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**Moral Psychology and Politics:
Evolved Moral Intuitions and Their Links to Contemporary Political Issues**

PSY 493 Senior Thesis

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Abstract

This literature review thesis explores the evolutionary based theory of moral psychology called the Moral Foundations Theory and its innate processes that serve as factors in moral judgments regarding contemporary political issues. This thesis describes the theoretical foundations underlying the Moral Foundations approach, and then proceeds to review empirical sources on its general applicability. It then examines how the approach may be applied to political ideology, as well as the connection to the emotion of disgust. Next, the review continues to explore relations between pathogen and sexual disgust sensitivity and politics. The final section of the thesis body takes a close look at how moral foundations can be applied to climate and environmental issues. The studies reviewed also explored the impacts of framing different issues regarding the various foundations and how this may be a political tactic moving forward, further expressing the relevance of the Moral Foundations Theory. Future research should account for the wide range of political ideologies and broaden the knowledge on the cultural reach of the theory.

**Moral Psychology and Politics:
Evolved Moral Intuitions and Their links to Contemporary Political Issues**

This thesis will examine many studies relating to the Moral Foundations Theory, a theory of the nonconscious and evolutionary bases of moral judgments, originally proposed by Haidt and Joseph (2004), then further developed by Haidt (2012) and Graham et al. (2013), and how this theory is related to political views. Issues such as immigration and same-sex marriage will be explored in relation to the Moral Foundations Theory, along with a larger, more comprehensive focus on climate change and environmental issues. The emotion of disgust, which is closely tied to the Moral Foundations Theory and its evolutionary basis, is also studied in this paper to understand how evolved pathogen and sexual disgust mechanisms are related to political attitudes.

Politics is a very crucial topic because of how intertwined it is with each individual's life. There is a lot of disagreement and polarization in politics these days, therefore understanding why people hold certain views may help with progress and change in the future. The Moral Foundations Theory proposed a system of evolved predispositions that shape intuitive morality, and how those systems help shape political views in the current environment. It is important going forward to understand why people hold differing moral judgments and what may prompt these judgments. If this can be understood, then there is opportunity for change through framing issues in different ways that can help reach individuals with opposing political attitudes to view things with new perspectives. One very recent application of the Moral Foundations Theory was displayed in a study by Chan (2020) regarding the COVID-19 pandemic, that looked at which of the five foundations predicted compliance with staying-at-home, wearing a face-mask, and social distancing instructions. Chan proposed that the findings from this study provide information on how to effectively frame health instructions, a tactic that may help save lives. The Moral

Foundations Theory may be useful for productivity in politics, and for urgent matters such as health instructions and other pressing political issues with drastic consequences. This concept of framing will also be discussed later, particularly for the climate and environmental issue which is another immediate political challenge.

First this paper will introduce the Moral Foundations Theory, its connection to evolution, and disgust mechanisms, and review several studies that illustrate the generalizability of the theory. Next, I will describe studies that examined the Moral Foundations Theory and its relation to political views, including any possibilities for shifting these views. The following section describes how the theory is related to disgust, with the emotion of disgust being linked to purity, and how both pathogen and sexual disgust are linked to political ideologies and attitudes. The thesis closes with a close look at studies linking the Moral Foundations Theory to climate and environmental political views.

Moral Foundations Theory: Background and Perspective

The Moral Foundations Theory was originally suggested by Haidt and Joseph (2004) who advanced a nativist theory of intuitions that underlie moral judgments. The theory has been explained by Graham et al. (2013), and by Haidt (2012). When explaining the brain, Haidt used an analogy from Marcus (2004) that compared it to a book where the innate responses are the first chapter of development and then throughout childhood the brain is influenced by experiences and culture. The Moral Foundations Theory explores this idea of innateness through the five foundations that Haidt (2012) and colleagues proposed. Each foundation is thought to be universal but may be relied on for moral judgments at different levels within individuals. These five foundations that make up the theory are Care/harm, Fairness/cheating, Loyalty/betrayal, Authority/subversion, and Sanctity/degradation. Each one is proposed to have an evolutionary

basis and triggers that originally activated the foundation, as well as current triggers that may activate it. In addition, Haidt has proposed Liberty/oppression as a possible sixth foundation, but this thesis will not focus on that foundation.

The Care/harm foundation as described by Graham et al. (2013) and Haidt (2012) originally served the adaptive function of caring for children. The individuals who had intrinsic responses to signs of need from their children were evolutionarily favored. This explains why one of the original triggers was the suffering of one's own children. Haidt argues that the current triggers include features that distinguish children from adults, cuteness, toys, etc. This foundation is one of the two individualizing foundations, meaning that it focuses more on rights and justice for individuals. Generally, according to Haidt, people on the political left tend to rely on this foundation and the other individualizing foundation more than the binding foundations and more than conservatives, which will be explored further in this paper.

The other individualizing foundation is Fairness/cheating. Haidt and Joseph (2004) proposed that natural selection favors people who are attentive and responsive to cues for cooperation, reciprocity, and cheating. These original triggers of cooperation or selfishness shown by others served the evolutionary purpose of helping people determine opportunities for beneficial cooperation (Haidt, 2012). The current triggers for this foundation are concepts like equality and justice that are related to reciprocity and cheating interactions which are displayed through political views by the political left and right. The political left tends to view fairness as equality while the political right views it as proportionality, but overall, the fairness foundation is (on average) relied on at higher levels by the political left (Haidt).

While the Care/harm and the Fairness/cheating foundations make up the individualizing foundations, the binding foundations focus more on group cohesion and stability (Graham et al.,

2013). These foundations include Loyalty/betrayal, Authority/subversion, and Sanctity/degradation. The Loyalty/betrayal foundation is described by Graham et al. and Haidt (2012) to have helped address the adaptive challenge of forming united coalitions that would be safe from outside groups. Haidt suggested that the original triggers for this foundation were discovering who was cohesive with an individual's group and who betrayed the group. He argued that the human mind is predisposed to be tribal. In the present day, humans join sports teams for competition which activates the loyalty foundation. Haidt argued that this foundation is also more strongly activated in those on the political right, with people tending to be more nationalistic than people on the political left. Those on the left tend to favor universalism and therefore have trouble gathering voters who rely strongly on this foundation.

The next binding foundation is Authority/subversion which serves to preserve hierarchies (Graham et al., 2013; Haidt & Joseph, 2004). Haidt (2012) stated that its evolutionary function was to help people forge beneficial relationships within hierarchies, and that the original triggers were factors indicative of high and low rank. Haidt added that the current triggers are obedience, disobedience, respect, disrespect, submission, and rebellion directed at an authority figure. The authority foundation triggers can also be related to upholding or undermining traditions and institutions. Conservatives tend to be more reliant on the Authority/subversion foundation, while the political left is less disposed to hierarchies.

The final binding foundation is Sanctity/degradation, which served the adaptive purpose of keeping individuals safe from threats such as pathogens (Graham et al., 2013). The original triggers of this foundation were sensory stimuli that indicated a dangerous pathogen or toxin was nearby. Haidt (2012) suggested that the current triggers differ between cultures, with some cultures being aversive to outgroup members. Haidt argued that the Sanctity foundation is

closely related to the emotion of disgust, which allowed individuals to balance attraction to new things with fear of new things, a phenomenon called the omnivore's dilemma. Disgust was a tactic for individuals to avoid harm while still gathering the resources necessary for survival. Schaller and Park (2011) proposed that disgust is part of the "behavioral immune system" that serves to protect individuals from pathogens through certain signals. Haidt (2012) noted that disgust is important to the Sanctity/degradation foundation because by having a sense of disgust, we are able to distinguish what is sacred. Disgust has been found to be related to political conservatism, but it also can be used by the political left when discussing certain issues such as the environment, which will be explored later.

Due to how disgust has been shown to be closely related to politics and the Moral Foundations Theory, it is a large part of this paper. To give more background on disgust, Inbar and Pizarro (2016) explored the link between disgust and political views. Inbar and Pizarro described that while disgust may have evolved as a protector from pathogens and toxins, it plays a role in politics with people who have higher levels of disgust tending to have higher levels of conservatism. Inbar and Pizarro noted that exposing participants to a disgust-eliciting odor causes those people's attitudes to become more conservative. They also stated that the behavioral immune system, the mechanism thought to be responsible for promoting pathogen-protecting behaviors, has been found to be related to things like outgroup avoidance and sexual conservatism, both of which are shown in conservative ideology. Inbar and Pizarro argued that certain aspects of political ideology have origins in pathogen avoidance adaptations.

In order to explain the relationship between disgust and its links with conservative ideology, there are competing hypotheses. The one regarding out-group avoidance and pathogen disgust assumes that throughout evolutionary history, pathogens from out-group members were

dangerous. In addition, reactions to out-group members may be partly based on sexual disgust (Inbar & Pizarro, 2016). Higher levels of sexual disgust prompt sexual conservatism which could be a response to pathogen threat. Sexual conservatism may protect individuals from being exposed to diseases which is a greater risk with each new sexual partner. Having a monogamous sexual strategy may explain the support for socially conservative policies due to the avoidance of pathogen exposure that comes with these strategies. Both types of disgust, pathogen and sexual, will be explored with regards to the Moral Foundations Theory and political views later in this paper.

Due to the research on the Moral Foundations Theory and its implications for politics, there have been conflicting results on whether the theory is generalizable to various populations. A study by Davis et al. (2016) found that the relationship between conservatism and the binding foundations in Americans was stronger in white people than black people, which posed questions about generalizability. They also pointed out that religiosity tends to be higher in black Americans and religiosity has been found to be related to the binding foundations, but this association is not found as strongly in black Americans. A different study by Iurino and Saucier (2019), also assessing generalizability found evidence suggesting that the five-factor model of the Moral Foundations Theory may not be cross-culturally valid when looking at 27 countries.

In response to these studies implying that the Moral Foundations Theory may not be cross-culturally generalizable, Doğruyol, Alper, and Yilmaz (2019) assessed the Moral Foundations Questionnaire (MFQ) in various cultures, using translated measures to ensure that they could reach non-English speakers unlike some previous studies that have only used the English version. In this study, Doğruyol et al. administered the MFQ and measured the level of how much each country was WEIRD (western, educated, industrialized, rich, and democratic).

They analyzed data from 7263 participants in 30 countries. They used confirmatory factor analyses on a two factor model and a five factor model of the moral foundations questionnaire for the entire sample, and the WEIRD and non-WEIRD samples separately, as well as measurement invariance procedure.

Doğruyol et al. (2019) found that the five-factor moral foundations model had a good fit to both WEIRD and non-WEIRD samples' data and had a better fit than the two-factor model. While they did find evidence for a five-factor morality structure across WEIRD and non-WEIRD samples, some of the statements in the questionnaire varied on how related to their underlying foundation they were. For future studies, the researchers proposed analyzing how much each foundation applies to different cultural contexts.

The study by Doğruyol et al. (2019) is important because it examined how applicable the Moral Foundations Theory is to non-WEIRD cultures, which are not included as much in most of the samples for studies surrounding this topic. The general findings of this study provided some evidence of the Moral Foundations Theory not completely being limited to WEIRD cultures. As for limitations, the researchers mentioned that they used a short form of the MFQ and that participants completed this while completing other studies which could have confounding impacts. Overall, seeing as there have been conflicting views regarding the generalizability of the Moral Foundations Theory, it's important to study how applicable this theory may be because of how it's linked with politics and views on important issues.

The Moral Foundations Theory, while oftentimes applied to politics, is also studied in other contexts regarding morality. To give an example of this, Crone and Lahan (2015) examined the Moral Foundations Theory in relation to sacrificial dilemmas, an area where the theory has not been applied as much. These are moral dilemmas in which participants weigh hypothetically

harming people to save others. Crone and Lahan predicted that the Harm, Fairness, and Purity foundations would decrease the endorsement of sacrificing lives in the situations. They also predicted that endorsing the Loyalty foundation would increase the support for sacrifice because the perceived endangered individuals in the situation would be thought of as an ingroup member. They had no prediction for authority. They included a large sample that were given six dilemmas where they had to judge the moral acceptability of fatally harming someone in order to save multiple other lives and they took the MFQ.

Crone and Lahan (2015) found that both the Harm and Purity foundations were significantly negatively correlated with endorsement of sacrifice. They also found that there were no significant relations for the Fairness or Ingroup foundations and endorsement of sacrifice. However, in the follow-up analyses a regression showed that the Ingroup foundation positively predicted sacrifice endorsement. By removing any political context, these findings indicated that even with a non-ideologically divisive topic, participants displayed very different moral judgments. Moral foundations can be predictors of moral judgments even for situations that are not related to political ideology. This adds to the research on Moral Foundations Theory and how endorsements of different foundations may lead to different positions on more than just politics.

The two previous studies provided a general background on the Moral Foundations Theory and its applicability to various situations and cultures. The findings by Doğruyol et al. (2019) suggested that the Moral Foundations Questionnaire is applicable to various nations and is not limited to just WEIRD cultures. Even though this is only one study, it's important to keep these findings in mind while considering the following studies in this paper. It's also important to be critical of the extent to which the theory is generalizable and acknowledge the studies that may not have found as many cross-culturally generalizable findings because of potential

conflicts that arise from generalizing findings to cultures that were not represented in the research. The findings by Crone and Lahan (2015) gave some background on the ways in which the foundations influence moral judgments. They illustrated one of the various ways that the Moral Foundations Theory can be applied outside of political issues, which is another way in which the theory is commonly applied that will be explored in the following section. The moral foundations can provide insight into how individuals who fall at different places on the political spectrum establish attitudes on various issues.

Moral Foundations Theory and Political Ideologies

The study by Chan (2020) regarding the foundations and their applicability to the COVID-19 pandemic mentioned earlier indicated the relevance and versatility of the Moral Foundations Theory. In this study, Chan found that both individualizing foundations predicted following stay-at-home, face-mask, and social distancing instructions, and that Sanctity predicted compliance with the face-mask and social distancing instructions. Chan also found that for older participants, the Loyalty foundation was relevant for following stay-at-home and social distancing instructions which he attributed to protecting the safety of one's group. For younger participants, the Sanctity foundation predicted lower compliance with the instructions, which Chan hypothesized may be due to people's desire to be social and the three instructions evoking a type of moral disgust, hence decreasing their likelihood of following them. Overall, as the COVID-19 pandemic has become a politicized issue, the moral foundations indicated that basing judgments on Care and Fairness, the foundations relied on more by the political left, predicted compliance with all three behaviors requested by public health officials. This study further exemplifies how the Moral Foundations Theory has implications for crucial issues through its useful information that can help frame instructions to keep people safer.

Because people on the political left rely more on the individualizing foundations than do people on the political right, and people on the political right tend to rely more on the binding foundations than the political left (Haidt, 2012), it remains important to study the ways in which people with these ideologies interact with the other foundations. One study by Turner-Zwinkels, Johnson, Sibley, and Brandt (2020) examined how people on the political left and right rely on different foundations. They wanted to test the claim that liberal moral systems have a greater difference between individualizing and binding foundations and conservatives have more similarities between them. This study examined this in more highly educated people. Turner-Zwinkels et al. focused on interconnections that may exist within the moral foundations to expand on existing knowledge about group differences across the foundations. The authors wanted to test whether the political liberals' moral systems would have weaker connections between individualizing and binding foundations whereas conservatives would have stronger connections between them.

Turner-Zwinkels et al. (2020) looked at three large data sets from the United States and New Zealand. To test whether the foundation structure was more interconnected in conservatives than liberals, Turner-Zwinkels et al. used an algorithm to identify items that are closely associated with each other and then they compared this with clusters of moral values predicted by the Moral Foundations Theory through the Adjusted Rand Index for both liberals and conservatives. They also examined the strength of item relationships within the individualizing and binding foundations and then between them. Turner-Zwinkels et al. grouped participants according to political party and according to education level by having them complete a political ideology item, an education scale, and the MFQ. In one sample, the results showed that for liberals, Care and Fairness clustered together, separate from the binding foundations, as

predicted. The other samples showed this general pattern, but not as strongly. However, the results did support their first hypothesis and showed that conservatives mixed more individualizing and binding items than liberals.

The findings that liberals tend to show more separation between the individualizing and the binding foundations than conservatives gives more insight into how people with different political orientations rely on the five moral foundations. This differentiation may show that liberals are more opposed to relying on Loyalty, Authority, and Purity than conservatives are to relying on Care and Fairness. They found that for participants who identified as neither liberal or conservative, they did not show the increased segregation that liberals showed, implying that this may be a factor of just the liberals (Turner-Zwinkels et al., 2020). The researchers cited that there was low stability found for conservative networks, which may be a limitation. Another potential limitation was that liberal samples were slightly younger across all samples and in samples 1 and 3 they were more likely to be female participants than conservative samples were (Turner-Zwinkels et al.).

While the study by Turner-Zwinkels et al. (2020) assessed the differentiation between foundations for different political ideologies, Day, Fiske, Downing, and Trail (2014) looked at whether moral foundations played a role in the changing of political attitudes. Day et al. examined the effects of moral foundations on political attitudes and referenced the study by Feinberg and Willer (2013), analyzed in a later section of this thesis, which found that when it comes to the environment, framing the issue on the Purity foundation increased conservative pro-environmental attitudes. Day et al.'s (2014) first hypothesis was the "entrenching hypothesis" which predicted that moral foundation-based frames would have a limited effect on changing political attitudes. They added that this may even change the direction in a way that is more pro-

attitudinal than it was before. Their second hypothesis was the “persuasion hypothesis” which predicted that the moral foundations may even shift attitudes that are counter to one’s beliefs.

In their first study, Day et al. (2014) tested a large sample of Americans by randomly assigning participants to a “moral frame” condition where they would be exposed to moral foundation-based frames of issues that are pro-attitudinal for conservatives (Day et al.). Participants were exposed to five issues that were each framed based on one of the moral foundations, with each participant receiving one issue framed based on each of the foundations. The researchers then gave them a task to create arguments that supported the stance on the issue they read.

For Study 1, Day et al. (2014) did not find support for their “persuasion hypothesis” due to the liberals’ attitudes not being significantly affected by the conservative pro-attitudinal issues being framed based on the Care and Fairness foundations, that they call the “liberal-relevant” foundations. For the Authority-based frames and the Purity based frames, they found that these frames increased the conservative attitudes for those who identified as conservatives already, supporting their “entrenching hypothesis.”

In their second study, Day et al. (2014) tested another large sample of participants, using the same design as the first study, but instead framed views that are pro-attitudinal for liberals. For Study 2 they found that the Care frame and the Fairness frame increased liberals’ attitudes to be more liberal and they found that for the Ingroup frame, the Authority frame, and the Purity frame that both liberals and conservatives showed decreases in conservative attitudes, supporting their “persuasion hypothesis.”

Day et al. (2014) were surprised that the Authority and Purity framed issues increased conservative attitudes for existing conservatives and the Ingroup frame did not because the

Ingroup foundation is oftentimes more relevant for conservatives. Also, Study 1 showed that when liberals were exposed to conservative attitudes framed in the Care and Fairness foundations, this did not increase liberals' likelihood to shift to a more conservative stance (Day et al.). Overall, the authors found strong support for the "entrenching hypothesis" and some support for the "persuasion hypothesis," showing that there is some indication that moral foundations which are relevant to a particular political orientation can increase the attitudes supporting that political orientation, however, when it comes to changing views to support the opposite orientation, conservatives shifted their views to be more liberal when issues were framed in conservative-relevant foundations, but liberals did not shift to hold more conservative views. These findings are very relevant to how moral foundations relate to political views because framing issues a certain way may lead to some people shifting views in the direction of supporting the opposite orientation. This also has shown that even framing an issue that one already supports in the context of foundations they rely on can lead to even further support for the issue, illustrating the impact that framing and the foundations have on ideology. It also brought up new questions of why liberals held their views more consistently than conservatives. A few limitations mentioned by Day et al. (2014) are that they did not look into the degree of support and they did not look into if the ingroup references in the study were lacking in a tight ingroup such as party, family, or class.

Because the Moral Foundations Theory proposed automatic reactions that have an evolutionary basis, it brings up the idea of how certain processes that initially served the purpose of survival may influence political views. Peterson, Sznycer, Sell, Cosmides, and Tooby (2013) looked at how a component of a man's upper-body strength was related to political decision making regarding fair economic distribution. The basis for this study was that throughout

evolutionary history, strength may have played a role in a man's decision of how much to assert his own interest in conflicts (Peterson et al.). This study builds on the asymmetric war of attrition (AWA) model (e.g., Hammerstein & Parker, 1982) to explore whether men with greater physical strength are more likely to support politics that increase their resources and men with less physical strength are more likely to adopt positions that distribute resources. Peterson et al. (2013) wanted to examine whether decision-making adaptations have evolved to include perceived fighting ability (upper-body strength) as an element. They predicted low socioeconomic status would be positively linked with redistribution support and high socioeconomic status would be negatively linked with redistribution support in men.

Peterson et al. (2013) collected data on upper-body strength, socioeconomic status, and support for economic redistribution from participants in Argentina, the United States, and Denmark. They found that consistent with their hypothesis, upper-body strength in men of a high socioeconomic status was significantly negatively linked with support for economic redistribution, and for men of a low socioeconomic status, upper body strength was positively correlated with support for economic redistribution. They also found that upper-body strength did not influence the level of support of economic redistribution in women, as predicted. Peterson et al. concluded from these results that men who are physically stronger tend to support policy that is in their own self-interest, a finding that was consistent across participants in all three countries.

These findings are important because past research has noted that self-interest only has a small effect on political views, whereas these results showed that due to evolution, self-interest may be a factor for policy support that is cost-effective for one's self (Peterson et al., 2013). Despite these findings, Peterson et al. reported that while the results supported the notion that

physically strong males are more likely to assert self-interest, it should be noted that the policies regarding redistribution are constrained by the state and through political processes, weighing strength may influence processing regarding large-scale political conflict, not personal disputes, and testosterone may play a role in the association found, but is unlikely to be the only accountable factor (Peterson et al.). Men in both socioeconomic classes favored policies that would be in their best interest, which provided that certain foundations may be interpreted differently by individuals, seeing as in this study participants' support for the different policies may be due to them valuing fairness differently. This study provided further evidence for automatic, evolutionary based processes that generate moral judgments with fairness and equity, and therefore political outcomes.

While the moral foundations may have an evolutionary and automatic basis, there are questions about if reliance on certain foundations can be changed. In one study, Hannikainen, Hudson, Chopik, Briley, and Derringer (2020) examined how increased empathy may encourage shifts in moral judgments. The researchers based their study on previous research on the flexibility of one's empathy and research on believing that it can be altered. Hannikainen et al. proposed that the Care and Fairness endorsements by political liberals could arise from a tendency toward empathy. For example, empathy has been found to be reported more in people on the political left across cultures (e.g., Hasson, Tamir, Brahm, Cohrs, & Halperin, 2018), and this may indicate that when people increase their propensity to empathy, they may align more with liberal morals. For their study, Hannikainen et al. (2020) tested whether goals to change levels of empathy predicted shifts in participants' moral foundations.

Hannikainen et al. (2020) studied American university psychology students and had them take an empathic concern scale, a perspective taking scale, a measure that asked about their

desire to change, and the MFQ. Participants completed the empathy and moral foundations measures each week for 15 weeks. Liberals, women, and younger participants all reported higher empathic concern at the beginning, but goals to increase in empathy and perspective-taking were not related to political orientation, gender, or age. They did find that empathic concern and perspective-taking were significantly positively related to the individualizing foundations (Care/harm and Fairness/cheating), but empathic concern had no relationship with the binding foundations (Loyalty/betrayal, Authority/subversion, and Sanctity/degradation) and perspective-taking had a significant negative correlation with scores on the binding foundations. Hannikainen et al. also found that both the goal to have higher levels of empathic concern and the goal to have higher levels of perspective-taking significantly predicted long-term increases of the individualizing foundations and long-term decreases of the binding foundations. They found that within-person changes in empathy levels were significantly positively correlated with the individualizing foundations, but not with the binding foundations, showing that increases in empathy were related specifically to increases in individualizing foundations.

The findings by Hannikainen et al. (2020) displayed that changing one's empathy to having higher levels of empathic concern and perspective-taking, may align with increases in endorsement of the individualizing moral foundations over time. Due to how individualizing foundations are related to political liberalism, this shift may strengthen alignment with liberal ideals for a person who has increased their empathy. This study was conducted with a sample of undergraduate students and therefore may not be fully generalizable, and it was conducted via self-report and correlational methods. However, the findings do hint at the ability to change political views to encompassing more aspects of liberalism if one increases levels of empathy.

While the studies regarding changing potential of the foundations and ideology are important to wrangle with political polarization in the future, it's also important to understand the foundations' role in the various existing political attitudes. Political polarization of many issues and some stances by certain political parties on issues can be contradictory, which is why Koleva, Graham, Iyer, Ditto, and Haidt (2012) wanted to study the moral factors that prompt people to accept certain political positions. They examined the role that the moral foundations had in predicting attitudes on various culture war issues, adding to the research on the moral foundations and political views. For their first study, Koleva et al. had a large sample of US participants choose one or more surveys to take, with many having taken the MFQ and another morality survey concerning social issues. They found that the Purity foundation was the strongest predictor of stances on culture war issues, being most strongly related to disapproval of issues regarding things like casual sex, pornography, same-sex relations, marriage, children outside of marriage, euthanasia, cloning, and gambling. Koleva et al. found that for disapproval of animal testing and the death penalty, Harm was the strongest predicting foundation. For the majority of the culture war issues, a foundation, mostly Purity, was a stronger predictor than political orientation.

In their second study, Koleva et al. (2012) accounted for limitations in the first study by incorporating a wider range of issues that were unrelated to sexuality. The participants in this study took the MFQ and a political attitudes questionnaire. The researchers found that the Purity, Loyalty, and Harm foundations were the strongest predictors, all being significant on 7 or more of the 11 issues. They found that Purity was the strongest predictor of supporting stricter abortion laws, banning same-sex marriage, opposing stem cell research, supporting teaching creationism in schools, and more negative views toward illegal immigration. Koleva et al. also found that

Harm and Purity were both the strongest predictors of supporting tougher plans against global warming, which is consistent with studies regarding Purity and environmental views that are explored later in this paper. Overall, the findings showed that Purity was commonly a predictor for issues related to sexuality and sanctity of life. The findings regarding Purity being a stronger predictor for opposing illegal immigration, while surprising to Koleva et al., are consistent with studies regarding disgust and how this emotion that relates to Purity has been linked to opposition to outgroups, such as immigrants through a potential pathogen avoidance mechanism (e.g., Aarøe, Osmundsen, & Petersen, 2016; Aarøe, Petersen, & Arceneaux, 2017). Koleva et al. (2012) added to the research about moral foundations that argues that there are links between political positions and the various foundation endorsements. While the Purity foundation as shown in this study, is related to certain political views, this relationship may be due to disgust and its interaction with the moral foundations.

Moral Foundations Theory and Disgust

Due to the Moral Foundations Theory view that moral judgment is an innate, automatic process, Horberg, Oveis, Keltner, and Cohen (2009) wanted to examine the relationship between disgust and the Purity foundation through analyzing how disgust is related to amplification of moral judgments of Purity violations. They predicted that increased disgust would lead to greater moralization of the Purity foundation due to how it serves to protect one's sanctity. Horberg et al. studied this relationship based on the appraisal-tendency framework, stating that experiencing greater disgust should be associated with strong intuitions of Purity as moral and therefore greater moral judgments about violations or upholding Purity. They assessed this across three types of relationships, the first being integral emotion where a particular emotion-eliciting event impacts judgments made about that event. The second was incidental emotion, stating that an

elicited emotion shapes later judgments of unrelated events, and the third was individual differences in trait emotion to assess trait levels and their impact on judgments. Horberg et al. also predicted that greater disgust would not be associated with higher judgments within the Justice and Care foundations and that other negative emotions will not be linked to Purity judgments.

Horberg et al. (2009) controlled for socioeconomic status, political conservatism, and gender in all their studies. In their first study, 96 U.S. undergraduate students completed a questionnaire including two Purity and two Justice violations and then they recorded their level of condemnation of the violations and their level of feelings of disgust and anger. They found that women were significantly more critical of the Justice violations and that conservatism was significantly associated with stronger Purity violations criticism. Significantly more disgust was reported than anger regarding the Purity violations, supporting their predictions.

For their second study, Horberg et al. (2009) assigned 122 U.S. undergraduate students to either watch a disgust- or a sadness-inducing video and then complete a moral judgment task, an assessment of emotional responses, and demographics. Once again, political conservatism was significantly associated with Purity judgments, but it was not related to any other judgments. Horberg et al. found that participants in the disgust condition made greater judgments overall than participants in the sadness condition. Participants in both conditions made stronger judgments about the Care/harm behaviors than the Purity ones. Horberg et al. did find that consistent with their hypothesis, participants in the disgust condition made significantly greater judgments for the Purity behaviors, and there were no differences in the conditions for judgments on the Care/harm behaviors. This study found causal evidence that disgust increases moralization of the Purity foundation.

In their third study, Horberg et al. (2009) had 88 U.S. undergraduates complete a questionnaire containing the moral judgment task, assessments of trait disgust, anger, and fear, and demographics. They found that once again, judgments of the Justice violations were significantly greater than those of the Purity violations which may support the claim that Justice is a more significant aspect of morality. They also found political conservatism was not a predictor of judgments, unlike in the previous two. Horberg et al. found that trait disgust was significantly related to stronger judgments of Purity violations and stronger rewards of virtues and there were no significant relationships for the Justice behaviors. Overall, the findings across these studies gave evidence to the association between disgust and moralization of the Purity foundation.

Disgust has been found to be associated with moral condemnation, however moral judgments and disgust sensitivity both vary across different domains. Therefore, van Leeuwen, Dukes, Tybur, and Park (2017) wanted to examine this relationship further. The Purity foundation has been theorized to have developed out of pathogen-avoidance mechanisms which are related to disgust sensitivity (e.g., Haidt, 2012.). There are, however, conflicting ideas on the degree of this relationship, with an alternate theory from Chapman and Anderson (2014) that disgust sensitivity is related to judgments of Care and Fairness violations and is not limited to the Purity foundation. In light of these conflicting perspectives, van Leeuwen et al. (2017) wanted to study how disgust sensitivity and moral judgment are related to each other independent of political views.

van Leeuwen et al. (2017) aggregated data consisting of the Three-Domain Disgust Scale (moral, sexual, and pathogen disgust), the MFQ, and a measure of ideology from previous studies and compiled three new data sets and five published data sets. The data was taken from a

wide variety of countries, including the UK, US, China, India, Belgium, Netherlands, and Japan. As predicted, conservatism was significantly negatively correlated with the individualizing foundations and positively with the binding foundations. They also found that conservatism had a small significant positive correlation with sexual disgust sensitivity, but not with moral or pathogen disgust sensitivity. The three domains of disgust were positively correlated with the five foundations, and controlling for conservatism had a small effect, with the largest impact being slightly reducing the effect of sexual disgust on the authority foundation. The strongest relationships between moral disgust and the moral foundations were with the Care and Fairness foundations, and for sexual disgust the strongest relationship was with the Purity foundation, with smaller relationships with the others except for fairness where there was no relationship. For pathogen disgust, the strongest relationships were with Loyalty, Authority, and Purity foundations, and pathogen disgust was unrelated to Care or Fairness. The researchers noted that sexual disgust was more strongly related to Purity than pathogen disgust was. The various mechanisms of sexual and pathogen disgust are discussed later in this paper to further analyze the disgust and Purity relationship. Overall, judgments for each foundation were related to at least one type of disgust (van Leeuwen et al.). The researchers pointed out that the effects are small and there may be some variance in disgust sensitivity for the different domains across the different countries. van Leeuwen et al. did state that the findings are consistent with theories about disgust coming from moral judgments.

Disgust and Political Views

Conservative/liberal Ideology

The findings by Horberg et al. (2009) and van Leeuwen et al. (2017) above highlight the importance of closely examining the relationship between disgust and conservatism. The

emotion of disgust has been hypothesized to be more closely related to political right-leaning ideology than political left ideology. Having a higher sensitivity to disgust has been proposed to be positively correlated with higher levels of conservatism due to the group protection that disgust sensitivity mechanisms may provide. However, some studies that will be discussed in this section show that this connection may be more complex, especially when breaking down the relationship by different types of disgust and by different political issues.

Based on previous research linking greater disgust sensitivity to conservatism, Elad-Strenger, Proch, and Kessler (2019) wanted to clarify some existing uncertainties about this relationship. They pointed out that in prior studies, researchers failed to determine whether conservatives experience greater magnitudes of disgust, or if they experience different dimensions of disgust. Elad-Strenger et al. expanded on the previous research by using a methodological variation in the stimuli and having a distinction between general disgust sensitivity and specific disgust reactions. For their first two studies, Elad-Strenger et al. predicted that when disgust sensitivity was measured independent from specific stimuli, it would not be correlated with political orientation. They also predicted that the direction of the correlation between conservatism and disgust would be dependent on the content of the disgust stimuli.

In Studies 1 and 2 Elad-Strenger et al. (2019) used stimuli intended to trigger greater disgust in liberals, while Study 2 added stimuli intended to trigger greater disgust in conservatives. The researchers tested German psychology students for Study 1 and German students from other disciplines for Study 2. All rated their political orientation and completed disgust scenarios, and filled out an elicitor-unspecific disgust sensitivity scale which was counterbalanced with the disgust scenarios in the studies. They found that in both studies, the

more conservative participants were, the less disgust they had toward the elicitors intended to trigger liberals, and the more disgust they had toward the elicitors intended to trigger conservatives. Elad-Strenger et al. also found that when other predictors were controlled for, the elicitor-unspecific disgust sensitivity scale had no significant correlation with political orientation, as predicted. In their 5th study, they did find that when using more politically neutral disgust scales, political orientation was significantly positively correlated with the “conservative” disgust scale and was significantly negatively correlated with the “liberal” disgust scale. Elad-Strenger et al. explained this finding by stating that conservatism can correlate either positively or negatively with certain constructed disgust scales. Overall, the findings showed that conservatism and elicitor-specific disgust can be positively or negatively related, depending on the content of the elicitors. This finding that conservatism may not always be directly related to disgust is consistent with the findings by van Leeuwen et al. (2017) that the different domains of disgust were associated with the moral foundations, independent of political ideology.

While Elad-Strenger et al. (2019) showed that the relationship between conservatism and disgust depends on the content on the disgust stimuli, Adams, Stewart, and Blanchar (2014) wanted to expand on disgust research by addressing the role of disgust in socio-political attitudes by manipulating disgust through odor. Their motivation stemmed from the theory that the behavioral immune system shapes political attitudes, and the finding that disgust has been found to play a role in political conservatism. They built on previous findings from Smith, Oxley, Hibbing, Alford, and Hibbing (2011) and others that have linked exposure to a disgust eliciting stimuli to increased negative attitudes toward gay and lesbian people. Adams et al. (2014) predicted that for this study, exposing participants to a disgust odorant would elicit the emotion of disgust and would lead to increased disapproval of gay marriage. They also predicted that

there would be weak effects for disgust sensitivity on premarital sex, pornography, and abortion views. Adams et al. had 57 participants rate their level of disgust sensitivity, respond to socio-political opinion questions, place themselves on a conservatism-liberal scale, and answer the three domains of disgust scale (which looks at moral, sexual, and pathogen disgust).

Adams et al. (2014) found that the odorless group had significantly greater moral disgust sensitivity, but the two groups did not differ for the other types of disgust sensitivity or for political orientation. Participants in the disgust odor condition reported greater negative attitudes about gay marriage and disagreed more with premarital sex and pornography. The finding for disagreement with abortion rights was not significant. They also found that the disgust odor group generally had significantly greater agreement with “Biblical truth” than the control group. They controlled for gender, age, and moral disgust sensitivity. The researchers also found that older participants reported greater moral disgust sensitivity, and participants who reported more moral disgust sensitivity reported greater conservative attitudes toward gay marriage.

The disgust odor led to a strong response of negative attitudes toward gay marriage, which Adams et al. (2014) asserted is related to how same-sex marriage is associated with sexual impurity. Adams et al. mentioned that the odor disgust had a larger effect on sexual attitudes, which supports the notion that disgust may serve to protect from pathogen transmission by decreasing the instances of certain sexual behaviors. This breakdown of pathogen avoidance and sexual attitude mechanisms will be explored more in the next sections. Adams et al. pointed out that the sample size for this study was relatively small and replication is needed for broader conclusions to be stated.

The findings that disgust may serve to protect from pathogens has also been studied in the context of the immigration issues. A study by Faulkner, Schaller, Park, and Duncan (2004)

found that participants with higher disease salience had more negative views about immigrants who were considered unfamiliar to them. Faulkner et al. suggested that this aversion to unfamiliar immigrants may be an evolved disease-avoidance mechanism. As research has shown that humans make political assessments through nonconscious processing, Aarøe et al. (2017) wanted to further study the behavioral immune system and the role it plays in protecting people from threats. Having a sensitive behavioral immune system is thought to lead to anti-immigration feelings due to being prone to experiencing disgust. The researchers suggested that the evolutionary history behind these mechanisms that were used to help our ancestors avoid threats and study how this process is conveyed through certain political attitudes today. Aarøe et al. performed four tests on participants in the United States and Denmark, utilizing both experimental and observational methods, and measured opposition to immigration with a scale for each one. For the first test, they studied whether differences in behavioral immune system sensitivity were related to differing opinions on immigration. Aarøe et al. found that disgust was significantly positively correlated with opposition to immigration, even when controlling for income and education, which have been found to be correlates of anti-immigration views. Interestingly, these effects were still apparent after controlling for political ideology. The inconsistency with ideology is also shown in the finding that the effect of behavioral immune system sensitivity on opposition to immigration was enhanced for more liberal participants. Having greater behavioral immune system sensitivity may lead to liberals aligning more with attitudes that do not fit with their values.

Aarøe et al. (2017) conducted another test that examined whether the behavioral immune system responded to cues from debates about immigration. They predicted that in debates about immigrants that appear familiar, the relationship between behavioral immune system sensitivity

and anti-immigration attitudes would be weakened, however cues about immigrants' good intentions would not comfort participants sensitive to disease threats. Participants read a description about either a Middle Eastern or an Eastern European immigrant, with manipulated cues about familiarity, and completed a scale about opposition to immigration. They found that opposition was significantly reduced for the Eastern European immigrant and the effect of contamination disgust was significant for the Middle Eastern immigrant, but not for the Eastern European one, showing that greater familiarity with an immigrant's culture decreased disgust responses. Aarøe et al. also found that when the immigrant was described as motivated to conform, the opposition only decreased for individuals low in disgust sensitivity, but did not for those high in disgust sensitivity.

Aarøe et al. (2017) also tested if participants with higher behavioral immune system sensitivity were more likely to avoid and dislike situations with a high probability of contact with immigrants and support anti-immigration policies. They found that participants with higher disgust sensitivity had stronger opposition to all kinds of close contact with immigrants. This test was conducted on the Denmark sample, which is a homogenous country and therefore may not be generalizable to more diverse populations where contact with immigrants is more common. These studies relate to findings regarding disgust sensitivity and conservatism, but while the effects of disgust sensitivity in Test 1 were greater for liberals, this could mean that conservatives already had a previous determination of their views on immigration and may oppose immigration for reasons beyond disease avoidance. While participants with higher disgust sensitivity may avoid immigrants more, this may be due to sexual disgust, not pathogen avoidance, similarly to the findings in the study by Billingsley, Lieberman and Tybur (2018) for the 2016 election, which is discussed later in this thesis.

While disgust levels may influence views on immigration, higher levels of disgust sensitivity have also been found to be related to homophobia which is a problem that spans across many countries and is frequently associated with conservative views (Wang, Yang, Huang, Sai, & Gong, 2019). Because disgust and the Sanctity moral foundation are theorized to have evolved to avoid pathogens, the behavioral immune system may even react to things that do not pose a threat of pathogens, due to overgeneralization of cues (Wang et al.). In this study, Wang et al. examined the Sanctity foundation and the role it plays in attitudes toward homosexuality. They predicted that moral foundations would mediate the link between disgust and attitudes about homosexuality. The researchers had a large sample of Chinese university students fill out the Chinese Moral Foundations Questionnaire, a 20-item Attitudes toward Lesbians and Gay Men Scale, with higher scores meaning more negative attitudes, a 25-item Disgust Scale, and demographic information.

Wang et al. (2019) found that disgust sensitivity was significantly positively associated with all five moral foundations, most strongly with Sanctity. Disgust sensitivity was significantly positively correlated with more negative attitudes toward gay and lesbian people, but stronger for attitudes toward gay men. They also found that Sanctity was significantly positively linked to negative homosexuality attitudes and that even the Authority foundation was significantly positively correlated with negative homosexuality attitudes. Wang et al. found that disgust sensitivity had a positive relationship with negative homosexuality attitudes and with both Authority and Sanctity. They also found through a multiple mediation model that disgust sensitivity had a direct positive association with negative homosexuality attitudes, an indirect association with negative homosexuality attitudes through Sanctity, but no significant association through Authority. This trend was the same when negative homosexuality attitudes were broken

down to attitudes about gay men and attitudes about lesbian women, where disgust was positively associated with both, indirectly associated through Sanctity, and not significantly associated through Authority. Overall, Wang et al. found support for their prediction that Sanctity was a mediating factor for the association between disgust sensitivity and negative attitudes toward gay and lesbian people. These findings are consistent with the Moral Foundations Theory that the Sanctity foundation may explain the relationship between disgust sensitivity and homosexuality attitudes. This study also displayed findings that were consistent with the Moral Foundations Theory from a sample of Chinese students, as opposed to most findings that come from Western countries.

Overall, the studies regarding disgust and political views indicate that there is a relationship between disgust and political views on a range of issues. Wang et al. (2019) found that greater disgust was associated with higher negative attitudes toward homosexuality, and Aarøe et al. (2017) found that greater disgust was associated with higher opposition to immigration. While both of these views are linked conservative ideology, Aarøe et al. reported that their findings regarding disgust and immigration were significant after controlling for political ideology, emphasizing the impact that disgust sensitivity has on attitudes outside of political alignment. However, Elad-Strenger et al. (2019) found that the relationship is more complex, showing that the level of disgust one felt was dependent on the content of the stimuli that triggered it, questioning if disgust is more common in conservatives or if it's just apparent due to specific kinds of triggering stimuli which conservatives find disgust eliciting that are factors in political views. Aarøe et al. (2017) studied behavioral immune system sensitivity in their study which is an evolved mechanism for pathogen avoidance, whereas Adams et al. (2014) mentioned that negative homosexuality attitudes may be due to views surrounding sexual

impurity. While the studies do generally support that there is an association between disgust sensitivity and political views, a closer look at the specific kinds of disgust are needed to further comprehend this relationship.

Pathogen Avoidance

Due to some findings that higher behavioral immune system sensitivity is related to more conservative attitudes on some issues (e.g., Aarøe et al., 2017), this section will explore pathogen disgust, which is hypothesized to have evolved out of the behavioral immune system to protect individuals from diseases. While this is an evolved mechanism, it is thought to be a factor still influencing political views today. The following studies will explore the innate pathogen avoidance processes and their present relationships with politics.

The behavioral immune system is an adaptive tool for humans to avoid contamination, but it has been found to influence culture and social interaction (Terrizzi, Shook, & McDaniel, 2013). In this study, Terrizzi et al. examined the relationship between differences in the behavioral immune system and conservative values. Disgust is a mechanism of the behavioral immune system, and it has been found to be related to aspects of conservatism (Terrizzi et al.). Because the behavioral immune system serves to promote pathogen avoidance, it may promote outgroup negativity behaviors, and therefore may be related to conservative values of less diverse ingroups. The researchers conducted a meta-analysis to provide a comprehensive review of the behavioral immune system and conservatism. They collected research from PsychINFO, from the Society for Personality and Social Psychology's listserv, and through email requests to researchers. Terrizzi et al. incorporated 24 studies in the meta-analysis. They found that the relationship between the behavioral immune system and social conservatism was consistent across different behavioral immune system measures and across different social conservatism

measures. They found that a stronger behavioral immune system was significantly associated with social conservatism. Terrizzi et al. noted that the relationship between the behavioral immune system and conservatism was with social conservatism specifically, and that some studies do not differentiate between social and economic conservatism, therefore the studies that measured conservatism as a unidimensional measure displayed a weaker relationship with the behavioral immune system. Terrizzi et al. mentioned that their findings showed that social conservatism was due to disease-avoidance mechanisms that have evolved as adaptive strategies, further highlighting the role that evolution may play in political views.

The findings that there was a positive relationship between the behavioral immune system and conservatism supports the view that the role of disgust in political attitudes is rooted in pathogen avoidance, however, to further test this relationship, van Leeuwen, Park, Koenig, and Graham (2012) examined whether endorsement of the binding foundations was greater in areas with historically higher numbers of pathogens. They wanted to examine this due to the evolutionary basis of the Moral Foundations Theory and research concerning societies with greater pathogen prevalence having more group-centered customs. The Loyalty, Authority, and Sanctity foundations may serve to protect people from pathogens due to how they promote out-group avoidance behaviors. Because Purity has been found to be related to disgust and the Loyalty and Authority foundations promote adhering to traditions, van Leeuwen et al. proposed that they would be highly endorsed by individuals in pathogen-prevalent areas.

van Leeuwen et al. (2012) utilized historical pathogen prevalence estimates (e.g., Murray & Schaller, 2010) and contemporary pathogen prevalence estimates (e.g., Fincher, Thornhill, Murray & Schaller, 2008) from previous researchers. They then had a large number of participants complete the MFQ, political orientation, and demographics; however, the majority

of the participants were from the U.S. van Leeuwen et al. (2012) found that historical pathogen prevalence was significantly positively correlated with higher reliance on the three binding foundations, but not the individualizing foundations. The same was found for contemporary pathogen prevalence, however this relationship was no longer significant when GDP per capita was controlled for (van Leeuwen et al.). They also found that when controlling for variation in political orientation, gender, education, and age, historical pathogen prevalence was significantly positively related to reliance on the binding foundations. The same was found for contemporary pathogen prevalence, except there also was a significant positive correlation with reliance on the Fairness foundation. Overall, the findings were consistent with the prediction that historical pathogen prevalence was significantly related to higher levels of the binding foundations. The researchers stated that the finding that the historical pathogen prevalence was related to greater reliance on the binding foundations displays how this mechanism may have been an evolved function of morality. van Leeuwen et al. also mentioned, however, that the Moral Foundations Theory only noted a link between pathogen avoidance and the Sanctity foundation (Haidt & Joseph, 2007), whereas they found a relationship with all the binding foundations. van Leeuwen et al. (2012) mentioned that this relationship with the Loyalty and Authority foundations may be due to the association between pathogen avoidance and conformity. Other explanations that van Leeuwen et al. proposed were that the binding foundations may share certain mechanisms, the threats they originally addressed may have contrived, or they could have all evolved to play a partial role in pathogen avoidance.

A study by Aarøe et al. (2016) also focused on the behavioral immune system by examining the relationship between individual differences in generalized social trust and activation of the behavioral immune system to assess if people who are more sensitive to disgust

are less likely to engage with others, possibly linked to having a lower level of generalized social trust. While pathogen avoidance has been positively associated with conservatism and negative perceptions of outgroups, Aarøe et al. proposed that pathogen avoidance motivation may instead have lower levels of generalized social trust for members of ingroups as well. The researchers stated that the existing beliefs about how pathogen avoidance targets outgroups fails to consider the low occurrence of this throughout history and the fact that adapted pathogens in one group could suggest they are less dangerous for members outside that group, both as reasons that this prior idea may not be a likely model.

Aarøe et al. (2016) predicted in their first study that higher pathogen avoidance motivation would be related to a reduction in generalized social trust, avoiding interactions with outgroup members, and with ingroup members. The researchers had a large number of participants take a pathogen disgust scale, a social trust questionnaire, and they controlled for gender, age, education, income, and race. They found that individuals with higher pathogen sensitivity had significantly lower social trust than those who were lower in pathogen sensitivity. This effect was apparent when controlling for socio-demographic variables, including education, which has previously been suggested as an explanation for differences in social trust. In Study 2, they found that when participants answered questions about their trust in “most people” or “people in your neighborhood” that the effects were the same for both groups, indicating that outgroup avoidance is not the only factor of generalized social trust. In their 3rd study, Aarøe et al. assessed pathogen disgust and outgroup prejudice and found no significant effects on attitudes toward gay people, but they did find a significant effect for conservative issue attitudes, and a larger significant effect for attitudes toward immigrants. Because the effects of outgroup prejudice were not stable overall, Aarøe et al. asserted that pathogen avoidance is not solely

linked to outgroup avoidance. However, for the findings on immigration and conservative issue preferences, they cannot fully be explained by general social trust.

These findings explored the behavioral immune system which has been stated to find outgroup members a threat, and instead showed that pathogen avoidance may be explained by a more general social distrust (Aarøe et al., 2016). The researchers also pointed out that these findings do not mean that pathogen avoidance is not related to outgroup dynamics, considering they did find that higher pathogen avoidance was linked to more negative perceptions of immigrants.

While the previous few studies explored the relationships regarding pathogen avoidance and conservative views, Stewart, George, and Adams (2019) took an applied approach and examined the relationship between disgust sensitivity and reactions to political leaders, specifically to Barack Obama and Mitt Romney during the 2012 American Presidential Election. Stewart et al. noted that disgust may function to provide protection from diseases (e.g., Haidt, 2012) and that this function may be enhanced by the human behavioral immune system which can evoke out-group avoidance behavior (e.g., Neuberg, Kenrick, & Schaller, 2011). Stewart et al. (2019) researchers focused on pathogen disgust sensitivity and anxiety regarding President Obama, Mitt Romney, as well as photos of black and white men. They hypothesized that induced disgust would increase negative emotional reactions to President Obama, but not as much to Mitt Romney or the photos of other men. The first study focused only on how participants responded to President Obama and included a large sample of undergraduate psychology students who completed emotional responses to President Obama scales, a pathogen disgust scale, a trait anxiety scale, a conservatism-liberal scale, and demographic information.

Stewart et al. (2019) found that political ideology was a large factor in the emotional response to President Obama, with liberals feeling less disgusted and happier about him, while nonwhite participants also felt less disgusted and more happy toward him than did white participants. Participants who had higher levels of pathogen disgust were more likely to have anger, disgust, fear and sadness sentiments toward President Obama. These findings, as suggested by Stewart et al. may not be specific to President Obama, but instead were related to reactions to politicians or black men.

The second study exposed 46 white participants to either a disgust odor or a no-odor condition, and then presented expressionless images of black men, white men, President Obama, and Mitt Romney. The participants gave their emotional responses, completed a pathogen disgust scale, and a conservatism-liberal scale. Stewart et al. (2019) found that inconsistent with their predictions, there were no significant main effects of the disgust odor manipulation on reactions to any of the images. After using constrained regression models, Stewart et al. found that political ideology was the strongest determinant of most emotional responses to candidates, and it played a significant role in emotional responses to President Obama, but not as much for Mitt Romney which may have been due to Romney's status as a contender. There were no significant determinants of emotional response to the black and white men photos. A post hoc probing analysis found that for the disgust odor condition, elevated pathogen disgust was significantly related to higher disgust and lower contentment for President Obama and was not related to reactions to Mitt Romney.

Overall, Stewart et al. (2019) showed that disgust sensitivity and induced disgust influenced feelings about President Obama. For the experiment, there was a small sample size, limiting the possibility of significant main effects. Stewart et al. mentioned that conservatives'

concerns of Purity may be related to their views toward outgroup members, which was shown in the Billingsley et al. (2018) study on the 2016 election, mentioned later in this thesis, in which sexual disgust was the strongest predictor of voting for the conservative candidate. Sexual disgust as a potential factor will be explored in the next section, whereas Stewart et al. (2019) only looked at pathogen disgust, but there may be more layers to this disgust sensitivity.

Many studies in this paper have samples that are focused on just a couple countries, which is not representative of different cultures. Tybur et al. (2016) explored pathogen disgust in 30 different nations. Because the behavioral immune system works to avoid pathogens and has been linked to conservative political ideology and to certain conservative regime styles of nations, Tybur et al. wanted to examine two hypotheses about these relationships. One hypothesis was that traditional norms in various cultures have evolved to offset pathogen threats and that not adhering to these norms increases one's disease risk. The other hypothesis was based on outgroup avoidance and states that people have greater protection to local pathogens than to foreign ones and therefore contact with an outgroup member is a larger risk. The researchers proposed these two hypotheses because of how conservatism is related to greater conformity to traditional norms and to greater preferences to an ingroup.

Tybur et al. (2016) studied a large sample of participants from 30 countries, including participants from universities and the public. Participants completed a questionnaire regarding political attitudes and attitudes toward certain groups, including measures of traditionalism, social dominance orientation, and disgust sensitivity. The researchers also measured parasite stress through utilizing the historical prevalence of pathogens in regions. Tybur et al. found that participants in countries with higher levels of parasite stress had greater levels of traditionalism and the same was true at the national level with nations' traditionalism scores being significantly

associated with parasite stress. They found that disgust sensitivity was also significantly linked to traditionalism independent of national parasite stress. These findings supported the researchers' first hypothesis regarding traditional norms, however, they did not find the same support for their hypothesis about outgroup avoidance. Tybur et al. found instead that higher scores on parasite stress were not significantly associated with higher social dominance orientation at the individual or national level.

Overall, these results suggested that the relationship between pathogen avoidance and political attitudes can be explained by motives related to adherence to traditional norms. This may help explain the findings by van Leeuwen et al. (2012), mentioned earlier, which found that pathogen prevalence was related to endorsement of all the binding foundations, not just Purity, which van Leeuwen et al. stated may be due to conformity. These findings, along with those of Tybur et al. (2016) illustrate that the association between pathogen disgust and conservatism may have roots in more of the moral foundations than just Purity. Tybur et al. asserted that at the national level this motivating factor of adherence to traditional norms could be due to how if norms led to less pathogen contact, they may be more likely to be sustained and they may promote alliances that can provide health care. Tybur et al. also stated that these norms may be more prevalent in nations with higher pathogen levels because they have not been as influenced by colonialism and Western institutions. For these findings at the individual level, Tybur et al. asserted that those wanting to avoid pathogens may be drawn to traditional norms that may have more contact restrictions. While this study did not find pathogen avoidance to be related to the conservatism aspect of outgroup avoidance tactics, this relationship with disgust may be due to a different type than pathogen avoidance, such as sexual disgust which was not accounted for in this study.

Generally, the studies regarding pathogen disgust in this section found significant support for the relationship between pathogen avoidance and political conservatism, focusing mostly on the role of the behavioral immune system and its use in the Sanctity foundation. However, a few studies investigated the relationship between pathogen disgust and political views, highlighting a few other possible explanations. van Leeuwen et al. (2012) found that higher reliance on the Loyalty and Authority binding foundations were also associated with historical pathogen prevalence, indicating that there may be other factors in the relationship between pathogen disgust and conservatism. The study by Aarøe et al. (2016) added that another factor in this relationship may be a general social distrust and the study by Tybur et al. (2016) also deferred from solely attributing the relationship to outgroup avoidance and suggested that adherence to traditional norms may explain the pathogen avoidance and political conservatism connection. Regardless of the various factors explaining this relationship, the studies in this section did provide evidence of an association between pathogen avoidance and conservative views. However, pathogen disgust is not the only kind of disgust that may have an influence in political views. The study by Tybur et al. did not find evidence that pathogen avoidance was related to outgroup avoidance, but they did not account for sexual strategies which may be related to these behaviors. Sexual disgust is another type of disgust that may explain the relationship between disgust sensitivity and conservative views, or may be a component of the relationship between pathogen avoidance and conservatism.

Sexual Disgust

Because of how disgust and political views have been found to be related, Billingsley et al. (2018) wanted to expand on research on this subject, focusing on the 2016 American presidential election. They studied the prevailing view that disgust sensitivity is related to

political conservatism through pathogen avoidance and sexual strategies. In response to previous findings that suggested that disgust sensitivity is explained by pathogen avoidance, and out-group avoidance, which aligns with political conservatism views, Billingsley et al. assessed if this may be explained by sexual strategy motivators and out-group avoidance. Donald Trump's personal attacks were heavily based on disgust cues, and since conservatives are more responsive to these cues, this may explain why these tactics worked to gain support from them. They assessed whether disgust sensitivity was related to more conservative attitudes, and if this was accounted for more by the pathogen-avoidance model or the sexual strategies model.

A large sample of American adults completed surveys regarding demographics, disgust sensitivity measures, political party orientation, and presidential candidate preference (Billingsley et al., 2018). They found that pathogen disgust sensitivity was significantly positively associated with social conservatism when controlled for age, sex, and income. For the results regarding the 2016 presidential election, Billingsley et al. found that with each unit increase of pathogen disgust sensitivity, there was a 20% increase in odds of voting for Donald Trump, and that using a different disgust scale, the increase in disgust was linked with increased chances of voting for Trump in female voters, which may have led to this overall effect. When analyzing sexual disgust, the researchers found that it was also significantly positively associated with political conservatism, whereas conservatism was not associated with moral disgust. After examining a regression model, Billingsley et al. found that while sexual disgust was a significant predictor of social conservatism, pathogen disgust no longer was, after controlling for sexual disgust. They also found that for every unit increase in sexual disgust sensitivity, the odds of voting for Trump increased by about 30%, whereas pathogen disgust and moral disgust were not associated with voting for Trump. Billingsley et al. found that sexual disgust was a significant

predictor of aligning with the Republican party over both the Democratic and the Libertarian parties, but these effects were not found for other domains of disgust. Sexual disgust was found to be a mediating factor on the effect of pathogen disgust on political orientation, consistent with previous findings, as well as on voting behavior. These findings are more aligned with the sexual disgust model since pathogen disgust was not found to predict anything independently of sexual disgust. Despite these results, the sample of participants was not representative of the population of U.S. voters and majority of the sample were liberals. They point out that they also only used one measure of sexual strategies and only a few measures of conservatism that may have not included certain aspects of the orientation, and they did not examine any policy-specific attitudes.

The findings from Billingsley et al. (2018) indicated that the pathogen avoidance mechanisms found often in conservative ideology may be explained by sexual strategies. Sexual disgust may promote behaviors that also serve as avoiding pathogens, and pathogen disgust may promote behaviors that prompt less sexual promiscuity as well (e.g., Murray, Jones, & Schaller, 2013). Due to previous research linking pathogen avoidance and conservative ideology, Tybur, Inbar, Güler, and Molho (2015) wanted to examine this relationship and if there were any alternative explanations that account for it, such as sexual strategies. They proposed this as an explanation due to how new sexual partners may present risk of pathogen exposure and how the sexual and pathogen domains of the Three Domain Disgust Scale are moderately associated. This relationship may exist also due to how sexual strategies, such as endorsing monogamy, are typically linked to support of rules condemning promiscuity, which is oftentimes associated with conservatism. For the first study, Tybur et al. had a large sample of US participants take the Three Domain Disgust Scale and individual ideology items. They found that as predicted,

pathogen avoidance was significantly related to social conservatism, more so than economic conservatism and party identification. They also found that sexual disgust was related to each of the conservatism variables and had stronger correlations than pathogen avoidance did. They then used structural equation modeling and found that sexual strategy was a mediating factor for the relationship between pathogen avoidance and conservatism.

To combat some limitations from the measures in the first study, for their second study, Tybur et al. (2015) had another large sample take a revised disgust scale, a social dominance orientation scale, a traditionalism scale, a religiosity scale, and individual ideology items. Similar to the first study, they found that pathogen avoidance was only related to conservatism indirectly through sexual disgust. Tybur et al. continued to address limitations from the measures used by incorporating different pathogen avoidance and sexual strategies scales. Another large sample took the Three Domain Disgust Scale, the ideology items, a germ aversion scale, and a sociosexual orientation inventory (a measure of short- and long-term mating). Once again, Tybur et al. found that pathogen avoidance only correlated with conservatism indirectly through sexual strategies. The indirect effect was significant in each model. Overall, these findings showed that sexual disgust may be an explanation for the relationship between pathogen disgust and conservative ideology (Tybur et al.) These findings are also consistent with the findings from Billingsley et al. (2018) where sexual disgust was a strong predictor of voting for a conservative presidential candidate in 2016. This is an important finding, considering that previous research has attributed conservative views to pathogen avoidance and that this relationship impacts attitudes on certain issues and regarding political leaders (e.g., Aarøe et al., 2016; Stewart et al., 2019). Sexual strategies, as demonstrated by Tybur et al. (2015) may underlie those conservative views.

While the previous two studies explored sexual disgust and conservatism relationships, Crawford, Inbar, and Maloney (2014) wanted to examine the reasons for some of these conservative attitudes, specifically looking at negative responses to gay and lesbian people. They proposed that one reason for these responses may be due to conservatives being higher in disgust sensitivity and therefore higher in sexual conservatism. This sexual conservatism may prompt conservatives to view gay and lesbian people as contradicting traditional sexual morality or purity. The researchers predicted that for people who were sexually conservative, greater disgust sensitivity would be associated with more negative attitudes against groups perceived as threatening sexual morality, and that greater disgust sensitivity would be associated with more positive attitudes of groups perceived as upholding sexual morality.

Crawford et al. (2014) included a large sample of US participants who completed a modified disgust scale, feeling thermometer ratings for various groups (five that threaten traditional sexual morality, four that uphold, three left-aligned and two right-aligned groups not directly related to sexual morality), and political party identification. After confirming that the sexual-morality threatening groups were perceived as such in the study, Crawford et al. found that higher levels of disgust were significantly negatively correlated with attitudes toward these groups, and were significantly positively correlated with attitudes toward the upholding groups. Higher disgust, as predicted, was also unrelated to attitudes toward the left and right aligned groups. Further analysis revealed that out of the three disgust sensitivity subscales (core, contamination, and animal-reminder) only contamination was found to significantly predict attitudes toward traditional sexual-morality threatening and upholding groups.

Crawford et al. (2014) found support for both of their predictions regarding attitudes toward sexual-morality threatening and upholding groups for those with higher disgust

sensitivity. This showed that the relationship between disgust sensitivity that tends to be apparent in conservatives and anti-gay and lesbian views may be due to conservative's perception that these groups threaten traditional sexual morality and purity. One explanation proposed by Crawford et al. is that this may be due to the behavioral immune system that shields people from pathogens, prompting more sexual conservatism in some people. These findings are consistent with those of Tybur et al. (2015) that found that sexual disgust was a mediating factor for the relationship between pathogen avoidance and conservatism.

In order to understand why sexual attitudes are related to conservative views it is important to study how sexual behavior is related to pathogen avoidance and disgust. Murray et al. (2013) wanted to study the impact of threat of disease on mating styles and sexual promiscuity. Murray et al. explained that the underlying theory for their predictions is that there is cost/benefit logic that unrestricted sexual behavior may have certain disease exposure costs. Due to this, Murray et al. predicted that having a higher perceived disease vulnerability would be correlated with strategizing mating in a long-term way with fewer sexual partners over life. In this study, the researchers included an ethnically diverse sample of students from a Canadian university. The participants responded to questionnaires about perceived disease vulnerability and some samples were part of a disease manipulation condition that had them look at photos of people with symptoms of infectious diseases and then answer questions regarding the experience and their feelings.

Murray et al. (2013) found that higher levels of germ aversion were significantly correlated with lower scores on short-term mating, and lower desires for number of partners across a lifespan. For the experimental manipulation data, the researchers found that contrary to their predictions, men in the disease threat condition indicated a greater preference for more

sexual partners. They also found that there was a significant negative correlation between the Perceived Vulnerability to Disease - Germ Aversion questionnaire and short-term mating in both conditions, but it was stronger in the manipulated one. Murray et al. discovered that in the manipulated condition, the Perceived Vulnerability to Disease questionnaire was significantly negatively related to sexual promiscuity and significantly positively related to long-term mating, which the researchers attributed to primarily the female participants' responses after further analysis.

Despite the conflicting results found for male participants in the study by Murray et al. (2013), the studies generally indicate that sexual disgust plays a role in political ideology, through emphasizing more conservative views. Sexual disgust in the studies by Billingsley et al. (2018) and Tybur et al. (2015) accounted for the relationships between pathogen disgust and conservative attitudes. While the previous section of this paper expressed findings supporting pathogen avoidance mechanisms as factors in conservative ideology, the studies in this section suggest that this relationship may be due to sexual disgust, which also may promote pathogen avoidance behaviors.

Moral Foundations and Climate/Environmental Views

Disgust is most closely associated with the Sanctity foundation, as shown in the previous sections of this paper. As discussed above, the disgust processes that are utilized in the Sanctity moral foundation have been found to be related to conservative ideology (e.g., Adams et al., 2014; Koleva et al., 2012; Stewart et al., 2019.; Terrizzi et al., 2013; Wang et al., 2019) While disgust and the Sanctity foundation were relied on when expressing conservative views about immigration (e.g., Aarøe et al., 2017) and about homosexuality (e.g., Wang et al. 2019), these are not the only issues that Sanctity is applied to. A few studies even explore instances where the

Sanctity foundation, despite its associations with conservative ideology, is instead relied on by people on the political left. One of those instances is when discussing climate and environmental issues, where people on the political left may rely on the Sanctity foundation more so than they usually would on other issues. This further emphasizes the importance of using the Moral Foundations Theory to understand issue-specific debates, instead of just broad political orientation categories.

Frimer, Tell, and Haidt (2015) examined whether liberals also rely on Sanctity when assessing morality, or if it is something that only conservatives seem to rely on. The researchers mentioned that there have been studies that found that conservatives have a stronger reliance on Sanctity than liberals, but Haidt (2010) proposed that some liberals may rely on Sanctity depending on context. In their study, Frimer et al. (2015) explored the idea that liberals rely on Sanctity when it comes to certain issues, such as environmental issues. They took an existing theory about how social conservatives are more likely to rely on the Sanctity foundation than liberals, and looked at the possibility that liberals also rely on Sanctity, but in regards to different political issues. They mentioned that it had not been shown directly before within a moral foundations framework that liberals rely on the Sanctity foundation for at least some of their judgments, expressing why this study was important for expanding the knowledge of political orientation and moral foundations. The first hypothesis for this study was that liberals do not base moral judgments on the Sanctity foundation, even if they may feel related intuitions. The second hypothesis took the opposite approach and said that liberals do base some moral judgments on the Sanctity foundation, but they find different things to be sacred than conservatives. The participants in two of the studies were present-day liberal aligning mountain

climbers, and the participants in the experimental study were liberals, moderates, and conservatives in the broader population.

In Study 1, Frimer et al. (2015) looked at how liberals reacted to bolts that were drilled into Cerro Torre (a mountain) by a mountain climber to see if liberals opposed this due to a reliance on Sanctity. In this study, Frimer et al. looked at an online forum that was discussing the removal of the bolts and analyzed this thread for words that belonged to any of the five moral foundations. Study 1 used a baseline thread for comparison and found that the thread that discussed the bolts included significantly more Sanctity, Authority, and Fairness words, but did not have more Care and Loyalty words than in the baseline thread.

Study 2 used a questionnaire to analyze how the climbers perceived the bolting of the mountain to follow up and see if the results matched those of Study 1 and to see if the population of climbers in Study 1 were actually liberals. The participants reported their opinions on the situation, they reported the perceived effects and relevance of the foundations to their opinion, and they reported their political ideology. Frimer et al. (2015) found that 88% of the participants identified as liberals, 7% as neutral, and 5% of conservative. For perceived effects, participants reported violations of all four foundations, but more so for the Sanctity foundation than the others and more specifically, desecration was a larger concern than harm for condemnation. For perceived relevance, Sanctity was also higher than the other three foundations measured, and Care was the least relevant.

The 3rd study used an experimental method to assess whether liberals condemn based on Sanctity by asking a population of Americans (not specifically climbers) to judge different scenarios, which included a climber painting an arrow on different objects, such as a plastic sheet for a control, on the rock, and on an American flag to assist friends trying to find their way up

the mountain. The arrow on the rock was to represent a form of liberal sacrilege and the American flag example was to compare it with a form of conservative sacrilege. The researchers asked participants if they agreed with how the situation presented to them was handled and asked to agree or disagree with statements assessing the morality and their feelings about the situation. Study 3 found that compared to the controls, liberals condemned the rock painting, but not the flag painting, and moderates and conservatives condemned both (Frimer et al., 2015). When looking at the mediating factors included in the experiment, they found that more pain perception, perceived sacrilege, and offense was brought about by rock painting for liberals. Frimer et al. found that feelings of desecration and disgust explained the condemnation of the rock painting by liberals and for conservatives, while sacrilege and offense were the stronger mediators when judging the flag painting.

The words chosen by the participants in Study 1 on the bolt thread discussion indicated that they saw the mountain more as a sacred object than as a victim who had been harmed (Frimer et al., 2015). Desecration was a large concern for the climbers, most of whom were liberals, when regarding the bolts in Cerro Torre, which suggests that liberals do rely on the Sanctity foundation for certain violations, even those that cause no harm. Liberals treated the mountain, but not the flag as sacred which may be explained by the references made by liberals to desecration and disgust. This shows that liberals do sometimes rely on the Sanctity foundation, but not in context of defending a nation (Frimer et al.). These results showed that contrary to previous belief, liberals do rely on the Sanctity foundation when it comes to nature. It would be worthwhile to look at a wider range of environmental issues to see if the political left relies on Sanctity for those as well.

In another study addressing the reliance on the Sanctity foundation, Frimer, Tell, and Motyl (2017) investigated how sacred thinking is apparent for both liberals and conservatives, due to how Sanctity is linked to conservatives' ideology regarding certain issues like same-sex marriage, but is conversely used to support liberal's ideology in the case of environmental regulation. This expanded on other studies and theories that have examined the role of Sanctity in conservative political orientation, and in the political orientation of liberals with respect to the environmental issue. This study analyzed whether liberals in the general population relied on Sanctity when reviewing the Keystone XL Pipeline issue. Frimer et al. predicted that liberals would use mostly Sanctity-based arguments and that conservatives would use mostly Fairness-based arguments, reversing roles for this issue, compared to the issue of legalization of same-sex marriage.

Frimer et al. (2017) studied 146 Americans for the first study, each of whom reported their political orientation, and answered a question about their opinion on same-sex marriage. They found that conservatism significantly predicted negative same-sex marriage opinions. When justifying their beliefs on same-sex marriage, liberals relied more on Fairness than Sanctity, whereas conservatives relied on both equally. For their second study, Frimer et al. had 152 US participants complete scales that assessed people's perceptions of the effects of same-sex marriage on society and how relevant these effects are to their morals, along with a version of the MFQ. They found that conservatism significantly predicted disapproval of same-sex marriage, that conservatives thought Care and Fairness were less relevant than did liberals, and Authority and Sanctity were more relevant for conservatives when considering the issue. They also found that liberals relied on all four foundations (they did not test Loyalty), but that Fairness was their main justification when assessing that generally legalization of same-sex marriage would have

positive effects on society. Frimer et al. also found that Fairness and Sanctity helped explain this dispute, but not Care and Authority. Both studies 1 and 2 are consistent with other work on the moral foundations theory.

For Study 3, Frimer et al. (2017) had 200 U.S. participants complete a survey that was similar to the one used in Study 1, except that the Keystone XL Pipeline was the debated issue. They found that morality was less present in these findings than in the ones for same-sex marriage, with more justifications regarding the pragmatics of the pipeline, however political conservatism was significantly negatively correlated with the use of Sanctity, and reliably positively correlated with the use of Fairness. The findings support the idea that liberal arguments can rely on Sanctity more than conservatives in some situations. Study 4 examined 290 participants, using the same measures as in Study 2, but regarding the Keystone Pipeline. They found that similarly to Study 2, conservatives thought Care and Fairness were less relevant and Authority was more relevant than liberals thought, but differently in this study, liberals found Sanctity more relevant than conservatives. Frimer et al. also found that all four foundations being tested helped explain the disagreement over the pipeline, with a reversed direction of effects from those in their second study.

These studies found that regarding certain issues, liberals may rely more on Sanctity foundations than conservatives do (Frimer et al., 2017). These differences may play a role when it comes to trying to negotiate, due to the difficulty to compromise with a side that relies on Sanctity. Frimer et al. also pointed out that the contrast of Sanctity arguments coming from one side, while Fairness arguments come from another is a bad mix for deciding on the best path forward. As for limitations, Frimer et al. noted that liberals claimed that Fairness was a more relevant concern for both issues and that conservatives reported Sanctity was the most relevant

for same-sex marriage and Fairness for the pipeline, which may be due to lower willingness from liberals to admit to relying on Sanctity. This study also included more males, relied on self-report and correlational measures, therefore not being able to dictate causal claims.

Climate change is one of the most discussed and prominent environmental topics in today's political world. In recent years, climate change has become a largely debated political issue with liberals and conservatives holding very polarized attitudes on the issue. Therefore, Wolsko, Ariceaga, and Seiden (2016) examined whether the disagreement between liberals and conservatives on environmental issues is not their level of concern, but is instead due to how the issue is framed in accordance with the moral foundations. Overall, Wolsko et al. predicted that the moral framing of the environmental issue would be a moderating factor on the relationship between political orientation and environmental attitudes. They hypothesized that the conservatives would increase their pro-environmental attitudes when the issue was framed in the binding foundations.

In their first experiment, Wolsko et al. (2016) had U.S. college students complete surveys on political orientation and then read information from either an individualizing foundation frame, a binding frame, or a control. Participants then took an assessment of their conservation intentions and one of their climate change perceptions. Wolsko et al. found that the effect of political orientation was stronger in the individualizing condition and in the control condition than the binding condition on conservation intentions. Regarding levels of conservation intentions, liberals had higher levels than conservatives in the individualizing and the control conditions, but they were equal in the binding frame. While conservatives had greater levels of conservation intentions in the binding condition than the individualizing one, there was no difference for the levels that liberals had in the two conditions.

For the second experiment, Wolsko et al. (2016) had a slightly older sample of participants complete a survey about personal values and behaviors, respond to the information in one of the different frame conditions, and take the same assessments as in Experiment 1. They also responded about the source of the message to assess ingroup identity and measured how much participants were willing to donate to the Environmental Defense Fund. Regarding conservation intentions, the findings in this experiment coincide with those of Experiment 1. For the donation amount model, Wolsko et al. found that the effect of political orientation was stronger in the binding condition, and in this condition, liberals had smaller donations than conservatives, whereas they had equal amounts in the individualizing condition. However, conservatives had higher donations in the binding condition than they did in the individualizing condition, supporting the hypothesis that framing the issue with a binding foundation would increase pro-environmental attitudes for conservatives. The inclusion of ingroup identity reduced the interaction effect in the moderation model in the donations analysis.

In the third experiment, Wolsko et al. (2016) had participants follow the same procedures from Experiment 2 and added a survey to assess the perceived argument strength of the pro-environmental messages. Wolsko et al. found that the argument in the binding condition was perceived as significantly weaker than the individualizing condition. They found that conservatives reported higher perceived strength of the binding condition arguments than the liberals did and lower than the liberals did for the individualizing condition, but the perceived effects from conservatives on the two conditions were equal. Liberals reported higher strength for the individualizing condition than the binding one. Overall, the results from this study reinforced the Moral Foundations Theory by indicating that when an issue is framed in the

binding foundations that appeal to conservatives, it may impact their attitudes, further displaying how liberals and conservatives tend to hold moral values based on different foundations.

Due to the political polarization of climate change, some of which includes disbelief about the legitimacy of scientific evidence of the issue, Rossen, Dunlop, and Lawrence (2015) wanted to study the mechanisms that led to this skepticism, specifically in conservatives. They referenced the study, explored later, that found conservatives to be more concerned with maintaining social order, therefore basing environmental views on the binding foundations, whereas liberals based environmental priorities on the Care and Fairness foundations (e.g., Feinberg & Willer, 2013). Rossen et al. (2015) proposed that maintaining social order and free market ideology were the two domains that underlie climate change skepticism in political conservatives and examined if they were distinct. They recognized the previous research that has shown that conservatives respond more to environmental degradation issues when it is framed in terms of the Purity moral foundation, but research has not included climate change skepticism specifically which is a slightly different political issue. Rossen et al. also based their predictions on the Liberty foundation which has been proposed as a potential sixth moral foundation.

Rossen et al. (2015) hypothesized that the morality based on the binding foundations and the morality based on the Liberty foundation would be empirically distinct. They also hypothesized that endorsements of the binding or Liberty foundations would be related to climate change skepticism and would account for variance in skepticism. Rossen et al. had a large sample of Australian participants take a climate change skepticism scale, the MFQ which included Liberty related questions, a political ideology scale, and a political engagement scale. They found support for their first hypothesis that the binding and Liberty foundations were distinct and they both significantly positively associated with conservatism. The binding

foundations were significantly positively correlated with the individualizing foundations, whereas the Liberty foundation was significantly negatively correlated with the individualizing foundations. Rossen et al. also found that climate change skepticism was significantly positively correlated with the binding foundations and the Liberty foundation. The moral foundation groups (individualizing, binding, and Liberty) independently from each other helped explain the variance in climate change skepticism. The researchers concluded that the binding and Liberty foundations were separate reasons for climate change skepticism, due to how they were empirically distant and therefore concerns about social change and concerns about economic freedom may be found together in beliefs, but also may be distinct pathways. Because both the binding and Liberty foundations are found in political conservatism and may explain conservative views about climate change, the distinction between the two may be important for how climate issues are framed to appeal to conservatives. While the previous research showed appealing to the Purity foundation was effective, seeing as some conservatives may take a Liberty approach to the issue, this might be another effective persuasion technique.

While Rossen et al. (2015) found relations between the moral foundations and climate change skepticism, a study by Feinberg and Willer (2013) explored framing processes of the issue and its impacts on attitudes. Feinberg and Willer wanted to examine whether liberals viewed the environment in moral terms because of how the issues are discussed regarding the individualizing foundations and if conservatives were more likely to take pro-environmental attitudes if the issues are discussed through different moral foundations. The researchers believed that because environmental issues are typically framed according to the Care and Fairness foundations, that this explains the appeal to liberals and not conservatives. Due to this belief, Feinberg and Willer predicted that if conservatives were exposed to pro-environmental

statements in terms of moral concerns that appeal more to them they will be more supportive of pro-environmental issues. Their first study had two large samples of American participants measure their political ideology. The first group read one of three vignettes where a character either recycled a bottle, threw it away, or it was not mentioned, and then the participants rated how moral they thought the character was. They found that liberals in the throw away condition had significantly lower perceived morality scores of the character than liberals in the recycle condition, whereas conservatives did not differ significantly for any conditions. The second sample in this study was asked to rank how important it was to behave in an environmentally friendly way and then to explain their answers. The explanations were assessed for how much they included moral reasons and right and wrong perceptions, using a coder. Feinberg and Willer found a significant correlation between liberalism and the morality composite, as well as liberalism and pro-environmental views. They also found that viewing the environment as a moral issue was a mediating factor for the association between liberalism and environmental attitudes.

The third study included a large sample of participants who also completed the political ideology measure and then were assigned to a Care, Purity, or neutral message condition (Feinberg & Willer, 2013). The participants reported how much they felt certain emotions, including disgust, and they took a measure of pro-environmental views. Feinberg and Willer found that participants in the Purity condition felt more disgust, which was a stronger effect for conservative participants who reported more disgust than conservatives in the Care group, whereas liberals in both groups had no significant difference. They also found that conservatives in the Purity condition had significantly greater pro-environmental views than those in the Care condition, and that these conservatives in the Purity did not differ significantly from the liberals

on their pro-environmental scores. When analyzing disgust, Feinberg and Willer found that disgust partially mediated the message and ideology interaction and environmental attitudes relationship, which displayed that conservatives may have had greater pro-environmental attitudes in the Purity condition because they reported higher disgust levels. This is consistent with other studies that have analyzed the role that disgust plays in conservative ideology, and Feinberg and Willer showed that this phenomenon may also be present in conservative views regarding the environment. Overall, this study is consistent with the study by Day et al. (2014) about shifting political attitudes which found that conservatives can be swayed to be less conservative when issues were framed in conservative-relevant moral foundations.

These findings that framing of climate and environmental issues in regards to certain moral foundations may impact views on these issues is an important phenomenon for the political world. While Rossen et al. (2015) showed that one pathway to climate skepticism is based in the binding foundations, the findings by Wolsko et al. (2019) and Feinberg and Willer (2013) that framing the issue for conservatives in terms of these foundations may spark shifts is crucial, especially considering the quickly approaching climate change impacts. Together these findings provide potential solutions for the political divide and skepticism about the climate issue. The findings in this section also highlighted the importance of studying issues individually from political ideology within the Moral Foundations Theory. While conservatives may generally utilize the Sanctity foundation more than liberals, when it comes to environmental issues liberals may rely on this foundation more, contrary to what's expected when looking at just political alignment (e.g. Frimer et al., 2015; Frimer et al. 2017). The studies regarding climate and environmental issues further illustrate the importance of the Moral Foundations Theory and its relevance to present day matters.

Discussion

The studies highlighted in this paper suggested that there are differences in the foundations that people on the political left and the political right rely on. While individuals value different foundations and hold opposing views, they seem to operate by way of different mechanisms, which can be shown in the findings by Turner-Zwinkels et al. (2020) that liberals differentiated more between the individualizing foundations, and the findings by Day et al. (2014) that liberals did not adopt pro-conservative views framed in terms of the individualizing foundations, whereas conservatives took on more pro-liberal views when they were framed in the binding foundations. The mechanisms within each foundation also may be different processes, shown by the large role that disgust plays in the Sanctity foundation which has been associated with conservative views. Even within the relationship between politics and disgust, there may be different processes occurring, either from pathogen avoidance or sexual strategizing behaviors, or even from a combination of the two. Regardless of the potential different mechanisms in forming different political attitudes, there is evidence that change can occur through changes in empathy (e.g., Hannikainen et al., 2020) or even through framing specific issues within the context of a foundation that appeals to a specific ideology (e.g., Feinber and Willer, 2013; Wolsko et al., 2019).

The issue debates in contemporary politics encompass a wide range of topics, and it stands to reason that the foundations relied on when making moral judgments for specific issues may not always align with the typical findings regarding overall political left or right ideology. This emphasizes how the Moral Foundations Theory can be applicable to many domains of politics, but focusing on the various issues and how to best utilize the theory in the context of each one may help with more effective political discussions in the future. The various political

issues that the Moral Foundations Theory can be applied to illustrates the importance of studying the different approaches to moral judgments. As there is increasing polarization on political issues, framing certain views in terms of the foundations may have implications for political progress. While this paper addressed certain political issues such as climate change/environmental action, immigration, and same-sex marriage, there may be other issues that the Moral Foundations Theory applies to, seeing as it is related to liberal and conservative ideologies. The study by Petersen et al. (2013) found differences in support for a kind of economic issue based on body strength, displaying that evolutionary factors and the foundations may have implications for monetary political issues that were not discussed heavily in this paper.

While this thesis assessed the Moral Foundations Theory and its relationship with certain political attitudes, such as liberal and conservative views, there are other ways that this theory may be applied in the future. The terms “liberal” and “conservative” as used in this paper are mostly referring to what individuals in the United States consider to be the definitions. However, the meanings of these terms when used to describe ideology, vary based on cultural context and even sometimes vary from individual to individual within cultures. Political ideology rests on a spectrum, therefore even inside the standard definitions for these terms can be a wider range of political attitudes. One potential future application of the Moral Foundations Theory could be an examination of the various attitudes that may be encompassed by the terms “liberal” and “conservative” to see if there are any significant differences or trends within these categories. Another potential concept to study is how reliance on certain foundations may change throughout people’s lifespans. While one study mentioned earlier by Hannikainen et al. (2020) found that increasing empathy can change which foundations an individual bases judgments on, there may be other factors or experiences that one has with age that could shift this as well.

There are also certain relationships to the moral foundations, political views, and disgust that were not examined as deeply in this paper such as gender differences, associations with certain personality traits, and religious tendencies. For example, a study by Fincher and Thornhill (2008) found that religious diversity or the number of religious groups a country has was significantly positively correlated with measures of parasite stress. They proposed that this relationship was due to the idea that the intergroup boundaries of religious groups isolate each group from others, and therefore are more prominent in areas with higher numbers of pathogens. Religiosity in individuals has also been found to be positively related to sexual disgust sensitivity in the study by Tybur et al. (2015), in which sexual disgust was also positively related to social conservatism. Due to the prevalence of religion in conservative ideologies, there may be other connections that drive these mechanisms and this relationship that were not addressed in this paper.

Even though a few studies incorporated cross-cultural samples and tested the generalizability of the MFQ (e.g., Doğruyol et al., 2019), there is still much need for work on how the approach applies in a wider variety of cultural, ethnic, and linguistic groups. The study by Stewart et al. (2019) that found that disgust played a role in perception of Barack Obama also found that reactions to a random black male photo headed toward similar negative emotional reactions to those of Obama, although these findings were not significant. However, they do indicate that this may be a future consideration to study going forward.

While there were gender differences found in the study by Murray et al. (2013) regarding germ aversion and sexual promiscuity, and the study by Billingsley et al. (2018) regarding sexual disgust and the 2016 election, there are other gender variances that were not addressed in this paper. One study by Moore, Joens-Witherow, Ross, and Benegal (2019) found that reliance on

certain moral foundations and the likelihood of voting for Trump in 2016 varied based on gender with the Care foundation being significantly negatively correlated with voting for Trump and the Purity foundation being significantly positively correlated with voting for Trump in men.

However, for women, Moore et al. found that reliance on the Fairness foundation was significantly negatively related to voting for Trump, while reliance on the Authority foundation was significantly positively related to voting for Trump. Moore et al. also found that the binding foundations were related to Machiavellianism and Narcissism in males.

There are connections between the moral foundations and other personality traits that have been established, including the Big Five personality traits. Lewis and Bates (2011) found that greater reliance on the individualizing foundations was related to higher levels of openness, neuroticism, and agreeableness. They also found that greater reliance on the binding foundations was related to higher levels of conscientiousness and extraversion. Personality traits may be an important aspect to study for its potential implications for the Moral Foundations Theory and political ideologies.

There also are findings related to pathogen disgust that were not discussed thoroughly in this paper, but serve as important information. Beyond individual differences, some studies have found patterns across regions regarding pathogen disgust. Fincher et al. (2008) found that collectivism in cultures was significantly positively correlated with pathogen prevalence in those cultures. They proposed that collectivism may be an adaptation to pathogen transmission and may serve as a protector from infection. A different study by Thornhill, Fincher, and Aran (2009) also found the connection between pathogen prevalence and collectivism in countries studied, as well as autocracy, women's subordination, and women's sexual restrictiveness were also significantly positively correlated with high pathogen prevalence. The findings in this study

provide another example of the broad implications of pathogen disgust and display another variation based on gender, providing more support for other relevant studies on this subject.

The limitations for many of the studies examined in this thesis are regarding the samples of participants. Many studies in this paper, and in psychology as a whole are conducted with participants from WEIRD (western, educated, industrialized, rich, and democratic) cultures which due to their differences may not be fully generalizable. However, the study by Doğruyol et al. (2019) did address this issue when studying the MFQ as a fit measurement and a few other studies in this paper had some participants from various cultures, but many did not, limiting the generalizability of some of the findings. Another limitation is that many of these studies utilized participants from universities, which also do not provide a fully representative sample. Finally, as mentioned above, the political world is constantly evolving, and therefore terminology like “liberal” and “conservative” which were used frequently in much of the research may not mean the exact same thing to every individual, especially in the research that is done cross-culturally. This further emphasizes the need to expand research into Moral Foundations Theory and a more inclusive range of political ideologies, including breaking down the categories “liberal” and “conservative” into more specific ranges and definitions.

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