have free will condition. LFW = Sea turtles lack free will condition. PC = political conservatism. All coefficients are standardized.
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.33

*Moral Emotion Regressions on Free Will Manipulations and Political Conservatism
(N=299)*

	<u>HFW</u>	<u>LFW</u>	<u>PC</u>	<u>HFW *</u> <u>PC</u>	<u>LFW *</u> <u>PC</u>	<u>Intercept</u>	
<u>Predicted</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>Adj. R²</u>
guilt for using plastic straws	0.104 (0.138)	0.223 (0.139)	-0.238 (0.092)*	-0.031 (0.139)	0.065 (0.136)	-0.107 (0.096)	0.047**
collective guilt for humans using plastic straws	0.072 (0.137)	0.195 (0.139)	-0.255 (0.092)**	-0.025 (0.138)	0.056 (0.136)	-0.087 (0.096)	0.053***
personal guilt for using plastic straws	0.120 (0.139)	0.220 (0.140)	-0.194 (0.093)*	-0.035 (0.140)	0.065 (0.137)	-0.112 (0.097)	0.029*
collective pride for humans reducing use of plastic straws to protect sea turtles	-0.073 (0.139)	0.044 (0.140)	-0.213 (0.093)*	0.131 (0.140)	-0.061 (0.138)	0.016 (0.097)	0.028*
collective pride for humans removing plastic straws from turtles' noses	0.007 (0.142)	-0.054 (0.143)	-0.108 (0.095)	0.156 (0.143)	-0.004 (0.140)	0.0214 (0.099)	-0.007

Note. HFW = Sea turtles have free will condition. LFW = Sea turtles lack free will condition. PC = political conservatism. All coefficients are standardized.
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.34

Behavioral Intention Regressions on Free Will Manipulations and Political Conservatism (N=299)

	<u>HFW</u>	<u>LFW</u>	<u>PC</u>	<u>HFW *</u> <u>PC</u>	<u>LFW *</u> <u>PC</u>	<u>Intercept</u>	
<u>Predicted</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>β (SE)</u>	<u>Adj. R²</u>
intention to reduce use of plastic straws	0.003 (0.138)	0.028 (0.139)	0.028 (0.093)	-0.313 (0.139)*	-0.354 (0.137)*	-0.021 (0.097)	0.042**
intention to reduce use of plastic bags	0.002 (0.139)	0.093 (0.140)	-0.059 (0.093)	-0.182 (0.140)	-0.206 (0.138)	-0.037 (0.097)	0.026*
intention to reduce use of plastic bottles	-0.017 (0.139)	0.078 (0.141)	-0.083 (0.094)	-0.117 (0.141)	-0.193 (0.138)	-0.023 (0.097)	0.024*

Note. HFW = Sea turtles have free will condition. LFW = Sea turtles lack free will condition. PC = political conservatism. All coefficients are standardized.
#*p* < .10, **p* < .05, ***p* < .01, ****p* < .001

Table 2.35

Regression for Hypothesis 18 using Control Condition Data

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
turtle agency eating plastic straw	turtle free will	0.190 (0.095)*
	political conservatism	0.263 (0.095)**
	turtle free will * political conservatism	0.158 (0.100)
	intercept	-0.030 (0.094)

Note. Coefficients are standardized. Adj. $R^2 = 0.113$. $F(3, 100) = 5.365$.
 Model p-value < .01. VIF < 2 for all predictors. AIC=288.61. BIC = 301.84.
 #p < .10, *p < .05, **p < .01, ***p < .001

Table 2.36

Regression for Hypotheses 22 using Control Condition Data

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
turtle pain eating plastic straw	turtle free will	-0.127 (0.096)
	political conservatism	-0.183 (0.096)#
	turtle free will * political conservatism	-0.270 (0.099)**
	intercept	0.051 (0.095)

Note. Coefficients are standardized. Adj. $R^2 = 0.088$. $F(3, 100) = 2.399$. Model p-value < .05. VIF < 2 for all predictors. AIC=291.46. BIC = 304.68.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.37

Regression for Hypotheses 15 and 19 using Control Condition Data

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
morality use plastic straw	turtle free will	0.240 (0.123)#
	turtle agency eating plastic straw	0.052 (0.151)
	turtle pain eating plastic straw	0.016 (0.123)
	political conservatism	0.077 (0.114)
	turtle free will * turtle agency eating plastic straw	0.567 (0.106)***
	turtle free will * turtle pain eating plastic straw	0.227 (0.130)#
	turtle free will * political conservatism	0.071 (0.133)
	turtle agency eating plastic straw * turtle pain eating plastic straw	-0.081 (0.162)
	turtle agency eating plastic straw * political conservatism	0.041 (0.127)
	turtle pain eating plastic straw * political conservatism	0.013 (0.117)
	turtle free will * turtle agency eating plastic straw * turtle pain eating plastic straw	0.155 (0.155)
	turtle free will * turtle agency eating plastic straw * political conservatism	0.199 (0.172)
	turtle free will * turtle pain eating plastic straw * political conservatism	-0.098 (0.114)
	turtle agency eating plastic straw * turtle pain eating plastic straw * political conservatism	0.088 (0.144)
	turtle free will * turtle agency eating plastic straw * turtle pain eating plastic straw * political conservatism	-0.044 (0.152)
intercept	-0.187 (0.113)	

Note. Coefficients are standardized. Adj. $R^2 = 0.267$. $F(15, 88) = 3.498$. Model p -value < .001. VIF < 3.2 for all predictors. AIC=279.50. BIC = 324.45.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.38

Regression for Hypotheses 16, 20, and 23 using Control Condition Data

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
guilt use plastic straw	turtle free will	0.415 (0.125)**
	turtle agency eating plastic straw	0.133 (0.150)
	turtle pain eating plastic straw	0.329 (0.123)**
	political conservatism	-0.325 (0.114)**
	morality use plastic straw	-0.310 (0.106)**
	turtle free will * turtle agency eating plastic straw	0.193 (0.170)
	turtle free will * turtle pain eating plastic straw	-0.141 (0.132)
	turtle agency eating plastic straw * turtle pain eating plastic straw	-0.001 (0.164)
	turtle free will * political conservatism	0.300 (0.137)*
	turtle agency eating plastic straw * political conservatism	-0.199 (0.127)
	turtle pain eating plastic straw * political conservatism	0.079 (0.117)
	morality use plastic straw * political conservatism	-0.208 (0.098)*
	turtle free will * turtle agency eating plastic straw * turtle pain eating plastic straw	0.037 (0.156)
	turtle free will * turtle agency eating plastic straw * political conservatism	0.439 (0.183)*
	turtle free will * turtle pain eating plastic straw * political conservatism	0.006 (0.115)
	turtle agency * turtle pain eating plastic straw * political conservatism	0.022 (0.144)
	turtle free will * turtle agency eating plastic straw * turtle pain eating plastic straw * political conservatism	0.319 (0.152)*
	intercept	-0.034 (0.115)

Note. Coefficients are standardized. Adj. $R^2 = 0.272$. $F(17, 86) = 3.263$. Model p-value < .001. VIF < 3.7 for all predictors. AIC=280.36. BIC = 330.61.
#p < .10, *p < .05, **p < .01, ***p < .001

Table 2.39

Regression for Hypotheses 17, 21, and 24 using Control Condition Data

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
intention to reduce using plastic straw	turtle free will	0.243 (0.138)#
	turtle agency eating plastic straw	-0.103 (0.151)
	turtle pain eating plastic straw	-0.260 (0.128)*
	political conservatism	0.150 (0.122)
	morality use plastic straw	-0.142 (0.117)
	guilt use plastic straw	0.504 (0.110)***
	turtle free will * turtle agency eating plastic straw	0.397 (0.186)*
	turtle free will * turtle pain eating plastic straw	0.142 (0.133)
	turtle agency eating plastic straw * turtle pain eating plastic straw	-0.208 (0.167)
	turtle free will * political conservatism	-0.167 (0.142)
	turtle agency eating plastic straw * political conservatism	0.046 (0.131)
	turtle pain eating plastic straw * political conservatism	0.099 (0.121)
	morality use plastic straw * political conservatism	-0.044 (0.102)
	guilt use plastic straw * political conservatism	-0.202 (0.097)*
	turtle free will * turtle agency eating plastic straw * turtle pain eating plastic straw	0.139 (0.156)
	turtle free will * turtle agency eating plastic straw * political conservatism	-0.077 (0.189)
	turtle free will * turtle pain eating plastic straw * political conservatism	0.240 (0.115)*
	turtle agency eating plastic straw * turtle pain eating plastic straw * political conservatism	0.091 (0.156)
	turtle free will * turtle agency eating plastic straw * turtle pain eating plastic straw * political conservatism	-0.024 (0.159)
	intercept	-0.064 (0.118)

Note. Coefficients are standardized. Adj. $R^2 = 0.270$. $F(19, 84) = 3.002$. Model p-value < .001. VIF < 4 for all predictors. AIC=282.25. BIC = 337.78.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

CHAPTER 3

THE EFFECTS OF INTELLIGENCE FRAMING AND SELF-AFFIRMATIONS ON BELIEFS ABOUT PIG MINDS AND MORAL CONCERN ABOUT EATING PIGS

Introduction

Globally, over 400 billion animals including pigs, chickens, turkeys, sheep, and cows are raised each year on factory farms to produce meat and other products for human consumption (Foer, 2009). Many of these animals suffer under inhumane conditions during their lifetime and during the slaughtering process (Foer, 2009). People tend to consider intentionally causing suffering to others, including animals, morally wrong (Schein & Gray, 2018). When made aware of this suffering, even people who eat meat report that it is morally wrong (Piazza & Loughnan, 2016). Meat eaters sometimes reduce their meat consumption and become vegetarians as they recognize that eating meat violates their moral values (Rozin, 1999; Rozin et al., 1997). However, at other times, these same people discount the suffering of meat animals (Rothgerber, 2020). For example, some surveys find that nearly 60% of vegetarians admit they had eaten meat within the past day (Rothgerber, 2020). So, if people continue to eat meat despite being morally opposed to the suffering of meat animals, what psychological processes are they using to reconcile their moral attitudes and behaviors?

The failures of animal welfare advocacy may offer a hint. Animal welfare advocates have been trying to persuade the public to reduce their meat consumption by reminding them with ads and literature that meat animals are cognitively complex and have the capacity to think (Piazza & Loughnan, 2016) and suffer (Wen, 2016). Their rhetoric often relies on inducing guilt (Wen, 2016) and assumes that if people accept that meat animals have complex minds, then they would judge it to be more morally wrong to eat them, feel more guilty about eating them, and reduce their intentions to eat their meat.

These assumptions are not unfounded. Guilt is a moral emotion that involves moral judgments (Haidt, 2003). Feelings of guilt focus on a specific action that violates one's moral values, and it often motivates people to try to repair the harm caused by that action (Haidt, 2003; Tangney et al., 2007). Thus, if people believe that reducing meat consumption can help repair the indirect harm they have caused by eating meat, or prevent similar harm in the future, people who feel guilty about eating meat animals may intend to eat less meat from those animals.

But some research on this rhetorical strategy by animal welfare advocates suggests that it does not always work to increase moral concern about eating animals (Piazza & Loughnan, 2016). Piazza and Loughnan (2016, Study 3) found that when people are told that pigs are more intelligent than dogs (versus told the opposite) and then told about how pigs suffer on factory farms, they report that other people would judge that eating pigs is more morally wrong and that other people would feel more guilty about eating pigs. This supports the rhetorical assumptions of animal welfare advocates.

However, Piazza and Loughnan also found that when people were similarly told that pigs were more intelligent than dogs and suffered on factory farms, and then were asked to report how they judged and felt about eating pigs from their own perspective, people reported that pigs were more intelligent, but they did not report stronger moral judgments or feelings of guilt about eating pigs. This challenges the assumptions of animal welfare advocates and suggests that people are discounting the moral relevance of the minds of meat animals when they judge the immorality of eating them. It also suggests people are morally discounting the minds of meat animals because they are defending something about themselves.

People sometimes rationalize that they are not morally wrong to eat meat (Piazza et al., 2-15; Rothgerber, 2020). The Theory of Dyadic Morality (TDM) predicts that people judge their actions (including eating pigs) to be less immoral when they do not perceive themselves intentionally causing damage to their harmed targets (e.g., pigs) (Schein & Gray, 2018). Thus, people may be rationalizing that they are not morally responsible for the suffering that pigs experience during the food production process because they are not intentionally causing harm to pigs.

It is plausible that perceiving meat animals, like pigs, as more intelligent motivates people to make this rationalization. The TDM predicts that people tend to judge an action (e.g., eating pigs) as more harmful and immoral when they perceive the target of the action (e.g., pigs) as more vulnerable or capable of experiencing suffering (Schein & Gray, 2018). Some mind perception research has found that people who

perceive animals as more intelligent (e.g., greater capacities for thinking, choosing, and planning), also tend to perceive them as more capable of experiencing suffering (e.g., greater capacities for fear and pain; Bastian et al., 2012, Study 3; Loughnan et al., 2010). Thus, it is plausible that when people are told that meat animals, like pigs, are intelligent, they perceive pigs as more vulnerable or capable of suffering, and consequently increase their perception that their eating of pigs is or may be morally wrong.

Moreover, both cognitive dissonance theory and self-affirmation theory, two ego-defense theories of motivation, support this possibility (Cohen & Sherman, 2014; Festinger, 1957; Sherman & Cohen, 2002; Steele & Liu, 1983). They predict that as one recognizes that one is or may be violating one's own moral values, people defensively engage in rationalizations (Cohen & Sherman, 2014; Festinger, 1957; Sherman & Cohen, 2002; Steele & Liu, 1983). After engaging in these rationalizations, ego-defense theories predict that people maintain their existing moral attitudes about valued behaviors (Cohen & Sherman, 2014; Festinger, 1957; Sherman & Cohen, 2002; Steele & Liu, 1983). It is plausible that such rationalizations also prevent an increase in their moral concern about eating pigs (Rothgerber, 2020).

In this study, I replicate and extend a study by Piazza and Loughnan (2016, Study 3) to test whether framing pigs as more intelligent than dogs causes people to rationalize that they are not morally responsible for eating pigs because they (the humans) are not intentionally harming pigs. Moreover, by extending the study with a self-affirmation manipulation, I test whether this tendency, if it exists, is motivated by a need to defend

one's self-integrity. This study aims to provide greater insight into the motivational processes underlying moral concern about eating meat and gain some sense of how to change people's attitudes toward animal welfare based on the minds of meat animals.

Background

Mind Perception and the Morality of Eating Meat

The Theory of Dyadic Morality, a harm-centric theory of morality, predicts that the more people perceive an action as intentionally damaging vulnerable others, the more they judge the action to be morally wrong (Schein & Gray, 2018). Thus, the TDM predicts that the more one perceives oneself eating animals as intentionally damaging vulnerable animals, the more one should judge eating their meat to be morally wrong. The TDM also predicts that the more that targets of intentional damage are perceived as having minds with the capacity to suffer, the more they will be perceived as vulnerable, and the more it will be judged morally wrong to intentionally damage those targets. Thus, the TDM predicts that the more we perceive meat animals as having minds with the capacity to suffer, and the more we judge ourselves eating animals as intentionally damaging them, the more we should judge our meat-eating behavior to be morally wrong. There is mixed empirical support for these predictions.

People seem to express more moral concern about harming things, including animals, which they believe have greater capacities to think and feel (Gray et al., 2007). People also tend to think it is more morally wrong to eat animals, including meat animals, with greater cognitive capacities (Ang et al., 2019; Bastian et al., 2012). In a correlational

study, Ang et. al. (2019) found that the more people (specifically meat-eaters) attribute mental capacities to meat animals, the more they tend to express moral concern about eating those animals and the less they tend to offer justifications for eating meat. They also found that the more meat-eaters attribute mental capacities to animals, the less edible the animals tend to seem to them.

There is some disagreement about which capacities of animal minds are morally relevant and the extent to which they are morally relevant. The TDM holds that people judge it is more morally wrong to harm animals when they are perceived as vulnerable and that they are perceived as more vulnerable when they are perceived as having experience-related capacities, like the capacity to feel pain and suffer (Schein & Gray, 2018).

There have been several attempts to distinguish between experience-related capacities and agency-capacities (Gray et al., 2007; Loughnan et al., 2010). Gray et. al. (2007) had people rate 18 different mental capacities on different entities, including different animals, humans, robots, and God. After conducting a principal components factor analysis, they found two factors, which they identified as experience-related capacities (i.e., “hunger, fear, pain, pleasure, rage, desire, personality, consciousness, pride, embarrassment, and joy”) and agency-related capacities (e.g., “self-control, morality, memory, emotion recognition, planning, communication, thought”; Gray et al., 2007, p. 619). When offered pairs of these entities and asked which of the two entities they expected it would be “more painful for you to harm” if forced”, they found a

stronger correlation between the selected entities experience-related qualities than agency-related qualities ($r = 0.85$ vs. $r = 0.26$, $p < 0.05$; Gray et al., 2007, p. 619). On this basis, Gray et. al. argued that experience-related capacities were more relevant than agency-related capacities to the moral patiency of the entity - its rights and privileges.

Loughnan et al. (2010) measured how people perceived the minds of cows in terms their “ability to experience” (p. 157) sensation-related mental states (“seeing, hearing, tasting, pain, hunger, pleasure, fear, happiness, and rage”; p. 157) and intellect-related states (“thinking, imagining, wishing, needing, desiring, intending, planning, choosing, and reasoning”; p. 157), they found that the two scales had high internal reliability (Cronbach’s alpha > 0.84) and were only modestly positively correlated ($r(99) = 0.32$, $p < 0.001$; p. 158).

However, there is also evidence that people tend to think about the different capacities of animal minds as one general mind capacity. Bastian et. al. (2012) found that people who have more moral concern about eating animals tend to perceive these animals as having both higher agency-related and higher experience-related mental capacities. They had people rate animals using the 5 highest loading agency-related and experienced-related capacities from the study by Gray et. al. (2007). After conducting another principal components analysis, they found that these mental capacities loaded onto a single factor, or a general mind capacity. They found that people who perceived an animal as having more of this general mind capacity also tended to judge that the animal was less edible ($r = -.42$, $p < .001$); judge that it was more morally wrong to eat the

animal ($r = .80, p < .001$); and judge that they would feel more bad about eating the animal ($r = .77, p < .001$; Bastian et al., 2012). Ang et. al. (2019) also claimed to have used the mental capacities scale by Bastian et. al. (2012) in their findings, and to have found that people tend to perceive meat animals as having a general mind capacity. Moreover, Bastian et. al. (2012) created two other mind attribution scales that included additional mental states beyond those used by Gray et. al., and found that these scales had high internal reliability (Cronbach's alpha $> .80$) when used to rate the minds of cows and sheep, both meat animals.

Motivated Mind Denial and Motivated Moral Discounting of Minds

If people generally believe it is more morally wrong to eat animals that have a greater general mind capacity, then it may be possible to influence their moral concern about eating animals by persuading them that the animals they eat have a greater general capacity for cognition than they think. Animal welfare advocates, like PETA and the Humane Society have attempted such mind perception interventions by teaching that the animals people eat are intelligent, social, and emotional beings (Piazza & Loughnan, 2016).

However, such mind perception interventions may not be effective since there is evidence that people sometimes respond to mind perception information by either denying that animals have minds, or accepting that animals have more complex minds, but not using this mind perception information when making moral judgments (Bastian et al., 2012; Piazza & Loughnan, 2016).

Drawing on cognitive dissonance theory (Festinger, 1957), Bastian et al. (2012) suggest that when people begin to judge that eating meat is logically inconsistent with their moral concerns about animals, like holding negative attitudes about causing things to suffer, they experience cognitive dissonance, a negative affective state. To reduce this cognitive dissonance, they argue that people tend to engage in mind denial or come to believe that the meat animal has lower mental capacities overall, including the capacity to suffer (Bastian, 2012). In their study on mind denial, Bastian et al. (2012) found that describing sheep and cows as food (e.g., that they will be slaughtered and used for food in the future), compared to not emphasizing their status as meat animals (e.g., that they will spend their time with conspecifics eating grass in their field) caused participants to attribute less mind to them. This suggests that reminding people that the animals they eat are harmed in order to eat them causes people to deny them minds.

Moreover, Piazza and Loughnan (2016) found that people can be persuaded that meat animals have minds but seem to disregard or not use their beliefs about the mental capacities of animals when they judge how morally wrong it is for them to eat meat. Piazza and Loughnan found that after people read that pigs are more intelligent than dogs, they tend to believe that the pigs are more intelligent than dogs and they tend to increase reports of moral concern about eating pigs (e.g., judged wrongness of eating pigs, feelings of guilt about eating pigs, and badness for eating pigs), but they only increase reported moral concern from the imagined perspective of a hypothetical stranger when they were asked about that person's pig eating behavior (i.e., other-oriented

condition) and not when asked to report their own moral concern about their own pig eating behavior (i.e., “self-relevant” condition; p. 17). For the other-oriented condition, participants read about a hypothetical stranger called “John” who likes to eat bacon, and they answered how they thought John would morally judge and feel guilty about eating pig meat (Piazza and Loughnan, 2016, p. 871).

Piazza and Loughnan (2016) suggested that when moral judgments and related feelings of guilt about meat-eating become personal or self-relevant, people may still be persuaded that meat animals are more intelligent, but do not use this increased mind perception (i.e., perceived intelligence) in the animal when determining their moral concern about them. They argued that this calls into doubt the efficacy of mind perception interventions, like when PETA, the Humane Society, and other animal welfare advocates attempt to persuade people to eat less meat by offering evidence that the animals they eat have more intelligent minds than they thought (Piazza and Loughnan, 2016).

Piazza and Loughnan (2016) frame the disregard for animal minds as not using the mind perception information when forming moral judgments. However, it is also possible that they use the mind perception information but discount its moral relevance when determining their moral concern about eating meat. They may, for example, still take into account the suffering of meat animals, but adopt other beliefs, like rationalizations, that make the minds of meat animals have less influence over their moral judgments about eating meat. Such a view would be consistent with the TDM, which

predicts that moral judgments about eating animals depends on other factors besides the suffering of the meat animal; it also depends on whether one perceives the mind of the meat eater to intentionally damage the meat animal when they eat meat (Schein & Gray, 2018). It is possible therefore that people may discount the moral relevance of animal minds when judging how wrong it is to eat those animals by rationalizing that they did not intend to damage the animal or make it suffer when they eat them.

There are also some problems with the study by Piazza and Loughnan (2016) that may influence their findings. For example, while Piazza and Loughnan (2016) do specifically ask about how guilty and bad people feel for themselves eating meat, they do not specifically ask people to report their moral judgments about themselves eating meat or how they imagine John would make moral judgments about himself eating meat. Thus, it is possible that people may not discount the moral relevance of pig intelligence when making specific moral judgments about themselves and others eating meat.

Piazza and Loughnan (2016) also did not investigate whether discounting the moral relevance of pig intelligence corresponds to a reduction in intentions to eat meat. Thus, it is possible that morally discounting pig intelligence when reporting less moral concern about eating pigs may not influence one's intentions to eat pig meat. It is also possible that framing mind perception interventions with respect to hypothetical strangers (versus oneself), as Piazza and Loughnan did when asking people to imagine how John would morally judge eating meat, may help increase behavioral intentions to reduce eating meat, perhaps by helping people save face.

Self-Affirmation Theory

Piazza and Loughnan (2016) suggest that one possible explanation for why people ignore the minds of meat animals when asked to make moral judgments about themselves eating meat is that moral questions about oneself threaten one's "positive view of the self" (p. 868), while similar moral questions about others or from their imagined perspective do not. However, they do not specifically describe or test this potential mechanism.

Self-affirmation theory holds that people tend to defensively ignore, reject, and rationalize information (Cohen & Sherman, 2014) that threatens their sense of "self-worth" (Critcher & Dunning, 2015, p. 3) in terms of perceiving themselves as "good, powerful, and stable" (Steele & Liu, 1983, p. 17) individuals, and in particular, their sense of self-integrity, or sense of themselves as adequately "moral and adaptive" (Steele & Spencer, 1992, p. 345). According to Cohen and Sherman (2014), self-integrity is "a sense of global self-efficacy, an image of oneself as able to control important adaptive and moral outcomes in one's life" (p. 336). Cohen and Sherman emphasize that the motive to defend one's self-integrity does not require a specific or fixed self-concept, or one that maximizes self-worth when one evaluates their self-concept; rather it is flexible to different self-concepts but aims to restore some sense of sufficient or adequate self-worth.

Self-affirmation theory assumes that people defensively change their attitudes and behaviors in ways that prevent the loss of self-integrity and self-worth but are not

motivated to prevent perceived logical inconsistencies between their attitudes and behaviors when those inconsistencies do not cause them to feel inadequate (Steele & Liu, 1983). If people tend to disregard pig intelligence information when making moral judgments about themselves because they are defending their self-integrity, then buffering this self-integrity should obviate the need to defensively disregard mind perception information about meat animals, and consequently, people should take their perceptions of pig intelligence into account when making moral judgments about their own pig eating behavior and in forming feelings of guilt based on those moral judgments. One way to increase self-integrity before encountering a moral question that threatens the self is to antecedently affirm the self.

Steele and Liu (1983) define self-affirmations as “thoughts and actions that affirm an important aspect of the self-concept” (p. 6). According to Cohen and Sherman (2014), “self-affirmation is an act that demonstrates one’s adequacy” (p. 337). One common self-affirmation method is to rate one’s values and then write an essay about one’s most personally important value (Cohen & Sherman, 2014; Critcher & Dunning, 2015; Epton et al., 2015). Self-affirmations broaden the self-concept and reduce the relative impact of the threatened aspect of self-integrity when evaluating one’s self-worth (Critcher & Dunning, 2015).

Self-affirmation interventions have been found to decrease people’s tendency to ignore, deny, and rationalize information that threatens their self-integrity and sense of self-worth, including health information (Epton et al., 2015; D. A. K. Sherman et al.,

2000; D. K. Sherman & Cohen, 2002). It is plausible that health information may threaten one's sense of self-integrity. Perceiving oneself as unhealthy may reduce one's sense that they are adequately powerful or effective at controlling their lives. In accordance with a harm-centric theory of morality, like TDM (Schein & Gray, 2018), unhealthy behaviors may also be perceived as immoral if one is perceived as intentionally harming oneself or others through those behaviors. Thus, it is plausible that information that one's behavior decreases one's health may reduce one's self-integrity. To reduce this threat, people may ignore, deny, or rationalize threatening health information when deciding how to behave.

In one study, Sherman et al. (2000) found evidence that self-affirmations reduce people's tendency to ignore threatening health information in the context of caffeine consumption. They found that after women read a scientific article about how caffeine consumption increases the risk of fibrocystic disease and breast cancer, female coffee drinkers who self-affirmed were more likely to accept the threatening health information as true and more likely to intend to reduce their consumption of caffeine than those who did not self-affirm (Sherman et al., 2000). In this study, self-affirmations involved ranking the importance of five values ("social, political, religious, theoretical, aesthetic"; Sherman et al., 2000, p. 1049) and then rating a series of 10 pairs of statements, where one statement in each pair related to their highest-ranked value and the other statement related to a different value. Those who did not self-affirm also ranked the same five values, but then rated a different series of 10 pairs of statements, where one statement in each pair was related to their lowest-ranked value and the other statement was related to

another value (Sherman et al., 2000). Statements were rated on a scale from 1 to 4, where higher ratings indicated greater agreement with the statement. In the self-affirmation condition, the sum of ratings for the statements about the highest-ranked value was used as an indicator of support for the highest-ranked value (Sherman et al., 2000). In the non-self-affirmation condition, the sum of ratings for the statements associated with the lowest-ranked value was used as an indicator of support for the lowest-ranked value (Sherman et al., 2000). As expected, Sherman et al. found that the sum of ratings in the self-affirmation condition was larger than the non-self-affirmation condition. Moreover, while self-affirmations increased coffee drinkers' belief that there is a link between caffeine consumption and fibrocystic disease, self-affirmations did not influence non-coffee drinkers' beliefs about this link, presumably because the information did not threaten their sense of self-integrity as a healthy, effective person (Sherman et al., 2000).

In this study, Sherman et al. (2000) also found evidence that threats to self-integrity and self-worth are not always associated with negative affect. Self-affirmations did increase how positively people felt about themselves (a sense of self-worth) but did not influence the mood of participants (Sherman et al., 2000). Moreover, mood and self-worth were not significantly correlated (Sherman et al., 2000). This suggests that threats to self-worth do not necessarily induce negative moods, and that alleviating those threats via self-affirmations do not necessarily increase mood.

In another study, Sherman et al. (2000) found evidence that self-affirmations reduced defensive rationalizations related to risk perception of contracting HIV and

actual health behaviors of buying condoms. College students who self-affirmed before watching an educational video about how young adults contracted HIV through unprotected sex were more likely to report that they were at risk for contracting HIV and more likely to buy condoms at the end of the experiment than those who did not self-affirm (Sherman et al., 2000). In this study, participants self-affirmed by ranking 11 values and personal characteristics (including “athletics, artistic skills, creativity, relations with friends/family, and physical attractiveness”) and then writing an essay on their highest ranked value for 5 minutes (Sherman et al., 2000, p. 1053). The essay asked participants to write both about why they thought the value was important to them and a description of a time when they thought the value was very important to them (Sherman et al., 2000). Participants who did not self-affirm ranked the same values and personal characteristics but wrote an essay about their “ninth most important value” and “why the value might be important to the average student” (Sherman et al., 2000, p. 1053).

In a meta-analysis of studies on the relationship between self-affirmation and health behavior change, Epton et al. (2015) found that doing self-affirmations prior to threatening health information had small positive effect sizes on message acceptance ($d=.17$), intentions for health behaviors ($d=.14$), and health behaviors ($d=.32$). The vast majority of the studies (90%) they reviewed used value affirmations as self-affirmation interventions, and they found that studies which used a values essay task to self-affirm had higher effect sizes on behavior change (Epton et al., 2015). Many of the studies they

reviewed related to the unhealthy consumption of food, alcohol, or caffeine (Epton et al., 2015).

Self-affirmations have also been found to reduce moral concern for certain violations of social norms framed as less harmful (Mooijman & Dijk, 2015). In one study on moral judgments about instances of incest and bestiality framed to lack harm, Mooijman and Dijk (2015) found that self-affirmations reduced moral condemnation for these instances of bestiality and incest. In the case of incest, participants judged whether it was morally wrong for siblings to consensually have sex with each other only once and while preventing pregnancy (Mooijman & Dijk, 2015). In the case of bestiality, participants judged whether it is “morally wrong” for a man to have sex with a dead chicken he bought and then ate (Mooijman & Dijk, 2015, p. 4).

In this study, the self-affirmation procedure involved all participants ranking six values (“science, business, art, social, politics and religion”; Mooijman & Dijk, 2015, p. 3) by its personal importance according to the Allport-Vernon-Lindsey Study of Values (AVL; Allport et al., 1960). Then those in the self-affirming condition completed an AVL subscale for that value, choosing between 10 pairs of statements, where each pair had a statement reflecting their highest-ranked value and a statement reflecting one of the other five values (Mooijman & Dijk, 2015). Similarly, those in the non-self-affirmation condition completed an AVL subscale, choosing between 10 pairs of statements, where each pair had a statement reflecting their lowest-ranked value and a statement reflecting one of the other five values (Mooijman & Dijk, 2015).

Mooijman and Dijk (2015) found that self-affirmations were mediated by negative self-emotions (e.g., “threatened, attached, miserable, dirty, and anxious”; p. 5) about the taboo behavior, but were not mediated by the emotion of disgust for the behavior. Mooijman and Dijk suggest that self-affirmations may be used to reduce moral judgments about violations of social norms, like certain taboos, that are understood as less harmful. They suggest that if adherence to the norm is viewed as central to one’s self-integrity, and the norm itself requires expressing negative moral judgments about it, then violations of this norm, even if it was not objectively causing suffering, would be threatening (Mooijman and Dijk; 2015). Thus, self-affirmations may reduce this threat and result in less adherence to the norm, including expressing negative moral judgments about its violations.

However, Mooijman and Dijk (2015) acknowledge that self-affirmations may not reduce moral judgments about taboos perceived as harmful. For example, since having sex with living animals may be perceived as more harmful to the animal than having sex with dead animals, self-affirmations may not reduce moral concern about having sex with living animals. While most people also only eat the meat of dead animals, drawing their attention to how the production of that meat involved animal suffering, may frame eating meat as harmful to animals. Thus, it remains an open question whether self-affirmations may increase moral concern about eating meat when people are reminded of the minds and potential suffering of meat animals.

Discounting the Moral Relevance of Minds through Meat-eating Rationalizations

The TDM suggests that when people learn that harm has occurred, they look for an agent that intentionally caused the harm (Schein & Gray, 2018). Thus, it is plausible that telling people that the animals they eat are intelligent, and that these animals are physically harmed on factory farms, may induce people to believe that they are intentionally causing the animals they eat to suffer. If causing intentional suffering to animals is judged morally wrong as the TDM (Schein & Gray, 2018) suggests, then such messages may threaten one's self-integrity as adequately moral. Self-affirmation theory (Cohen & Sherman, 2014) suggests that when one's self-integrity is threatened, people defensively rationalize.

There are multiple plausible ways in which people may justify or rationalize eating meat. If people adopt some kinds of rationalizations for eating meat, it may explain why they seem to discount the moral relevance of animal intelligence when making moral judgments about eating animals from their own perspective, and when reporting feelings of guilt about personally eating them. In particular, the TDM (Schein & Gray, 2018) suggests that people may adopt meat-eating rationalizations that help them deny or discount that they are intentionally harming meat animals. They may also adopt meat-eating rationalizations that may help them decide that intentionally harming meat animals is morally permissible. For example, they may think eating meat is morally permissible because eating meat is necessary for human health and to do otherwise would be intentionally harming oneself.

Piazza et al. (2015) found that people tend to rationalize their meat-eating behavior by appealing to four types of rationalizations, the 4Ns: eating meat is natural (e.g., we evolved to eat it), eating meat is necessary (e.g., we need it for our health), eating meat is normal (e.g., it is socially acceptable to eat it), and eating meat is nice (e.g. it is tasty). These beliefs may be used to target different aspects of the harm schema thought to be used for moral judgments according to the TDM (Schein & Gray, 2018).

For example, is it possible that thinking that meat is necessary for one's health reduces perceptions that a human intentionally damaged the animal when they eat it for food since it is possible that they believe they were forced to do it to preserve their health. It is also possible that believing that eating meat is tasty or part of our biological evolution similarly reduces perceived intentionality by suggesting that people are controlled by their instinctual appetites and not making choices freely.

In addition, or as an alternative, when people consider reducing their meat-eating behavior, it is plausible that they view not eating meat as unhealthy (which is related to being necessary in the 4N scale; Piazza et al., 2015), and that adopting such a strategy leads to self-harm, which itself may be judged as immoral by harm-centric theories of moral judgment, like the TDM (Schein & Gray, 2018). It is possible that people weigh such self-harm against the harm they caused to animals by eating meat, and then judge it is less morally wrong to eat meat. It is also possible that people judge that it is less morally wrong to eat meat, even while accepting that by eating meat they are intentionally causing animals to suffer. Thus, it is possible that people view self-defense of their own

health and the prevention of their own suffering as an exception to the general rule that intentionally harming others is morally wrong. Alternatively, it is possible that people view themselves as they would another targeted person and view the prohibition against self-harm as an application of the prohibition against intentionally harming anyone.

The Present Study

In this study, I replicate and extend a study by Piazza and Loughnan (2016, Study 3) to test why people seem to discount the moral relevance of pig intelligence when judging how morally wrong it is for them to eat pigs. The TDM suggests that people may rationalize that they are not acting immoral when they indirectly harm others, including pigs, by denying that they are intentionally harming them (Schein & Gray, 2018).

Moreover, when people learn that they are or may be violating their moral values, self-affirmation theory suggests that people become motivated to defend their self-integrity, or sense that they are an adequately moral and effective person, and that this may involve rationalizing or justifying their behaviors, including changing their attitudes and beliefs about those behaviors (Steele & Lui, 1983; Steele & Spencer, 1992). In addition, self-affirmations have been found to influence moral judgments (Mooijmand & Dijk, 2015). So, I extend the study to understand whether framing pigs as more intelligent than dogs causes people to rationalize that they are not morally responsible for eating them because they are not intentionally harming them, and if so, whether they are motivated to rationalize in this way by a need to defend their self-integrity.

I extend the study with two rationalization belief measures in order to test whether framing pigs as more intelligent than dogs causes people to rationalize that they are not morally responsible for eating pigs because they (the humans) are not intentionally harming pigs. To test whether people rationalize that they are not morally responsible for indirectly harming pigs by eating them because they did not intend the harmful action of eating pig meat, I ask participants to rate their agreement with the common rationalizations for eating meat – that eating meat is natural, necessary, normal, and nice (the 4Ns; Piazza et al., 2015). It is logically possible that when one believes that eating meat is natural or necessary, that one is arguing that one did not intend to eat meat, since it may suggest that one eats meat instinctually or without choice. I also ask participants to indicate the extent to which they believe they would be intentionally causing pigs to suffer if they were to eat pig meat in the future. I do this to explore whether people are rationalizing that they are not morally responsible for harming pigs by eating them because they are not intending pigs to experience the harmful outcome of suffering.

In addition, I extend the study by having participants either self-affirm or not self-affirm (by doing nothing) at the beginning of the study before they learn about pig intelligence and before making moral judgments about eating pig meat. I do this to test whether people morally discount their perceptions of pig intelligence when making moral judgments about personally eating pig meat because they are defending their sense of self-integrity, or sense of self as adequately moral and effective (Cohen & Sherman, 2014). Self-affirmation theory predicts that self-affirmations reduce defensive

rationalizations (Critcher & Dunning, 2015; D. K. Sherman & Cohen, 2002). I expect that people who self-affirm will be less likely to support the aforementioned rationalization beliefs for eating meat (Critcher & Dunning, 2015; Piazza et al., 2015). And I expect that if people are defending their sense of self-integrity when asked whether it is morally wrong to eat pigs, and when asked whether they feel guilty and bad about it, then having them complete a self-affirmation task before being asked to reflect on the morality of eating pigs should reduce their defensiveness about eating them and restore their use of pig intelligence information when determining their moral concern for eating pigs in terms of judgments of immorality and feelings of guilt about eating pigs, as well as intentions to eat less pig meat.

I also extend the study by asking people to answer another item which more explicitly measures how morally wrong they judge it is for them or the hypothetical stranger to personally eat pig meat. I expect it to be highly correlated with existing measures of moral judgments and feelings of guilt from the replicated study (Piazza & Loughnan, 2016, Study 3).

To explore the extent to which people discount the moral relevance of pig intelligence in terms of behavioral intentions to reduce eating pig meat, I also extend the study by asking participants to report how often they have consumed different kinds of meat, including pig meat, in the past and how often they plan to consume those kinds of meats in the future.

To test whether pig intelligence represents a general intelligence, including the capacity to suffer, I ask participants to rate the extent to which they believe pigs can experience several cognitive states related to suffering, including feelings of pain, fear, boredom, frustration, and loneliness. Since perceptions of intelligence-related mental capacities in animals have been found to be positively related with sentience-related mental capacities in animals (Bastian et al., 2012, Study 3; Loughnan et al., 2010), I expect perceived intelligence to be positively correlated with the perceived capacity for pigs to suffer.

To check whether my self-affirmation manipulation worked, I ask participants to complete measures of momentary self-worth (Critcher & Dunning, 2015) and self-integrity (Sherman et al., 2009). Finally, to better contextualize interpreting our study, I ask participants to answer demographic questions about themselves.

By understanding what motivates people to discount the moral relevance of information about animal minds when making moral judgments about eating animals, animal welfare advocates may be able to design more effective mind perception interventions for meat animals. If people are morally discounting the minds of meat animals because they are trying to defend their sense of self-integrity, then self-affirmation tasks may restore the efficacy of mind perception interventions to reduce intentions to eat meat. If self-affirmation tasks restore the efficacy of mind perception interventions, then animal welfare organizations may consider modifying their mind perception interventions to incorporate self-affirmation tasks prior to learning about the

minds of meat animals. If framing moral questions in terms of other hypothetical people (e.g., John) decreases behavioral intentions to eat meat, then they may decide to design mind perception interventions which explore moral questions by asking people to imagine how hypothetical strangers would express moral concern for eating animals.

Hypotheses

The hypotheses are identified as primary or secondary hypotheses.

Replication Predictions

Given that the findings by Piazza and Loughnan (2016, Experiment 3) should replicate, I make several predictions for people who did not self-affirm (i.e., the non-self-affirmation condition). Piazza and Loughnan found that feelings of guilt about eating pigs and moral judgments about eating pigs are positively related in their moral standing scale. So, I hypothesize that people who judge it is more morally wrong to eat pigs also feel more guilty and bad about eating pigs (Hypothesis 1, Secondary). Piazza and Loughnan also found that reading that pigs are more intelligent than dogs increased perceived pig intelligence. So, I hypothesize that reading that pigs are more intelligent than dogs (i.e., high pig intelligence condition) will increase the extent to which one perceives pigs as intelligent (Hypothesis 2, Secondary). Piazza and Loughnan found that reading that pigs are more intelligent than pigs increased the moral standing of pigs from the perspective of an imagined stranger, but not from one's own perspective. So, I hypothesize that amongst those who do not self-affirm, reading that pigs are more intelligent than dogs (i.e., high pig intelligence condition) will increase moral concern for

pigs from the imagined perspective of a hypothetical stranger (i.e., the other-perspective condition) more than it will increase moral concern for pigs from the perspective of oneself (i.e., the self-perspective condition; Hypothesis 3, Secondary). Hypothesis 3 implies that people discount the moral relevance of pig intelligence when making moral judgments about eating pigs from the perspective of oneself more than they do from the perspective of others.

Extension Predictions

Piazza and Loughnan (2016) measured how people judged (or imagined John to judge) that it is *wrong* to eat pigs in general, but they did not measure whether people judged (or imagined John to judge) that it was *morally wrong* for them (or him) to personally eat pigs. It could be the case people interpret wrongness in an amoral sense (e.g., eating pigs is morally permissible but the *wrong* thing to do if you want to achieve some amoral preference, like having a skinny body) or that they hold different moral standards in general from how they would apply those moral standards to themselves. To remove these ambiguities, I hypothesize that people who judge it is more *morally wrong* to personally eat pigs also judge that it is *wrong* to eat pigs in general (Hypothesis 4, Secondary). Similarly, I hypothesize that people who imagine that others (i.e., John) would judge it is more *morally wrong* for themselves to personally eat pigs also imagine that others (i.e., John) would judge it is *wrong* to eat pigs in general (Hypothesis 5, Secondary).

People may morally rationalize harming animals because it protects their moral sense of self-worth, an aspect of their self-integrity. Self-integrity is one's sense of self-worth as an adequately moral and effective person (Cohen & Sherman, 2014; Steele & Spencer, 1992). Self-affirmation theory predicts that when people reflect on a discrepancy between their personal behaviors and moral values, such as the discrepancy between eating intelligent animals and believing that eating intelligent animals is morally wrong, they feel less self-integrity (Sherman & Cohen, 2002; Steele & Liu, 1983; Steele & Spencer, 1992). Self-affirmation theory suggests that self-integrity is a need, and people become motivated to defend or regain it (Cohen & Sherman, 2014).

Thus, I hypothesize that if people read that pigs are more intelligent than dogs (i.e., high pig intelligence condition) before they read about how pigs suffer on factory farms and before they are asked to judge whether it is wrong to eat pigs from their own perspective (i.e., the self-perspective condition), then (compared to reading that pigs are less intelligent than dogs) they should subsequently report lower feelings of self-worth (Hypothesis 6, Primary) and lower self-integrity (Hypothesis 7, Secondary). I also predict that both feelings of self-worth (Hypothesis 8, Secondary) and self-integrity (Hypothesis 9, Secondary) would have been higher had they (in the self-perspective condition) antecedently self-affirmed.

The TDM predicts that people will increase their moral concern about eating pigs if they perceive pigs as having a greater capacity to suffer (Schein & Gray, 2018). Mind perception research suggests that perceived intelligence is positively related to having a

greater capacity to suffer (Bastian et al., 2012, Study 3; Loughnan et al., 2010). Thus, it is plausible that reading that pigs have high intelligence should make it less likely that people morally discount the intelligence of pigs when determining their moral concern about eating them. So, I hypothesize that amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), reading that pigs are more intelligent than dogs (compared to reading that dogs are more intelligence than pigs) should increase the tendency that people who perceive greater pig intelligence also more strongly report that they judge eating pigs is immoral (Hypothesis 10, Secondary), that they feel guilty about eating pigs (Hypothesis 11, Secondary), and that they intend to eat less pig meat (Hypothesis 12, Secondary).

Self-affirmations should reduce defensiveness (Critcher & Dunning, 2015; Sherman & Cohen, 2002). One way people may defend their self-integrity is to discount the moral relevance of pig intelligence information. So self-affirmations should make it less likely that people morally discount the intelligence of pigs when determining their moral concern about eating them. Thus, I hypothesize that amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), self-affirmations (compared to no self-affirmation) should increase the tendency that people who perceive greater pig intelligence also more strongly report that they judge eating pigs is immoral (Hypothesis 13, Secondary), that they feel guilty about eating pigs (Hypothesis 14, Secondary), and that they intend to eat less pig meat (Hypothesis 15, Secondary).

Self-affirmation theory predicts that people may defend their self-integrity by rationalizing threatening information (Critcher & Dunning, 2015; Sherman & Cohen, 2002). So, I hypothesize that judging whether it is morally wrong to eat pigs from one's own perspective (i.e., self-perspective condition) rather from the perspective of an imagined stranger (i.e., other-perspective condition) causes one to more strongly support the 4N rationalization (Piazza et al., 2015) for eating meat (Hypothesis 16, Primary). Since self-affirmations have been found to reduce the need to defensively rationalize one's behaviors (Piazza et al., 2015), I hypothesize that people who self-affirm will be less supportive of 4N rationalizations (Hypothesis 17, Secondary).

I also hypothesize that people who more strongly endorse 4N rationalizations that eating meat is natural or necessary would also less strongly endorse the belief that if they were to eat pig meat in the future they would be intentionally causing pigs to suffer (Hypothesis 18, Secondary). This is plausible since the TDM (Schein & Gray, 2018) predicts that people will judge eating pigs as less immoral if the person eating meat did not intend to cause the meat animal suffering, 4N rationalizations for eating meat include justifications that eating meat is natural or necessary (Piazza et al., 2015), and believing that one eats meat because it is necessary or natural is logically compatible with the view that one did not intend to eat meat, but instead had no choice but to eat it, perhaps eating it from instinct. Moreover, since the TDM (Schein & Gray, 2018) predicts people will judge eating pigs is more immoral if they perceive pigs as more capable of suffering, and since people tend to perceive cognitive capacities (like pig intelligence and the capacity

to suffer) in animals as increasing together, people may tend to judge that eating pigs is more immoral if they learn that pigs are more intelligent.

Consistent with the TDM, people may tend to defensively reject the belief that they intentionally caused pigs to suffer when they eat pig meat. They may reject such beliefs in order to morally compensate for learning that pigs are more intelligent. In other words, adopting the rationalization that one does not intend to harm pigs when they eat pigs may help people discount the moral relevance of pig intelligence when determining their moral concern about eating pigs. Self-affirmation theory suggests that this defensive rationalization may be reduced by doing a self-affirmation prior to making moral judgments. Thus, I hypothesize that amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), reading that pigs are more intelligent than dogs should (compared to reading that pigs have less intelligent than dogs) decrease support for the belief that if they eat pig meat they would be intentionally causing pigs to suffer (Hypothesis 19, Primary). Moreover, I hypothesize that amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), self-affirmations (compared to no self-affirmation) should attenuate the negative effect of reading that pigs have high intelligence on one's belief that if they eat pig meat they would be intentionally causing pigs to suffer (Hypothesis 20, Primary). In other words, if people self-affirm before reading that pigs are more intelligent than dogs and before judging the morality of

eating pigs from their own perspective, then self-affirming should increase their belief that eating pigs intentionally causes pigs to suffer.

In addition, amongst participants who judged eating pig meat from their own perspective (i.e., the self-perspective condition), I predict that people who more strongly believe that they are intentionally causing pigs to suffer by eating their meat also more strongly report that they judge eating pigs is immoral (Hypothesis 21, Primary), that they feel more guilty about eating pigs (Hypothesis 22, Secondary), and that they intend to eat less pig meat (Hypothesis 23, Secondary). By reducing their belief that they are intentionally harming pigs, self-affirmations should make it less likely that people rationalize eating pigs in ways that would make the minds of pigs less morally relevant when determining their moral concern about eating them.

Finally, I test whether people tend to perceive cognitive capacities (like pig intelligence and the capacity to suffer) in animals as increasing together. Some mind perception research finds that perceiving an animal as more intelligent may be accompanied by perceiving the animal as more vulnerable (Bastian et al., 2012; Loughnan et al., 2010). Thus, I hypothesize that perceived pig intelligence is positively correlated with the perceived capacity of pigs to suffer (Hypothesis 24, Secondary).

Method

Participants

The experiment involved 320 undergraduate psychology students from a research university in the southeastern United States who completed the approximately 28-minute

survey online survey as optional and voluntary research credit for their psychology course. Like the Piazza and Loughnan study (2016, Experiment 3), participants were told that the purpose of the study was to learn “more about people's perceptions of the intellectual capacities of various animals”.

Design

I used a 2 (self-affirmation vs no self-affirmation) by 2 (high pig intelligence vs low pig intelligence) by 2 (self-perspective vs. other-perspective) between-subjects experimental design. Participants were randomly assigned to conditions at the beginning of the survey.

Materials, Procedure, and Measures

The study used the same materials and procedure as the third study in Piazza and Loughnan (2016), with several exceptions at the beginning and the end of the study. At the beginning, participants engaged in a task that either self-affirmed or did nothing. At the end, before reporting their demographic information, participants answered: an additional question about the moral wrongness of themselves eating pig meat; questions about meat-eating justifications; questions about whether eating pigs in the future would involve them intentionally or unintentionally causing suffering to pigs; questions about their current consumption of meat (using measures adapted from Piazza and Loughnan’s study); questions about whether they intend to eat pig meat in the future; questions about the extent to which they believe pigs have the capacity to suffer; and questions about their self-worth and self-integrity.

Self-Affirmation Manipulation

Like Critcher and Dunning (2015), participants in the self-affirmation condition were first asked to rank-order a set of values and skills, and then write an essay for 3 minutes about the domain and how it was meaningful in their life. I used a similar prompt as Critcher and Dunning except I excluded “Physical health” and “Religious fulfillment”. I excluded these domains because, as Critcher and Dunning note, self-affirmations which focus on a threatened domain are less effective at reducing defensiveness, and thinking about one’s religion or health may increase the threat of eating meat to one’s self-integrity. For example, eating pigs is taboo in certain religions (Szűcs et al., 2012). Moreover, maintaining health is a common justification for eating meat, and poor health may threaten one’s self-integrity in terms of lower global self-efficacy (Piazza et al., 2015).

For the self-affirmation, I used the following prompts on the same page:

“Look at the six domains listed below. Consider how important and valued each domain is in your own life. Rank order the eight domains from most important to least important. (1 = most important, 2 = second most important, ..., 6 = least important). To rank the items below, drag and drop them into the order you prefer.”

Financial success
Broad cultural awareness
Friends and family
Athletic achievement
Artistic talent
Adventure in life”

“Look back to see which domain you ranked as your most valued domain. Please take 3 minutes to write about this domain and how it is meaningful in your own life.”

Like Critcher and Dunning (2015), those who did not self-affirm in the control condition did nothing. There are several reasons for this approach to a control condition for self-affirmations in my study. Firstly, it permits a replication of the pig intelligence study by Piazza and Loughnan (2016, Study 3), which lacked any antecedent task. Secondly, in their notes, Critcher and Dunning (2015) point out the very act of ranking one’s values or writing an essay about one’s lowest ranked values - both of which are commonly used as control conditions (Mooijman & Dijk, 2015; Sherman et al., 2000) - may function as a self-affirmation since it may broaden the working self-concept. Moreover, writing about one’s lowest-ranked value may threaten one’s self-integrity, and so when used as a control, self-affirmations may not be reducing defensiveness as much as the control condition is increasing defensiveness. Thus, doing nothing for a control

may help reduce this potential confound. Finally, those considering using ranking and writing about values as a part of a mind perception intervention would likely want to know how self-affirmation compares to doing nothing if doing nothing is their current practice.

Perspective Manipulation

Participants either answered questions about their moral concern from the perspective of themselves (self-perspective condition) or a hypothetical person named John (e.g., other-perspective condition). Depending on the perspective condition, participants first received different instructions about reading an article about the relative intelligence of pigs and dogs. In the self-perspective, they were told to read an article excerpt whose provenance is unspecified, while in the other-perspective, they were told that John wrote a report for a college project.

(Self-Perspective Condition)

“Below is an article excerpt about the intellectual abilities of dogs and pigs. Please read the entire text. Afterwards, you will answer several questions to ensure that you have read the article carefully.”

(Other-Perspective Condition)

“For this task, we will ask you to imagine a man named John. John is working on a class project for college where he has to find out about the mental life of pigs

compared to dogs. John owns a pet dog. John also eats pigs, with bacon being his favourite food. After his search, John prepares the following paragraphs. Please read John's paragraphs carefully. Afterwards, you will answer several questions to ensure that you have read the article carefully.*reading this article will be the majority of your task. Please, read it carefully.”

Perceived Pig Intelligence Manipulation

Next participants read about the relative intelligence of dogs and pigs. The high and low pig intelligence conditions used the very similar text comparing the cognitive abilities of dogs and pigs, except in the high pig intelligence condition, pigs are framed as the more intelligent animal, while in the low pig intelligence condition, dogs are framed as the more intelligent animal.

(Low Pig Intelligence Condition)

“Pigs are somewhat smart, but they are no where near as smart as dogs. Dogs have strong capacities for identity recognition and social organization, and recognize other dogs primarily by their powerful sense of olfaction (Haupt, 2005). Dogs are widely known to be highly inquisitive, with considerable learning and problem-solving abilities (Fraser & Broom, 1990; Wood-Gush & Vestergaard, 1991). They easily learn to operate levers and switches to obtain food and water, and to adjust ambient temperature to their liking (Signoret, Baldwin, Fraser, & Hafez, 1975). Dogs have also been observed to work in collaboration to free themselves from their cages (Duchene, 2006). According to Donald Broom,

Professor of Animal Welfare at University of Cambridge Veterinary School, who has been conducting mirror reflection tests with dogs: “Dogs have the cognitive ability to be quite sophisticated. Even more so than chimpanzees and certainly more so than three-year-old humans.” Pigs do not seem to possess the ability to use mirrors in this way. After teaching dogs to control a special joystick with their snouts, researchers at Pennsylvania State University found that dogs could learn to play matching games by moving the cursor around a computer screen. The dogs demonstrated a similar capacity as chimpanzees for learning the task (Helft, 1997). By contrast, pigs failed miserably at this matching task. Like chimpanzees, dogs can exploit the knowledge of conspecifics by following them to a secret or hidden food site. This suggests that dogs might possess high level social cognitive abilities, such as visual perspective taking, which is the ability to assume what the other sees and to adjust one’s own behavior accordingly (Held, Mendl, Devereux, & Byrne, 2000, 2001). Similar studies with pigs failed to produce evidence that would suggest pigs have similar social cognitive capacities as dogs.”

(High Pig Intelligence Condition)

“Pigs are very smart. Some scientists argue that pigs are as smart as dogs, and in some ways even smarter. Pigs have strong capacities for identity recognition and social organization, and recognize other pigs primarily by their powerful sense of olfaction (Haupt, 2005). Pigs are widely known to be highly inquisitive, with

considerable learning and problem-solving abilities (Fraser & Broom, 1990; Wood-Gush & Vestergaard, 1991). They easily learn to operate levers and switches to obtain food and water, and to adjust ambient temperature to their liking (Signoret, Baldwin, Fraser, & Hafez, 1975). Pigs have also been observed to work in collaboration to free themselves from their pens (Duchene, 2006). According to Donald Broom, Professor of Animal Welfare at University of Cambridge Veterinary School, who has been conducting mirror reflection tests with pigs: “Pigs have the cognitive ability to be quite sophisticated. Even more so than chimpanzees and certainly more so than three-year-old humans.” Dogs do not seem to possess the ability to use mirrors in this way. After teaching pigs to control a special joystick with their snouts, researchers at Pennsylvania State University found that pigs could learn to play matching games by moving the cursor around a computer screen. The pigs demonstrated a similar capacity as chimpanzees for learning the task (Helft, 1997). By contrast, dogs failed miserably at this matching task. Like chimpanzees, pigs can exploit the knowledge of conspecifics by following them to a secret or hidden food site. This suggests that pigs might possess high level social cognitive abilities, such as visual perspective taking, which is the ability to assume what the other sees and to adjust one’s own behavior accordingly (Held, Mendl, Devereux, & Byrne, 2000, 2001). Similar studies with dogs have failed to produce evidence that dogs have similar social cognitive capacities as pigs.”

Then participants in both the self-perspective and other-perspective conditions were asked to write about what they read and rate the intelligence of pigs from their perspective (and not from John's perspective):

"In a sentence or two, please summarize the text you just read."

"How intelligent are pigs?" (1=Not at all intelligent, 4= Moderately intelligent, 7=Very Intelligent).

Meat-Eating Status

Then participants were asked about whether they eat meat or whether John eats pig meat:

(Self-Perspective)

"Do you eat pigs (pork, ham, or bacon)? (Yes/No)".

(Other-Perspective)

"Does John eat pork? (bacon, ham, etc). (Yes/No)"

General Moral Judgments and Personal Feelings for Eating Pigs

Then participants rated how bad and guilty they or John felt about eating pigs (0=Not at all [bad/guilty] to 100=Extremely [bad/guilty]):

(Self-Perspective Condition)

"Do you feel bad about eating pigs? I feel..."

"Do you feel guilty about eating pigs? I feel..."

(Other-Perspective Condition)

“How bad do you think John feels about eating pigs after preparing this report?

John feels...”

“How guilty do you think John feels about eating pigs after preparing this report?

John feels...”

Next, using the same 0 to 100 scales, participants read how badly society treats pigs, and were asked to rate how bad and guilty they or John would feel about how society treats pigs:

(Self-Perspective Condition)

“In our society, pigs are slaughtered for their meat, kept in solitary confinement their whole lives with hardly enough space to turn around, and oftentimes are abused by industrial farmers—for example, they are kicked, beaten, castrated, and have their tails cut off. Do you feel bad about how pigs are treated? I feel...”

“Do you feel guilty about how pigs are treated? I feel...”

(Other-Perspective Condition)

“In our society, pigs are slaughtered for their meat, kept in solitary confinement their whole lives with hardly enough space to turn around, and oftentimes are abused by industrial farmers—for example, they are kicked, beaten, castrated, and

have their tails cut off. How bad do you think John would feel about how pigs are treated, after preparing his report?”

“How guilty do you think John would feel about how pigs are treated after preparing this report?”

Then participants were asked to rate how wrong it is to eat pigs from their perspective or John’s perspective (0=Completely OK to eat; 100=Extremely wrong to eat):

(Self-Perspective Condition)

“Would you say that it is wrong to eat pigs? I feel that it is...”

(Other-Perspective Condition)

“Do you think that John would feel it is wrong to eat pigs, after preparing this report? John would feel...”

Like Piazza and Loughnan (2016), I computed a MoralStanding index by taking the mean rating for the five items (depending on the perspective condition) associated with general moral judgments and feelings of guilt about eating pigs. I also computed a FeelingsOfGuilt index by taking the mean rating of the two items (depending on the perspective condition) explicitly measuring feelings of guilt. These indices use ratings from items in both the Self-Perspective and the Other-Perspective, depending on the condition to which the participant is assigned.

Moral Judgments for Personally Eating Pigs

While Piazza and Loughnan (2016) found that the five last items had a high internal reliability (Cronbach's alpha = .93), it is possible that participants in the self-perspective condition did not interpret the last item about the wrongness of eating pigs to be specifically about the moral wrongness of themselves (or John) eating pig meat.

To remove this ambiguity, I added the following items, which use the same scale for moral wrongness as that used in general moral judgment items:

(Self-Perspective Condition)

“Would you say that it is morally wrong for you to eat pigs? I feel that is...”

(Other-Perspective Condition)

“Do you think that John would feel it is morally wrong for him to eat pigs, after preparing this report? John would feel...”

I computed a MoralWrongness index by taking the mean rating of this new item and the former item for the general wrongness of eating meat. This index uses ratings from items in both the Self-Perspective and the Other-Perspective, depending on the condition to which the participant is assigned.

Meat-Eating Rationalizations

Next, participants rated their support for meat-eating justifications using the 4N Scale (1=Strongly Disagree to 7=Strongly Agree):

“Please indicate the extent to which YOU agree or disagree with the following statements about eating meat.”

[Natural Subscale]

“It is only natural to eat meat.”

“It is unnatural to eat an all plant-based diet.”

“Our human ancestors ate meat all the time.”

“Human beings naturally crave meat.”

[Necessary Subscale]

“It is necessary to eat meat in order to be healthy.”

“You cannot get all the protein, vitamins, and minerals you need on an all plant-based diet.”

“Human beings need to eat meat.”

“A healthy diet requires at least some meat.”

[Normal Subscale]

“Not eating meat is socially unacceptable.”

“It is abnormal for humans not to eat meat.”

“Most people I know eat meat.”

“It is normal to eat meat.”

[Nice Subscale]

“Meat is delicious.”

“Meat adds so much flavor to a meal it does not make sense to leave it out.”

“The best tasting food is normally a meat-based dish (e.g., steak, chicken breast, grilled fish).”

“Meals without meat would just be bland and boring.”

To help prevent ordering effects, the item order across subscales was randomized.

I computed a 4N Endorsement index by taking the mean rating of the 4N belief items.

Intentional Suffering Rationalizations

Then, participants rated whether they would be intentionally causing pigs to suffer if they eat pig meat again (1=Strongly Disagree to 7=Strongly Agree):

“Please indicate the extent to which you agree or disagree with the following statements about eating pig meat.”

“If I eat pig meat again, I would be intentionally causing pigs to suffer.”

“If I eat pig meat again, I would be accidentally causing pigs to suffer.” (Reverse Coded)

“If I eat pig meat again, I would NOT be causing pigs to suffer.” (Reverse Coding)

“If I eat pig meat again, I would be expecting to cause pigs to suffer.”

“If I eat pig meat again, I would be freely choosing to cause pigs to suffer.”

‘If I eat pig meat again, my instincts would be forcing me to cause pigs to suffer.’

(Reverse Coded)

To help prevent ordering effects, the item order was randomized. I computed an IntentionallyCausingPigSuffering index by taking the mean value across items, while taking into account reverse coded items.

Past Meat-Eating Behavior

Next, participants indicate their meat-eating behavior within the past year (1=Never, 2=Once in a while, 3=Once a month, 4=Several times a month, 5=Once a week, 6=Several times a week, 7=Everyday).

“In the past year, how often did you eat the following foods?”

“Pork”,

“Bacon”,

“Ham”,

“Beef”,

“Steak”,

“Lamb”,

“Chicken”,

“Turkey”,

“Fish”,

“Seafood (other than fish)”

To help prevent ordering effects, the food item order was randomized.

Intentions to Eat Pig Meat

Next, participants indicate their intentions to eat meat in the future (1=Never, 2=Once in a while, 3=Once a month, 4=Several times a month, 5=Once a week, 6=Several times a week, 7=Everyday).

“In the future, how often do you plan to eat the following foods?”

“Pork”,

“Bacon”,

“Ham”,

“Beef”,

“Steak”,

“Lamb”,

“Chicken”,

“Turkey”,

“Fish”,

“Seafood (other than fish)”

To help prevent ordering effects, the food item order was randomized. I computed an IntentionToEatPigMeat index by taking the mean value across pig meat items the participant intends to eat in the future. I computed an IntentionToReduceEatingPigMeat index by taking the difference between the mean value of pig meat items the participant ate in the past and the mean value across pig meat items

the participant intends to eat in the future (where a larger number indicates greater intention to eat less pig meat).

Perceived Pig Capacity to Suffer

Then, participants rated the extent to which they believe pigs have the capacity to suffer in terms of pain, boredom, fear, frustration, and loneliness. Prior research has measured perceived animal suffering in terms of pain, boredom, and fear (Paul & Podberscek, 2000; Peden et al., 2020; Phillips & McCulloch, 2005). Animal ethicists have also suggested that animals may suffer from loneliness and a lack of liberty, and more generally, from having their desires not satisfied, such as their desire for freedom of movement when caged (Regan, 2004). Thus, animals may also be perceived to suffer from feelings of frustration when their desires are not satisfied. Items had the form “To what extent can pigs experience [pain/boredom/fear/loneliness/frustration] (1=Not at all, 7=Very much so). The item questions and scale anchors were similar to those used by Loughnan et al. (2010) to measure perceived mental capacities and mental states of animals. I computed a PigsCapacityToSuffer index by taking the mean rating across the items.

Self-Affirmation Manipulation Checks

Then, to test whether the self-affirmation manipulation increased current feelings of self-worth, participants completed the three highest loading items from the Positive Feelings of Self-Worth scale (Critcher & Dunning, 2015; 1=Not at All to 9=Extremely):

“Please rate how well each statement characterizes how you feel about

yourself right now.”

“I currently feel proud.”

“I currently feel confident.”

“Overall, I feel positively toward myself right now.”

The Positive Feelings of Self-Worth scale was used to check a very similar manipulation as the one I used in this study. To help prevent ordering effects, the item order was randomized.

Then, to test whether the self-affirmation manipulation increased a sense of self-integrity, participants completed the items from the Self-Integrity Scale, but with no intermediate anchor labels (1=Strongly disagree to 7=Strongly agree; Sherman et al., 2009):

“Please indicate the extent to which you agree or disagree with the following statements.”

“I have the ability and skills to deal with whatever comes my way.”

“I feel that I’m basically a moral person.”

“On the whole, I am a capable person.”

“I am a good person.”

“When I think about the future, I’m confident that I can meet the challenges that I will face.”

“I try to do the right thing.”

“Even though there is always room for self-improvement, I feel a sense of completeness about who I fundamentally am.”

“I am comfortable with who I am.”

To help prevent ordering effects, the item order was randomized.

Demographics

Next, participants completed demographic information about their age, race, gender, and political conservatism. For political conservatism, participants rated the following items (0=Very Liberal to 100=Very Conservative):

“In general, how liberal (left-wing) or conservative (right-wing) are you on social issues?”

“In general, how liberal (left-wing) or conservative (right-wing) are you on economic issues?”

These items have been used in other moral psychology research to measure political conservatism (Ditto et al., 2019). I computed a PoliticalConservatism index by taking the mean value of these two ratings. To help prevent ordering effects, the item order was randomized.

Debrief

Participants were debriefed about the deception that the article they read was always about pigs and not dogs. Participants were given a chance to exclude their data from being used in the study during the debriefing.

Results

Exclusions

Of the 320 participants who completed the survey, only 195 participants (about 61%) were included in the final analysis. Participants were excluded from analysis if they: potentially were exposed to the survey multiple times by stopping and restarting the survey in different browser sessions (58 participants; 18%); failed to summarize either pig or dog intelligence (51 participants, 16%); indicated that they or John did not eat pig meat (24 participants; 8%); refused to give permission to use their data during the debriefing (22 participants; 7%); failed to write a self-affirmation in the self-affirmation condition (3 participants; 1%); or admitted they took the survey more than once (2 participants; 1%). Some of the aforementioned excluded participants were capable of being excluded for several of the aforementioned reasons.

As noted, some participants decided to initiate but not complete the survey in the same browser session; they may have been trying to peek at the content of the survey to decide whether they would want to participate in this survey for research credits instead of another available survey experiment in the psychology research pool. When participants tried to later resume the survey in a different browser session, the survey software did not always recognize them and assigned them new random experimental conditions. Thus, these participants were excluded from analysis to prevent potential exposure to multiple experimental conditions.

Some participants were excluded because they did not adequately summarize the article they read about pig and dog intelligence. Participants were coded as having adequately summarized animal intelligence only if they indicated that the correct animal (based on their experimental condition: high or low pig intelligence) had higher cognitive capacities than the other animal, or if they indicated it had high capacities and did not indicate that the other animal had higher cognitive capacities.

Some participants were excluded because they did not complete the self-affirmation task as requested. Participants were excluded in the self-affirmation condition if they failed to write about their highest ranked domain.

Replication Prediction Results

Hypothesis 1

According to Hypothesis 1, people who judge it is more morally wrong to eat pigs also feel more guilty and bad about eating pigs. To test Hypothesis 1, using only data from participants that did not self-affirm, I computed the correlations between moral judgments about eating pigs, feelings of guilt for eating pigs, and feeling bad about eating pigs. Hypothesis 1 implies that each of these variables should be highly correlated with one another.

Amongst participants that did not self-affirm, high internal reliability was found between their moral judgments about eating pigs, feelings of guilt for eating pigs, and feeling bad about eating pigs (Cronbach's alpha = .90, N = 101). Thus, Hypothesis 1 is

supported: people who judge it is more morally wrong to eat pigs also feel more guilty and bad about eating pigs.

Hypothesis 2

According to Hypothesis 2, reading that pigs are more intelligent than dogs (i.e., high pig intelligence condition) will increase the extent to which one perceives pigs as intelligent. To test Hypothesis 2, using only data from participants that did not self-affirm, I regressed perceived pig intelligence on the pig intelligence manipulation condition (with low pig intelligence condition as the control) and perspective condition (with the other-perspective condition as control). In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
perceived_pig_intelligence ~  
    pig_intelligence_condition * self_perspective_condition
```

Hypothesis 2 implies a positive main effect for reading that pigs are more intelligent than dogs on perceived pig intelligence.

Amongst participants who did not self-affirm, reading that pigs were more intelligent than dogs increased perceived pig intelligence, even when controlling for perspective (see Figure 3.1 and Table 3.1). Thus, Hypothesis 2 is supported.

Hypothesis 3

According to Hypothesis 3, amongst those who do not self-affirm, reading that pigs are more intelligent than dogs (i.e., high pig intelligence condition) will increase moral concern for pigs from the imagined perspective of a hypothetical stranger (i.e., the

other-perspective condition) more than it will increase moral concern for pigs from the perspective of oneself (i.e., the self-perspective condition).

To test Hypothesis 3, using only data from participants that did not self-affirm, I regressed moral concern as it was measured in Piazza and Loughnan (2016, Experiment 3) - what the researchers called the moral standing of pigs, which they computed as the average of all general moral judgment and personal feeling items about eating pigs - on the pig intelligence manipulation condition (with low pig intelligence condition as the control) and perspective condition (with the other-perspective condition as control). In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
moral_standing_pigs ~  
  pig_intelligence_condition * self_perspective_condition
```

Hypothesis 3 assumes that people are discounting the moral relevance of pig intelligence when determining their moral concern for pigs from their own perspective (versus John's perspective). Thus, Hypothesis 3 implies a negative interaction effect for reading that pigs are more intelligent than dogs (before evaluating the moral standing of pigs with respect to eating them) from one's personal perspective on the moral standing of pigs (with respect to eating them). In other words, the beta coefficient should be negative for the following corresponding term in R syntax:

```
(pig_intelligence_condition:self_perspective_condition)
```

Amongst participants who did not self-affirm, there is an interaction between the pig intelligence condition and the perspective condition on the moral standing of pigs (see Figure 3.2 and Table 3.2). Amongst those who reported the moral standing of pigs from the perspective of John, reading that pigs are more intelligent than dogs (versus reading that pigs were less intelligent than dogs) increased the perceived moral standing of pigs (see Figure 3.2). However, amongst those who reported the moral standing of pigs from their own perspective, reading that pigs were more intelligent than dogs did not increase the moral standing of pigs (see Figure 3.2). Thus, Hypothesis 3 is supported.

Extension Prediction Results

Hypotheses 4 and 5

According to Hypothesis 4, people who judge it is more *morally wrong* to personally eat pigs will also judge that is *wrong* to eat pigs in general. According to Hypothesis 5, those who imagine that others (i.e., John) would judge it is more *morally wrong* to personally eat pigs also imagine that others (i.e., John) would judge it is *wrong* to eat pigs in general.

To test Hypotheses 4 and 5, using data across all conditions, I computed the correlation between the new item about how *morally wrong* it is to personally eat meat (either from the perspective of oneself or John) with the old item of how *wrong* it is in general to eat meat (from one's own perspective or another). Hypotheses 4 and 5 imply that there are strong correlations between general wrongness and moral wrongness, both from the self-oriented perspective and from the imagined perspective of John.

People who judge that it wrong to eat pigs also judge that it is morally wrong for them to personally eat pig meat ($r(91) = 0.86, p < .001$). Thus, Hypothesis 4 is supported. People who think that John would judge that it is wrong to eat pigs also think that John would judge that it is morally wrong for him to personally eat pig meat ($r(100) = 0.89, p < .001$). Thus, Hypothesis 5 is supported.

Hypotheses 6, 7, 8, and 9

According to Hypotheses 6 and 7, reading that pigs are more intelligent than dogs (i.e., high pig intelligence condition) before judging whether it is wrong to eat pigs from one's own perspective (i.e., the self-perspective condition) should (compared to reading that pigs are less intelligent than dogs) lower feelings of self-worth (Hypothesis 6) and lower self-integrity (Hypothesis 7). According to Hypotheses 8 and 9, self-affirming should increase feelings of self-worth (Hypothesis 8) and self-integrity (Hypothesis 9).

To test Hypotheses 6 and 8 using only data from the self-perspective condition, I regressed feelings of self-worth on the self-affirmation condition (with no self-affirmation as the control) and pig intelligence manipulation condition (with low pig intelligence condition as the control). In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
self_worth ~  
self_affirmation_condition * pig_intelligence_condition
```

To test Hypotheses 7 and 9, I regressed self-integrity using the same predictors. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
self_integrity ~  
    self_affirmation_condition * pig_intelligence_condition
```

Hypothesis 6 implies a positive main effect of reading that pigs are more intelligent than dogs (i.e., the high pig-intelligence condition) on self-worth. Hypothesis 7 implies a positive main effect of reading that pigs are more intelligent than dogs (i.e., the high pig-intelligence condition) on self-integrity. Hypothesis 8 implies a positive main effect of doing a self-affirmation on self-worth. Hypothesis 9 implies a positive main effect of doing a self-affirmation on self-integrity.

Amongst people in the self-perspective condition, no negative main effects were found on self-integrity or self-worth for reading that pigs were more intelligent than dogs. Instead, positive main effects were found (see Figures 3.3 and 3.5, and Tables 3.3 and 3.4). Thus, I failed to find sufficient support for Hypotheses 6 and 7, which is unexpected.

No statistically significant main effects were found for self-affirmations on self-esteem or self-integrity, although both beta coefficients were in the expected direction and the beta-coefficient for self-integrity was marginally significant ($p < .10$; see Figures 3.3 and 3.4, and Tables 3.3 and 3.4). Moreover, the model for self-esteem was not reach

statistical significance for an alpha of 0.05. Thus, I failed to find sufficient support for Hypotheses 8 and 9, which is unexpected.

Moreover, an interaction effect was found on self-integrity between the self-affirmation condition and the pig intelligence condition. Reading that pigs are more intelligent than dogs appears to increase self-integrity when one does not self-affirm, but does not appear to influence self-integrity when one self-affirms (see Figure 3.4).

Moreover, self-affirming does not appear to change self-integrity when pigs are framed as having low or high intelligence compared to dogs (see Figure 3.4). However, the 95% confidence intervals of mean self-integrity between those that do not self-affirm in the high pig intelligence condition and those that do self-affirm in the high pig intelligence condition only marginally overlap (CI = (5.83, 6.40) vs. CI = (5.01, 5.86) respectively). This suggests that self-affirming in the high pig intelligence condition may reduce self-integrity. If this is the case, then Hypothesis 9 would be false.

Hypotheses 10, 11, 12, 13, 14, and 15

According to Hypotheses 10, 11, and 12, amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), reading that pigs are more intelligent than dogs (compared to reading that dogs are more intelligence than pigs) should increase the tendency that people who perceive greater pig intelligence also more strongly report that they judge eating pigs is immoral (Hypothesis 10), that they feel guilty about eating pigs (Hypothesis 11), and that they intend to eat less pig meat (Hypothesis 12).

According to Hypotheses 13, 14, and 15, amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), self-affirmations (compared to no self-affirmation) should increase the tendency that people who perceive greater pig intelligence also more strongly report that they judge eating pigs is immoral (Hypothesis 13), that they feel guilty about eating pigs (Hypothesis 14), and that they intend to eat less pig meat (Hypothesis 15).

To test Hypotheses 10, 11, 12, 13, 14, and 15, using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), I regressed judgments of immorality (using the MoralWrongness index) on the self-affirmation condition (with no self-affirmation as the control), pig intelligence manipulation condition (with low pig intelligence condition as the control) and perceived pig intelligence. In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
eating_pigs_is_judged_immoral ~  
    self_affirmation_condition * pig_intelligence_condition *  
    perceived_pig_intelligence
```

Hypothesis 10 assumes that reading that pigs are more intelligent than dogs reduces the extent that people discount the moral relevance of pig intelligence when judging the immorality of eating pigs from their own perspective. Thus, Hypothesis 10 implies a positive two-way interaction effect for reading that pigs are more intelligent than dogs and perceiving pigs as more intelligent when controlling for whether one self-

affirms. In other words, the beta coefficient should be positive for the following corresponding term in R syntax:

```
(pig_intelligence_condition:perceived_pig_intelligence)
```

Since it is possible that pig intelligence does not become salient and morally relevant until one thinks about one's own intelligence through a self-affirmation, Hypothesis 13 may also be supported if there is a three-way positive interaction effect between affirming the self, reading that pigs are more intelligent than dogs, and perceiving more intelligence in pigs. In other words, Hypothesis 10 may also be supported if the beta coefficient is positive for the following corresponding term in R syntax:

```
(self_affirmation_condition: pig_intelligence_condition  
:perceived_pig_intelligence)
```

Similar analyses are conducted for Hypothesis 11, where feelings of guilt about eating pigs is predicted (using the FeelingsOfGuilt index), and for Hypothesis 12, where intentions to reduce eating pig meat is predicted (using the IntentionToReduceEatingPigMeat index).

Hypothesis 13 assumes that self-affirmation reduces the extent that people discount the moral relevance of pig intelligence when judging the immorality of eating pigs from their own perspective. Thus, Hypothesis 13 implies a positive two-way interaction effect for affirming the self and perceiving pigs as more intelligent when

controlling for whether one reads that pigs are more intelligent than dogs. In other words, the beta coefficient should be positive for the following corresponding term in R syntax:

```
(self_affirmation_condition:perceived_pig_intelligence)
```

Since it is possible that self-affirmations do not become salient until one is defensive, and since reading that pigs are more intelligent than dogs may increase defensiveness, Hypothesis 13 may also be supported if there is a three-way positive interaction effect between affirming the self, reading that pigs are more intelligent than dogs, and perceiving more intelligence in pigs. In other words, Hypothesis 13 may also be supported if the beta coefficient is positive for the following corresponding term in R syntax:

```
(self_affirmation_condition: pig_intelligence_condition  
:perceived_pig_intelligence)
```

Similar analyses are conducted for Hypothesis 14, where feelings of guilt about eating pigs is predicted (using the FeelingsOfGuilt index), and for Hypothesis 15, where intentions to reduce eating pig meat is predicted (using the IntentionToReduceEatingPigMeat index).

Amongst those who judged whether it is wrong to eat pigs from their own perspective, there is no evidence of any interaction effect between reading that pigs are more intelligent than dogs and perceived pig intelligence on moral concern in terms of moral wrongness for eating pigs, guilt for eating pigs, and intentions to reduce eating pig meat (see Tables 3.5 to 3.7). None of the linear regression models had statistically

significant interaction effects, and two of the models lacked statistical significance. Thus, I failed to find sufficient support for Hypotheses 10, 11 or 13.

Amongst those who judged whether it is wrong to eat pigs from their own perspective, there is no evidence of any interaction effect between self-affirming and perceived pig intelligence on moral concern in terms of moral wrongness for eating pigs, guilt for eating pigs, and intentions to reduce eating pig meat (see Tables 3.5 to 3.7). None of the linear regression models had statistically significant interaction effects, and two of the models lacked statistical significance. Thus, I failed to find sufficient support for Hypotheses 13, 14 or 15.

Hypotheses 16 and 17

According to Hypothesis 16, judging whether it is morally wrong to eat pigs from one's own perspective (i.e., self-perspective condition) rather from the perspective of an imagined stranger (i.e., other-perspective condition) causes one to more strongly support the 4N rationalization for eating meat. According to Hypothesis 17, people who self-affirm will be less supportive of 4N rationalizations.

To test Hypotheses 16 and 17, using data across all conditions, I regressed endorsement for 4N rationalization for eating meat on the self-affirmation condition (with no self-affirmation as the control) and perspective condition (with the other-perspective condition as control). In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

endorse_four_n_rationalizations ~ self_affirmation_condition *
self_perspective_condition

Hypothesis 16 implies a positive main effect for determining moral concern about eating meat from one's own perspective (versus from an imagined stranger's perspective) on one's endorsement of 4N rationalizations for eating meat. Hypothesis 17 implies a negative main effect for self-affirmations on one's endorsement of 4N rationalizations for eating meat.

Using data across all conditions, no statistically significant main effects were found for perspective or self-affirmation on endorsement of 4N justifications of eating meat, and the model itself was not statistically significant (see Figure 3.5 and Table 3.8). Thus, I failed to find sufficient support for Hypotheses 16 or 17.

Hypothesis 18

According to Hypothesis 18, people who more strongly endorse 4N rationalizations that eating meat is natural or necessary would also less strongly endorse the belief that if they were to eat pig meat in the future, they would be intentionally causing pigs to suffer. To test Hypothesis 18, using data across all conditions, I computed the correlation between one's endorsement for 4N rationalization that eating meat is natural or necessary (by taking the mean of these kinds of 4N items) and the extent to which one believes that if they were to eat pig meat in the future, they would be intentionally causing pigs to suffer. Hypothesis 18 implies that the correlation is negative.

Using data across all conditions, there is a weak negative correlation between one's endorsement for 4N rationalization that eating meat is natural or necessary (by taking the mean of these 4N items) and the extent to which one believes that if they were to eat pig meat in the future they would be intentionally causing pigs to suffer ($r(193) = -0.25, p < .001$). Thus, Hypothesis 18 is supported.

Hypotheses 19 and 20

According to Hypothesis 19, amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), reading that pigs are more intelligent than dogs (compared to reading that dogs are more intelligent than pigs) should have negative main effect on one's belief that if they eat pig meat they would be intentionally causing pigs to suffer. According to Hypothesis 20, amongst those who are considering whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), self-affirmations (compared to no self-affirmation) should attenuate the negative effect of reading that pigs have high intelligence on one's belief that if they eat pig meat they would be intentionally causing pigs to suffer. To test Hypotheses 19 and 20, using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), I regressed the extent to which people believe that they are intentionally causing pigs to suffer by eating their meat on the self-affirmation condition (with no self-affirmation as the control) and the pig intelligence condition (with the low

pig intelligence condition as control). In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
believes_eating_pig_meat_intends_suffering_to_pigs ~  
  self_affirmation_condition * pig_intelligence_condition
```

Hypothesis 20 assumes that self-affirmation reduces the extent that people defensively discount the moral relevance of pig intelligence when judging how wrong it is to eat pigs from their own perspective by endorsing the rationalization that they are not intending to cause pigs to suffer when they eat pig meat again. Hypothesis 20 implies that self-affirming increases the extent to which people believe that eating pig meat intentionally causes pigs to suffer when threatened with information that pigs have high intelligence. So, Hypothesis 20 implies a positive two-way interaction effect for affirming the self and reading that pigs are more intelligent than dogs on believing that they are intending to cause pigs to suffer when they eat pig meat. In other words, the beta coefficient should be positive for the following corresponding term in R syntax:

```
(self_affirmation_condition:pig_intelligence_condition)
```

Using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), no statistically significant evidence was found of a positive interaction effect on believing that eating pigs intentionally causes them to suffer between doing a self-affirmation and reading that pigs are more intelligent than dogs (see Figure 3.6 and Table 3.9). Thus, insufficient evidence was found for Hypothesis 20. While the coefficient and the model were

statistically insignificant, the interaction's beta coefficient was in the predicted positive direction. Moreover, while statistically insignificant, the beta coefficient for pig intelligence was negative as expected (see Table 3.9).

Hypotheses 21, 22, and 23

According to Hypotheses 21, 22, and 23, amongst participants who judged eating pig meat from their own perspective (i.e., the self-perspective condition), people who more strongly believe that they are intentionally causing pigs to suffer by eating their meat also more strongly report that they judge eating pigs is immoral (Hypothesis 21), that they feel more guilty about eating pigs (Hypothesis 22), and that they intend to eat less pig meat (Hypothesis 23).

To test Hypothesis 21, using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), I regressed judgments of immorality (using the MoralWrongness index) on the extent to which people believe that they are intentionally causing pigs to suffer by eating their meat, the self-affirmation condition (with no self-affirmation as the control) and the pig intelligence condition (with the low pig intelligence condition as control). In R syntax (where the star indicates the inclusion of all lower-order interactions and main predictors), the model looks like this:

```
eating_pigs_is_judged_immoral ~  
  self_affirmation_condition * pig_intelligence_condition *  
  believes_eating_pig_meat_intends_suffering_to_pigs
```

If Hypothesis 21 is supported and moral judgments, as the TDM (Schein & Gray, 2018) suggests, depend on perceived intentional harm, then believing that eating pig meat intentionally causes suffering to pigs should increase judgments of immorality about eating pig meat, and this should occur even when one antecedently self-affirms or reads that pigs have more intelligence. In other words, the beta coefficient should be positive for the following corresponding term in R syntax:

`believes_eating_pig_meat_intends_suffering_to_pigs.`

Similar analyses are conducted for Hypothesis 22, where feelings of guilt about eating pigs is predicted (using FeelingsOfGuilt index), and for Hypothesis 23, where intentions to reduce eating pig meat is predicted (using the IntentionToReduceEatingPigMeat index).

Using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), only a marginal main effect was found on the judged moral wrongness of eating pigs for believing that eating pig meat intentionally causes pigs to suffer ($p = 0.069$; see Table 3.10). Thus, insufficient evidence was found for Hypothesis 21.

Furthermore, no statistically significant evidence was found for a negative interaction effect on the judged moral wrongness of eating pigs between doing a self-affirmation and believing that eating pigs intentionally causes them to suffer (see Table 3.10). This suggests that self-affirming – even if it altered beliefs about whether eating pig meat intentionally causes pigs to suffer - did not alter how those beliefs were used in

making moral judgments about eating pigs. In other words, even if self-affirmations make one recognize that eating meat means they are intentionally harming pigs, it does not appear to make those beliefs used in making moral judgments, and thus does not appear to induce any rationalization through using those beliefs.

However, a positive interaction effect was found on the moral wrongness of eating pigs between doing a self-affirmation and framing pigs as more intelligent than dogs (see Table 3.10). This suggests that self-affirmation may make pig intelligence morally relevant, but perhaps for reasons other than beliefs about whether eating meat intentionally harming animals. And a marginal main effect was found on the judged moral wrongness of eating pigs for doing a self-affirmation ($p = 0.057$; see Table 3.10). This suggests that self-affirmation may increase moral concern, but perhaps for reasons other than beliefs about the intelligence of animals and whether eating meat intentionally harming animals.

Using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), no statistically significant evidence was found that believing that eating pig meat intentionally causes pigs to suffer increases the feelings of guilt for eating pigs (see Table 3.11). However, while statistically insignificant, the beta coefficient was in the expected positive direction. Thus, insufficient evidence was found for Hypotheses 22. Moreover, no statistically significant evidence was found for a negative interaction effect on feelings of

guilt about eating pigs between doing a self-affirmation and believing that eating pigs intentionally causes them to suffer (see Table 3.11).

Using only data from participants that considered whether it is morally wrong to eat pigs from their own perspective (i.e., self-perspective condition), only a marginal main effect exists on intentions to reduce eating pig meat for believing that eating pig meat intentionally causes pigs to suffer (see Table 3.12). Thus, insufficient evidence was found for Hypothesis 23. Moreover, no evidence was found of a negative interaction effect on intentions to reduce eating pig meat between doing a self-affirmation and believing that eating pigs intentionally causes them to suffer (see Table 3.12). In addition, the model did not reach statistical significance.

Hypothesis 24

According to Hypothesis 24, perceived pig intelligence is positively correlated with the perceived capacity of pigs to suffer. To test Hypothesis 24, using data across all conditions, I compute the correlation between the PigsCapacityToSuffer index and perceived pig intelligence. Hypothesis 24 implies that the correlation is positive.

Using data across all conditions, perceived pig intelligence and perceived suffering is weakly positively correlated ($r(193) = 0.25, p < .001$). Thus, Hypothesis 24 is supported.

Discussion

Perspective of moral judgment influences whether pig intelligence increases the moral standing of pigs

This study replicated Piazza and Loughnan's finding that framing pigs as more intelligent than dogs increases the moral status of pigs in terms of moral judgments and feelings of guilt about eating pigs when judging from the perspective of others but from one's own perspective (Hypothesis 3; Piazza & Loughnan, 2016, Study 3). Moreover, like Piazza and Loughnan's study, it found that the items for moral status had high internal reliability (Hypothesis 1) and that framing pigs as more (compared to less) intelligent than dogs increased perceived intelligence in pigs (Hypothesis 2). It broadens these findings from paid survey respondents in the U.K. to undergraduate students in the U.S. who earned course credit for their participation. This suggests that people in both the United States and U.K. are discounting the moral relevance of pig intelligence when making moral judgments about eating pigs.

Self-affirmations did not increase self-integrity or self-worth, but may decrease self-integrity when followed by moral judgments about eating meat

Using a self-affirmation manipulation paradigm, this study failed to find evidence that people are discounting the moral relevance of eating pigs by trying to defend their sense of self as a moral and effective person. I expected that framing pigs as more intelligent would decrease participants' feelings of self-worth and self-integrity (Hypotheses 6 and 7) and that the self-affirmation manipulation used in this study would

increase feelings of self-worth and self-integrity (Hypotheses 8 and 9), but none of these expectations were found to obtain. Moreover, the interaction between pig intelligence and self-affirmation on self-integrity, and the marginally overlapping confidence intervals for self-integrity in the high pig intelligence condition between self-affirming and not self-affirming (see Figure 3.4 and Table 3.4), suggests that the self-affirmation manipulation did not buffer one's sense of self as a moral person but made it worse for those who later read that pigs are more intelligent than dogs. In this case, self-affirmations may have induced expectations of a being a moral person, which was later violated when confronted with information that pigs have high intelligence and suffer on factory farms. Noticing this hypocrisy may have decreased one's self-integrity. In particular, it may have decreased the boost in self-integrity that appears to have followed thinking about pigs as more intelligent than dogs.

When people read that pigs are more intelligent than dogs, they may have given greater thought to the hierarchy of intelligence between humans and animals. This may have caused them to consider themselves more intelligent than pigs, and more generally, it may have caused them to feel superior to pigs along multiple dimensions, including being more effective and moral than pigs. Thus, without drawing attention to one's self-concept more broadly in relation to other humans, specifically considering human superiority over animals may have boosted their self-integrity. Alternatively, reading the pigs are more intelligent than dogs and that they suffer on factory farms may have caused people to feel defensive and react by thinking about alternative ways in which they are

morally adequate. Reading various justifications for eating meat may have increased this defensiveness and reactance.

However, since I did not measure one's self-integrity directly after the self-affirmation manipulation and directly after reading about pig intelligence and pig suffering on factory farms, it is unclear whether self-integrity first increased after the self-affirmation and then decreased after reading about pig intelligence and how pigs suffered on factory farms. Since I did not measure attitudes of human superiority of animals, I cannot test whether the boost in self-integrity after reading about pig intelligence was due to speciesism instead of defensiveness about being a moral person.

Reading about the intelligence of pigs was not found to increase the moral relevance of pig intelligence beliefs

Framing pigs as more intelligent than dogs was not found to change the way people use their pig intelligence beliefs when determining their moral concern about eating pigs from their own perspective. While the TDM predicts that people will increase their moral concern about harming animals when they are told that those animals have a greater capacity to suffer and mind perception research predicts that suffering may depend on intelligence, I failed to find sufficient evidence that framing pigs as more intelligent than dogs strengthens the relationship between perceived pig intelligence and moral concern in terms of judging it morally wrong to eat pigs, feeling guilty about eating pigs, or intending to reduce eating pig meat (Hypotheses 10, 11, and 12).

However, the beta coefficients for the interactions between perceived intelligence and the pig intelligence condition were in the expected positive direction for all three forms of moral concern (see Tables 3.5 to 3.7). While failing to reach statistical significance, these positive interaction coefficients indicate that reading that pigs are more intelligent than dogs (versus reading that pigs are less intelligent than dogs) may make perceived pig intelligence information morally relevant (i.e., salient and used) when judging the moral wrongness about eating pigs, feeling guilt about eating pigs, and intending to reduce eating pig meat.

Self-affirming was not found to increase the moral relevance of perceived pig intelligence

Self-affirmations were not found to change the way people use their pig intelligence beliefs when determining their moral concern about eating pigs from their own perspective (Hypotheses 13, 14, and 15). Self-affirming did not increase the relationship between perceived pig intelligence and moral concern about eating pigs in terms of moral judgments, feelings of guilt, or intentions to reduce eating pig meat (see Tables 3.5 to 3.7).

Defensive rationalizations about eating meat does not increase when making moral judgments from the self-perspective and does not decrease with self-affirmations

The study found no evidence that making moral judgments from the self-perspective increases defensiveness of the self for eating pigs in terms of rationalizations, or that such rationalizations decrease by self-affirming. In particular, no increase in

defensiveness was found in terms of endorsements of 4N justifications of eating meat (Hypotheses 16). Moreover, self-affirmations were not found to decrease defensiveness about eating meat in terms of endorsements of 4N justifications (Hypothesis 17).

Defensive rationalizations that one did not intentionally harm meat animals is not increased by framing meat animals as more intelligent and does not decrease with self-affirmations

The study also did not find statistically significant evidence of defensiveness about eating pigs in terms of rationalizing that one is not intentionally harming pigs when one eats them. In particular, amongst participants in the self-perspective, reading that pigs are more intelligent than dogs did not seem to cause people to reduce their belief that that eating pig meat intentionally causes pigs to suffer (Hypothesis 19). However, the beta coefficient for the pig intelligence condition was in the expected negative direction (see Table 3.9). Moreover, self-affirming did not seem to attenuate the aforementioned rationalization (Hypothesis 20). However, the beta coefficient was in the expected positive direction, which attenuates the aforementioned rationalization (see Table 3.9).

Rationalizing that eating meat is natural or necessary supports the rationalization that one does not intentionally harm animals when eating meat

While self-affirmations were not found to reduce defensiveness, some of the underlying theoretical assumptions of the TDM seem to hold with respect to rationalizations. For example, rationalizing in accordance with the TDM predicts that people would rationalize that eating meat is not morally wrong by believing that they did

not intend to harm the animal by eating meat. One way people can do this is by thinking they had no other choice but to eat meat and could not intend otherwise, which would occur if they endorsed the 4N beliefs that eating meat is natural or necessary. If they believe that they are not intending a harmful action (e.g., eating pig meat), then they should also not believe that they are intending the harmful consequence of that action (e.g., the suffering of pigs). Thus, as expected, this study found that people who justify eating meat because they think it is natural and necessary are also less likely to believe that if they were to eat pig meat in the future, they would be intentionally causing pigs to suffer (Hypothesis 18).

Perceived intelligence is weakly related to perceived capacity to suffer in pigs

Moreover, the TDM predicts that it is more wrong to intentionally harm animals which are perceived to be more vulnerable, where vulnerability is perceived as the capacity to suffer. While Piazza and Loughnan measured how people perceive pig intelligence, they did not measure how people perceive the capacity of pigs to suffer from pain or negative emotions. This study found that perceived pig intelligence and perceived pig suffering were weakly positively correlated (Hypothesis 24), which was weaker than expected. Thus, it might be easier for people to maintain the same level of perceived suffering in pigs after learning that pigs are more intelligent than dogs, and in this way maintain a similar level of moral concern about eating pigs in the self-perspective condition.

Moral judgments of wrongness do not always need the moral language of “moral”

This study also found that moral judgment items using the language of “morally wrong” to personally eat pigs was highly correlated with items using the language of merely “wrong” to eat pigs (which also lacks specifying the wrong doer), and so it ruled out the possibility that people were mistaking moral wrongs for amoral wrongs in the moral judgments about eating pigs (Hypotheses 4 and 5). It also ruled out the possibility that people were judging wrongness in ways that did not apply to the agent associated with the perspective condition (the participant or John).

Limitations

There are many reasons why the study may have failed to find evidence that framing pigs as more intelligent than dogs induced rationalizing that one did not intentionally harm pigs (in terms of endorsing 4N beliefs and the belief that eating pig meat involves intentionally causing pigs to suffer). For example, people only read text about how pigs were more intelligent than dogs and how pigs were mistreated on factory farms; perhaps if they had watched videos that sought to demonstrate pig intelligence in experimental studies and videos of pigs suffering on factory farms, participants may have felt more cognitive dissonance and been more likely to cope with it by adopting defensive rationalizations.

It is also possible that when people are asked to consider how John would make moral judgments about eating pigs, they invoke different cultural understandings of pigs than when they are asked to reflect on their own behavior eating pigs. This may account

for some of the difference in moral concern between the other perspective condition and the self-perspective condition when pigs were framed as more intelligent than dogs. For example, since the participants were students at a university in the southeastern United States, and some people hunt pigs for food and many people eat pigs in the southeastern United States, participants may have invoked cultural values for eating pigs when making moral judgments from their own perspective but may not have invoked those cultural values for eating pigs when they imagined how another person, like John, would have made moral judgments about eating pigs. Moreover, had the imagined person in the other-perspective condition been someone that the participant thought had more similar cultural values to themselves – perhaps one of the participant’s friends or family members – it is possible that no difference in moral concern may have been found between the self-perspective and other-perspective conditions.

Similarly, it is possible that the lack of defensiveness may be due to cultural differences in other morally relevant beliefs about pigs. It is possible that participants invoked different beliefs about the relationship between humans and pigs when they thought about moral judgments from their own perspective than when they thought about pigs from the perspective of another person. For example, it is possible that participants thought of pigs as more harmful (e.g., feral pigs as pests) or less friendly to humans (e.g., cute piglets at a petting zoo) when they made moral judgments from their own perspective than when they imagined pigs from the perspective of John, and it is possible that such beliefs may have influenced moral judgments. There is some evidence that

harmfulness predicts moral judgements above and beyond attributions of mental capacities (Piazza et al., 2014). Perhaps when people made moral judgments from their own perspective, they thought more about their own experiences with pigs than when they imagined how John would morally judge pigs, and this additional processing may have invoked different cultural beliefs and attitudes based on personal experiences.

That the study did not find evidence that people are ignoring pig intelligence information because they are trying to defend their self-integrity may be due to multiple reasons including low sample size, the particular self-affirmation manipulation used, that self-worth and self-esteem were not measured directly after the self-affirmation manipulation, and the peculiar historical events underway during data collection. The self-affirmation manipulation may have failed because it included “Friends and Family” as a value for reflection and participants were asked to complete the survey during the COVID-19 pandemic in 2020, a time when many participants may be feeling socially isolated. Thus, reflecting on how one values friends and family may remind participants of their unmet social needs and their low self-efficacy to perform daily activities during the pandemic, and this may have negated any potential increase in self-worth or self-integrity.

In addition, the study only considered moral concern about eating pigs. While framing pigs as more intelligent than dogs may have increased perceived intelligence in pigs and induced greater moral judgments from the perspective of an imagined stranger, framing other animals that people eat (e.g., oysters and insects) as having greater

intelligence may not increase their perceived intelligence or induce greater moral concern for them.

Finally, the study did not examine the link between moral judgments and moral behaviors. Some research suggests that the relationship between moral judgments and moral behavior is modest (Schwitzgebel & Rust, 2014). Schwitzgebel and Rust (2014) found moral attitudes about eating the meat of mammals, including beef and pork, only modestly positively correlated with the self-reported behavior of eating the meat of mammals amongst university professors ($r = 0.24, p < 0.001$). They found that more than 25% of both ethicists, non-ethicist philosophers, and non-philosopher faculty reported eating the “meat of mammals,” such as pig meat, during their “last evening meal,” despite having reported that it is “somewhat morally bad” to do so (Schwitzgebel & Rust, 2014, p. 308). So, it is possible that participants, during the experiment, expressed a moral judgment that eating meat is morally wrong, but then later chose to eat pig meat. Perhaps, they forgot their expressed moral concern or chose to eat pig meat despite those moral concerns.

Future Research

Future research should test whether self-integrity and feelings of self-esteem increase before participants are asked to reflect on the eating of animals. Since self-integrity is defined in both moral (i.e., being a morally adequate person) and non-moral terms (i.e., being an effective person) and this study found that self-integrity decreased after a self-affirmation that preceded being confronted with morally threatening

information, additional research is also needed to test whether self-affirmation manipulations may buffer perceived effectiveness without buffering perceived moral status.

Tables and Figures

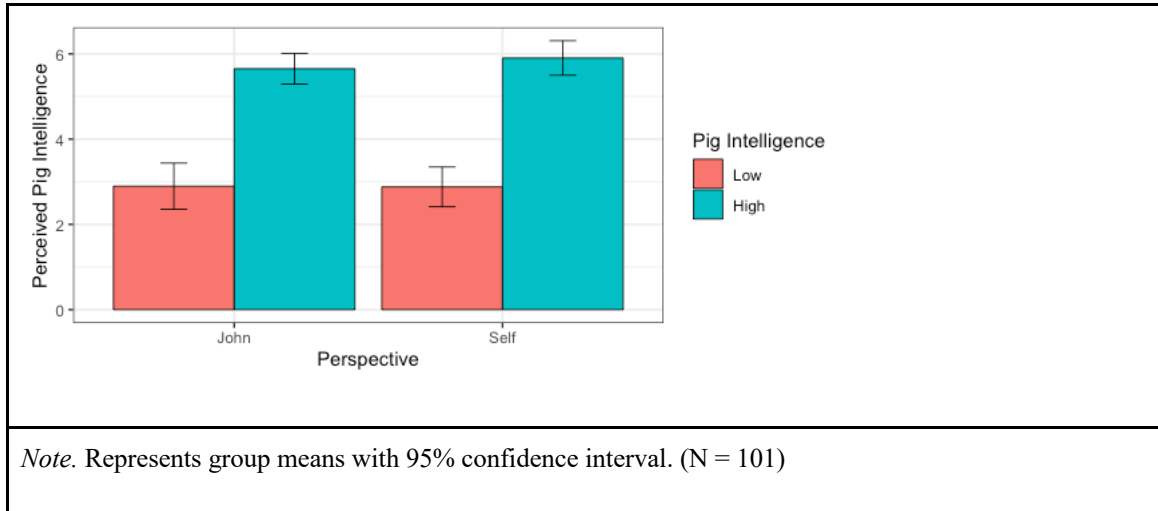


Figure 3.1

Perceived Pig Intelligence without Self-Affirmation by Manipulation Conditions

Table 3.1

Regression for Hypothesis 2

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
perceived pig intelligence	pig intelligence condition	1.514 (0.167)***
	perspective condition	-0.009 (0.169)
	pig intelligence condition * perspective condition	0.147 (0.248)
	intercept	-0.731 (0.115)***

Note. pig intelligence condition: 1=high, 0=low. perspective condition: 1=self, 0=other. Coefficients are standardized. Adj. $R^2 = 0.618$. $F(3, 97) = 54.861$. Model p-value < .001. VIF < 3 for all predictors. AIC=195.42. BIC = 208.5.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

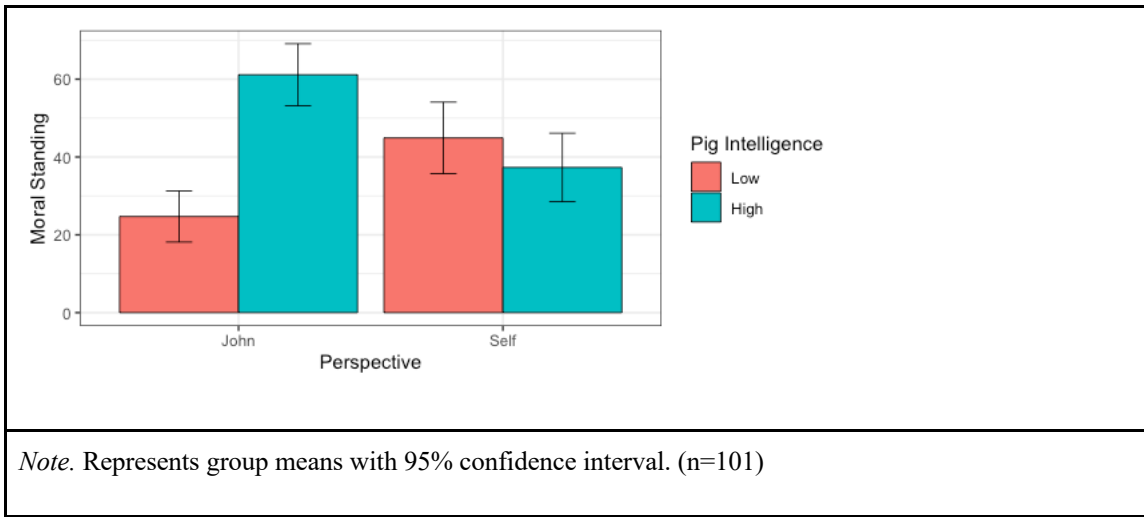


Figure 3.2

Moral Standing without Self-Affirmation by Manipulation Conditions

Table 3.2

Regression for Hypothesis 3

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
moral standing of pigs	pig intelligence condition	1.535 (0.224)***
	perspective condition	0.851 (0.226)***
	pig intelligence condition * perspective condition	-1.855 (0.332)***
	intercept	-0.761 (0.154)***

Note. pig intelligence condition: 1=high, 0=low. perspective condition: 1=self, 0=other. Coefficients are standardized. Adj. $R^2 = 0.314$. $F(3, 97) = 16.277$. Model p-value < .001. VIF < 3 for all predictors. AIC=254.44. BIC = 267.52.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

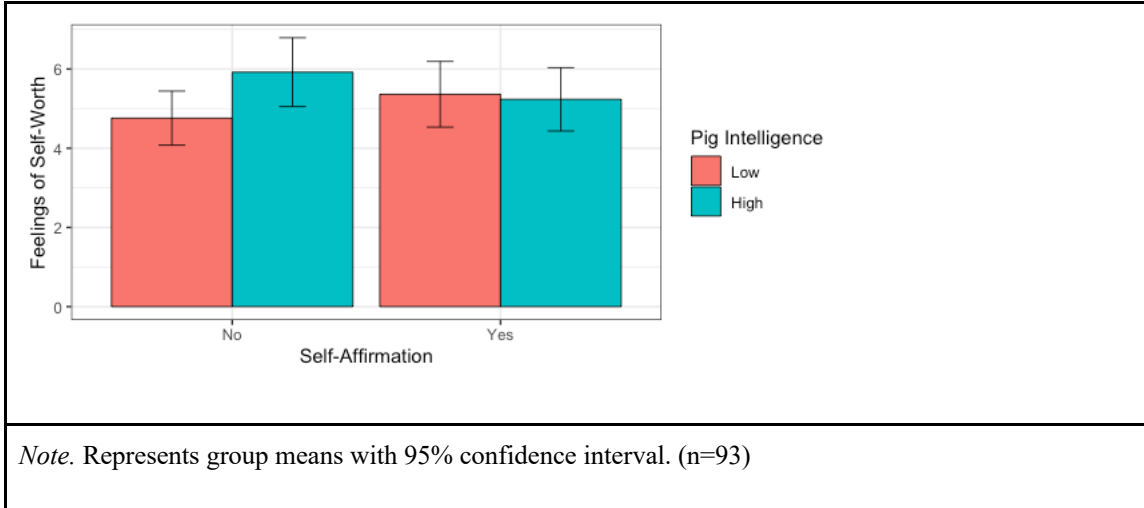


Figure 3.3

Feelings of Self-Worth in Self Perspective by Manipulation Conditions

Table 3.3

Regression for Hypotheses 6 and 8

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
feelings of self-worth	pig intelligence condition	0.624 (0.294)*
	self-affirmation condition	0.324 (0.287)
	pig intelligence condition * self-affirmation condition	-0.692 (0.412)#
	intercept	-0.287 (0.198)

Note. Pig intelligence condition: 1=high, 0=low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. $R^2 = 0.017$. $F(3, 89) = 1.526$. Model p -value $> .05$. VIF < 3.1 for all predictors. AIC=268.25. BIC = 280.92.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

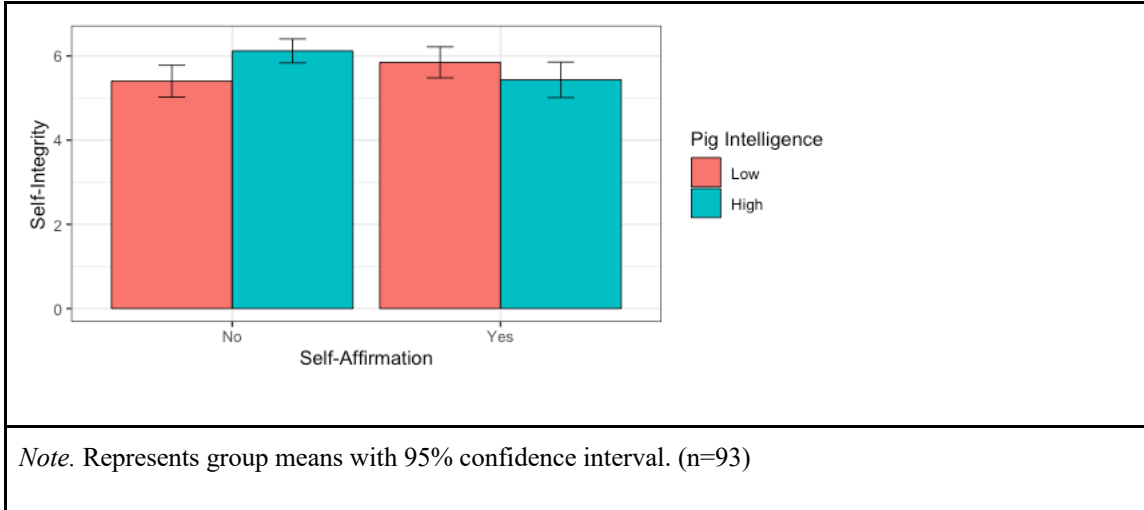


Figure 3.4

Self-Integrity in Self Perspective by Manipulation Conditions

Table 3.4

Regression for Hypotheses 7 and 9

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
self-integrity	pig intelligence condition	0.796 (0.284)**
	self-affirmation condition	0.496 (0.277)#
	pig intelligence condition * self-affirmation condition	-1.256 (0.399)**
	intercept	-0.312 (0.192)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = Yes, 0 = No. Coefficients are standardized. Adj. $R^2 = 0.078$. $F(3, 89) = 3.602$. Model p -value < .05. VIF < 3.1 for all predictors. AIC=262.26. BIC = 274.92.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.5

Regression for Hypotheses 10 and 13

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
moral wrongness eating pigs	pig intelligence condition	-1.318 (0.560)*
	self-affirmation condition	-0.489 (0.478)
	perceived pig intelligence	0.158 (0.324)
	pig intelligence condition * self-affirmation condition	1.097 (0.747)
	pig intelligence condition * perceived pig intelligence	0.598 (0.555)
	self-affirmation condition * perceived pig intelligence	-0.052 (0.480)
	pig intelligence condition * self-affirmation condition * perceived pig intelligence	-0.028 (0.741)
	intercept	0.362 (0.301)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. $R^2 = 0.051$. $F(7, 85) = 1.711$. Model p-value > .05. VIF < 12 for all predictors. AIC=268.65. BIC = 291.45.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.6

Regression for Hypotheses 11 and 14

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
guilt eating pigs	pig intelligence condition	-0.806 (0.551)
	self-affirmation condition	-0.199 (0.471)
	perceived pig intelligence	-0.073 (0.319)
	pig intelligence condition * self-affirmation condition	0.285 (0.736)
	pig intelligence condition * perceived pig intelligence	0.631 (0.547)
	self-affirmation condition * perceived pig intelligence	-0.025 (0.473)
	pig intelligence condition * self-affirmation condition * perceived pig intelligence	0.574 (0.730)
	intercept	0.047 (0.296)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. $R^2 = 0.080$. $F(7, 85) = 2.147$. Model p-value < .05. VIF < 12 for all predictors. AIC=265.77. BIC = 288.57.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.7

Regression for Hypotheses 12 and 15

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
intention reduce eating pig meat	pig intelligence condition	-0.976 (0.579)#
	self-affirmation condition	0.316 (0.494)
	perceived pig intelligence	0.284 (0.335)
	pig intelligence condition * self-affirmation condition	0.517 (0.772)
	pig intelligence condition * perceived pig intelligence	0.428 (0.574)
	self-affirmation condition * perceived pig intelligence	-0.071 (0.496)
	pig intelligence condition * self-affirmation condition * perceived pig intelligence	-0.554 (0.766)
	intercept	0.112 (0.311)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. $R^2 = -0.013$. $F(7, 85) = 0.829$. Model p-value > .05. VIF < 12 for all predictors. AIC=274.77. BIC = 297.57.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

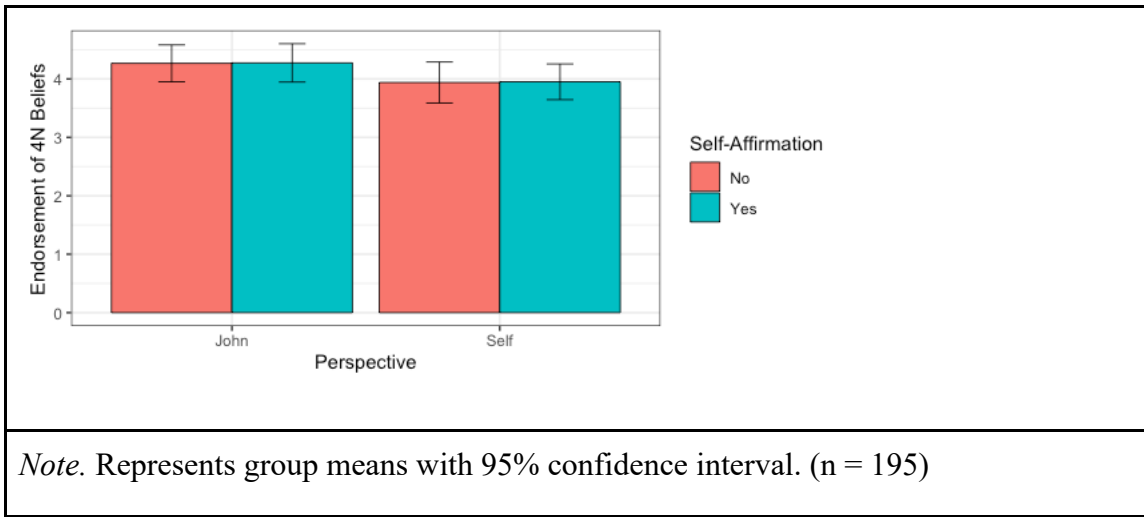


Figure 3.5

Endorsement of 4N Beliefs by Manipulation Conditions

Table 3.8

Regression for Hypotheses 16 and 17

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
endorsement of 4N beliefs	self-affirmation condition	0.006 (0.198)
	perspective condition	-0.290 (0.199)
	self-affirmation condition * perspective condition	0.004 (0.286)
	intercept	0.134 (0.134)

Note. Self-affirmation condition: 1 = yes, 0 = no. Perspective condition: 1 = self, 0 = other. Coefficients are standardized. Adj. $R^2 = 0.005$. $F(3, 191) = 1.349$. Model p -value $> .05$. VIF < 3 for all predictors. AIC = 558.29. BIC = 574.66.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

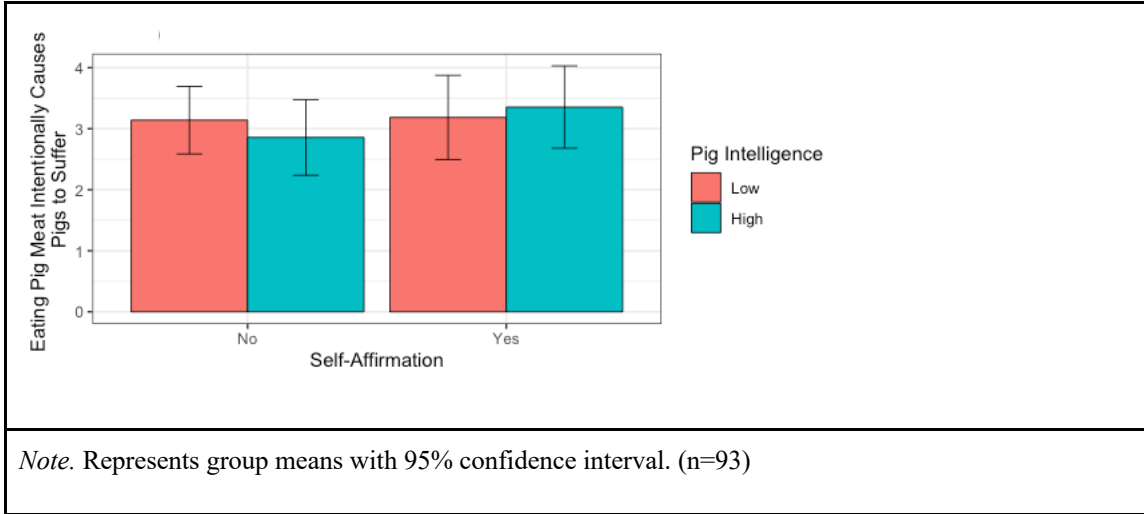


Figure 3.6

Eating Pig Meat Intentionally Causes Pigs to Suffer in Self Perspective by Manipulation Conditions

Table 3.9

Regression for Hypotheses 19 and 20

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
eating pig meat intentionally causes pigs to suffer	pig intelligence condition	-0.193 (0.299)
	self-affirmation condition	0.031 (0.292)
	pig intelligence condition * self-affirmation condition	0.309 (0.420)
	intercept	-0.002 (0.202)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. $R^2 = -0.018$. $F(3, 89) = 0.430$. Model p-value > .05. VIF < 3.1 for all predictors. AIC=271.58. BIC = 284.24.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.10

Regression for Hypothesis 21

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
moral wrongness eating pigs	pig intelligence condition	-0.418 (0.260)
	self-affirmation condition	-0.485 (0.251)#
	eating pig meat intentionally causes pigs to suffer	0.357 (0.194)#
	pig intelligence condition * self-affirmation condition	0.725 (0.364)*
	pig intelligence condition * eating pig meat intentionally causes pigs to suffer	0.065 (0.285)
	self-affirmation condition * eating pig meat intentionally causes pigs to suffer	0.140 (0.258)
	pig intelligence condition * self-affirmation condition * eating pig meat intentionally causes pigs to suffer	0.084 (0.371)
	intercept	0.251 (0.173)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. R² = 0.248. F(7, 85) = 5.325. Model p-value < .001. VIF < 5.1 for all predictors. AIC=247.10. BIC = 269.89. #p < .10, *p < .05, **p < .01, ***p < .001

Table 3.11

Regression for Hypothesis 22

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
guilt eating pigs	pig intelligence condition	-0.251 (0.286)
	self-affirmation condition	-0.177 (0.276)
	eating pig meat intentionally causes pigs to suffer	0.306 (0.213)
	pig intelligence condition * self-affirmation condition	0.451 (0.401)
	pig intelligence condition * eating pig meat intentionally causes pigs to suffer	0.133 (0.314)
	self-affirmation condition * eating pig meat intentionally causes pigs to suffer	0.094 (0.284)
	pig intelligence condition * self-affirmation condition * eating pig meat intentionally causes pigs to suffer	-0.213 (0.409)
	intercept	0.099 (0.191)

Note. Pig intelligence condition: 1 = high, 0 = low. Self-affirmation condition: 1 = yes, 0 = no. Coefficients are standardized. Adj. $R^2 = 0.086$. $F(7, 85) = 2.241$. Model p-value < .05. VIF < 5.1 for all predictors. AIC= 265.16. BIC = 287.96.
$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3.12

Regression for Hypothesis 23

<u>Predicted</u>	<u>Predictor</u>	<u>β (SE)</u>
intention reduce eating pig meat	pig intelligence condition	-0.032 (0.292)
	self-affirmation condition	0.319 (0.282)
	eating pig meat intentionally causes pigs to suffer	0.400 (0.217)#
	pig intelligence condition * self-affirmation condition	-0.170 (0.408)
	pig intelligence condition * eating pig meat intentionally causes pigs to suffer	-0.0004 (0.320)
	self-affirmation condition * eating pig meat intentionally causes pigs to suffer	-0.064 (0.289)
	pig intelligence condition * self-affirmation condition * eating pig meat intentionally causes pigs to suffer	-0.295 (0.416)
	intercept	-0.088 (0.195)

Note. pig intelligence condition: 1=high, 0=low. self-affirmation condition: 1=yes, 0=no. Coefficients are standardized. Adj. R² = 0.051. F(7, 85) = 1.708. Model p-value > .05. VIF < 5.1 for all predictors. AIC=268.68. BIC = 291.47.
#p < .10, *p < .05, **p < .01, ***p < .001

CHAPTER 4

CONCLUSION

Conclusion

In this dissertation, I examined why people sometimes do not increase their moral concern for harming animals, even after learning that those animals suffered and have greater agency with which to suffer. In particular, I examined whether people sometimes use beliefs about animal agency to reduce their moral concern about indirectly harming animals (i.e., indirectly harming sea turtles by using disposable plastic straws and indirectly harming pigs by eating meat). In two experiments, I tested whether after people read alleged scientific accounts that animals have greater agency (i.e., that sea turtles have free will, and that pigs have greater intelligence in dogs) that they perceive greater agency in those animals, have less moral concern about engaging in behaviors which harm those animals (i.e., judging the harmful behavior was morally wrong, feelings of guilt for the harmful behavior, and intentions to reduce the harmful behavior), and endorse agency-related rationalizations that harming animals is not morally wrong. In particular, I test whether inducing people to believe that animals as more agentic increases rationalizing that they were not morally wrong to engage in the harmful behavior because (a) the harmed animal (i.e. sea turtles) intended an intermediate self-harming behavior (i.e. eating a plastic straw) and was at least causally responsible for

harming itself, or because (b) they (as the human harming the animal) did not intend the harmful action (i.e. believing that eating meat is necessary and natural, which suggests that they did not freely intend to eat pig meat because they had no reasonable choice but to eat meat, or perhaps had no choice at all) or the harmful outcome of animal suffering (i.e. believing that were they to eat pigs, they would not be intentionally causing pigs to suffer).

In the first experiment described in Chapter 2, I tested whether framing animals as having free will can induce the first rationalization for indirectly harming animals – that one is less morally responsible for harming animals because the harmed animal has free will and uses it to harm itself. Such a rationalization follows Bandura’s notion that people can morally disengage (i.e., reduce their perceived moral responsibility and moral concern for a harmful behavior) by diffusing perceived causal responsibility for a harmful behavior or its harmful outcomes (Bandura et al., 1996). The rationalization is also compatible with the TDM since the TDM is silent on the perceived agency of the victim and holds that the perceived immorality of a behavior decreases as one becomes less certain about whether an agent intentionally damaged a target through this behavior (Schein & Gray, 2018).

In the experiment, I find that when sea turtles are framed as having free will (compared to no framing), people tend to believe that they have greater free will. I also find that political conservatives tend to believe sea turtles have greater free will whether or not they are framed as having free will. In addition, I find that when sea turtles are

framed as having free will (compared to no framing), people tend to believe that sea turtles were more intentional in eating plastic straws and that sea turtles were more causally responsible for eating plastic straws, which suggests that people, both political conservatives and political liberals, tended to responsabilize sea turtles and hold them causally responsible for self-harm. Moreover, I find that when sea turtles are framed as having free will (compared to no framing), people tend to hold humans less causally responsible for sea turtles eating plastic straws, which suggests that framing harmed animals as having free will causes people to rationalize that they are not morally responsible for indirectly harming animals because they are less causally responsible. I also find that framing sea turtles as having free will causes political conservatives to judge that it less immoral (i.e., less bad) to use plastic straws and causes them to report that they are less likely to reduce their use of plastic straws. Thus, framing harmed animals as having free will causes both political conservatives and political liberals to responsabilize harmed animals, it appears that only political conservatives reduce their moral concern for them. However, framing sea turtles as having free will was not found to increase feelings of guilt about using plastic straws. As expected, political conservatives tended to feel less guilt about using plastic straws.

Moreover, there is some evidence that amongst political conservatives, making free will beliefs about animals salient suffices to reduce moral concern about harming animals. When sea turtles were framed as lacking free will (compared to no framing), participants (both liberals and conservatives) tended to less strongly believe that sea

turtles have free will, but amongst political conservatives, participants still believed that sea turtles were more causally responsible for eating plastic straws and more strongly intended to eat plastic straws. Moreover, amongst political conservatives, framing sea turtles as lacking free will (compared to no framing) caused them to judge that it is less bad to use plastic straws and to report that they are less likely to reduce their intentions to use plastic straws. This suggests that amongst political conservatives, making free will salient suffices to induce the responsabilization of animals and blaming animals for self-harm. Moreover, generally, it suggests conservative ideology of personal responsibility is not just used to rationalize indirectly harming humans, but also is used by conservatives to blame animals for human behaviors which indirectly harm them.

There are many limitations to this study. Firstly, it manipulated free will on an animal species whose mental capacities few people have direct knowledge or experience; free will framing may be less effective on animals whose mental capacities people have greater familiarity or stronger pre-existing beliefs. For example, it may be more difficult to convince people that oysters have free will. Secondly, the measure for moral judgments about using plastic straws uses the words “bad” and “good” instead of the words “wrong” and “right”; thus, this I may have measured non-moral judgments of badness about using plastic straws instead of moral judgments of wrongness. Thirdly, the harm examined in this study only applies to indirect harm; free will framing may have no effect or less of an effect on more directly harmful behaviors, like kicking animals. Despite these limitations, it does appear that, at least for political conservatives, framing

some animals as having free will reduces one's moral concern about indirectly harming them in terms of moral judgments and behavioral intentions, and that it causes one to responsabilize animals in ways compatible with the agency-related rationalization that humans are less wrong for harming animals because the animals harmed themselves. This suggests that the TDM (Schein & Gray, 2018) should explicitly incorporate agency beliefs about the targets of harmful actions into its model for moral judgments.

In the second experiment described in Chapter 3, I tested whether framing animals as having greater intelligence than other animals can induce the second rationalization for indirectly harming animals – that one is less morally responsible for harming animals because one did not intend the harmful action or its harmful outcome of animal suffering. This defense follows from the TDM, which predicts that people make judge an action to be less morally wrong when they perceive less intentionality in it (Schein & Gray, 2018).

In the experiment, I find that framing pigs as more intelligent than dogs (compared to the opposite framing that pigs are less intelligent than dogs), increases perceived intelligence in pigs. This replicates prior research by Piazza and Loughnan (2016, Study 3). And like Piazza and Loughnan, I find that intelligence-framing increases the judged wrongness of eating pigs from the perspective of an imagined other person, but that it does not increase the judged wrongness of eating pigs from the perspective of oneself. I also do not find sufficient evidence that framing pigs as more intelligent increases guilt for eating pigs from one's own perspective, or that it increases one's

intentions to reduce eating pig meat. This extends prior research by suggesting that people do not use beliefs about the intelligence of harmed animals when expressing moral concern in other ways besides explicit self-reported moral judgments. This is compatible with theoretical predictions that moral judgments influence guilt and guilt influences behavioral intentions.

One possibility for why people are not increasing their moral concern for eating pigs framed as intelligent is that people are defensively rationalizing that they are not morally responsible for harming pigs because they are not intending to harm them. I examined two ways to do this: (a) believing that eating pigs is necessary and natural, which suggests one is not intending to eat pigs because one has no rational choice or no choice at all but to eat pigs, and (b) denying that when one eats pig meat one is intentionally causing pigs to suffer. However, I did not find evidence that framing pigs as more intelligent increases the endorsement of either of these two beliefs or their associated agency-related rationalizations.

Piazza and Loughnan (2016, Study 3) suggested, but did not test, whether people ignored pig intelligence when reporting their moral concern because they were defending a positive sense of self, such as their self-esteem or self-worth. Self-affirmation theory holds that people are motivated to defend their self-integrity, or sense of self as an adequately moral and effective person, and it predicts that affirming the self should reduce defensive rationalizations by buffering one's self-integrity (Critcher & Dunning, 2015; D. K. Sherman & Cohen, 2002). However, I did not find that affirming the self

before expressing moral concern about eating pigs from one's own perspective increased self-integrity or positive feelings of self-worth. Moreover, self-affirmations did not attenuate the relationship between the pig intelligence manipulation and the aforementioned rationalization beliefs about intentionally harming pigs. In addition, I did not find that self-affirmation attenuated the relationship between reading that pigs were more intelligent and moral concern about pigs in terms of moral judgments of wrongness about eating pigs, feelings of guilt about eating pigs, or intentions to reduce eating pig meat. Thus, it remains plausible that people are not defensively rationalizing that they did not intentionally harm pigs when they learn or remember that pigs are very intelligent and that they suffer on factory farms; it remains plausible that they are not defending their self-integrity with such a rationalization.

One of the main limitations of these findings is that data for many of the participants in the study had to be excluded from analysis because the survey technology allowed them to start, stop, and then restart the survey again with different randomly assigned experimental conditions – effectively allowing them to preview the survey under different conditions before completing it. Another major limitation of the study is that feelings of self-worth and self-integrity were not measured directly after the self-affirmation manipulation, but after participants had been exposed to many items about moral concern and rationalizations for eating pig meat. So, it is possible that exposure to these moral judgments and rationalizations washed out any effect the self-affirmation manipulation may have had on reported feelings of self-worth and self-integrity.

Both the findings in both experiments may be due to Type 1 error in the statistical tests (Pipis, 2020). With a 5% level of confidence, 5% of the random variables (e.g., regression coefficients) in the regression models may be statistically significant due to chance (Pipis, 2020). In the second experiment, excluding intercepts, 27 multiple linear regressions comprising 166 coefficients were tested at a 5% confidence level, suggesting that about 9 coefficients may be statistically significant by chance. Moreover, at 253 correlations were tested (see Tables 2.5 to 2.30) at the 5% confidence level, suggesting that amongst these correlations, about 13 correlations may be statistically significant by chance. In the second experiment, excluding intercepts, 12 multiple linear regressions comprising 60 coefficients were tested at a 5% confidence level, suggesting that about 3 coefficients may be statistically significant by chance.

Finally, neither experiment in this dissertation measured moral behavior objectively (albeit past meat eating behavior was self-reported), so it is also important to recognize that expressing moral concern in terms of moral judgments, guilt, and behavioral intentions in the experiment may not correspond to moral behavior outside of the experiment. It is possible that people express moral concern differently in experiments than how they would express moral concern outside of experiments, and in particular, how they would express moral judgments prior to actual behaviors. For example, it is possible that people report that eating meat is morally wrong in an experiment, forget about these moral judgments, and then later eat meat. It is also possible that people who would judge that eating meat is morally wrong were they to

reflect on it, may eat meat without ever having made any antecedent moral judgments about eating meat; such people may have never reflected on how they would morally judge eating meat before participating in this experiment, and were they to have never participated, it is possible they never would engage in such moral reflection. Moreover, it is possible that even those who do routinely express moral concern prior to making a moral decision about how to behave may still choose to behave counter to their moral judgments. Even philosophers who professionally reflect on moral questions do not appear to engage in many morally relevant behaviors more frequently or more consistently with respect to their moral judgments than non-philosophers (Schwitzgebel & Rust, 2014).

Future Research

Since I failed to find rationalizations motivated by ego-defense, it makes more plausible other explanations for why pig intelligence seems to be ignored. In particular, it remains plausible that when people are making moral judgments about eating pigs from the perspective of others, they use their beliefs about pig intelligence as a proxy for their beliefs about pig sentience, including the capacity to suffer, but when people make moral judgments about themselves eating pigs, they do not use intelligence as a proxy, but instead do more detailed processing of the situation with respect to the dyadic harm schema, and focus on the sentience and suffering of the pig victim and pay less attention to attributions of pig agency, like intelligence. This perspective is supported by my finding that there was a low correlation between perceived pig intelligence (i.e., agency)

and perceived capacity for pigs to suffer (i.e., sentience). If animals are framed as having greater intelligence, but animal intelligence is morally irrelevant in making moral judgments about harming them oneself, and then it is not surprising that people would not feel any more defensive or more strongly endorse rationalizations to defend their self-integrity because the increase in perceived intelligence would not lead them to judge that what they did was any more morally wrong.

However, it is also possible that animal agency remains morally relevant for certain groups of people, like political conservatives. In this study, I did not analyze whether political conservatism may have interacted with beliefs about animal agency. Future studies should do this since amongst political conservatives, making free will salient (by framing sea turtles as having greater free will or lacking free will) was found to reduce moral concern for sea turtles. In particular, future research should test whether making pig intelligence more salient similarly causes political conservatives to express less moral concern about indirectly harming other animals, including pigs.

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