`

Moral Emotions as Antecedents of Political Attitudes

Dragos C. Petrescu

Christ Church

Thesis submitted for the degree of Doctor of Philosophy

Department of Experimental Psychology

University of Oxford

2013

`

AKNOWLEDGEMENTS

I would like to thank my supervisor, Dr Brian Parkinson, without whose guidance and support this research would not have been possible. I am also grateful for the financial assistance I received from the Romanian-American Foundation, Ratiu Foundation, Dinu Patriciu Foundation, and Christ Church.

I would like to acknowledge my colleagues from the Department of Experimental Psychology: Gwenda Simons, Ilmo van der Lowe, Janice Sanchez, Laura Taylor, and Simon Lutterbie, for help, advice, and encouragement. I would also like to thank Dr Emanuele Castano for guiding my research at the New School for Social Research. Thanks are also due to my Oxford friends who through their invaluable friendship have made feel at home: Alex Tennet, Andi Schmidt, Andy Brown, and Zsolt Kiss. My lifelong friends: Alexandru Tudorache and Catalin Gorie – thank you for your friendship.

Finally, I thank my family – for any kind of support there is. My parents, Constantin and Elisabeta, who made it possible for me to live my dreams and fulfill my potential; and my brother, Mircea, who opened up my eyes to the things I can achieve. *Vă mulțumesc.*

`

CONTENTS

`

`

`

`

`

LIST OF TABLES

`

LIST OF FIGURES

`

Moral Emotions as Antecedents of Political Attitudes

Dragos C. Petrescu

Christ Church

D.Phil. in Experimental Psychology

Submitted Michaelmas Term, 2012

ABSTRACT

The main objective of this thesis was to investigate the proposition that moral emotions act as antecedents of political attitudes. My approach (Chapter 1) stems from moral foundations theory, which proposes that liberals and conservatives have different moral values (Graham, Haidt, & Nosek, 2009). Chapter 2 presents Study 1, an experimental test of the hypothesis that induced disgust leads participants to adopt more left-wing economic attitudes in comparison to a control condition (sadness). Results supported this hypothesis. Chapter 3 reviews emotion-regulation theories, and presents Study 2, which investigated whether emotion-regulation strategies, disgust sensitivity (DS-R), and private body consciousness (PBC) moderate the effects found in Study 1. As predicted, disgust led to more left-wing economic attitudes, but this was only the case for high-PBC and high-DS-R participants. Chapter 4 presents Study 3, which replicated Study 2, and showed dissociations between the effects of disgust on economic and social attitudes. Chapter 5 presents a cross-sectional investigation (Study 4) that tested for associations between the predisposition to experience disgust and both social and economic attitudes. As predicted, core disgust and pathogen disgust were associated with left-wing economic attitudes and these effects applied only to British participants, and not non-British participants. Chapter 6 presents Study 5 – an experiment investigating the relationship between disgust and prejudiced attitudes towards outgroups. Induced disgust led to more prejudiced attitudes towards a novel group than both sadness and neutral emotion. Chapter 7 is focused on two self-conscious moral emotions: guilt and shame. Study 6, presented in this chapter, found a positive association between guilt proneness and left-wing economic attitudes, and a relationship between shame proneness and social-conservative attitudes. Study 7 failed to reveal causal relationships between incidental guilt and shame and political attitudes. Chapter 8 presents the general discussion addressing limitations, implications, and future research directions.

`

DETAILED ABSTRACT

The main purpose of the present thesis was to investigate the role of moral emotions (disgust, guilt, and shame) in the adoption of political attitudes. As outlined in Chapter 1, political ideology is defined as "a set of beliefs about the proper order of society and how it can be achieved" (Erikson & Tedin 2003, p.64). Political ideology involves many aspects but is often conceptualized as unidimensional continuum ranging from left-wing (or liberal) to right-wing (or conservative) (e.g., Jost, 2006). In the present thesis, I adhere to a different model that distinguishes between two dimensions of political attitudes pertaining to social and economic issues (e.g., Duckitt, 2001; Evans, Heath, & Lalljee, 1996; Van Hiel & Kossowska, 2007). The social dimension ranges from traditionalism to progressivism, whereas the economic dimension ranges from a preference for capitalism and free competition to egalitarianism.

Chapter 1 also introduces three main traditions regarding the psychological systems corresponding to liberal versus conservative political orientation. Perspectives emphasizing the importance of personality differences (e.g., Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Altemeyer, 1988), motivated social cognition (e.g., Jost, Kruglanski, & Sulloway, 2003), and moral foundations (Graham, Haidt, & Nosek, 2009) are presented. The central hypotheses of the present thesis are in line with moral foundations theory. Research in this framework has found that liberals and conservatives have different moral values. Liberal morality is mostly concerned with issues of harm and fairness, whereas conservatives are also preoccupied with authority, loyalty, and purity. For this reason liberals and conservatives disagree on numerous matters such as abortion,

`

gay rights, and capitalism (Graham et al., 2009). Morality is thus central in the adoption of political attitudes. Chapter 1 further reviews the literature pertaining to morality and moral judgments. I review the two main theoretical approaches to moral judgments: the rationalist approach (e.g., Kohlberg, 1971) and the affective approach (Haidt, 2001). The present research is consistent with research emphasizing the importance of emotions in (moral) judgments, including the affect-as-information framework (Schwarz & Clore, 1983), somatic marker hypothesis (Damasio, 1994), and social intuitionist model of moral judgments (Haidt, 2001). Research in this tradition has revealed that experimentally inducing participants to experience diverse affective states influences their judgments regarding a broad range of issues, for example offers in economic games (Moretti & di Pellegrino, 2010), life satisfaction (Schwarz & Clore, 1983), and morality of certain behaviours (Schnall, Haidt, Clore, & Jordan, 2008). Chapter 1 ends with a theoretical review of the moral emotions. Haidt (2003) groups moral emotions into four groups that share certain characteristics: "other-condemning" emotions, "self-conscious" emotions, "other-suffering", and "other-praising" emotions.

Chapter 2 reviews the literature linking the moral emotion of disgust with political attitudes. The majority of studies reviewed report an association between a predisposition to experience disgust and social-conservative attitudes, most notably, opposition to gay rights and abortion. Researchers in the field have proposed that the relationship between disgust and the moral dimension of purity accounts for this association (e.g., Horberg, Oveis, Keltner, & Cohen, 2009; Inbar, Pizarro, & Bloom, 2009). I propose that there are theoretical and empirical reasons to support the proposition that disgust would also promote left-wing economic attitudes. First, not all studies investigating the relationship

`

between disgust and social-conservative attitudes have found support for his relationship (e.g., Tybur, Merriman, Hooper, McDonald & Navarrete, 2010). Second, disgust can sometimes function as a liberal emotion, too. For example, high levels of disgust sensitivity are also associated with practices and beliefs which are close to the liberal political spectrum, such as animal rights activism (Herzog & Golden, 2009) and moral vegetarianism (Rozin, Markwith, & Stoess, 1997). Finally, there is empirical evidence to suggest that disgust is related to violations of fairness, a moral dimension that liberals find particularly relevant. For example, participants react to unfair offers in economic games with disgust (Chapman, Kim, Susskind, & Anderson 2009; Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003). Moreover, inducing participants to experience disgust influenced participants' decisions to reject unfair offers in similar paradigms (Moretti & di Pellegrino, 2010).

Experimental Study 1, presented in Chapter 2, tested the hypothesis that inducing participants to experience disgust leads them to adopt more left-wing attitudes pertaining to economic issues. In line with previous research (Schnall et al., 2008), I expected that these effects would be particularly strong for participants who are aware of their physical sensations, as indicated by the private body consciousness scale (PBC; Miller, Murphy, & Buss, 1981). Undergraduate psychology students from the University of Oxford (N = 39; 24 women) completed the experiment in exchange for partial course credit. Participants were randomly assigned to one of two experimental conditions, corresponding to the induced emotional states: disgust vs. control (sadness). The emotion-induction procedure consisted of exposing participants to four images depicting affective content. As expected, participants in the disgust condition reported more left-

`

wing economic attitudes than participants in the control condition. Moderation hypotheses were not supported: neither the degree to which participants were sensitive to their bodily sensations, nor the degree to which they were able to control automatic reactions, as indicated by the attentional control scale (ACS; Derryberry & Reed, 2002), moderated the effects. Study 1 also investigated a number of cross-sectional relations. As predicted, left-wing economic attitudes were negatively predicted by emotional uncertainty and need for structure.

Chapter 3 presents Experimental Study 2, which was aimed to replicate results found in Study 1. An equally important goal of this experiment was to further explore potential moderators of the relationship between incidental disgust and left-wing economic attitudes: PBC, disgust sensitivity (DS-R; Haidt, McCauley, & Rozin, 1994), and emotion-regulation styles (Gross & John, 2003). The experiment had a similar design to Study 1, with participants randomly assigned to either a disgust-induction or control condition. The main effect uncovered in Study 1 was not replicated, but two moderator effects were found. Induced disgust led to more left-wing economic attitudes, and this was only the case for participants scoring high on the PBC and DS-R measures. Also, contrary to expectations, whether or not participants habitually engaged in cognitive reappraisal as an emotion-regulation strategy did not moderate the effects. Similar to Study 1, cross-sectional hypotheses were also tested. Contrary to predictions, the DS-R was not related to left-wing economic attitudes.

Chapter 4 presents Experimental Study 3, which aimed to replicate Studies 1-2 and to compare the effects of disgust on social and economic attitudes. The experiment used the same basic design as before, but recruited a larger sample of participants (N =

`

79; 49 women). Similar to Study 2, induced disgust led to more left-wing economic attitudes but this was only the case for participants scoring high on the PBC and DS-R scales. Study 3 also revealed an unexpected moderation effect of gender: induced disgust led women, but not men, to endorse more socially liberal attitudes. Cross-sectional results replicated previous research: the DS-R was a significant predictor of social-conservative attitudes, but not of economic attitudes. The lack of a relation between the DS-R and economic attitudes is problematic, given that Studies 1-3 revealed that feelings of disgust do play a role in the adoption of such attitudes. I therefore proposed that that the DS-R may not tap into the type of disgust which is relevant in this context (fairness-related disgust), and as a consequence does not predict economic attitudes. Cross-sectional Study 4 was designed to address this possibility.

Chapter 5 presents Cross-sectional Study 4, an investigation of associations between two measures of disgust sensitivity, the DS-R and the Three Domain Disgust Scale (TDDS; Tybur, Lieberman, & Griskevicius, 2009), and social and economic attitudes. Previous research reports only weak associations between DS-R and fairness-related concerns (r = .12; Graham & Joseph, 2009). On the other hand, pathogen disgust, indexed by a subscale of the TDDS, shows a stronger relation with fairness concerns (r = .27; Olatunji et al., 2012). Given this association, I expected pathogen disgust to predict left-wing economic attitudes. Previous research does not report associations between DS-R subscales (core, animal nature, and contamination disgust) and fairness concerns, but there is evidence to suggest that core disgust is strongly related to pathogen disgust (Olatunji et al., 2012). I therefore expected core disgust to show a similar pattern of associations to economic attitudes. Furthermore, I proposed that a relationship between

`

disgust and left-wing economic attitudes might reflect specific British concerns regarding class divisions of wealth, occupation, and education. As a consequence, I expected that the abovementioned associations would be particularly strong for British participants, as opposed to non-British participants. The survey was conducted completely online. Participants associated with the University of Oxford (N = 314; 221 women) participated in exchange for a ticket to enter a raffle to win £50. Results were generally in line with hypotheses. The study successfully replicated previous research and found a relationship between DS-R and social-conservative attitudes. More critically, as predicted, positive associations between both core disgust, pathogen disgust, and left-wing economic attitudes were found. These novel relationships only applied to British participants, supporting my assumptions regarding the specificity of effects.

Chapter 6 focuses on a different aspect of disgust: its relationship to negative attitudes towards outgroups and presents Experimental Study 5, which was aimed at uncovering this darker side of disgust. A New York City based sample of participants (N = 141; 90 women) participated in an online experiment in exchange for a ticket to a raffle to win $100. Participants were randomly assigned to one of four experimental conditions: disgust vs. anger vs. sadness vs. neutral. Following the emotion-induction procedure, their attitudes towards a novel group (extraterrestrial aliens called the Gs) were assessed by means of self-report. In line with my predictions, participants in the disgust condition who reported low levels of self-importance of moral identity (Aquino & Reed, 2002), showed higher levels of prejudice towards the Gs than participants in the sadness and neutral conditions. For participants in the anger condition, effects followed similar

`

patterns but were not significant. However, my predictions regarding a moderation effect by PBC were not met.

Chapter 7 presents Cross-sectional Study 6 and Experimental Study 7: two studies testing for relationships between guilt and shame on the one hand and political attitudes on the other. Study 6 investigated correlations between guilt- and shame-proneness (Tangney, Wagner, & Gramzow, 1989) and political attitudes. Participants associated with the University of Oxford and other volunteers (N = 374; 241 women) completed an online survey. Results supported the main predictions. As expected, there was an association between guilt proneness and left-wing political attitudes, and between shame proneness and social-conservative attitudes. Moreover, results uncovered in Study 4 pertaining to disgust sensitivity and political attitudes were replicated in Study 6. The obtained associations between guilt, shame, and political attitudes were also contrasted with those of disgust sensitivity and political attitudes.

Experimental Study 7, also presented in Chapter 7, aimed to directly assess causal relationships between guilt and shame on the one hand, and political attitudes on the other. An international sample of participants (N = 300; 206 women) were recruited to participate in the experiment in exchange for a ticket to a lottery to win £50. Similar to Study 5, the experiment was conducted completely online. Participants were randomly assigned to one of four experimental conditions, equivalent to the four induced emotional states: disgust vs. guilt vs. shame vs. neutral. Subsequently, their political attitudes were assessed. Findings did not support my predictions: induced guilt did not lead to more left-wing economic attitudes, and shame did not lead to more social-conservative attitudes. Similarly, induced disgust did not impact on participants' political attitudes.

`

Methodological failure and participant self-selection are likely to have caused the lack of effects in Study 7.

Chapter 8 presents a general discussion. It concludes that the present research has implications for research and theory regarding moral emotions and political attitudes, but also for more general frameworks such as somatic marker hypothesis, the affect-as-information hypothesis and the social intuitionist model. Studies 1-3 are consistent with previous research investigating the influence of disgust on moral judgments. Haidt and his colleagues (Schnall et al., 2008; Wheatley & Haidt, 2005) induced participants to experience disgust (through hypnosis, odors, videos, pictures, and biographic recollections) and found that these markers led to stronger moral condemnation of certain moral violations. In the present study, inducing disgust somatic markers impacted on participants' political attitudes. To the best of my knowledge, these are novel results which emphasize that disgust can function as an "unfairness marker" and bias political attitudes with regard to economic issues.

The main limitation of the present thesis was that Study 7 failed to support the hypotheses regarding guilt, shame, and political attitudes. Cross-sectional associations between guilt- and shame-proneness on the one hand and political attitudes on the other were uncovered in Study 6. Study 7 failed to uncover corresponding causal relationships, and it is therefore still possible that these correlations are in fact due to other unmeasured factors related to both self-conscious emotions and political attitudes. Moreover, it might also be the case that that political attitudes bring about self-conscious emotions and not the other way around. Taking into account the limitations of Study 7, future research is

`

necessary to further explore the relationships between guilt, shame, and political attitudes.

Finally, implications for applied research are discussed. I argue that the present findings are pertinent for understanding political behaviour, but that future research directly addressing applied questions is required. A different direction future research might take is to investigate the remaining other-condemning emotions – anger and contempt – in relation to political attitudes and behaviour.

`

CHAPTER 1: PSYCHOLOGICAL FOUNDATIONS OF POLITICAL ORIENTATION

In this Chapter, I define political ideology and present three major traditions that attempt to uncover the psychological foundations underlying liberal and conservative orientation: personality, motivated social cognition, and moral foundations. I focus on the influence of moral values on political attitudes and present a broad theoretical foundation emphasizing the importance of emotions in moral and political attitudes. Research within the affect-as-information framework, the somatic marker-hypothesis, and the social intuitionist model is reviewed. Finally, I provide a brief theoretical review of the moral emotions based on Haidt (2003).

The psychological underpinnings of political orientation and attitudes have been the subject of much academic scrutiny. Traditionally theorists have focused on the importance of personality (e.g., Altemeyer, 1988) and motivation (e.g., Jost, Kruglanski, & Sulloway, 2003), but more recent approaches have emphasized the importance of moral values as antecedents of political attitudes (e.g., Graham, Haidt, & Nosek, 2009). The present thesis fits in this tradition – I explored the role of moral emotions in the adoption of left-wing and right-wing political attitudes. In this Chapter, I define political ideology, present the main tenets of the liberal and conservative political orientations, and summarize the three major traditions aimed at explaining antecedents of the two ideologies.

Liberals and Conservatives

Erikson and Tedin (2003) define political ideology as "a set of beliefs about the proper order of society and how it can be achieved" (p. 64). Political ideology involves many aspects, but most researchers have employed a unidimensional measure ranging

`

from left-wing to right-wing as a parsimonious approximation of political attitudes (Jost, 2006). Research in this perspective has revealed that political orientation has two interrelated aspects. The first aspect concerns social change, and distinguishes between promotion of change by the political left and opposition to change from the political right. The second aspect concerns equality and differentiates between endorsement of equality by those with a left-wing orientation and opposition to it by those with a right-wing orientation (Jost et al., 2003).

Other approaches proposed that a unidimensional conceptualization is not sufficiently informative, and suggested that there are factorially distinct dimensions underlying political orientation. These bi-dimensional models distinguish between clusters of attitudes pertaining to *social* and *economic* issues (e.g., Duckitt, 2001; Evans, Heath, & Lalljee, 1996; Van Hiel & Kossowska, 2007). The first dimension focuses on social issues, and ranges from traditionalism and conservatism to openness, autonomy, individual freedoms, and so on (Van Hiel & Mervielde, 2004). Focusing on the conservative side of the spectrum, as the literature often does, social (or cultural) conservatism is defined as being primarily concerned with the "preservation of the ancient moral traditions of humanity" (Kirk, 1953/2001, p. 8). The second dimension deals with attitudes towards economic issues; it ranges from economic conservatism to egalitarianism. Again focusing on conservatives, economic conservatism encompasses a preference for capitalism and free competition (Van Hiel & Mervielde, 2004).

Empirical evidence is also mounting that the social and economic aspects of political ideology are distinct constructs which are associated with different psychological traits. For example it is the social conservatives rather than the economic

`

conservatives who tend to be more dogmatic and to be threatened by mortality (e.g., Crowson, 2009). In a British context, Evans et al. (1996) have identified two clusters of attitudes which they termed *left versus right* and *libertarian*[1] *versus authoritarian* dimensions of political attitudes. The left-versus-right dimension corresponds to the economic dimension presented above, whereas the liberal versus authoritarian dimension corresponds to the social dimension, and deals mostly with people's individual freedoms to protest against government and publish controversial materials. In line with the evidence presented above, the present research used the left-right dimension to assess participants' attitudes towards economic issues and the libertarian-authoritarian dimension to assess attitudes to social issues.

The Psychology of Political Orientation

Social scientists have long speculated about the underlying psychological systems that correspond to liberal versus conservative political orientation. Historically there has been an emphasis on personality differences (e.g., Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Altemeyer, 1988), motivated social cognition (e.g., Jost et al., 2003) and moral foundations (Graham et al., 2009). The following sections address each of these in turn.

[1] In this context the term "libertarian" is not used in its common meaning (i.e., someone who is economically conservative and socially liberal). The libertarian-authoritarian dimension proposed by Evans et al. (1996) is strictly concerned with social issues regarding individual freedom.

`

Personality and political orientation. Most research investigating the assumption that differences in political orientation reflect differences in personality has focused on conservatives. Moreover, the subgroup of conservatives inclined to hold prejudiced attitudes has generated most interest. Two of the main theories that sprung from this tradition are right-wing authoritarianism (RWA; Altemeyer, 1988) and social dominance orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994).

Adorno et al. (1950) developed the authoritarian personality research in an attempt to explain the rise of Fascism in 1930s Europe. Their approach aims to describe the characteristics of a "potentially fascistic individual, one whose structure is such as to render him particularly susceptible to antidemocratic propaganda" (p. 1). The authoritarian personality was measured with the F scale, which included nine covarying factors: conventionalism, authoritarian submission, authoritarian aggression, anti-intellectualism, superstition and stereotypy, power and toughness, destructiveness and cynicism, projectivity, and concern over sex.

The theory initially received a lot of attention but researchers soon lost interest. Empirical evidence confirmed the weakness of both the theory and the F-scale. Research showed that if response bias was controlled for, the F-scale had no reliability and unidimensionality (Sibley & Duckitt, 2008). Moreover empirical research by Pettigrew (1959) found that *social and cultural factors*, rather than personality, explained why prejudice against Black people was higher in some American regions than in others. Findings in this tradition persuaded many researchers to ignore personality and pursue this different line of work for the next twenty years (Sibley & Duckitt, 2008).

`

However, recently a burgeoning interest in personality as antecedent of political attitudes emerged (Sibley & Duckitt, 2008). At the center of this interest is the work of Altemeyer. He defined right-wing authoritarianism as "the covariation of three attitudinal clusters in a person" (Altemeyer, 1996, p.6). These factors were conventionalism, authoritarian aggression, and authoritarian submission, and together they form the right-wing authoritarianism scale (RWA), which is a reliable instrument tested within diverse samples of participants (Altemeyer, 1988; 1996; 1998).

Social dominance orientation (SDO), the second important personality dimension, was introduced by Sidanius, Pratto, and their colleagues (Pratto et al., 1994; Sidanius & Pratto, 1999) as a different approach to the personality – prejudice relation. SDO is defined as a general leaning towards systems in which social groups hold unequal statuses, and "the extent to which one desires that one's ingroup dominate and be superior to outgroups" (Pratto et al., 1994, p. 742). SDO was found to be associated with a wide range of attitudes, such as racism (Sidanius, Devereux, & Pratto, 1992), capitalism (Sidanius & Pratto, 1993), opposition to gay rights, and approval of military interventions and spending (Pratto et al., 1994).

Although this tradition is not central to the present thesis' approach, a number of hypotheses regarding the relation between RWA, SDO, and political attitudes have been tested. Overall, I believe that taking into account personality is beneficial when trying to unravel the processes underlining political orientation. However other factors should be taken into account because this approach alone can only offer a limited insight on the matter; accounting for the dynamic, social, and moral factors can provide a more

`

comprehensive picture of the processes that cause variation in attitudes – a fact that becomes obvious in analyses such as the one undertaken by Pettigrew (1959).

Motivated social cognition and political orientation. Jost et al. (2003) argue that the assessment of personality differences between liberals and conservatives represents good first step in unraveling the underpinnings of political ideology. However, in line with findings supporting the assumption that social factors predict political conservatism better than personality (e.g., Pettigrew, 1959), they propose that at least part of the reason for which people embrace ideologies is to fulfill social-cognitive needs. Jost and his colleagues further argue that focusing on personality theory alone is a mistake and that the motivated social-cognition approach addresses two main shortcomings of the personality approach. Unlike the personality tradition, Jost and his colleagues argue, the motivated social-cognition perspective offers a means to differentiate between psychological structures and ideological consequences, and accounts for the influence of situational factors on conservatism (and liberalism). According to the authors, this approach has also other advantages; for instance, by comparison to the personality approach, the social-cognitive approach acknowledges a broader array of motivations that relate to the conservative mind-frame and integrates them into a coherent framework.

Their analysis of political conservatism unifies a multitude of theories and empirical results that propose connections between psychological motives and political attitudes. From this perspective, motivation to avoid unpleasant emotional states such as fear, uncertainty and anxiety represents part of the reason for which people embrace conservative political attitudes. Conservative attitudes also help to *prevent change* and

`

disorder and *to account for social and economic inequality*. Associations between political conservatism and a wide range of variables including need for structure and uncertainty avoidance are reported (Jost et al. 2003).

A limited number of hypotheses arising from this approach are tested in the present thesis, mostly regarding need for structure and uncertainty management. Overall, I believe that motivational factors play a central role in the adoption of political attitudes – a fact confirmed by the overwhelming evidence that Jost et al. reviewed. My main objection to the Jost et al. (2003) approach is that it fails to account for the more emotional and moral antecedents of political attitudes (e.g., Haidt & Graham, 2007). I now turn to this tradition, which also provides a direct criticism to Jost et al. view of political conservatives.

Moral values and political orientation. Moral psychology has been dominated by the core belief that morality has one main purpose: protecting the individual (Graham et al., 2009). For example, according to Turiel (1983): "the moral domain refers to prescriptive judgments of justice, rights, and welfare pertaining to how people ought to relate to each other" (p.3). Research in a cross-cultural framework (Brazil vs. the United States) has shown that the morality of Western participants is accurately encompassed by this definition as they morally condemn only acts that involve individual harm. On the other hand, participants from Brazil also show moral disapproval of behaviors that do not harm anyone but are disgusting or offensive (Haidt, Koller, & Dias, 1993). Similarly research conducted in other non-Western countries, such as India (Shweder, Mahapatra, & Miller, 1987), has also found that people also care about purity, hierarchy, and loyalty and morally disapprove of actions that violate these values (for more information about

`

cultural differences between moral values see also Shweder, Much, Mahapatra, & Park, 1997)

Building on these insights, Haidt and Joseph (2004) formulated *moral foundations theory*. Haidt and his colleagues set out to identify the psychological structures which allow different cultures to form different moral systems. They found five clusters of values equivalent to five psychological structures termed *moral foundations* (Haidt, Graham, & Joseph, 2009; Haidt & Joseph, 2004). The moral foundation of *harm* (also called *care*) encompasses the human need to care for and protect others. The *fairness* moral foundation encompasses our propensity for equality and social justice. The *ingroup* or *loyalty moral* foundation includes the commitments we make as members of groups for example to be loyal, altruistic, and to avoid betrayal. The *authority* or *respect* moral foundation pertains to the human sense of hierarchy and promotes the values of obedience and respect for authority. Finally, the *purity* moral foundation represents our need for cleanness from both a physical and a spiritual perspective (Haidt et al. 2009).

Haidt and his colleagues draw on Marcus's (2004) propositions concerning the genetic system on which human psychology develops to suggest that people are born with the capacity to acquire moral foundations but that these foundations can still be influenced by socialization (Graham et al., 2009). They also draw on Richerson and Boyd (2005) to underline the evolutionary importance of culture in shaping moral foundations. Moral foundations develop differently in different cultures. From these interactions between moral foundations and culture results anything that pertains to morality, for example conceptions of virtue and vice (Haidt et al., 2009).

`

It is not necessary to travel to other countries to find diversity in culture and moral beliefs, as is apparent, for example, in the polarization of attitudes reflected in the American "culture war" (Hunter, 1991). According to Graham and colleagues (Graham et al., 2009), this vitriolic debate reflects deeply rooted disagreements with regard to moral concerns including whether parents should have authority over their children or whether people should have the right to divorce. The authors argue that differences in ideology reflect differences in moral values. Graham et al. investigated the degree to which liberals and conservatives differ with regard to their endorsement of the five groups of moral virtues outlined above. They report four studies which found that liberal morality is mostly concerned with issues of harm and fairness, whilst conservatives are preoccupied with all five categories. For this reason liberals and conservatives disagree on numerous matters such as abortion, gay rights, and capitalism.

From the moral foundations theory perspective, the motivated social cognition approach is, therefore, incomplete in emphasizing that conservatism is associated with characteristics that "look rigid, authoritarian, and dumb: dogmatism, intolerance of ambiguity, high need for order, low cognitive complexity" (Haidt & Graham, 2007, p. 101). Haidt and Graham argue that besides regulating unpleasant emotional states including uncertainty and anxiety, there are strong moral motivations for adopting political conservatism (as well for adopting liberalism). Therefore, for example, when one politically opposes gay marriage or abortion rights, one morally opposes them due to the moral value added to purity and the respect granted to the institution of marriage.

Morality thus plays a central role in the adoption of political attitudes. The present research fits within this framework. I investigated the role of *moral emotions* in adopting

`

liberal and conservative attitudes. I will, therefore, now turn to the literature pertaining to morality and moral judgments in order to clarify the historical framework in which the majority of studies were conducted. I review the two main traditions of understanding moral judgments: the rationalist approach and the affective approach.

Moral Judgments

Reason and Moral Judgments

Philosophers and psychologists alike have long concerned themselves with the nature of morality. Rationalist perspectives stressing the primacy of reason in moral judgment have traditionally dominated the discourse in moral philosophy (Haidt, 2001). For instance, Immanuel Kant believed that rational beings must act in accordance to principles of morality. One such principle is the *categorical imperative*, which proposes that an act is moral only if its underlying motivation and intention are universalizable (1785/1998). Utilitarian philosophers, such as John Stuart Mill (1863/1998), proposed that utility is "the foundation of morals" (p. 55) and that actions are morally right if they promote happiness.

Psychologists, too, argued for the primacy of reason. For instance, Kolhberg's cognitive-developmental theory (Kohlberg, 1971) played a pivotal role in the cognitive revolution that took place in the 1960s and challenged "irrational emotive theories of moral development" (1971, p.188). Kohlberg, proposed six stages of moral development during which children formulate increasingly complex judgments with regard to what is acceptable behavior or not.

`

Emotions and Moral Judgments

More recent theorizing has brought about, however, an affective revolution which challenged the supremacy of reason and emphasized the importance of affective experiences and emotions in (moral) reasoning. Zajonc (1980) wrote an influential and controversial paper in which he urged researchers to study affect. He argued that affective and rational processes are operated by distinct systems which contribute independently to information processing. Furthermore, in contrast with the general view that cognitive processes precede affective ones, Zajonc argued for affective primacy. For example, biological structures that process affect are more ancient than the structures involved in cognitive processes. Affective responses are similarly present in humans and other animals. Zajonc reviews evidence that affective reactions are quicker and more powerful than cognitive processes. He makes use of his affective primacy framework to account for the mere exposure effect, phenomenon in which participants are likely to favour objects they have previously been exposed to, before they can explain the reasons for their choices. He therefore contends that "preferences need no inferences" (p. 160).

This paper stirred a long-lasting debate between Zajonc and Lazarus, who advocated cognitive primacy by proposing that "cognitive activity is a necessary precondition of emotion because to experience an emotion, people must comprehend" (Lazarus, 1984, p. 124; see also Lazarus 1982). The answer to this debate lies in the definition of cognition. If basic perception is considered to be part of cognition (as Lazarus would argue), then emotion cannot occur without cognition. On the other hand, if one only defines cognition as pertaining to more complex reasoning (as Zajonc would

`

believe) then the affective primacy hypothesis is supported, and affective reactions can occur prior to cognition (Cooper, 1993).

Affect-as-information hypothesis. Research within the affect-as-information hypothesis has found that temporary affective states serve as information for value judgments (e.g., Schwarz & Clore, 1983). In their studies, Schwarz and Clore (1983) induced participants to experience happy or sad moods and asked them to rate how satisfied they were with their lives. Half of these participants were made aware of potential external causes for the experienced affective state, whereas the other half was not provided with similar information. Results showed that moods influenced participants' judgments: participants led to experience a positive mood made more positive evaluations of their lives, whereas participants induced to experience a negative mood reported more negative evaluations. More importantly, participants induced to experience negative affect reported lower levels of life satisfaction only if they were not given a reasonable explanation for how they felt. This is the key aspect that differentiated the affect-as-information framework from similar models. The fact that affect did not influence everyone's judgements suggests that the reported effects are not due to the relevant thoughts affect might bring about. In fact, affect has a direct effect on judgments, not a mediated one. Affect itself *is* the information.

The somatic marker hypothesis. Damasio's (1994; 1995) somatic marker hypothesis was developed based on research conducted on patients with damaged ventromedial prefrontal cortex (patients in a similar state to the famous Phineas Gage). These patients can be considered normal with regard to their cognitive abilities but they fail to consider future outcomes when pursuing immediate benefits. They also make bad

`

choices when selecting friends, spouses, and occupations. In general, their decisions tend to lead to financial, social, and personal losses. Intriguingly, these patients also show a deficiency in emotion experience and expression – a fact which led Damasio to reason that the emotional deficiency plays an important role in their condition. The somatic marker hypothesis proposes that "marker" signals help our decision processes. These markers are the result of emotional states which have become connected with previous outcomes of similar situations. When people are faced with complex choices, relevant somatic states are activated and improve the decision-making process by signaling which options will have either detrimental or desired consequences. This facilitates the selection of options with beneficial outcomes.

To test these assumptions, Damasio and his colleagues set up a series of experiments involving a card game called the Iowa Gambling Task. This task involves uncertainty, payments, and penalties, which makes for a realistic modeling of decision-making. In the game, participants are given a sum of money and four decks of cards from which they chose to turn one card at a time. In most cases a card from any deck brings the player cash compensation, but at unpredictable intervals a cash penalty. Normal participants and participants with prefrontal cortex damage performed the task and were not aware that choosing mostly from two of the decks led to long-term losses (although these desks bring high immediate gains) whist the remaining two decks brought long-term gains (although the immediate gains were smaller). Healthy participants started making profitable decisions before they consciously realized the winning strategy; patients with prefrontal damage made more detrimental choices, and persisted to do so despite figuring out at some point which was the correct approach. Furthermore, healthy

`

participants started to show anticipatory increases in galvanic skin response if they considered a choice from desks that brought long-term loses. Patients never showed such reactions suggesting they cannot activate non-conscious signals that function as "value markers" to differentiate between desirable and undesirable options (Bechara, Damasio, Tranel & Damasio, 1997; Bechara, Tranel, Damasio, & Damasio 1996). As a result of this deficiency, patients with ventromedial prefrontal cortex damage behave in many ways like sociopaths would. This form of "acquired sociopathy" (Damasio, Tranel, & Damasio, 1990, p. 82) becomes apparent mostly through their reckless everyday behavior.

The social intuitionist model of moral judgment. Building on these advancements and on insights from Hume (1777/1966), Haidt (2001) proposed an alternative to rationalist models of moral judgment, the *social intuitionist model* (p. 814). This model suggests that intuitions -- rather than thoughtful deliberation -- form moral judgements. These intuitions are quick and automatic "gut feelings". In case it is necessary, such as when the agent has to justify their position, intuitions are followed by "slow, ex-post facto moral reasoning" (p. 817). According to Haidt, this model is consistent with dual-process theories of judgment. The model therefore acknowledges that two interactive systems are at work when dealing with moral judgments: an in intuitive system which is quick, automatic and efficient and a reasoning system which is slow and effortful. Similar to other judgements, intuitive processing is at work in most morally-relevant situations leading us to quickly and efficiently reach conclusions. The slow reasoning system is at work mainly when one has incompatible intuitions, or when one is asked for a justification of one's conclusions.

`

In line with Damasio's somatic marker hypothesis, Haidt proposes that manipulating somatic makers will affect moral judgments. Empirical evidence supports this proposition. For example Wheatley and Haidt (2005) induced participants to experience disgust, in order to investigate whether such markers are used as information in moral judgment. Highly hypnotizable participants were selected for this study. They received a posthypnotic suggestion to experience disgust when they read a certain word. Subsequently, they rated a variety of moral vignettes. In line with hypotheses derived from the somatic marker hypothesis, the social intuitionist model, and the affect-as-information framework, participants showed higher moral condemnation when the vignettes included the selected word, as opposed to when they did not.

In order to provide further empirical evidence for this social intuitionist approach, Schnall, Haidt, Clore and Jordan (2008) induced participants to experience disgust and subsequently asked them to pass moral judgments on various vignettes. The vignettes described a diversity of situations and behaviors, for example first cousin intimate relationships or cannibalism as a last resort to avoid starvation. The emotion of disgust was induced through different methods such as by exposing participants to an unpleasant odor, conducting the experiment in a disgusting room, asking participants to revisit a personal episode which made them physically disgusted, and watching a disgust-inducing video. Control conditions included neutral affect and sadness. Across these studies, feelings of disgust led to harsher moral judgments relative to controls, especially for people who were particularly sensitive to their physical sensations. These results suggest that intuitions driven by gut feelings play a central and specific role in moral judgment.

`

Moral Emotions

Haidt (2003) proposes that the features that distinguish moral emotions from their non-moral counterparts are those features which are relevant to other individuals or society in general: *emotion elicitors* and *action tendencies*. Non-moral emotions are elicited by events relevant to the self: for example we experience sadness and happiness when we are personally confronted with negative or positive events. According to Haidt, it is possible to feel happy for someone else's positive outcomes, but these emotional responses seem to occur only in the case when that someone is somehow associated to us, or if we momentarily identify with them. A special case is moral emotions, as they have *disinterested elicitors*. For instance, according to Haidt, simply hearing the news about injustice towards someone we have never met and, and do not necessarily identify with, has the potential to make our "blood boil" with anger. There are, of course, many instances in which we get angry because we personally were treated badly, but unlike other emotions, moral emotions have this unique capacity to react in instances which are not directly relevant to the actor.

A second feature Haidt uses to distinguish moral emotions from other emotions concerns their *actions tendencies,* i.e. the actions they motivate. Action tendencies differ in the extent to which they favor other people, or reinforce existing hierarchy. In comparison to the non-moral emotions, moral emotions motivate *behavior that is beneficial* to other people or reinforce existing hierarchy.

After underlining the core features that distinguish them from other emotions, Haidt presents the main moral emotions. He groups moral emotions in what Ekman (1992) termed "families" of emotions. In emotion families, members share certain

`

characteristics, such as facial expression or action tendencies. Haidt discusses four families of emotions:

1) "other-condemning" emotions are characterized by negativity towards other people and help reinforce existing hierarchies. They include anger, contempt, and disgust;
2) "self-conscious" are the result of a reflection on the self in response to a transgression. They include guilt, shame and embarrassment;
3) "other-suffering" emotions includes compassion which is elicited by others' suffering;
4) "other-praising" emotions are the only positive moral emotions. They include gratitude and elevation and are elicited by others' moral behavior.

Each emotion is presented in terms of the specific stimuli that elicit them and their action tendencies. It is important to note that the beneficial action tendencies are not equally evident for all these emotions. For example, it seems quite easy to understand how compassion, an other-suffering emotion, is associated with prosocial behaviour such as helping or providing emotional support to others (see, for example, Batson, Harris, McCaul, Davis, & Schmidt, 1979). On the other hand, other-blaming emotions, such as anger, contempt, and disgust, serve the function of promoting moral values (and thus reinforcing existing hierarchies). Thus, although the relation between other-blaming emotions and beneficial action tendencies may not be immediately apparent, these emotions still fulfill this function by condemning moral violators (see the CAD triad hypothesis, Rozin, Lowery, Imada, & Haidt, 1999). In the present thesis, I investigated moral emotions from two emotion families in the context of political attitudes. These

`

emotions were disgust, a member of the other-blaming family, and shame and guilt, members of the self-blaming (or self-conscious) family. According to Rozin and his colleagues (Rozin, Haidt, & Fincher, 2009; Rozin, Haidt, & McCauley, 2008), disgust was originally a food-rejecting emotion, but now is elicited both by physical objects and by violations of social norms. Its action tendencies include avoiding and rejecting offensive stimuli. On the other hand, the self-conscious emotions, guilt and shame, are always the result of a reflection on the self. The function of these emotions is to help us maintain good relations in our social worlds (Tangney, Stuewig, & Mashek, 2007). Shame and guilt are discussed in greater detail in Chapter 7 (pp. 146-150).

`

CHAPTER 2: INCIDENTAL DISGUST AND LEFT-WING ECONOMIC ATTIUDES

This Chapter presents Experimental Study 1, a first test of the hypothesis that induced disgust leads participants to adopt more left-wing attitudes pertaining to economic issues. Undergraduate psychology students from the University of Oxford (*N* = 39; 27 women) participated in the experiment in exchange for partial course credit. Participants were randomly assigned to one of two experimental conditions: disgust vs. control (sadness). As expected, participants in the disgust condition reported more left-wing attitudes than participants in the control condition. Contrary to my predictions, this effect was not moderated by the degree to which participants were aware of their physical sensations, as indicated by the private body consciousness scale (PBC; Miller, Murphy, & Buss, 1981), or by the degree to which they were able to control automatic reactions, as indicated by the attentional control scale (ACS; Derryberry & Reed, 2002). At a cross-sectional level, left-wing economic attitudes were negatively predicted by emotional uncertainty and need for structure.

Disgust is an emotion that is believed to have evolved as a "guardian of the mouth" (Haidt, Rozin, McCauley, & Imada, 1997, p. 111), helping our ancestors to avoid ingestion of potential contaminants by arousing feelings of repulsion and avoidance of poisonous foods. Disgust caused by food is known as "core disgust" (Haidt et al., 1997). However, according to Rozin and his colleagues, the core disgust biological structures were able to easily extend and react to other sources of threat through the mechanism of preadaptation. As a result, *animal nature disgust* is a more developed form of disgust which appeared later in our evolution. This form of disgust is caused by reminders of our animal origin, such as bodily functions (Rozin et al., 2008). It is important to note that not all disgust theories agree that animal disgust is a valid separate dimension of disgust. Tybur and his colleagues (Tybur, Lieberman, & Griskevicius, 2009) argue that people are not bothered by most bodily functions they share with animals – such as breathing and

`

sleeping. This perspective is discussed at length in Chapter 5, where I compare the two models and their relationships to political attitudes.

Rozin and colleagues' analysis further reveals two other, even more sophisticated, forms of disgust: *interpersonal disgust* and *socio-moral disgust*. Interpersonal disgust, or contamination disgust, represents disgust provoked by potential contamination (actual or metaphorical) from other persons, most notably strangers and outgroups. Moral disgust is elicited by moral offenses, as sanctioned by cultural norms (Rozin et al., 2008). Empirical evidence supports the proposition that disgust plays a central role in a variety of moral judgments and beliefs (Haidt, 2001; Schnall et al., 2008; Wheatley & Haidt, 2005). Chapter 2 reviews research regarding the relationship between disgust and political attitudes, and introduces Study 1, a first experimental investigation in this relationship.

Disgust and Political Attitudes

The original inspiration for investigating the disgust - political attitudes connection derives from the innovative work of Haidt and his colleagues (Graham et al., 2009; Haidt & Graham, 2007; Haidt & Joseph, 2004). As described above, from their perspective, moral values play a determining role in the context of political attitudes. It comes as no surprise, then, that political liberals and conservatives differ with respect to their moral systems (Haidt & Joseph, 2004). Graham et al. (2009) investigated the use of the five sets of moral intuitions described above among liberals and conservatives. They found that liberal morality mostly focused on issues of harm and fairness. On the other hand, conservatives concerned themselves with all five foundations (their moral domain also included issues of loyalty, authority, and purity).

`

Inbar, Pizarro, and Bloom (2009) argue that *disgust sensitivity* (proclivity to experience disgust in various situations, see Haidt, McCauley, & Rozin, 1994) might predict the degree to which people endorse certain moral values. Moreover, moral values play a central role in political attitudes, and these differences in morality should be reflected in *differences in political ideologies*. They first found that disgust sensitivity as assessed using the scale developed by Haidt et al. (1994) positively correlated with conservatism, as reported on a one-item measure. Their research further revealed associations between disgust sensitivity and conservative attitudes with regard to different political matters. This association was particularly strong for abortion rights and gay marriage, issues pertaining to the moral foundation of purity. In a different line of research, Hodson and Costello (2007) found that interpersonal disgust sensitivity (sometimes called "contamination disgust", a subscale of the measure mentioned above) was related to extreme facets of conservatism including outgroup derogation, right-wing authoritarianism, and social dominance orientation. Results of yet another study by Inbar and his colleagues (Inbar, Pizarro, Iyer, & Haidt, 2012) gave further support to this disgust-political conservatism relationship, by surveying large samples of over 30.000 respondents, and controlling for the effect of other personality traits. Moreover, similar to Hodson and Costello (2007), Inbar and his colleagues found that the disgust-conservatism association is particularly strong for interpersonal, or contamination, disgust.

Horberg, Oveis, Keltner, and Cohen (2009) investigated the degree to which disgust makes purity-related matters more morally relevant. They build on *appraisal-tendency framework* (e.g., Lerner & Keltner, 2000; 2001), which proposes that emotions are characterized by specific appraisals and can affect judgments only in matters that are

`

linked to these appraisals. For instance, Lerner and Keltner (2001) reported that trait fear and trait anger are differently predictive of judgments. In their study, fear-prone participants made more pessimistic predictions of the future, while anger-prone participants made more optimistic predictions. In line with these findings, Horberg and colleagues argue that disgust can influence judgments only with regard to purity-related transgressions. These authors found that disgust sensitivity, as well as experimentally induced disgust, led participants to take a more conservative stand and more strongly condemn purity-related violations. These results were specific to the emotion of disgust, as sadness and anger did not reveal similar effects. Equally relevant, the results were specific to transgressions pertaining to the purity moral foundation, as disgust did not predict the degree to which transgressions pertaining to fairness/justice or harm/care were treated as moral. It is worth noting that these results are consistent with findings within the affect-as-information framework (Schwarz & Clore, 1983), somatic marker hypothesis (Damasio, 1994, 1995), and the social-intuitionist model of moral judgments (Haidt, 2001) which predict that emotional reactions guide judgments in a variety of situations, reviewed in Chapter 1 (pp. 11 - 15).

Experimental Study 1

Disgust has been portrayed as a conservative emotion and conservatives have been portrayed as generally more disgust-sensitive (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009). As discussed above, Horberg and colleagues (2009) proposed that disgust has a unique relation with violations of purity, a moral domain with greater relevance for political conservatives than liberals (Graham et al., 2009). Moreover,

`

investigators have generally concluded that disgust mostly affects political attitudes pertaining to social issues, and does not impact on political attitudes that deal with economic issues. Some researchers have made this assumption explicit, while others have kept it at an implicit level. For instance, Smith, Oxley, Hibbing, Alford, and Hibbing (2011) hypothesized that people's physiological reactions to disgust-inducing stimuli would predict their purity-related political attitudes to issues such pre-marital sex or pornography, but *not* their attitudes to issues pertaining to economic and defense policies. This hypothesis was supported. Furthermore, although Inbar, Pizarro, and Bloom's (2009) influential study found that disgust predicted attitudes regarding one economic issue, namely federal tax cuts, the authors treated this finding as "surprising" and "unexpected", and did not comment on it further.

Despite the usual assumption that a) disgust is a "conservative emotion"; and that b) disgust does not impact on political attitudes pertaining to economic issues, there are reasons to assume that disgust can sometimes function as a liberal emotion by impacting on economic attitudes. First, not all studies investigating the disgust-social conservatism relationship have found support for his relationship (e.g., Tybur, Merriman, Hooper, McDonald & Navarrete, 2010). Second, there is evidence to suggest that disgust can sometimes function as a liberal emotion, too. For example, animal rights activists (who traditionally tend to endorse liberal attitudes, Jamison & Lunch, 1992) seem to score high on measures of disgust sensitivity (Herzog & Golden, 2009). Similarly, disgust plays a role in the adoption of moral vegetarianism (Rozin, Markwith, & Stoess, 1997), a practice which is also closer to the liberal philosophy.

`

Third and most important, besides the disgust-political attitudes literature which centres on violations of purity, there is a whole body of research linking the emotion of disgust with violations of fairness, a moral dimension that liberals tend to find particularly relevant. In an innovative study, Chapman, Kim, Susskind, and Anderson (2009) found that immorality, conceptualized as unfair behavior in an economic game, evoked the same facial expressions as repulsive tastes and images of contaminants, such as cockroaches. These results were paralleled by self-reports of experienced affect. There is also evidence that incidental disgust leads to harsher condemnation of unfair treatment more generally. In a variant of the ultimatum game, induced disgust, as compared to induced sadness and a neutral state, influenced participants' decisions to reject unfair offers (Moretti & di Pellegrino, 2010). Moreover, neuro-economic research has found that the anterior insula, a brain structure associated with the emotion of disgust (Anderson, Christoff, Panitz, De Rosa, & Gabrieli, 2003; Wicker et al., 2003; Wright, He, Shapira, Goodman, & Liu, 2004), is selectively activated during unfair offers in similar paradigms (Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003). These results suggest that disgust has a link with the fairness/reciprocity moral foundation, which tends to be associated more with liberal ideology.

Research investigating the influence of disgust on political attitudes mostly reports that disgust predicts social aspects of political attitudes (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009), but is unrelated to the separate *economic dimension* of political ideology (distinguished above, see Evans et al., 1996). To the best of my knowledge, only one previous study has reported a link between disgust and economic political attitudes (Inbar, Pizarro, Iyer et al., 2012). This study found a near-

`

significant trend (p = .07) towards a relation between disgust sensitivity and *conservative* attitudes pertaining to economic issues. There are, however, several factors that might call this finding into question. The order of the items, as well as their content, might have led to a correlation between economic and social issues that overestimated the real interdependence between the two attitude clusters. At the very outset of the study, participants completed a unidimensional scale assessing whether they thought of themselves as liberal, conservative, moderate, or something else. They only reported on where they stood with regard to "economic issues" and "social issues" after completing this initial scale. This sequence of measures is not ideal because once participants have self-identified as liberal or conservative, they will probably be more likely to answer subsequent items in a way that justifies their initial self-labeling. Additionally, given that "economic issues" and "social issues" are rather abstract concepts for lay people, they may simply have answered both sets of items similarly. Further, although participants were given the choice to self-identify as *libertarian* (one of the groups for which economic and social political attitudes do not correlate, e.g., Iyer, Koleva, Graham, Ditto, & Haidt, 2012), participants that self-identified as such were excluded from analyses, further adding to the likelihood that economic attitudes were more tightly correlated than usual with social attitudes in this particular study. Unfortunately, the correlation between economic and social issues is not reported. It is generally accepted that political attitudes for economic and social issues do correlate (Jost et al., 2003), but given that the study set-up might have led to overestimation of this overlap, and that participants for whom this overlap is non-existent were eliminated from analyses, it is difficult to appraise the

`

degree to which this study is informative with regard to a specific disgust-economic political attitudes relation.

Finally, the existence of a disgust-conservative economic attitudes relationship does not seem to fit in well with the literature reviewed above, which reports systematic links between disgust and fairness. Indeed, if the emotion of disgust sensitizes people to economic-fairness issues (e.g., Moretti & di Pellegrino, 2010; Sanfey, et al., 2003), it seems more likely that this would reflect in a relation between disgust and *liberal* or *left-wing* attitudes pertaining to economic equality.

On the basis of the above arguments and evidence, it seems worthwhile to investigate the link between disgust and the economic dimension of political attitudes more directly. Across three studies I investigated this link and hypothesized that disgust will prompt people to adopt more left-wing, liberal *economic* attitudes, in line with the disgust-fairness literature. After initial testing of this relationship (Studies 1and 2), I also contrasted the effects of disgust on economic attitudes with those of disgust on social political attitudes (Studies 3, 4, and 6).

Main Aims

Study 1 aimed to provide a preliminary investigation of the relationship between disgust and liberal political attitudes. Participants were exposed to pictures intended to induce either disgust or sadness, and subsequently reported on their political attitudes with regard to economic fairness. By using an experimental design, the present study addresses a shortcoming of previous research assessing links between disgust and political attitudes, namely that this prior research has been correlational and provides no

`

direct evidence about direction of causality. Indeed, the most influential studies on this topic (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009) assessed whether trait disgust predicts political attitudes at a cross-sectional level. Inbar and colleagues claim that "it does seem unlikely that political attitudes would shift a person's general emotional dispositions, particularly when it comes to disgust, a basic emotion that emerges long before individuals form political attitudes" (2009, p. 10), but little is actually known about the causal relation between disgust and political attitudes to date. The possibility that a third factor socializes people into experiencing high levels of disgust and into endorsing conservative political attitudes in parallel cannot be completely ruled out. The capacity to experience disgust may be innate, but the domains to which disgust generalizes are dependent on cultural learning which occurs over the course of development. The present experiment was designed to directly assess the causal relationship between disgust and political attitudes.

Participants were induced to experience one of two emotional states: disgust or sadness, and subsequently their political attitudes were assessed. The control condition used another negative emotion in order to permit conclusions regarding the specificity of the findings. Any effects of disgust on equality-related attitudes cannot be attributed to the negativity of the experienced response but must instead reflect disgust-specific processes. Sadness has also been used as a control condition in previous studies investigating the influence of disgust on attitudes and judgments, which employed similar paradigms to the one used here (e.g., Horberg et al., 2009; Moretti & di Pellegrino, 2010; Schnall et al., 2008).

`

Cross-sectional Predictors

Besides the relation between experimentally induced disgust and political attitudes, I also investigated the role of individual differences in predicting political attitudes pertaining to economic equality. First, I was interested in predicting political attitudes as a function of personal need for structure (Neuberg & Newsom, 1993; Thompson, Naccarato, Parker, & Moskowitz, 2001). Jost and his colleagues argue that a main reason for which people have conservative attitudes is because they fulfill their psychological motivations, such as the need for structure. Similarly, conservative attitudes help manage unpleasant emotional states associated with uncertainty. In their meta-analysis, Jost et al. provide an ample review of literature reporting systematic links between need for structure and uncertainty avoidance on the one hand and political conservatism components on the other. Need for structure was found to predict RWA (Altemeyer, 1998), stereotyping (Schaller, Boyd, Yohannes, & O'Brien, 1995) and anti-gay attitudes (Smith & Gordon, 1998). In the present research, I investigated the link between personal need for structure (Neuberg & Newsom, 1993), and political attitudes pertaining to economic fairness.

Second, I investigated the relation between *emotional uncertainty* and economic political attitudes. According to Wilson (1973), people endorse political conservative ideologies as a result of motivations to avoid the unpleasant emotional states associated with uncertainty. As Wilson writes "the central proposition of the present theory is that the common basis for all the various components of the conservative attitude syndrome is a *generalized susceptibility to experiencing threat or anxiety in the face of uncertainty*" [italics added] (p. 259). In the present study, I focused on the role of a dispositional factor

`

- *emotional uncertainty* (Greco & Roger, 2001) - in predicting political attitudes pertaining to economic equality. Emotional uncertainty provides an indication of the degree to which people *experience uncertainty as an unpleasant, anxiety-inducing state*. If adopting conservative political attitudes serves at least to a degree to alleviate the unpleasant states aroused by uncertainty (Jost et al., 2004), then experiencing uncertainty as unpleasant should predict the adoption of conservative attitudes. The emotional uncertainty scale (EUS) developed by Greco and Roger (2001) was previously found to predict variables theoretically and empirically linked to political conservatism, such as religious worldview defence (Van den Bos, van Ameijde, & Van Gorp, 2006) and negative attitudes toward social deviants (Van den Bos, Euwema, Poortvliet, & Maas, 2003).

Potential Moderators

I assessed the role of *attentional control* as potential moderator of the relationship between incidental disgust and political attitudes. Attentional control is the general ability for intentional control over focusing and disengaging attention, with regard to negative as well as positive stimuli (Derryberry & Reed, 2002). This capacity permits the inhibition of dominant, reflexive reactions to pursue less dominant tendencies. Previous research suggests that people scoring high on a self-report measure of attentional control are able to control emotional reactions in several paradigms, while people scoring low on these measures react in accordance with their emotions (Derryberry, Reed, & Pilkenton-Taylor, 2003; Gyurak, & Ayduk, 2007). I therefore reasoned that disgust would lead to more left-wing economic attitudes, but that this would be particularly evident for people who

`

do not exhibit a good control on their emotional reactions, as indicated by attentional control measures. This hypothesis is also in line with propositions derived from the somatic marker hypothesis. According to Damasio (1994), a somatic state serves two functions: it signals advantageous or disadvantageous choices, and it directs attention and working memory according to preferences and goals. If disgust works as an "unfairness marker", then disgust stimuli should direct participants' attention towards unfairness cues. Therefore, it seems reasonable to hypothesize that this unfairness marker should bias attitudes particularly for those participants who are less likely to exert voluntary control over their attention.

Finally, I was interested in assessing *private body consciousness* as a potential moderator of disgust's effects on political attitudes. Individual differences predict the degree to which people experience affective states as a result of internal cues (e.g., Laird et al. 1994; Schnall, Abrahamson, & Laird, 2002; Schnall et al., 2008). These stable characteristics moderate a variety of observed effects involving emotional reactions. For instance, Laird (1984) argues that individual differences in sensitivity to internal or "self-produced" cues, such as physiological arousal, determine whether participants experience more positive emotions after being instructed to produce the facial expression of smiling. Similarly, there are strong variations in the capacity to detect one's own heartbeat, which are associated with experienced emotion (Katkin, 1985). Here we tested the proposition that such individual differences might influence the degree to which people's political attitudes are biased by disgust.

The Private Body Consciousness (PBC) scale is a measure of individual differences with regard to awareness of internal sensations (Miller, Murphy, & Buss,

`

1981). Previous research has found that PBC moderates the effect disgust has on moral judgments (Schnall et al., 2008). In these studies, disgust induced by various methods (e.g., exposing participants to a disgusting odor, conducting the experiment in a disgusting room, asking participants to revisit a disgust-relevant biographic event, and watching a disgust-inducing video) led to stronger moral condemnation of a range of transgressions. However, in three out of four studies, this effect occurred only for people who scored above the mid-point of the PBC scale. Therefore, it seems apparent that disgust can play a role in judgments similar to the ones used in my study, but its influence should be particularly evident for people who are sensitive to their bodily sensations as indicated by the PBC. Moderation by PBC would also be in line with the assumption that disgust works as a "somatic marker" for revulsion and moral disagreement (e.g., Schnall et al., 2008; Wheatley and Haidt**,** 2005). Given that somatic markers are physical experiences, it is reasonable to assume that participants who are particularly sensitive to physical cues will be more likely to be influenced by the disgust stimuli that are associated with moral condemnation of unfairness.

Hypotheses

In the first study, I aimed to test the following hypotheses with regard to left-wing attitudes pertaining to economic equality. At a cross-sectional level, I aimed to assess emotional uncertainty and personal need for structure as predictors of left-wing attitudes. Based on previous research suggesting systematic links between the two concepts and components of right-wing attitudes (for a review and meta-analysis see Jost et al., 2003),

`

I hypothesized that both personal need for structure (Hypothesis 1) and emotional uncertainty (Hypothesis 2) would negatively predict left-wing attitudes.

Second, I predicted that experimentally induced disgust would influence political attitudes pertaining to economic fairness. I hypothesized that disgust would prompt people to adopt *more liberal* (or left-wing) attitudes pertaining to economic equality (Hypothesis 3). Following previous research on the relation between attentional control and the inhibition of emotional, reflexive reactions (for a review see Derryberry et al., 2003), I hypothesized that disgust would lead to left-wing attitudes primarily among participants with low self-reported attentional control (Hypothesis 4). Finally, in line with previous research on disgust as embodied moral judgment (Schnall et al., 2008), I also expected that effects would be particularly strong for people who are sensitive to their internal bodily sensations, as indicated by the PBC (Miller et al., 1981) scale (Hypothesis 5).

Method

Participants. Undergraduate psychology students from the University of Oxford (N = 39; 27 women) participated in the experiment in exchange for partial course credit. They were recruited via posting advertisements on a specialized departmental website. Age of participants ranged from 18 to 21 years (M = 18.82, SD = .75). Most participants were British (79.49%) and were native English speakers (92.31%). Non-British participants came from Canada (5.12%), Germany (5.12%), USA (2.56%), Malaysia (2.56%), Singapore (2.56%), and Spain (2.56%).

`

Design. Participants were randomly assigned to one of the two experimental conditions (emotion: disgust vs. control).

Procedure. Participants completed the study individually. Participants filled in an online questionnaire prior to coming to the laboratory. The questionnaire contained demographic variables and the personality measures described below. Subsequently, the laboratory-based part of the study followed. The study was presented as an investigation of the relation between personality and creativity. Written consent was obtained from all participants. First, participants had to look at a number of pictures which they were told were being piloted for a future study. They were informed that questions about the pictures would follow later on. In fact, the pictures represented the emotional induction manipulation: participants in the disgust condition were presented with four pictures intended to induce the emotion of disgust, whereas participants in the control condition were presented with pictures intended to induce sadness. Next, a creativity task was introduced which assessed additional hypotheses not discussed here but also served as a filler task. Participants had to design a T-shirt by filling in a prepared outline. After about five minutes, participants completed the left-right dimension of the political attitudes scale developed by Evans et al. (1996), which was the dependent variable. Finally, participants completed manipulation check items, assessing the degree to which the pictures induced the emotions of disgust and sadness. After completing the experiment, participants were thanked and debriefed.

One participant only completed the online part of the study; therefore only personality measures are available for this participant.

Questionnaire measures.

`

Private body consciousness. The Private Body Consciousness (PBC) scale (Miller et al., 1981) is a 5-item scale that measures general awareness of internal physical sensations. Sample items include "I am sensitive to internal bodily tensions" and "I know immediately when my mouth or throat gets dry" (see Appendix 2.1 for the full list of items). Participants filled in the questionnaire online prior to their arrival at the lab; they rated each item on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Responses from the five items were averaged (M = 4.49, SD = .62, α = .59).

Personal need for structure. The Personal Need for Structure scale (PNS; Neuberg & Newsom, 1993) is a 12–item scale which measures a preference for structure and clarity across situations, and an aversion towards ambiguity. This measure includes items such as "It upsets me to go into a situation without knowing what I can expect from it" and "I'm not bothered by things that interrupt my daily routine" (reversed scored). Participants filled in the PNS online prior to their coming to the laboratory. They rated the items on a 6-point scale (1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = slightly agree, 5 = moderately agree, 6 = strongly agree). Scores were calculated by averaging individual responses across items, after reverse-scoring where appropriate (M = 3.66, SD = .72, α = .87).

Emotional uncertainty. The Emotional Uncertainty Scale (EUS) is a 15-item measure of the extent to which people experience uncertainty as an unpleasant state. Sample items are "I feel anxious when things are changing" and "I get worried when a situation is uncertain" (see Appendix for full scale). The scale has high internal consistency and test-retest reliability (Greco & Roger, 2001). Participants completed the EUS online prior to coming to the laboratory. They rated each statement on a 7-point

`

scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Participants' answers for the 15 items were averaged to form a reliable scale (M = 4.17, SD = .89, α = .90).

Attentional control. The Attentional Control Scale (ACS; Derryberry & Reed, 2002) is a 20-item scale that contains items pertaining to *attention focus* (e.g., "When concentrating, I can focus my attention so that I become unaware of what's going on in the room around me"); *attention shifting* (e.g., "It is easy for me to read or write while I'm also talking on the phone"); and *flexible control of thought* (e.g., "I can become interested in a new topic very quickly when I need to"). Participants completed the ACS in the laboratory part of the experiment, before the experimental manipulation. They rated their agreement with each statement on the 4-point scale (1 = almost never; 2 = sometimes 3 = often 4 = always). Answers were averaged for each participant (after reversed scoring when appropriate), resulting in a reliable scale (M = 2.37, SD = 34, α = .80).

Left-wing economic attitudes. The Left vs. Right scale (henceforth Left-Right scale; Evans et al., 1996) is a 5-item measure assessing people's opinions about economic equality. It focuses almost exclusively on issues of inequality and exploitation and was developed particularly to be relevant for British respondents. Sample items are: "Government should redistribute income from the better off to those who are less well off" and "There is one law for the rich and one for the poor" (see Appendix 2.2 for the full list of items). The Left-Right scale was the dependent variable in the present study and was completed by participants in the laboratory, following completion of the emotion induction procedure. Participants rated their agreement with each item on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Answers for the five items were

`

averaged to form a scale of relatively satisfactory reliability, considering the number of items and sample size (M =3.29, SD = .71 α = .67)

Results

Cross-sectional results. First, zero-order correlations were computed to appraise whether PNS and EUS were significant predictors of left-wing attitudes as indicated by the Left-Right scale. That was indeed the case, both PNS, r (38) = -.59, p < .001, and EUS, r (38) = -.34, p = .03 were significant and negative predictors of left-wing political attitudes. There was also a significant overlap between PNS and EUS, r (39) = .64.

Due to the substantial overlap between PNS and EUS, a multiple regression analysis with PNS and EUS as predictors, and the Left-Right scale as dependent variable was performed in order to assess whether these stable personality traits independently predicted economic political attitudes. The model was significant, F (2, 35) = 9.42, p = .001 and PNS was a significant predictor of political attitudes β = -.62, p = .001, while EUS was no longer a significant predictor of attitudes after controlling for PNS, β =.05, *n.s*. (PNS remained a significant predictor of the Left-Right scale even after controlling for demographics such as age and gender).

Manipulation checks. A MANOVA with emotion (disgust vs. control) as independent factor and experienced disgust, and sadness as dependent factors was conducted in order to check whether the emotional states were successfully induced. As intended, participants in the disgust condition reported significantly higher levels of disgust due to watching the pictures (M = 5.55, SD = 1.32) than participants in the control condition (M = 3.60, SD = 1.46, F (1, 36) = 17.55, p < .001, η^2 = .33), while participants

`

in the control condition reported significantly higher levels of sadness (M = 5.17, SD = 1.38) than those in the disgust condition (M = 3.65, SD = 1.79, F (1, 36) = 8.43, p = .006, η^2 = .19).

Political attitudes. An ANOVA with emotion (disgust vs. control) as independent factor and the Left-Right scale as dependent variable was conducted in order to check whether participants in the disgust condition reported different political attitudes to participants in the control condition. That was indeed the case - participants in the disgust condition reported significantly more liberal attitudes (M = 3.51, SD = .65) than participants in the control condition (M = 3.04, SD = .70), F (1, 36) = 4.49, p = .04, η^2 = .11.

Moderation effects. In order to test my hypothesis that the effects of disgust on political attitudes would be particularly strong for participants scoring high on PBC, a GLM with emotion (disgust vs. control) as independent factor, political attitudes (*left versus right*) as dependent factor, and standardized PBC scores as continuous independent variable (Dunlap & Kemery, 1987) was conducted. This analysis revealed the expected main effect of emotion F (1, 34) = 5.13, p = .03, η^2 = .13, but the emotion x PBC interaction was not significant $F < 1$.

Similar analyses testing for a moderating role of attentional control in the disgust – left-wing attitudes relation were performed. These analyses also failed to support a moderation hypothesis: the emotion x ACS interaction was not significant.

`

Discussion

Three of the five hypotheses were supported by the results. First, I found support for Hypothesis 1, which proposed that personal need for structure would negatively predict left-wing attitudes pertaining to economic issues. Jost et al. (2003) argue that part of the reason for which people have conservative attitudes is to fulfil the psychological need for structure. Previous research already reports systematic links between PNS (Thompson et al., 2001) and social aspects of political conservatism, such as stereotyping (Schaller et al., 1995), RWA (Altemeyer, 1998), anti-gay attitudes (Smith & Gordon, 1998), and spontaneous trait inference (Moskowitz, 1993). The present research adds to this knowledge and shows that a preference for simple structures also predicts people's attitudes about financial equality. People who have an intrinsic need to structure seem to prefer financially hierarchical societies where economic distinctions are clear-cut. Such societies indeed pose less potential threat to the status-quo, which according to Jost et al. (2003) conservatives tend to defend.

Second, support was found for the assumption that emotional uncertainty would negatively predict left-wing attitudes (Hypothesis 2). Displeasure with uncertainty is seen by Jost et al. (2003) as a core motive for the adoption of conservative attitudes. Previous research grants some support for this claim. For example, Van den Bos and colleagues found that emotional uncertainty predicted religious worldview defense (Van den Bos et al., 2006) and negative reactions towards homeless people (Van den Bos et al., 2003). In my study, the EUS negatively predicted left-wing attitudes. This suggests that the way people feel about uncertainty is also related to their attitudes concerning economic fairness. However, caution is warranted when interpreting this relation, as the multiple

`

regression analysis revealed that emotional uncertainty was not a significant predictor of political attitudes when controlling for personal need for structure. This result suggests that it is the uncertainty component that arises from lack of structure and simplicity that is relevant in the context of economic political attitudes.

With regard to experimental results, my third hypothesis was supported: participants induced to experience disgust reported significantly stronger left-wing attitudes than participants in the control condition. From this perspective, the present study deviates from previous research which emphasized the existence of relationship between disgust and political conservatism relationship (e.g., Inbar, Pizarro, & Bloom, 2009). Conservatives are concerned with purity transgressions and previous studies have found that disgust makes purity-related, but not justice and fairness-related transgressions, more morally relevant (Horberg et al., 2009). However, in line with a different part of the literature that supports a disgust-fairness link (Moretti & di Pellegrino, 2010; Sanfey et al., 2003), the results of the present experiment suggest that disgust can sometimes sensitize people to fairness-related issues pertaining to economic equality. It is also important to note that unlike the results reported by previous research, the present study provided information regarding the *causal* relationship between disgust and political attitudes. While previous research speculated with regard to this relationship, the possibility that unmeasured factors impact on both disgust on attitudes could not be completely refuted based on the reported cross-sectional evidence. The present findings provide experimental evidence that disgust leads to more left-wing economic attitudes.

`

My fourth hypothesis was not supported: attentional control did not moderate the relationship between disgust and left-wing political attitudes. In previous research, ACS modulated emotional reactions in several paradigms, for example the emotional Stroop task (Derryberry & Reed, 2002) and the startle-probe paradigm (Gyurak, & Ayduk, 2007). Given these findings, ACS was included in the present study as a potential moderator of the effects of the disgust induction. However, it is possible that ACS only modulates reactions to fear- and anxiety-relevant stimuli. Indeed, to the best of my knowledge, studies in which ACS was found to modulate reactions to emotional stimuli have made use of primarily anxiety- and fear-inducing stimuli (e.g., Derryberry & Reed, 2002; Gyurak, & Ayduk, 2007). Although disgust is also a threat-relevant emotion, it might not be regulated by the same top-down processes whereby people use attention to control emotional reactivity to fear- and anxiety-relevant cues.

Finally, the present experiment did not support my fifth hypothesis: the relation between disgust and political attitudes was not moderated by the degree to which people were sensitive to their "gut feelings" as indicated by the PBC (Miller et al., 1981). In previous research, disgust was found to influence moral judgments in paradigms similar to one employed here, but this was primarily true for people scoring in the upper half of the PBS distribution. This effect was not found here, suggesting that when issues of economic fairness are influenced by disgust, it might not be due to visceral intuitions ("gut feelings"). It could be the case that participants' attitudes were influenced by a more "conceptual disgust" which did not entail visceral feelings but instead activated concepts of moral condemnation (Schnall et al., 2008).

`

Study 2 was designed to investigate the extent to which the experimental findings uncovered in Study 1 are the result of an emotional experience. To this end, I assessed the role that emotion-regulation styles (Gross, 1998a; Gross & John, 2003) play in the relationship between disgust and left-wing political attitudes. In line with Study 1, I also assessed the role of PBC, assuming that a larger sample might uncover the expected disgust – PBC interaction effect.

CHAPTER 3: INCIDENTAL DISGUST AND POLITICAL ATTITUDES – INVESTIGATING POTENTIAL MODERATORS

This Chapter presents Experimental Study 2. Study 2 was aimed to replicate results uncovered by Study 1 and to explore whether the relationship between incidental disgust and left-wing economic attitudes is moderated by PBC, disgust sensitivity, or emotion-regulation styles. The experiment employed the same design as Study 1, with participants assigned to a disgust-induction or control condition. Although, Study 1's main effect was not replicated, two moderator effects were found: disgust led to more left-wing economic attitudes, but only for participants scoring high on the PBC and DS-R measures. Also, contrary to expectations, whether or not participants habitually engaged in cognitive reappraisal as an emotion-regulation strategy did not moderate the effects. At a cross-sectional level of investigation, the DS-R did not predict left-wing economic attitudes.

Experimental Study 2

Study 2 had three aims. First, I wanted to assess the influence of trait disgust on left-wing political attitudes. Study 1 established a relationship between induced (acute) disgust and left-wing political attitudes. However, most research that has proposed a link between disgust and political attitudes (e.g., Hodson & Costello, 2007; Inbar, Pizarro, &

`

Bloom, 2009) investigated the role of different versions of the questionnaire measure of trait disgust sensitivity developed by Haidt and his colleagues (Haidt et al., 1994), rather than the role of temporary disgust states. Therefore Study 2 also assessed the role of disgust sensitivity in predicting left-wing attitudes in order to compare and contrast effects of acute feelings of disgust with those of chronic predisposition to experience disgust. Second, I wanted to provide a replication of the results uncovered by Study 1 using a different sample. Third and finally, I aimed to provide a more in-depth investigation of the relationship between disgust and left-wing political attitudes. In my first experiment, participants exposed to disgust-inducing pictures reported more left-wing attitudes than controls. Surprisingly, this relation was not dependent on the degree to which they attended to internal physical sensations (as indicated by PBC) or on the degree to which they were able to inhibit dominant emotional reactions (as indicated by ACS). While the results pertaining to ACS could be explained by an exclusive relationship between ACS and the modulation of fear-related stimuli, PBC's failure to moderate effects is more difficult to account for. These results lead one to question the nature of the underlying processes. It might be the case that the results uncovered here are not due to an actual "physical" experience of disgust, but instead to a "conceptual disgust" induced by the manipulation, which in turn brought about associations of moral condemnation (this alternative was also considered by Schnall et al. 2008). Similarly, it is possible that participants did indeed experience physical disgust, and the effects revealed in Study 1 may have been due to associated attunements and appraisals rather than body symptoms, such somatic markers.

`

In order to assess the extent to which actual disgust feelings underlie the reported effects, study 2 investigated whether the way in which people generally manage, or *regulate* their emotions (Gross, 1998a), affected the relationship between disgust and political attitudes. I reasoned that if emotional states (rather than associated thoughts of moral condemnation) led to the results of Study 1, than effects would differ for participants depending on the degree to which they engage in particular emotion-regulation styles. I also re-assessed the role of PBC in the disgust-political attitudes relation, in order to rule out the possibility that the absence of significant effects of this variable in Study 1 was due to any sample- or experimenter-related specificity. Finally, I also assessed the moderating role of the degree to which participants' were likely to generally experience disgust, as indicated by a standardized measure of disgust sensitivity (Haidt et al., 1994). Before describing the specifics of Study 2 in more detail, I first turn to the literature reviewing the two new individual-differences factors assessed: disgust sensitivity (Haidt et al., 1994) and emotion-regulation style (Gross & John, 2003).

Disgust Sensitivity

As described in Chapter 1, disgust is an emotion that has evolved to protect our ancestors from the potential of ingesting contaminated food. The most basic form of disgust acts as a "guardian of the mouth" (Haidt et al. 1997, p. 111) against contaminants, most notably human and animal body products. However, later in our evolution disgust became sensitized to other elicitors such as inappropriate sex practices, immoral behavior, or disfigurement (Haidt et al., 1994).

`

The disgust scale (DS) developed by Haidt et al. (1994) is a measure of *disgust sensitivity,* that is predisposition to experience disgust. Initially, the scale revealed seven categories of disgust-relevant stimuli. Haidt et al. concluded that the DS is a reliable 32-item instrument. However, extensive analyses by Olatunji et al. (2007) led them to suggest the use of a refined 25-item version of the disgust scale (DS-R) with three underlying dimensions - core disgust, animal reminder disgust, and contamination-based disgust.

The DS and DS-R have been used to predict willingness to do disgusting things, such as touch a cockroach (e.g., Rozin, Haidt, McCauley, Dunlop & Ashmore, 1999), insula activity in response to disgust stimuli (e.g., Calder et al., 2007), psychological health (e.g. OCD symptoms, Olatunji et al. 2007), and socio-political attitudes (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009). In fact, most research reviewed in Chapter 2 (pp. 20-22) assessed the role of various versions of the DS in predicting socio-political attitudes. In the present study, the revised DS-R scale was used as a cross-sectional predictor of political attitudes, and as a potential moderator of the relation between incidental disgust and left-wing political attitudes.

Emotion Regulation

Generally, emotions are seen as adaptive, having evolved to deal with essential life challenges (Ekman, 1994). Although there is an ongoing debate with regard to the primary function of emotions, most researchers agree that they serve motivation- (e.g., Leeper, 1948), cognition- (e.g., Oatley & Johnson-Laird, 1987), and communication-related functions (e.g., Parkinson, 1996). However, emotions evolved to serve our

`

ancestors in an environment very different from the one we now live in. This makes it undesirable to react emotionally in many circumstances, for instance when facing criticism at work, or when someone accidentally steps on our foot. Moreover, one might simply have contrasting motivations such as retaliating to manager's criticism as well as maintaining their job. Managing powerful emotions on a regular basis is instrumental in being able to keep a stable job, maintain social relations, and form romantic partnerships (Gross & John, 2003). Indeed, previous research suggests that people manage their emotions in various circumstances and for various purposes (Gross, Richards, & John, 2006).

Defining emotion regulation. People are confronted with a plethora of potentially emotion-eliciting stimuli. These stimuli range from internal sensations, such as indigestion or a sore throat, to external elicitors, such as bad news or a good book (Gross et al., 2006). Thompson (1994) defines emotion regulation as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (pp. 27-28).

As such, emotion regulation is a term that denotes a range of processes meant to manage emotions. Emotion regulation entails the processes by which people sustain, amplify, inhibit or control, emotional arousal. Commonly this implies the inhibition of negative emotions, but the inhibition of positive emotions (such as when one is trying to conceal satisfaction with an offer during negotiations) or the amplification of negative emotions (such as when one is purposefully trying to enhance their disappointment with an offer during negotiations) are also possible forms of emotion management. The

`

enhancement of positive emotions is also common, for instance when people revisit a positive episode in order to enhance their mood or when they consume alcohol to celebrate an achievement (Thompson, 1994). Thompson continues with a second class of processes, those that involve *external* regulation of emotion. People oftentimes attempt to manage other people's emotions for example mothers actively tend to the emotion regulation of their infants.

Moreover, Thompson notes that emotion regulation is more likely to change an emotion's duration or intensity rather than the actual specific emotion. Changing the actual emotion is still possible, for instance when one experiences guilt instead of anger in response to being blamed for a transgression they have not committed. Last, emotion regulation processes serve different goals in different circumstances. These goals go beyond preserving a positive state and might include presenting oneself in a desirable manner, maintaining cordial relations, or avoiding conflict (Thompson, 1994).

Cognitive reappraisal- vs. Suppression. Gross and his colleagues (1998a; 2001; Gross & John, 2003) studied the use of two emotion-regulation strategies people are thought to employ on a regular basis, *cognitive reappraisal* and *expressive suppression*. The central premise of this approach revolves around a "process model of emotion" (Gross & John, p.348) – a model which summarizes a number of influential theories' common assumptions (e.g., Arnold, 1960/1961; Frijda, 1986; Lazarus, 1991a) about emotions. Building on these contributions the model outlines the main stages of emotions. The onset of an emotional experience is brought about by assessment of emotion stimuli. Relevant stimuli lead to a diversity of response tendencies which can alter behavior and physiological responses to enable the organism to respond

`

appropriately to the situation. Emotion is a time-dependent process, and once it has been initiated it can be modulated at different stages of its development.

This modulation is what Gross and his colleagues (Gross, 2001; Gross & John, 2003) refer to as "emotion regulation". They distinguish between emotion-regulation strategies based on the stage at which they have their main influence on the emotional experience. Antecedent-focused emotion-regulation processes are the modulation processes people employ at an early stage, when response tendencies had not yet been elicited and had not yet impacted on behavior or physiological arousal. Based on the moment in time when they occur these processes are: situation selection, situation modification, attentional deployment, and *cognitive reappraisal.* On the other hand, after the emotion is already in progress and after elicitation of response tendencies has occurred, people employ response-focused emotion regulation strategies. The only response-focused emotion regulation strategy listed by Gross is *expressive suppression* (Gross, 2001). Gross et al. chose to investigate in depth two of the five subtypes mentioned above, *cognitive reappraisal* and *expressive suppression*.

Cognitive reappraisal represents the construal of stimuli that could lead to emotional reactions in manner that reduces their emotional effect (e.g., Gross, 1998b). For instance, when someone is participating in a sports competition, they might evaluate the situation as an opportunity to improve their performance rather than a challenge with outcomes that would reflect on their abilities. The idea of cognitive reappraisal was first introduced by Lazarus and his colleagues, who investigated the influence of cognitive mechanisms on stress reactions to aversive stimuli (Lazarus & Alfert, 1964; Speisman, Lazarus, Mordkoff, & Davison, 1964). Lazarus and his colleagues propose that "the same

`

stimulus may be either a stressor or not, depending upon the nature of the cognitive appraisal the person makes regarding the significance for him" (Speisman et al., 1964, p. 367). In one of their influential studies (Lazarus & Alfert, 1964), participants' stress reactions in response to a disturbing video depicting a subincision ritual were assessed. The experiment employed three experimental conditions: one in which participants watched the video without any other information; a second in which the hurtful aspects of the process were denied by both an introduction presented before the the video and a subsequent commentary soundtrack throughout the presentation of the film; and a third condition that presented a complete commentary soundtrack before the actual presentation of the video. Results revealed that participants in the second and third conditions experienced less stress (as assessed by galvanic skin conductance and heart rate) than participants in the silent condition. This and similar experiments (e.g., Speisman et al., 1964) suggest that people's interpretation of stimuli can diminish their stress impact. The view that emotions are altered by cognitive (re-)appraisals is now accepted in emotion theories (e.g., Frijda, 1988; John & Gross, 2004; Lazarus, 1991b), stress and coping (e.g., Carver & Scheier, 1994); and abnormal psychology (e.g., Linehan, Bohus & Lynch, 2007).

Suppression is a longstanding theme in the psychology of emotions (e.g., Darwin, 1872/1965; Freud, 1923/1961). Gross and his colleagues define expressive suppression as the processes by which people consciously restrain the expression of emotion during the experience of emotion (Gross, 1998b; Gross & Levenson, 1993). For example one might conceal displeasure with the dinner a friend cooked, in order not to hurt their feelings. Suppression's effects on physiological arousal and subjective emotion

`

experience have been examined using both experimental methods and cross-sectional studies, where dispositional differences in regulation are assessed. For example, McCanne and Anderson (1987) studied the effect of expression suppression and amplification on subjective reports of affect, in a paradigm in which participants had to imagine affective scenes. As part of a within-subjects design, facial EMG responding and self-reports of affect were measured during three experimental conditions: no instructions, expressive amplification (participants had to amplify tension in relevant facial muscles), and expressive inhibition (participants had to inhibit facial expressions). EMG data indicated that participants contained and amplified emotional expressivity effectively. In line with similar experiments (e.g., Strack, Martin & Stepper, 1988), self-reports indicated that suppressing the normal expression of emotions during positive scenes decreased levels of experienced positive emotion and led to higher levels of negative affect. No findings were found with regard to negative trials, suggesting that inhibiting negative feelings is not an effective way to reduce subjective negativity. With regard to physiological arousal, a different line of research by Gross and his colleagues has found that suppression leads to *increased* sympathetic nervous system activation, as indicated by skin conductance and cardiovascular measures (Gross & Levenson, 1993).

Building on these findings, Gross (1998b) contrasted the effects of cognitive reappraisal and expressive suppression on emotion expression, subjective experience, and physiological arousal. Participants watched a disgust-inducing video, while their expressive reactions were filmed and their physiological reactions were measured. Participants also reported on their subjective experience of emotion prior to and after having seen the video. They received different instructions meant to manipulate the

`

emotion-regulation style, across three between-subjects experimental conditions: *control condition* (participants had to naturally watch the video and no further instruction was given); *reappraisal condition* (participants received instructions to be distant and objective with regard to the content of the video) and *suppression condition* (participants received instructions to mask their expressions so that an external observer would not be able to notice they were emotional). When engaging in reappraisal, participants showed lower levels of facial expression and subjective emotion experience, while this regulation style had no impact on physiological responding. On the other hand, suppression also lowered facial expression, but not the subjective experience of emotion. Furthermore, it led to an increased sympathetic nervous system response.

In a complementary approach, Gross and John (2003) investigated whether people show stable individual differences in their engagement in the two strategies. They also investigated whether the preferred emotion-regulation style shows reliable associations with a variety of social and psychological outcomes. They developed a questionnaire measure of the tendency to engage in the two emotion-regulation strategies, which they named the emotion regulation questionnaire (ERQ). Correlational studies found that reappraisal was related to beneficial effects, such as higher levels of positive affect (and lower levels of negative affect), higher levels of well-being, and more social connectedness. On the other hand, a tendency to suppress emotions was related mostly to negative outcomes, such as lower levels of positive affect and higher levels of negative affect, poorer social relations, and decreased levels of well-being.

These measures of people's habitual use of reappraisal and suppression have also been used in experimental studies, as predictors of actual "real-time" emotion regulation.

`

For example, in an experiment investigating the influence of negative feedback on performance, participants who regularly engaged in reappraisal were able to manage the emotional impact of negative feedback and improved their performance. On the other hand, habitual suppression did not influence participants' performance following negative feedback, suggesting that suppressors were not able to cope with negative feedback in an adaptive manner (Raftery & Bizer, 2009).

Abler and colleagues' (Abler, Erk, Herwig, & Walter, 2007) neuroimaging study underlined the advantages of reappraisal in comparison to suppression in the processing of negative emotional stimuli. The habitual use of reappraisal had a negative relation with amygdala activation, while suppression scores did not predict brain activation in the same paradigm. In another neuroimaging study, participants with a disposition to engage in cognitive reappraisal showed reduced anticipatory reactions to aversive stimuli (as indicated by insula activity) suggesting that reappraisers were successful in regulating negative affective states (Carlson & Mujica-Parodi, 2010). Taken together these studies provide evidence habitual reappraisers and suppressors engage in their preferred regulation process when confronted with momentary affect in paradigms that do not explicitly encourage them to do so. For this reason, the ERQ (Gross & John, 2003) was included in the present study as an assessment of participants' stable tendencies to engage in expressive suppression and cognitive reappraisal.

Hypotheses

For Study 2, I formulated the following hypotheses. First, I was interested in predicting left-wing attitudes cross-sectionally. Previous research has reported links

`

between disgust and conservative attitudes (Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009), and these studies mostly emphasized social aspects of political attitudes. Given that incidental disgust led to more left-wing attitudes with regard to economic dimensions in my first study, I expected that disgust sensitivity would also predict left-wing political attitudes (Hypothesis 1).

Second, I aimed to replicate the results pertaining to incidental disgust and left-wing attitudes uncovered by Study 1. Therefore, in line with Study 1 and with a part of the literature that supports a disgust-fairness relationship (Moretti & di Pellegrino, 2010; Sanfey et al., 2003), I hypothesized that experimentally induced disgust would prompt people to adopt more liberal (left-wing) attitudes pertaining to economic equality (Hypothesis 2). Third, following previous research investigating the role of disgust in moral judgments (Schnall et al., 2008), I hypothesized that effects of disgust on left-wing attitudes would occur primarily among participants reporting high levels of sensitivity to their internal physical sensations on the PBC (Miller et al., 1981) scale (Hypothesis 3).

Fourth, I was interested in assessing the potential moderating role of emotion-regulation styles. Assumptions in this respect are based on previous research suggesting that cognitive reappraisal is an appropriate strategy for diminishing subjective experience of acute negative emotions, and that suppression does not impact on such experiences (e.g., Abler et al., 2007; Gross, 1998a; McCanne & Anderson, 1987). I hence hypothesized that reappraisal and not suppression would moderate the disgust-political attitudes relationship. As such, the disgust emotion induction should only lead participants to adopt more left-wing attitudes if they do not habitually engage in cognitive reappraisal (Hypothesis 4). Participants in the disgust condition who generally engage in

`

cognitive reappraisal should be able to successfully regulate acute feelings of revulsion and not make use of these feelings when reporting their political attitudes.

Finally, as an additional test of the degree to which it is the experience of disgust that impacts on participants' political attitudes, I assessed the moderating role of disgust sensitivity on the effect of incidental disgust on left-wing attitudes. I reasoned that the emotion induction procedure would more strongly impact on the attitudes of participants who were already predisposed to experience disgust in various circumstances as indicated by the disgust scale. Therefore, I hypothesized that incidental disgust would lead to more left-wing attitudes only among those participants reporting relatively high levels of disgust sensitivity on the disgust scale (Hypothesis 5).

Method

Participants. Undergraduate students from the University of Oxford (N = 50; 27 women) participated in the experiment in exchange for partial course credit. Recruitment was done in the same manner to Study 1, by posting advertisements on a specialized departmental website. Participants' ages ranged from 18 to 27 years (M = 19.82, SD = 1.38). A large number of participants were British (74.00%) and most participants were native speakers of English (84.00%). Non-British participants were originally from China (4%), Bulgaria, Germany, Japan, Kenya, Malaysia, Pakistan, Russia, Slovenia, The Netherlands, The United States, and Zimbabwe (2.00% each).

Design. Participants were randomly assigned to one of the two experimental conditions (emotion: disgust vs. control).

`

Procedure. The experiment employed a procedure similar to Study 1. Like in Study 1, participants filled in most personality questionnaires and demographic data online, prior to the laboratory session. During the laboratory session they were exposed to the same emotion-inducing stimuli: disgust vs. sadness and subsequently reported on their political attitudes. Manipulation checks and debriefing ended the experiment.

Questionnaire Measures.

Private body consciousness. PBC (Miller et al., 1981) was assessed in a manner parallel to Study 1. Participants answered the five items on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Scores were averaged and formed a scale of acceptable reliability (M = 4.21, SD = .80, α = .69).

Disgust sensitivity. Disgust sensitivity was measured with the Revised Disgust Scale (DS-R; Haidt at al., 1994, modified by Olatunji et al. 2007). The DS-R is a 25-item scale (see Appendix 3.1 for the full list of items), with three subfactors pertaining to core disgust (e.g., "I might be willing to try eating monkey meat, under some circumstances"), animal-reminder disgust (e.g., "It would bother me to be in a science class, and to see a human hand preserved in a jar") and contamination disgust (e.g., "I never let any part of my body touch the toilet seat in public restrooms"). Similar to the other personality measures, participants filled in the DS-R online, before arriving to the laboratory. They reported their attitudes on a 5-point scale, ranging from 0 (strongly disagree, for the first part of the questionnaire, and not disgusting at all, for the second part of the questionnaire) to 4 (strongly agree; extremely disgusting). Scores were reversed when appropriate and averaged to form a reliable scale (M = 1.68, SD = .57, α = .86). The three subscales were

`

also instruments with acceptable levels of reliability: core (α = .78), animal-nature (α =.76), and contamination (α =.63).

Emotion regulation styles. Habitual emotion regulation strategies were measured with the Emotion Regulation Questionnaire (ERQ, Gross & John, 2003). The ERQ is a 10-item questionnaire (see Appendix 3.2 for the complete list of items) assessing a tendency to engage in cognitive reappraisal (e.g., "When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm") and expressive suppression (e.g., "I control my emotions by not expressing them"). Participants filled in the ERQ online, before they came to the laboratory; they reported on their emotion regulation styles on a 7-point scale ranging from 1 (Strongly disagree) to 7 (Strongly Disagree). Scores for the two factors were averaged and results indicated two measures were obtained: cognitive reappraisal (M = 4.62, SD = .92, α = .743) and expressive suppression (M = 3.57, SD = 1.13, α = .70).

Left-wing economic attitudes. Political attitudes pertaining to economic equality were assessed in a manner similar to Study 1, using the Left-Right scale. Participants filled in the 5-item measure developed by Evans et al. (1996) after the emotion-induction procedure. Participants rated their endorsement of each item on the same 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores were calculated by averaging answers for the five items, and a scale of relatively satisfactory reliability was obtained (M =3.31, SD = .62 α = .65)

`

Results

Cross-Sectional Results. Zero-order correlations were calculated to check whether the DS-R (or any of its subscales: core disgust, contamination disgust, and animal nature disgust) significantly predicted scores on the Left-Right scale. That was not the case; none of the scales was significantly correlated to left-wing attitudes.

Manipulation Checks. A MANOVA with emotion (disgust vs. control) as independent factor and experienced disgust and sadness as dependent variables was performed in order to check whether the emotional states were successfully induced. As intended, participants in the disgust condition reported higher levels of disgust (M = 4.08, SD = 1.85) than did participants in the control condition (M = 2.92, SD = 1.63), F = 5.54, $p < .02$, $\eta^2 = .10$. Conversely, participants in the control condition reported higher levels of sadness (M = 4.64, SD = 1.58) than did participants in the disgust condition (M = 2.28, SD = 1.43), F = 30.72, $p < .001$, $\eta^2 = .39$.

Main Effects. An ANOVA with emotion (disgust vs. control) as independent factor and the Left-Right scale as dependent factor was performed in order to check whether there were any differences in reported political attitudes between the two experimental conditions. Participants in the disgust condition reported more liberal attitudes (M = 3.46, SD = .51) than participants in the control condition (M = 3.17, SD = .71), but the effect did not reach statistical significance F (1, 48) = 2.75, p = .10.

Moderation effects.

PBC. A GLM with emotion (disgust vs. control) as independent factor, the Left-Right scale as dependent factor, and standardized PBC scores as continuous independent variable (Dunlap & Kemery, 1987) was conducted in order to test my hypothesis that

`

disgust effects on political attitudes would be moderated by PBC. That was indeed the case; the analysis revealed a strong emotion x PBC interaction effect, F (1, 46) = 22.31, p < .001, η^2 = .33. The emotion main effect nearly reached significance level, F (1, 46) = 3.50, p = .07, η^2 = .07, while PBC did not have a main effect on political attitudes F (1, 46) = 1.12, *ns.*

In order to further examine the emotion x PBC interaction effect, simple slope analyses were conducted for high-PBC (one standard deviation above the mean) and for low-PBC (one standard deviation bellow mean), following the procedure outlined by Aiken and West (1991). As expected, high-PBC participants in the disgust condition reported more left-wing attitudes (M = 3.75, SE = .15) in comparison to control participants (M = 2.79, SE = .14), F (1, 46) = 21.97, p < .001, η^2 = .32. For low-PBC participants, surprisingly, the reverse effect was observed, with disgust leading to less left-wing political attitudes (M = 3.21, SE = .14), in comparison to control (M = 3.63, SE = .16), F (1, 46) = 4.16, p = .047, η^2 = .08.

Disgust sensitivity. In order to test for the moderating role of DS-R, a similar analysis was performed with standardized DS-R scores as continuous independent factor. The expected emotion x DS-R interaction effect was found, F (1, 46) = 6.26, p = .016, η^2 = .12. The condition main effect showed a near-significant trend, F (1, 46) = 3.04, p = .09, η^2 = .06, while DS-R did not have a significant main effect on the Left-Right scale. Simple slope analyses (Aiken & West, 1991) were subsequently performed to further examine the emotion x DS-R interaction effect. As expected, results revealed that for participants reporting high levels of DS-R (1 standard deviation above the mean), participants in the disgust condition reported stronger left-wing attitudes on the Left-

`

Right scale (M = 3.54, SE = .16) in comparison to participants in the control condition (M = 2.84, SE = .17), F (1, 46) = 9.05, p = .004, η^2 = .16. Moreover, as expected, for participants reporting low levels of DS-R, no such differences were observed, F < 1. Mean values for these participants were M = 3.37, SE = .16, for the disgust condition, and M = 3.50, SE = .17, for the sadness condition.

Because PBC and DS-R were correlated, r (50) = .26, p = .07, there was a need to show independence of effects. A third analysis was hence performed in which both emotion x PBC and emotion x DS-R were entered in the model, alongside emotion, PBC, and DS-R. This analysis revealed the significant emotion x PBC interaction effect F (1, 44) = 17.89, p < .001, η^2 = .29, whilst the emotion x DS-R interaction no longer attained statistical significance, F (1, 44) = 2.83, p = .1, η^2 = .06. As before, simple slope analyses were performed. Again, high-PBC participants in the disgust condition reported more left-wing attitudes (M = 3.75, SE = .15) in comparison to control participants (M = 2.84, SE = .14), F (1, 46) = 19.51, p < .001, η^2 = .31. On the other hand, for low-PBC participants, the surprising effect uncovered above did not remain significant, and only a trend was observed, F (1, 44) = 2.93, p =.09, η^2 = .06, (M = 3.22, SE = .14, for disgust and M = 3.57, SE = .16 for sadness). This interaction is depicted in Figure 3.1. Taken together these results suggest that PBC rather than DS-R is the stronger moderator of the relationship between incidental disgust and left-wing economic attitudes.

`

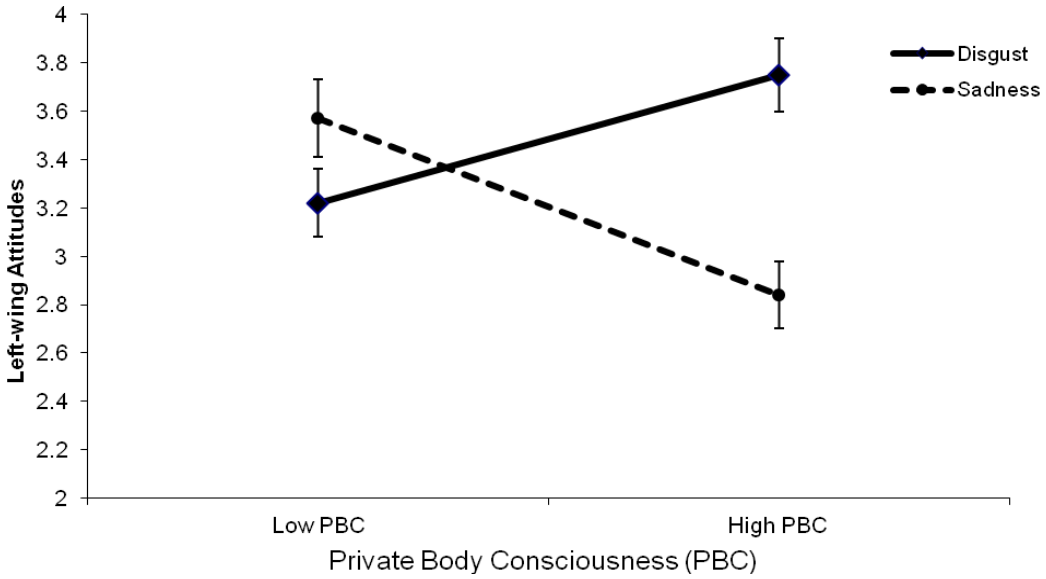

Figure 3.1. Left-Right scale scores (left-wing economic attitudes) as a function of the emotion x PBC interaction effect (while controlling for DS-R). Standard errors represent error bars.

Emotion regulation. The potential moderating role of cognitive reappraisal was tested in a GLM with emotion (disgust vs. control) as independent factor, the Left-Right scale as dependent factor, and standardized reappraisal scores as continuous independent variable. The emotion x reappraisal interaction effect was not significant ($F < 1$), suggesting that whether or not participants were habitual reappraisals did not influence the effects of induced disgust on the Left-Right scale. Overall, this analysis revealed no significant results ($ps > .10$)

Although no hypotheses were formulated with regard to a potential moderating effect of expressive suppression, a parallel analysis was performed with standardized suppression scores as independent predictor of the Left-Right scale. The emotion x

`

suppression interaction was not significant ($F < 1$), but a trend for an emotion main effect was observed, F (1, 46) = 3.88, p =.06, η^2 = .08.

Discussion

The aims of Study 2 were threefold. First, at a cross-sectional level of investigation, I was interested in investigating the role of disgust sensitivity in predicting political attitudes pertaining to economic equality. In Study 1, I found that incidental disgust led participants to more strongly endorse egalitarian attitudes. In study 2, I aimed to investigate whether a *general disposition* to experience disgust would similarly predict left-wing attitudes. Previous research clearly established that disgust sensitivity predicts political attitudes with respect to social issues – such as abortion and gay rights (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009) – but little is known whether disgust sensitivity would also predict issues pertaining to economic fairness. Second, I was interested in replicating the effects found in Study 1, in which acute feelings of disgust led participants to more strongly endorse left-wing attitudes on a questionnaire measuring attitudes with regard to economic equality. Third, I wanted to investigate the nature of the relationship between incidental disgust and left-wing attitudes. More specifically, I wanted to appraise the degree to which the results uncovered in Study 1 were due to a physical or embodied experience of disgust. For this, I assessed the moderating roles of three personality variables: private body consciousness (Miller et al., 1981), emotion regulation style (Gross & John, 2003), and disgust sensitivity (Haidt at al., 1994).

`

My first hypothesis was disproved: contrary to my expectations, disgust sensitivity did not predict left-wing attitudes. Although it contradicts my assumption, this result is in line with previous research. Horberg et al. (2009) investigated the association between a measure of predisposition to experience disgust and both purity- and justice-related violations. In their research, trait disgust was associated with the condemnation of purity-related violations, but not to the condemnation of fairness-related violations. The authors account for these results by proposing that disgust only makes purity-related matters more morally relevant. Although, likewise, in the present study trait disgust was not related to fairness-related political attitudes, in Study 1 acute feelings of disgust did impact on these attitudes. This suggests that at least in some circumstances disgust does lead to an increased moral significance of the fairness/justice domain. I now turn to the results pertaining to induced, acute feelings of disgust, in order to explore some of the circumstances in which feelings of repulsion are relevant in the context of fairness-related attitudes.

My second hypothesis was not supported either; induced disgust did not lead to a stronger endorsement of left-wing attitudes pertaining to equality and fairness. Although the pattern of results was in the right direction, the difference between disgust and control did not reach significance, and thus Study 2 failed to replicate results reported in Study1. However, when the moderating role of PBC was assessed, the expected results were found: induced disgust led participants who reported a high sensitivity to internal bodily sensations to endorse left-wing attitudes more strongly than controls (Hypothesis 3). Parallel results were found in the research reported by Schnall and colleagues (Schnall et al., 2008), in which induced disgust led to an increased moral condemnation of a variety

`

of transgressions, but these results were mostly specific to people reporting high levels of PBC. In line with Schnall and her colleagues, I conclude that this modulation by PBC is an indication that it was indeed the visceral feelings of disgust that biased participants' reactions to fairness-related matters of economic equality, rather than conceptual knowledge of disgust and moral condemnation. It is important to note that Schnall et al. failed to find a main effect of disgust in three out of four experiments, and found instead an interaction between disgust and PBC. In this context, the fact that Study 2 did not replicate Study 1 with regard to the main effect of disgust is not problematic. It is probable that induced acute feelings of disgust would bias judgments and attitudes for only a subset of people. It might be the case that most participants in Study 1 were particularly sensitive to their physical sensations as indicated by PBC, and for this reason Study 1 uncovered a main effect of emotion and no interaction between emotion and PBC. Indeed, an inspection of the PBC average scores in the two studies indicates that Study 1 participants had higher PBC scores than Study 2 participants. It might be the case that the moderator variable was affected by a kind of ceiling effect in Study 1 with the result that a majority of participants were affected by the extraneous feelings of disgust induced by the experimental procedure.

Hypothesis 4 was not supported: participants' habitual reappraisal tendencies (Gross & John, 2003) did not moderate the results. I expected that habitual reappraisers would be successful in managing acute feelings of disgust and would therefore be less likely to be influenced by them, but that was not the case. Although a suppression moderation effect was not expected, it is worth noting that habitual suppression did not moderate the relation between disgust and political attitudes either. Gross and John's

`

research indicates that emotion-regulation styles are relatively stable over time, and it is expected that reappraisers and suppressors would naturally engage in these regulation styles in various circumstances. However, it might be the case that the ERQ is more reliable in predicting people's emotion regulation outside the laboratory, in natural settings. This is consistent with findings that the ERQ is associated with general measures of affect and well-being. The emotion-inducing stimuli used in the present study are relatively mild – four mildly aversive pictures were presented for one minute altogether. The intensity and duration of emotional responses to these stimuli is not comparable to real-life emotion reactions. In fact, the vast majority of experiments that have investigated the use of reappraisal or suppression in response to experimentally induced affect directly instructed participants to engage in the desired emotion-regulation style as opposed to measuring their general tendency to engage in one emotion-regulation style or the other (e.g., Gross, 1998; Richards & Gross, 2000). Although some studies have found that habitual reappraisers naturally engage in reappraisal even in the absence of explicit experimental instructions (e.g., Abler et al., 2007; Raftery & Bizer, 2009), others have not (e.g., Volokhov & Damaree, 2010). Volokhov and Damaree question the degree to which scores on the ERQ are appropriate predictors of regulation of both real-life and experimentally induced affect. For a better test of the moderating role of emotion regulation in the relationship between incidental disgust and political attitudes, future research could experimentally manipulate reappraisal and suppression (instead of measuring a tendency to engage in these regulation styles) in a paradigm similar to the one employed here.

`

Finally, my fifth hypothesis was supported by the results. Disgust sensitivity (Haidt et al., 1994) moderated the impact of induced disgust on left-wing attitudes. The rationale for this hypothesis was simple: if feelings of disgust do indeed lead to a stronger endorsement of left-wing attitudes, then this should be particularly apparent for people who have a tendency to experience this emotion in response to a wide variety of stimuli. These results are consistent with the assumption that the effects obtained by Study 1 and Study 2 were caused by physical, embodied experiences of disgust. However, it is worth noting that these effects did not remain significant when PBC was also entered in the model. Given that PBC and DS-R were correlated, it is possible that DS-R moderated the disgust – political attitudes only to the extent that it predicted higher PBC levels. Results found here are consistent with this interpretation but one should also note that sample size (n = 50) could account for the fact that DS-R did not remain a significant moderator when PBC was entered in the model. As a result, Study 3 was designed as an additional test of this possibility.

Overall, the results obtained here indicate an interesting dissociation between acute feelings of disgust and predispositions to experience this emotion in general, as indicated by the DS-R. In Study 1, I found that sudden, acute, feelings of revulsion led to a stronger endorsement of left-wing attitudes. Similarly, in Study 2, induced disgust led to the same effects, albeit only for subgroups of participants who were particularly sensitive to internal bodily sensations or had the predisposition to experience disgust as a response to a variety of stimuli. However, just the tendency to experience disgust as measured by the DS-R did not significantly predict left-wing attitude in Study 2. In fact none of its subscales – core, animal nature, and contamination disgust – predicted

`

attitudes pertaining to economic issues. It could the case that disgust leads to left-wing attitudes only when it is experienced acutely such as during Studies 1 and 2, or it might be the case that the DS-R only predicts political attitudes pertaining to social issues. However, in line with most research on the disgust sensitivity and political attitudes, at this point it is safe to assume that the DS-R does not predict economic attitudes. In order to gain a better understanding of the processes at work, one needs to directly compare effects of trait and acute disgust on the social and economic dimensions of political attitudes. Study 3 was designed for this purpose.

CHAPTER 4: CONTRASTING THE EFFECTS OF DISGUST SENSITIVITY AND INCIDENTAL DISGUST ON SOCIAL AND ECONOMIC ATTITUDES

This Chapter presents Experimental Study 3. Study 3 used the same basic design as studies 1 and 2, but recruited a larger sample (N = 79; 49 women). For this experiment, social-political attitudes were assessed in addition to economic attitudes. Results revealed the same moderation effects as before: disgust led to more left-wing attitudes but only for participants scoring high on the PBC and DS-R scales. The study also revealed a surprising moderation effect of gender: only women endorsed more socially liberal attitudes after having been induced to experience disgust. Finally, at a cross-sectional level, results replicated previous research: the DS-R was a significant predictor only of social-conservative attitudes, and not of economic attitudes.

`

Experimental Study 3

Study 3 had the following aims: a) to replicate the results uncovered by Studies 1 and 2 that support a causal link between incidental disgust and left-wing political attitudes pertaining to economic equality; b) to replicate and further investigate the results of Study 2 which show that the incidental disgust – left-wing attitudes relationship is moderated by PBC and DS-R; c) to replicate the results reported by previous research which have established a relationship between disgust sensitivity as measured by the DS-R and conservatism with regard to social issues such as abortion and gay rights; and finally d) to assess the effects of both incidental disgust and disgust sensitivity on both social and economic aspects of political attitudes.

In this study, I also assessed political attitudes as a unidimensional concept, using a 1-item measure. The purpose of this was to contrast findings on the specific measures of economic and social political attitudes with the unidimensional measure employed by some of the previous research (e.g., Inbar, Pizarro, Iyer et al., 2012). It was difficult to formulate specific expectations with regard to disgust sensitivity and incidental disgust effects on the 1-item measure, as I generally expected dissociations between social and economic attitudes, and the 1-item measure encompassed both dimensions. Therefore, from this perspective, the inclusion of this measure was mostly exploratory, to provide a contrast between a unidimensional and a bi-dimensional operationalization of political attitudes.

A second reason for including this measure was to investigate the degree to which the economic- and social-political attitudes measures are related to this 1-item measure. When measures do not specify which aspect of political orientation is being assessed,

`

which is primary in participants' minds? This might help understand the degree to which participants in the present sample are concerned with social and economic issues.

In order to prevent overestimation of the relationship between disgust sensitivity and political attitudes, Study 3 investigated whether the relationship would hold even after controlling for demographic variables and the two "Big Five" personality dimensions that have previously been found to predict both political attitudes and disgust sensitivity: *openness to experience* and *conscientiousness*. The assumption that conservatives are less likely to score high on measures of openness to experience or related constructs has received empirical support. A variety of studies report negative relations between different measures of openness to experience and conservatism (Joe, Jones, & Ryder, 1977), or its related and more extreme facets, RWA (Peterson & Lane, 2001) and SDO (Pratto et al., 1994). The hypothesis that conservatives are more conscientious than liberals has similarly received empirical support in various studies (for an overview see Carney, Jost, Gosling, & Potter, 2008). Similarly, Druschel and Sherman (1999) have investigated the relationship between personality traits and disgust sensitivity. Their research revealed a negative relationship between openness to experience and trait disgust, and a positive relationship between conscientiousness and disgust sensitivity.

A new aim for Study 3 was to test whether gender predicts political attitudes, either independently or in conjunction with incidental disgust. Gender effects were not tested until now due to the small number of males recruited in studies 1 and 2[2]. Empirical

[2] This was mainly due to the high proportion of females taking undergraduate psychology courses.

`

evidence suggests that men and women differ with regard to political attitudes. Pratto, Stallworth, and Sidanius (1997) proposed that there are gender differences in the social-psychological characteristic pertaining to preference for hierarchy over equality. To support their argument, Pratto and colleagues review a number of studies. Across these studies women showed lower levels of conservatism, racism, or patriotism (e.g., Ekehammar & Sidanius, 1982; Furnham, 1985; Sidanius & Ekehammar, 1980). In their study investigating gender differences in political attitudes and social dominance orientation, Pratto et al. (1997) replicated these findings: men were more likely than women to endorse conservative attitudes. On the other hand, women were more likely to support policy aimed at reducing inequality, such as programmes aimed at the disadvantaged or promoting equal rights. Furthermore, men scored higher on the SDO measure and evidence supported that this difference in preference for hierarchy explained in part the gender differences in political attitudes.

Taken together, the evidence reviewed above suggests a main effect of gender on both dimensions of political attitudes: women should report more liberal attitudes with regard to both economic and social issues. There is also some evidence to suggest that incidental disgust might influence political attitudes differently for men and women. First, women are more likely than men to experience disgust (e.g., Druschel & Sherman, 1999). Second, and more relevant to a moderation hypothesis, at least one study has found that incidental disgust differentially affected men's and women's purity-related attitudes. In a study investigating the influence of disgusting smells on attitudes towards gay men and lesbians, Inbar and his colleagues (Inbar, Pizarro, & Bloom, 2012) found that disgust lowered men's liking of lesbians, but women's attitudes were not affected.

`

The authors mention in the discussion section that they have replicated this effect on attitudes towards both gay men and lesbians. In line with these findings, it is possible that in the present study disgust would influence men's and women's purity-related attitudes differently. Therefore, with regard to social issues it is likely that disgust would lead men, rather than women, to adopt conservative attitudes.

Hypotheses

Study 3 had seven hypotheses. First, at the cross-sectional level, I was interested in the relationship between disgust sensitivity on the one hand and social and economic attitudes on the other. Assumptions were formulated in line with previous research reporting that disgust sensitivity predicts social-conservative attitudes (Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009), and results uncovered in Study 2 which revealed no relationship between disgust sensitivity and economic attitudes. I therefore expected that disgust sensitivity would predict social-conservative attitudes, but not economic-political attitudes (Hypothesis 1).

With regard to incidental disgust and economic political attitudes, I aimed to replicate the results found in Study 2. Therefore, I hypothesized that private body consciousness and disgust sensitivity would moderate the relationship between incidental disgust and left-wing attitudes pertaining to economic equality. I expected that incidental disgust would lead to more left-wing attitudes, but only for the subsets of participants that report particularly high levels of PBC (Hypothesis 2) and high levels of disgust sensitivity (Hypothesis 3). In line with Study 2's findings, I was also interested in investigating the independence of these effects. In study 2, the DS-R did not remain a

`

significant moderator of the relationship between incidental disgust and political attitudes after controlling for PBC and the PBC x emotion interaction. Given the small sample size no definite conclusions could be drawn based on this study alone and additional investigations were warranted.

A third set of hypotheses pertained to incidental disgust and political attitudes pertaining to social issues. Expectations were formulated in line with previous research underlining a relation between trait disgust and conservative social-political attitudes (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009), and with Study 2 which revealed that incidental disgust biased political attitudes only for those participants that were particularly sensitive to their bodily sensations and to the emotion of disgust in general. I hence expected that experimentally induced acute feelings of disgust would lead to more conservative attitudes with regard to social issues, but only for those participants that report high levels of private body consciousness (Hypothesis 4) and high levels of disgust sensitivity (Hypothesis 5).

With regard to gender, I expected that women would report more liberal attitudes than men, both with regard to social issues (Hypothesis 6) and with regard to economic issues (Hypothesis 7). Finally, I expected disgust would be more likely to lead social-conservative attitudes in men rather than women (Hypothesis 8).

Method

Participants. Undergraduate students from the University of Oxford (N = 79, 49 women) participated in the experiment in exchange for partial course credit. Recruitment was done in a similar manner to Studies 1 and 2, by advertising the experiment on a

`

specialized departmental website. Participants' ages ranged from 18 to 27 years (M = 19.48, SD = 1.65). Similar to the previous studies, a large number of participants were British (71%) and were native English speakers of (77.9%). Participants not originally from the UK came from Germany (5%); Austria, China, India, and Italy (2.5% each); Australia, Belgium, Iran, Pakistan, Romania, Russia, South Africa, Thailand, and Ukraine (1.27% each).

Design. Participants were randomly assigned to one of the two experimental conditions (emotion: disgust vs. control).

Procedure. The experiment followed the same basic procedure as Studies 1 and 2. The main differences consisted in a number of questionnaire measures that were assessed in addition to ones employed in Studies 1 and 2. In a manner similar to the previous studies, participants filled in personality questionnaires and provided demographic data online, before coming to the laboratory. In the laboratory, they were exposed to the same emotion-inducing stimuli: disgust vs. sadness, and subsequently reported on their political attitudes. After the dependent measures, a number of items not included in the present report were assessed. In order to ensure that the additional creativity task employed in Studies 1 and 2 did not impact on the results, participants in the present study engaged in this task after the political attitudes measures. Finally, manipulation checks and debriefing ended the experiment.

`

Questionnaire measures.

Private body consciousness. The same scale as in Study 1 and Study 2 was used (Miller et al., 1981). Scores were averaged and formed a scale of acceptable reliability (M = 3.95, SD = .78, α = .630).

Disgust sensitivity. Proclivity to experience disgust was measured in the same manner as in Study 2, with the DS-R (Haidt at al., 1994, modified by Olatunji et al. 2007). Scores were averaged, after being reversed when appropriate, and a reliable scale was obtained (M = 1.64, SD = .59, α = .872). Items pertaining to the three subfactors also formed scales of acceptable levels of reliability: core (α = .73), animal-nature (α =.82), and contamination (α =.50).

Openness to experience. Openness to experience was assessed using a 10-item IPIP questionnaire, which is part the larger International Personality Item Pool (Goldberg et al., 2006). Example items include "I believe in the importance of art" and "I am not interested in abstract ideas" (reverse scored; see Appendix 4.1 for the list of items). Like all other personality measures used in this study, participants filled in the questionnaire online before coming to the lab; they rated the extent to which each item applied to them on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Responses from the ten items were averaged after reverse coding when appropriate. (M = 5.35, SD = .80, α = .76).

Conscientiousness. Conscientiousness was similarly assessed with a 10-item IPIP questionnaire (Goldberg et al., 2006). Items include "I get chores done right away" and "I do just enough work to get by" (reverse scored; see Appendix 4.2 for the full list of items). Participants filled in the conscientiousness questionnaire online, prior to their

`

coming to the laboratory; they rated the extent to which each item applied to them on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Responses from the ten items were averaged (after reverse coding when appropriate) to form a reliable scale (M = 4.19, SD = .91, α = .84).

Left-Right scale. Political attitudes pertaining to economic equality were assessed in a manner similar to Studies 1 and 2 with the measure developed by Evans et al. (1996). Ratings on the five items were averaged and a scale of relatively satisfactory reliability was obtained (M =3.17, SD = .67, α = .65).

Social conservatism. A short version of the classical C-scale (Wilson & Patterson, 1968) developed by Henningham (1996) was administered as a measure of participants' social conservatism. The scale contains 12 items, each containing a single word or a short phrase pertaining to one of the three underlying factors: conventional morality, intolerance, and punitiveness. Sample items include "Death penalty" and "Legalized abortion" (see Appendix 4.3 for the full list of items). Participants indicated their agreement or disagreement with each item on a 3-point scale ranging from "no" to "yes" (the middle point represented an "undecided" opinion). Because the scale was developed to reflect attitudes in an Australian context, one of the items was changed to better suit a British context. As such, "Asian immigration" was changed to "Immigration of foreigners" (in line with Dollinger, 2007). The scale was previously shown to be a valid measure of social conservatism among English students (Maltby, 1997). Scores for each items were averaged, after reverse coding when appropriate, and a scale was obtained (M =1.38, SD = .25, α = .59).

`

Overall political orientation. In line with previous research (e.g., Inbar, Pizarro, Iyer et al., 2012,), a 1-item general political orientation item was included. Participants were asked to indicate where they generally stood with regard to their political views. The scale ranged from 1 (extremely liberal or left-wing) to 7 (extremely conservative or right-wing). The middle point represented moderate or centre. Higher scores on this measure indicate more conservative or right-wing political attitudes.

Results

Zero-order correlations. As expected, the C-scale and the Left-Right scale were negatively correlated, r (79) = -.26, p = .02. Both the C-scale and the Left-Right scale correlated with the 1-item political attitude measure (C-scale: r (79) = .39, p < .001; Left-Right scale: r (79) = -.55, p < 1), suggesting that the two scales reflected participants' general attitudes while adding information that was not encompassed by the 1-item measure.

Zero-order correlations were calculated in order to appraise individual predictors of social and economic political attitudes. As expected, disgust sensitivity predicted social conservative attitudes as measured by the C-scale, r (75) = .33, p = .004. In fact, all three disgust sensitivity subscales were significant predictors of scores on the C-scale: core disgust, r (75) = .26, p = .03; contamination disgust, r (75) = .27, p = .02; and animal nature disgust, r (75) = .32, p = .005.

On the other hand, in line with Study 2, economic attitudes were predicted neither by disgust sensitivity, nor by any of its subscales, ps > .56. Last, the DS-R did not predict participants' ratings on the 1-item political attitudes measure, r (75) =.14, *n.s*. With

`

regard to the DS-R subscales, only contamination disgust proved to be a significant predictor of the 1-item measure, r (75) = .24, p = .04.

Multiple regression analyses. Multiple regression analyses were performed in order to investigate whether the significant relationships uncovered above could be accounted for by any of the measured control variables or by demographic measures. I therefore performed three multiple regressions analyses, with independent factors being the DS-R and dependent variables being the three political attitudes measures, while simultaneously controlling for effects of openness to experience, conscientiousness, gender, and age.

First a multiple regression analysis was performed to investigate whether disgust sensitivity would remain a significant predictor of social political-attitudes, even after simultaneously controlling for the abovementioned factors. The model was significant, F (5, 69) = 4.32, p = .002, R^2 = .24. Disgust sensitivity was a significant independent predictor of social-conservative attitudes, β = .23, p = .04. In line with previous research, both openness to experience (β = -.25, p = .02) and conscientiousness (β = .23, p = .04) also independently predicted political attitudes.

A second analysis was performed to investigate whether contamination disgust would remain a significant predictor of the unidimensional measure of political orientation, while simultaneously controlling for the effects of openness to experience, conscientiousness, age, and gender. Contamination disgust did not remain an independent predictor of this measure, β = .14, *n.s.* Openness to experience was the only independent predictor of the unidimensional measure of political orientation, β = -.49, p < .001,

`

Finally, the economic and social-political attitudes scales where simultaneously regressed on the unidimensional measure. Results indicated that both dimensions were significant independent predictors of overall political orientation: β = -.48, p < .001, for economic issues, and β = .26, p = .008, for social issues.

Manipulation checks. A MANOVA with emotion (disgust vs. control) as independent factor and self-reported disgust, anger, sadness, arousal, tension, and overall negativity as dependent variables was performed in order to check whether the emotion-induction procedure was successful. As expected, participants in the disgust condition reported significantly higher levels of disgust (M = 4.79, SD = 1.38) than did participants in the control condition (M = 2.73, SD = 1.71), F (1, 78) = 34.14, p < .001, η^2 = .31. By contrast, participants in the control condition reported significantly more sadness (M = 4.85, SD = 1.42) than did participants in the disgust condition (M = 2.42, SD = 1.62), F = 50.38, p < .001, η^2 = .40.

Main effects. A MANOVA with emotion (disgust vs. control) as independent factor, and the C-scale, the Left-Right scale, and the 1-item measure as dependent factors, was performed in order to check whether there were any differences in economic- or social-political attitudes between the two experimental conditions. This analysis revealed no significant effects. Notably, participants in the disgust condition reported more liberal attitudes on the Left-Right scale (M = 3.30, SD = .75) than participants in the control condition (M = 3.04, SD = .58), and this difference almost reached statistical significance, F (1, 77) = 2.91, p = .09, η^2 = .04. On the other hand, for the social-political attitudes measure the means for the two conditions were about the same: M = 1.37, SD = .24, for the disgust condition, and M = 1.39, SD = .26, for the control condition, F < 1. Similarly,

`

on the 1-item measure of political orientation, the difference between the disgust condition (M = 2.89, SD = 1.27) and the control condition (M = 3.07, SD = 1.19) was not significant, $F < 1$.

Moderation effects.

PBC. A GLM with emotion (disgust vs. control) as independent factor, the Left-Right scale, the C-scale and the 1-item political attitudes measure, as dependent variables, and standardized PBC scores as continuous independent variable (Dunlap & Kemery, 1987) was performed to test my hypothesis that the effect of disgust on political attitudes would be moderated by PBC. No main effects were observed on either of the dependent variables, ps > .1. The expected emotion x PBC interaction effect was observed for the Left-Right scale, F (1, 73) = 7.70, p = .007, η^2 = .10, and for the 1-item measure of political attitudes, F (1, 73) = 7.78, p = .007, η^2 = .10. For the conservatism scale, the emotion x PBC interaction effect was not significant, F (1, 73) = 1.65, *n.s.*

In order to further examine the significant emotion x PBC interaction effect on the Left-Right scale, simple slope analyses were conducted for high PBC, i.e., one standard deviation above the mean, and for low PBC, i.e., one standard deviation below the mean (Aiken & West, 1991). As expected, high-PBC participants in the disgust condition reported more left-wing attitudes (M = 3.62, SE = .16) in comparison to control participants (M = 2.97, SE = .13), F (1, 73) = 9.82, p = .002, η^2 = .12. For low-PBC participants, as expected, there was no difference in left-wing political attitudes between disgust participants (M = 3.02, SE = .15), and control participants (M = 3.18, SE = .14), $F < 1$. This interaction effect is depicted in Figure 4.1.

`

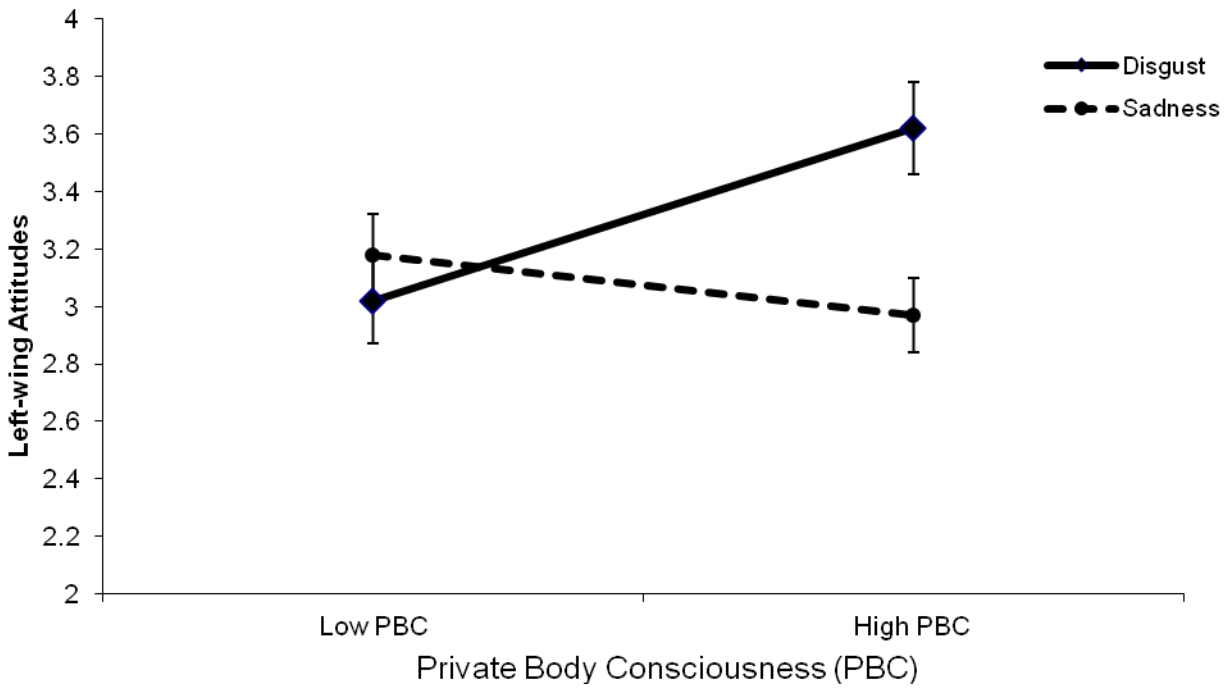

Figure 4.1. Left-Right scale scores (left-wing economic attitudes) as a function of the emotion x PBC interaction effect. Error bars represent one standard error.

A parallel analysis was performed to better appraise the nature of the emotion x PBC interaction on the 1-item political attitudes measure. Similar to the results on the Left-Right scale, for high-PBC, participants in the disgust condition reported being more liberal in general (M = 2.32, SE = .30) in comparison to control participants (M = 3.27, SE = .25), F (1, 73) = 5.86, p = .02, η^2 = .07. Moreover, for low-PBC participants, as expected, there was no difference between participants in the disgust condition (M = 3.42, SE = .29), and participants in the control condition (M = 2.82, SE = .26), F (1, 73) = 2.41, *n.s.*

`

Disgust sensitivity. DS-R was entered in a GLM as an independent predictor together with emotion (disgust vs. control), while the three dimensions of political attitudes were entered as dependent variables.

Emotion again did not have a significant main effect on any of the three political attitude measures, *p*s > .2. The expected emotion x DS-R interaction effect was found for the social conservative measure, the C-scale, F (1, 71) = 4.32, p = .04, η^2 = .06, and for the 1-item measure of political attitudes, F (1, 71) = 4.04, p = .048, η^2 = .06. There was also a trend for an emotion x DS-R interaction on the Left-Right scale, F (1, 71) = 3.18, p = .08, η^2 = .04.

Simple slope analyses (Aiken & West, 1991) were conducted to further investigate the emotion x disgust sensitivity interaction effect on the C-scale and the 1-item measure of political attitudes. Surprisingly, for high levels of disgust sensitivity (1 standard deviation above the mean), participants in the disgust condition reported less conservative attitudes on the conservatism measure (M = 1.37, SE = .05) in comparison to participants in the control condition (M = 1.52, SE = .05), F (1, 71) = 4.48, p = .04, η^2 = .06. On the other hand, for participants reporting low levels of disgust sensitivity no such differences were observed F < 1.

For the 1-item measure, simple slope contrasts were not significant but an obvious trend was observed. High-DS-R participants in the disgust condition (M = 2.74, SE = .28) identified themselves as more liberal than high-DS-R participants in the control condition (M = 3.48, SE = .27), F (1, 71) = 3.53, p = .06, η^2 = .05. For low disgust sensitivity participants, no such trend for difference between disgust participants' (M = 3.48, SE = .27) self-reported attitudes and control participants attitudes, F (1, 71) = 1.02, *n.s.*

`

Although the emotion x DS-R interaction did not reach significance for the Left-Right scale, p = .08, the pattern of means for high- and low-DS-R was observed graphically in order to appraise whether it was similar to the pattern uncovered by Study 2. That was indeed the case: high-DS-R participants in the disgust condition (M = 3.45, SE = .21) reported more left-wing attitudes than high-DS-R controls (M = 2.97, SE = .21). Similar to the Study 2, the pattern of results indicates that for low disgust sensitivity participants the scores for disgust participants (M = 3.13, SE = .17) were about the same as control participants' ratings (M = 3.20, SE = .14).

Similar to Study 2, PBC and DS-R were correlated (r (78) = .26, p = .02); therefore an additional analysis was performed with both PBC and DS-R as potential moderators. In this analysis the emotion x DS-R interaction no longer trended, F (1, 68) = 1.69, p = .20, while the emotion x PBC interaction effect remained significant F (1, 68) = 5.72, p = .02, η^2 = .08. These results are consistent with Study 2 and suggest that only PBC is an independent moderator of the relationship between disgust and left-wing political attitudes.

Gender. A GLM with emotion (disgust vs. control) and gender (male vs. female) as independent factors and the Left-Right scale as dependent variable was performed. The emotion x gender interaction effect was significant, F (1, 73) = 4.99, p = .03, η^2 = .06[3] (see Figure 4.2). In order to further analyze this interaction effect, simple main

[3] Because PBC and gender were correlated, r (78) = .20, p = .08, an additional analysis was performed to check whether this interaction would remain significant even after introducing PBC in the model; the

`

effects were calculated. These analyses revealed that for women disgust (M = 3.38, SE = .17) led to more left-wing attitudes than control (M = 2.90, SE = .13), F (1, 73) = 6.90, p = .01, η^2 = .09. For men, there was no such difference between disgust condition (M = 3.19, SE = .17) and control condition (M = 3.37, SE = .17), F < 1.

A parallel analysis was performed with the C-scale as the dependent variable. The emotion (F < 1) and the gender (F (1, 73) = 2.45, *n.s.*) main effects were not significant. The gender x emotion interaction effect was, however, significant F (1, 73) = 6.07, p = .02, η^2 = .08. Simple main effects revealed that only for women, disgust led to more *liberal* social attitudes (M = 1.34, SE = .05) than the control condition (M = 1.48, SE = .05), F (1, 73) = 4.47, p = .05, η^2 = .06. For men the difference between disgust (M = 1.39, SE = .06) and control conditions was not significant (M = 1.26, SE = .06), F (1, 73) = 2.18, *n.s.*

---

interaction was marginally significant even after introducing PBC and emotion x PBC in the model, F (1, 68) = 3.45, p = .07, η^2 = .05.

`

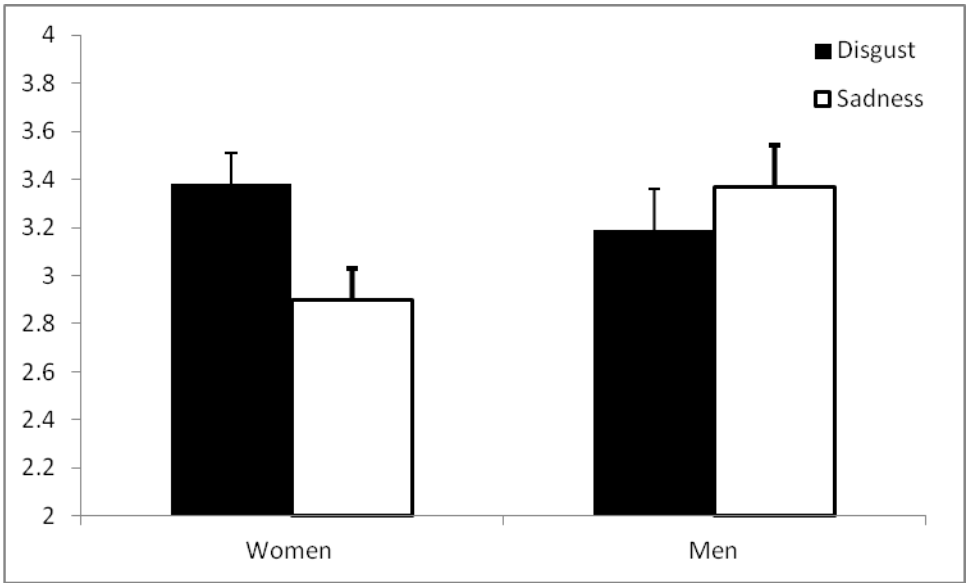

Figure 4.2. Left-Right scale scores (left-wing economic attitudes) for women and men in the disgust and sadness condition. Error bars represent one standard error.

Because women were also more disgust sensitive than men, F (1, 77) = 3.35, p = .07, η^2 = .04, an additional analysis was performed in order to verify whether this gender interaction could account for the unexpected emotion x disgust sensitivity interaction, in which participants who were particularly sensitive to disgust reacted with more liberal attitudes after the disgust induction. Therefore a GLM with emotion, gender, and the disgust sensitivity measure as independent factors was performed. The dependent variable was the social conservative measure, the C-scale. In this analysis, the emotion x disgust sensitivity interaction did not reach significance, F (1, 67) = 1.18, *n.s.* On the other hand, the emotion x gender interaction effect remained significant, F (1, 67) = 5.45, p = .02, η^2 = .07. No other effect reached significance, but there was a near-significant main effect of disgust sensitivity, F (1, 67) = 3.34, p = .07, η^2 = .05. Taken together, these

`

results confirm that the emotion x disgust sensitivity interaction effect uncovered may indeed have depended on gender.

Discussion

Four of my hypotheses were supported by the results. First, at the cross-sectional level, disgust sensitivity predicted conservative attitudes pertaining to social issues (Hypothesis 1). This result is in line with an increasing body of research supporting a relation between proclivity to experience disgust and social-conservative attitudes (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009). Disgust sensitivity remained a significant predictor of political attitudes even after controlling for traditional personality predictors of political attitudes, openness to experience and conscientiousness. On the other hand, in line with Study 2, disgust sensitivity did not predict economic political attitudes (Hypotheses 2).

My third and fourth hypotheses were also supported. In line with Study 2, incidental disgust led participants to adopt more left-wing attitudes, but this was the case only for those reporting high levels of PBC and those reporting high levels of disgust sensitivity. However, the emotion x DS-R interaction was not significant when simultaneously when taking into account PBC, suggesting that disgust sensitivity was not an independent moderator. This effect replicates Study 2 with a larger sample, suggesting that this loss of significance is not due to insufficient statistical power. It seems that DS-R moderates the effects of incidental disgust on left-wing economic attitudes, only to the extent that it is associated with higher levels of PBC. This unique moderation effect by

`

PBC supports the assumption that it is the visceral, physical feelings of disgust which bias participants' endorsement of left-wing political attitudes, and that this bias does not depend on a simple priming effect of activated concepts of disgust and moral condemnation.

Overall, hypotheses pertaining to incidental disgust and conservative political attitudes were not supported by the findings. First, there was no relation between incidental disgust and social-conservative attitudes, even for participants scoring high on PBC. On the other hand, when disgust sensitivity was assessed as a potential moderating variable, the results uncovered the surprising effect that incidental disgust did impact on social-conservative attitudes, but in the opposite direction to the one expected. Participants who were generally disgust-sensitive, and who were momentarily induced to experience disgust, reported *less* conservative attitudes pertaining to social issues than controls. In the next paragraph, I address this surprising result in the larger context of findings uncovered by studies 1- 3.

In studies 1-3, I found that *incidental disgust* led to liberal attitudes in the context of *economic issues*. This relation was consistent with the link reported by previous research between disgust and fairness-related violations (e.g., Moretti & di Pellegrino, 2010). Moreover, in line with previous research (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009), disgust sensitivity did predict conservative attitudes pertaining to social issues. This relation was explained by theorists in terms of the relation between disgust and the moral foundation of purity, a moral domain that is particularly relevant for conservatives. In this context, it seems implausible that participants who were particularly sensitive to disgust would react with more *socially*-liberal attitudes after

`

being exposed to stimuli inducing acute feelings of disgust. For these reasons, I investigated whether this relationship was spurious, given that that gender showed a similar interaction effect with acute disgust. Indeed, disgust sensitivity no longer significantly interacted with the manipulation after controlling for gender, which is consistent with its interactive effects being spurious. It seems therefore likely that the disgust sensitivity moderated the relationship between incidental disgust and social conservative attitudes only to the extent to which it was associated with gender (women were more disgust sensitive than men). I now turn to discuss these gender effects.

In addition to replicating the results obtained across the first two studies, Study 3 tested new hypotheses pertaining to gender. First, building on previous research (e.g., Pratto et al., 1997), I expected that, overall, women would be more liberal than men. In fact, no gender differences were found for either of the political attitudes measures. More relevant to the central research topic, I hypothesized that gender would moderate the effects of induced disgust on social conservative attitudes, with men showing a stronger effect than women. Although a moderation effect was found, in fact disgust led to women but not men adopting more socially-liberal attitudes. Gender also moderated the effect of incidental disgust on economic political attitudes, again showing that disgust led to more liberal economic attitudes only for women. The fact that incidental disgust led women to adopt more social-liberal attitudes is surprising. One potential explanation for this surprising effect is that it might be difficult for the same emotion-inducing stimuli to sensitize participants to both fairness- and purity-related violations simultaneously. The evidence from the present study suggests that the experimental stimuli mostly enhanced the moral significance of fairness-related violations. This is not to say that the pictures

`

participants were exposed to had any special relation to fairness-related violations. The four pictures depicted moderate disgust-inducing scenes: two showed people vomiting, one showed a dirty toilet, and the other showed scattered rubbish. There was no literal or direct relation between the content of the pictures and fairness. Rather, I suspect that these disgust-inducing stimuli had the potential to sensitize participants to both fairness- and purity-related matters. However, for the present sample of participants, it is possible that fairness-related matters were naturally more salient. A generally liberal sample - University of Oxford undergraduate students - might be easier to sensitize to fairness-related issues than to purity-related issues. Moreover, as most participants were British, this natural tendency towards matters pertaining to economic equality might reflect concerns that are specific to the United Kingdom. Historically, the structure of the British society has been characterized by class divisions reflecting social and economic inequalities (e.g., Rubinstein, 1977).

Most studies emphasizing an exclusive (or predominantly strong) disgust-purity relation have been conducted in the United States (e.g., Hodson & Costello, 2007; Horberg et al., 2009; Inbar, Pizarro, & Bloom, 2009). Indeed, in the context of American politics, issues such as abortion and gay marriage seem to be matters of division and debate between liberals and conservative. However, in Europe, and more specifically Britain, these issues are not as salient in political discourse. For example, same-sex couples in the UK have been allowed to form civil partnerships since 2005 (Women and Equality Unit, 2003), and same-sex marriage seems close to becoming legal too. All major political parties are in principle in favour of ending the ban on same-sex marriage, including many Conservatives (e.g., Beckford, 2010). Therefore, my interpretation of the

`

general lack of an incidental disgust – social conservative relation (while a disgust – liberal economic attitudes was found) lies in the stronger emphasis British participants give to the fairness moral domain as opposed to the purity moral domain. Given that the fairness domain is more salient than the purity domain, disgust stimuli are more likely to sensitize participants to economic rather than social issues. Consistent with these assumptions is the finding that standardized beta coefficients were almost double for economic issues in comparison to social issues, when regressing both social and economic attitudes simultaneously on overall political orientation (although both dimensions were significant predictors of overall orientation).

The fact that a group of participants actually ended up endorsing more liberal attitudes with regard to social issues as a consequence of induced disgust could be the consequence of a broader liberal mind-frame being activated. That is, although the two dimensions of political attitude are distinct (Evans et al., 1996), it could very well have been the case that a momentary sensitization to fairness-related matters might have led to a general activation of liberal thinking, which also influenced attitudes pertaining to social issues. A plausible explanation could be also be formulated in terms of self-perception: endorsing liberal ideas with regard to economic policy might have prompted participants in the disgust condition, who were also generally susceptible to disgust, to temporarily perceive themselves as the type of people who adhere more to liberal values in general, and thus to endorse more liberal values across both types of issues.

On the other hand, taken together, cross-sectional results concerning the C-scale and the Left-Right scale indicate important dissociations between economic and social aspects of political attitudes. The disgust scale was a significant predictor only of social

`

aspects of political attitudes, such as gay marriage and voluntary euthanasia, and not of economic aspects. Indeed, all of its subscales (core disgust, animal nature disgust, and contamination disgust) were significant predictors of scores on the C-scale, while none proved a significant predictor of the Left-Right scale. As Studies 1-3 consistently report, feelings of disgust do play a role in the adoption of left-wing attitudes pertaining to economic equality. Therefore it might be the case that the DS-R simply does not address the type of disgust which is relevant in this context, and as a consequence does not predict results on the Left-Right scale. This possibility was tested in the Study 4.

Finally, it is worth commenting on the relation between the Left-Right scale, the C-scale, and the 1-item measure of political attitudes. Both the C-scale and the Left-Right scale were associated with the 1-item measure, but the relationship was stronger for the Left-Right scale. Moreover, overall, effects on the 1-item measure seemed to have mirrored more often the ones on the Left-Right scale than the ones on the C-scale. Indeed most cross-sectional findings were the same for both the 1-item measure and the Left-Right scale. In particular, there was no main effect on either measure, but, similar to the Left-Right scale, there was an emotion – PBC interaction effect on the 1-item political attitudes measure, and, similar to the C-scale, there was an interaction between emotion and disgust sensitivity on the 1-item political attitudes measure. Taken together the results confirm that the unidimensional measure of political attitudes was generally a good predictor of the Left-Right scale. The one instance in which the 1-item measure behaved similarly to the C-scale also underlines that fact that assessing only a unidimensional measure of political attitudes can bring about misleading effects.

`

CHAPTER 5: DISGUST SENSITIVITY AND POLITICAL ATTITUDES

`

This Chapter presents Cross-sectional Study 4, an investigation of interrelations between two measures of disgust proneness, the DS-R and the Three Domain Disgust Scale (TDDS; Tybur et al., 2009), and social and economic attitudes. Participants associated with the University of Oxford (N = 314; 221 women) filled in an online survey. Main results include replications of previous research that emphasized a relationship between DS-R and social-conservative attitudes, as well as novel findings showing positive associations between both core disgust and pathogen disgust, and left-wing economic attitudes. The fact that these relations were mostly true for British participants supports the assumption that the disgust – economically liberal attitudes link reflects specifically British phenomena. Dissociations between the two measures of disgust sensitivity are also discussed.

Cross-sectional Study 4

Study 4 was designed to test conclusions that emerged from Studies 2-3, pertaining to a relationship between a predisposition to experience disgust and left-wing political attitudes regarding economic issues.

The first aim of this study was to test the proposition that there is a relationship between disgust sensitivity and left-wing political attitudes, but this relationship was not uncovered in Studies 2-3 because the DS-R (Haidt at al., 1994, modified by Olatunji et al. 2007) does not tap into the relevant type of disgust sensitivity. In Chapter 1, I proposed that disgust might play a role in the adoption of liberal economic attitudes due to its link to *fairness* violations (e.g., Chapman et al., 2009; Moretti & di Pellegrino, 2010; Sanfey et al., 2003). The DS-R seems not to relate strongly to violations pertaining to Haidt and Joseph's (2004) fairness moral foundation. Indeed, Haidt, Graham, and Joseph (2009) report that disgust sensitivity is related most strongly to purity concerns (r = .34). Conversely, out of the five moral foundations the DS-R is related least strongly to fairness moral concerns (r = .12). This suggests that the overall DS-R scale might not be

`

the best instrument to assess sensitivity to the fairness-related domain of disgust sensitivity. Not much is known with regard to individual subscales, though. Rozin and colleagues' categorization of disgust elicitors includes core disgust, animal nature disgust, interpersonal disgust, and socio-moral disgust (Rozin et al., 2008). The DS-R measures three of these four disgust-relevant domains: core disgust, animal reminder disgust, and contamination disgust. To my knowledge, no study has reported on the relations between these three subscales and the moral foundations proposed by Haidt et al. (2009): "harm/care", "fairness/reciprocity", "ingroup/loyalty", "authority/respect" and "purity".

In order to test my hypothesis that a predisposition to experience disgust would predict left-wing political attitudes, in the present study I contrasted the effects of DS-R on political attitudes with those of another measure of disgust proneness, the Three Domain Disgust Scale (TDDS; Tybur et al., 2009). Tybur and his colleagues have criticized the perspective undertaken by Haidt, Rozin, and their colleagues, who proposed that disgust serves at least in part to protect against reminders of human animal nature (Haidt et al., 1994; Rozin et al., 2008). Tybur et al. reason that there are insufficient justifications for assuming there is a separate animal-reminder dimension of disgust. From their perspective, we actually enjoy being attributed desirable traits of animals (e.g., strength or bravery) and are not disgusted by many of the behaviors we share with other animals (e.g., sleeping or breathing). They further argue that the three subscales of the DS-R are not sufficiently distinct from a conceptual perspective, and that in fact they all encompass disgust reactions to potential sources of disease. In essence, Tybur and colleagues argue, disgust elicited by lesions or dead bodies (animal reminder), people

`

who may transmit disease (interpersonal or contamination disgust), and spoiled food (core disgust) can all be explained in terms of infection avoidance.

To address these points, Tybur and his colleagues proposed an alternative adaptationist approach to disgust, which emphasizes that disgust evolved to motivate behaviour that protects against three potential threats. As such, the most common sources of disease our ancestors encountered were *pathogens*. Moreover, it was also desirable to avoid *sexual* circumstances that impacted negatively on reproductive success and individuals who did not adhere to *moral* standards of behavior. Tybur et al. developed an alternative measure of disgust sensitivity which assesses proneness to disgust across these three domains. The *Three-Domains Disgust Scale* (TDDS; Tybur et al., 2009) is a 21-item measure assessing the degree to which concepts pertaining to the three domains are perceived as disgusting. The scale has good internal consistency and reliability indices and reveals the expected gender differences. Associations between the TDDS and perceived disease vulnerability, psychopathic traits, and other personality dimensions are also reported.

Olatunji et al. (2012) provide an in-depth analysis of TDDS scale, including a factor analysis, an investigation of its psychometric characteristics, and an analysis of its relation to other measures. Among a variety of constructs, they tested the interrelations between the TDDS subscales and a measure of moral concerns pertaining to the five moral foundations (Moral Foundations Questionnaire; Graham et al., 2009). Results indicated that the pathogen disgust subscale was correlated with three moral foundations: fairness, ingroup, and purity. Sexual disgust was related to all foundations except for

`

fairness; finally, moral disgust was associated with concerns regarding the harm and ingroup moral foundations.

Similar analyses pertaining to interrelations between TDDS and DS-R indicated that pathogen and sexual disgust were related to all three DS-R subscales (the strongest relation for pathogen disgust was with core disgust, and for sexual disgust was with animal-reminder disgust). Moral disgust showed no such associations with the DS-R subscales. When partialling out the variance explained by the other TDDS subscales, only pathogen disgust remained a significant predictor of all three DS-R subscales and again showed the strongest relation to core disgust.

In the present study, the TDDS was employed as an alternative measure of disgust proneness for two main reasons. First there is empirical evidence to suggest that at least one of its subscales is related to concerns which are relevant to economic attitudes, i.e., fairness-related concerns. Second, comparing and contrasting the two disgust sensitivity measures can provide important insights into the interrelations between the two measures, as well as their relationships to political attitudes.

In the present study, I assessed disgust sensitivity by employing both the DS-R and the TDDS measures. As in previous studies, I assessed left-wing political attitudes pertaining to economic equality (Evans et al., 1996) and social conservative attitudes (Wilson & Patterson, 1968, short version by Henningham, 1996). In addition to the

`

measures employed in the experimental studies, I also assessed the *libertarian*[4] *versus authoritarian* dimension of political attitudes measure proposed by Evans et al. (1996). This is the more social dimension of the political attitudes questionnaire developed by Evans and colleagues. It measures attitudes pertaining to a preference for authority and respect for intuitions. Unlike the C-scale, it does not contain issues pertaining to the purity moral domain – such as abortion and gay rights.

The TDDS has already been used in one study investigating political attitudes. Tybur and his colleagues (Tybur et al., 2010) investigated whether "political conservatism functions as a pathogen-avoidance strategy" (p. 599). This hypothesis was based on Thornhill, Fincher, and Aran's (2009) proposition that evolutionary, both negative attitudes towards outgroups and conservatism more generally may be traced back to the need to avoid pathogens. However, across three studies, Tybur and his colleagues found no relation between pathogen disgust and political conservatism. The only TDDS subscale that predicted conservative attitudes was sexual disgust. Tybur and colleagues argue that this relationship supports a specific relationship between conservative attitudes and *sexual disgust*, rather than disgust in general.

My main criticism of this research pertains to the manner in which political orientation was assessed. In the first two studies, Tybur et al. used a unidimensional conceptualizations of political attitudes (e.g., participants had to describe themselves on

[4] In this context the term "libertarian" is not used in its common meaning (i.e., someone who is economically conservative and socially liberal). The libertarian-authoritarian dimension proposed by Evans et al. (1996) is strictly concerned with social issues regarding individual freedom.

`

continua running from liberal to conservative). In study 3, Tybur and colleagues did assess right-wing authoritarianism, social dominance orientation, and religious fundamentalism, but these constructs represent rather extreme aspects of political orientation and tend to focus more on social issues than economic matters. Therefore this study, while informative, cannot answer the specific question addressed by the present research – does a predisposition to experience disgust predict more left-wing, or liberal, attitudes with regard to economic issues?

A second proposition that emerged from Studies 1-3 was that the existence of a disgust – left-wing economic attitudes relationship might reflect processes specific to British culture. As already argued, it seems possible that British participants are more sensitive to issues pertaining to economic divisions than to issues pertaining to purity. Most of the research suggesting that disgust sensitivity only relates to conservative political attitudes has been conducted in the United States (e.g., Hodson & Costello, 2007; Horberg et al., 2009; Inbar, Pizarro, & Bloom, 2009), and might not inform on specific British concerns regarding class differences of wealth, occupation, and education. From this perspective, the lack of association between disgust sensitivity and left-wing political attitudes in Studies 2-3 might be due to the fact that only a proportion of an already small sample of participants was originally from Britain. In order to address this possibility, the present study aimed to recruit a larger sample of participants and assess whether being British or not moderated the relationship between disgust sensitivity and economic political attitudes.

`

Control Variables

The present study used a correlational design. For this reason, any obtained relationship between disgust sensitivity and political attitudes may depend on third variables that might impact on both political attitudes and disgust sensitivity in parallel. For instance, openness to experience has been shown to negatively predict both disgust sensitivity (Druschel & Sherman, 1999) and conservative political attitudes (e.g., Jost et al., 2003). Although factors such as personality, age, and gender did not account for observed relationships between disgust sensitivity and political attitudes in previous studies (Inbar, Pizarro, & Bloom, 2009; Inbar, Pizarro, Iyer et al., 2012), it is important to control for their influence in the present study too. For this reason, I included measures of Big Five Personality traits, age, gender, and altruism (another personality factor which has been previously linked with both political orientation, Hirsh, DeYoung, Xu, & Peterson, 2010, and moral emotions, Haidt, 2003).

Hypotheses

Left-wing political attitudes pertaining to economic issues. First, I was interested in predicting left-wing political attitudes. I proposed that the pathogen disgust subscale of the TDDS (Tybur et al., 2009) would positively predict left-wing political attitudes pertaining to economic equality (Hypothesis 1). This hypothesis is based on the results reported by Olatunji et al. (2012) who found that pathogen disgust was the only TDDS subscale which predicted fairness-related moral concerns. In the absence of any previous research pertaining to interrelations between DS-R subscales and moral foundations, it is difficult to formulate specific hypothesis pertaining to core, animal

`

reminder, and contamination disgust. In my previous studies, none of these subscales predicted left-wing attitudes, but the sample size of these studies did not permit assessment of statistical effects of participants' country of origin.

Olatunji et al. (2012) did report a strong relation between the pathogen subscale of the TDDS and the core disgust subscale of the DS-R. One might assume that this relation implies that core disgust might also predict fairness-related concerns, due to its functional similarity to pathogen disgust. If that were the case, then core disgust should also predict left-wing political attitudes (Hypothesis 2).

Finally, I expected that the relations between left-wing political attitudes and both pathogen disgust and core disgust would be moderated by participants' nationality. In particular, I expected that these relationships would be stronger among British participants (Hypotheses 3, 4).

Social-conservative attitudes. With regard to the C-scale, I expected to replicate results from previous research (e.g., Hodson & Costello, 2007; Horberg et al., 2009; Inbar, Pizarro, & Bloom, 2009) and from studies 2-3. I expected DS-R and each of its subscales to positively predict social conservative issues (Hypothesis 5). In line with previous research, I expected that this relationship would be strongest for contamination (or interpersonal) disgust.

With regard to the Libertarian-Authoritarian scale (Evans et al., 1996), I expected that sexual disgust sensitivity would predict more conservative attitudes, in line with Olatunji et al.'s (2012) study, which found a relation between sexual disgust and moral concerns regarding respect for authority. This relation would also be in line with Tybur et al.'s (2010) research, which found that sexual disgust was related to a unidimensional

`

measure of conservatism. Following previous research that found the DS-R to be related to social conservatism on a variety of issues, I predicted that results for the Libertarian-Authoritarian scale would mirror those for the C-scale (i.e., that all DS-R subscales would be related to social conservatism, and that this relation would be stronger for contamination disgust; Hypothesis 6).

Method

Participants. An international sample of students and faculty associated with the University of Oxford (N = 314; 221 women) filled in the survey online in exchange for a ticket for a raffle to win £50. They filled in the measures of political attitudes and at least the first predictor variable, the TDDS. Recruitment was done by advertising on University Departments' and Colleges' mailing lists. Participants' ages ranged from 18 to 68 years (M = 26.42, SD = 9.29). More than a third of the participants had completed higher education (37.90%), while another third had completed postgraduate studies (35.00%). With regard to race, a large number of participants self-identified as White (82.20%). Other represented categories were Asian, or Pacific Islander (7.30%), multi-racial or any other category (2.90%), Hispanic (1.30%), and Black (.60%). 18 participants (5.70%) declined to respond to this item. About half of the participants were British (53.50%), and a large number were native English speakers (79.60% of the total sample). Large numbers of participants who were not British came from the United States (9.90% of the total sample), Australia (3.50% of the total sample), Canada (3.20% of the total sample), and Ireland (2.20%).

`

Questionnaire measures.

Disgust sensitivity, DS-R. Similar to Studies 2-3, participants filled in the DS-R (Haidt at al., 1994, modified by Olatunji et al. 2007). Scores were averaged, after being reversed when appropriate, and a reliable scale was obtained (M = 1.75, SD = .54, α = .84). Items pertaining to the three subfactors also formed scales of acceptable levels of reliability: core (M = 1.97, SD = .58, α = .71), animal-nature (M = 1.85, SD = .78, α =.78), and contamination (M = 1.05, SD = .64, α = .57).

Disgust sensitivity, TDDS. Proneness to experience disgust was also assessed with the measure developed by Tybur et al. (2009). A 21-item self-report measure (see Appendix 5.1 for the full list of items), the TDDS contains items pertaining to pathogen disgust (e.g., "Seeing some mould on old leftovers in your refrigerator"), sexual disgust (e.g., "A stranger of the opposite sex intentionally rubbing your thigh in an elevator") and moral disgust (e.g., "Cutting to the front of a line to purchase the last few tickets to a show"). Participants had to indicate on a scale ranging from 1 (not at all disgusting) to 7 (extremely disgusting) the degree to which they found each described event disgusting. Responses for the 3 subscales were averaged to form three reliable measures of disgust: pathogen disgust (M = 4.08, SD = 1.03, α =.78), sexual disgust (M = 3.61, SD = 1.21, α =.82), and moral disgust (M = 5.12, SD = .95, α =.83).

Big Five Personality Traits. Personality traits were assessed with the 20-item mini-IPIP questionnaire, which is part of a larger International Personality Item Pool (Goldberg et al., 2006; see Appendix 5.2 for the full list of items). Example items include "I am the life of the party" (extraversion); "I sympathize with others' feelings" (agreeableness); "I get chores done right away" (conscientiousness); "I have frequent

`

mood swings" (neuroticism); and "I have a vivid imagination" (intellect/imagination). Participants rated the extent to which each item applied to them on a 5-point scale ranging from 1 (very inaccurate) to 5 (very accurate). Items for each of the five dimensions of personality were averaged, after reverse scoring when appropriate and formed reliable measures of personality: extraversion (M =3.09, SD = .92, α = .83), agreeableness (M =4.05, SD = .72, α = .81), conscientiousness (M =4.05, SD = .72, α = .72), neuroticism (M = 3.06, SD = .72, α = .80), and intellect/imagination (M = 4.07, SD = .77, α = .75).

Altruism. Altruism was assessed in a manner similar to Zettler and Hilbig (2009) who investigated the role of altruism in predicting political orientation. Participants filled in the 8 items pertaining to altruism from the HEXACO-PI-R measure (Honesty, Emotionality, Extraversion, Agreeableness, and Conscientiousness; Ashton & Lee, 2008; Lee & Ashton, 2004) on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items include: "I have sympathy for people who are less fortunate than I am" and "I like the idea that only the strong survive" (reverse coded; see Appendix 5.3 for the full list of items). The 8 items were averaged after reverse scoring when appropriate and a reliable measure of altruism was obtained (M = 3.98, SD = .49, α = .70)

Left-Right scale. Similar to Studies 1-3, political attitudes pertaining to economic issues were measured with the scale developed by Evans et al. (1996). Ratings on the five items were averaged to form a measure of satisfactory reliability (M = 3.33, SD = .70, α = .71).

Libertarian-Authoritarian scale. The second dimension of the measure developed by Evans et al. (1996) was employed in order to measure social conservative

`

attitudes pertaining mostly to respect to authority. The scale is a 10-item measure with sample items such as “Young people today don't have enough respect for traditional values” and “Organizing public meetings to protest against the government should be allowed” (reverse scored; see Appendix 5.4 for the full list of items). Participants rated their agreement with each item on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Answers for the 10 items were averaged (after reverse coding when appropriate) and formed a reliable scale (M =2.37, SD = .54, α = .73).

Social Conservatism. The same measure was used as in Study 3, a short version of the C-scale (Wilson & Patterson, 1968), developed by Henningham (1996). This time a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was employed, as opposed to the 3-point scale proposed by Wilson and Patterson. This was to allow for easier comparisons between political attitudes measures and to avoid confusing participants by using different response scales. Scores for each items were averaged, after reverse scoring when appropriate, and a scale of acceptable reliability was obtained (M =2.01, SD = .56, α = .81).

Results

Zero-order correlations. First, zero-order correlations were computed to check whether the DS-R (or any of its subscales) and the subscales of the TDDS were significant predictors of the Left-Right scale, the Libertarian-Authoritarian scale, the short version C-scale, or the 1-item political orientation measure. The correlations are presented in Table 5.1. As can be observed, the present study replicated previous research in finding a significant positive relationship between the DS-R and the C-scale.

`

Moreover, all DS-R subscales were significant predictors of the C-scale and the strongest association was with contamination disgust. The DS-R was also predictive of the Libertarian-Authoritarian scale, again with contamination disgust being the strongest predictor. Results pertaining to the TDDS subscales replicated the findings reported by Tybur et al. (2010). Sexual disgust was a significant predictor of both measures of political conservatism. Furthermore, neither pathogen disgust nor moral disgust was a significant predictor of the two political conservatism measures. However, in line with Hypotheses 1 and 2 there was a significant relation between core disgust and the Left-Right scale and a marginally significant relation between pathogen disgust and scores on the Left-Right scale. There was also a significant relation between the entire DS-R scale and the Left-Right scale and a marginally significant relation between contamination disgust and the Left-Right scale.

Overall, interrelations between the TDDS and DS-R subscales followed similar patterns to those reported by Olatunji et al. (2012). Pathogen disgust was correlated with all three DS-R subscales: core disgust, r (309) = .58, $p < .001$; animal reminder, r (309) = .39, $p < .001$; and contamination disgust, r (309) = .41, $p < .001$. Sexual disgust was also correlated to all three DS-R subscales: core disgust, r (309) = .28, $p < .001$; animal reminder, r (309) = .32, $p < .001$; and contamination disgust, r (309) = .37, $p < .001$. Moral disgust was only associated with contamination disgust, r (309) = .13, $p = .02$.

`

Table 5.1.

Intercorrelations between various disgust-sensitivity measures and political-attitudes measures

	Political Attitudes Measure			
Disgust-sensitiv. Measure	Left-Right	Libertarian - Authoritarian	C-Scale	1-item measure
DS-R (entire scale)	.12**	.21***	.21***	.06
Contamination	.10*	.29***	.27***	.10*
Core	.13**	.17**	.13**	.04
Animal Reminder	.05	.12**	.17***	.04
Pathogen	.09*	.07	.04	.07
Sexual	-.05	.30***	.44**	.12**
Moral	.08	.08	.07	.01

Note. Pearson's *r* values are shown.

$^{*}p < .1$. $^{**}p < .05$. $^{***}p < .001$.

Multiple regressions. Multiple regression analyses were performed in order to check whether the significant relationships uncovered above could be accounted for by any of the measured control variables. I therefore performed the following multiple

`

regressions analyses, with independent factors being the various disgust sensitivity subscales and dependent variables being the various political attitudes measures, while simultaneously controlling for effects of the Big Five personality factors, altruism, gender, and age.

Left-wing economic attitudes, the Left-Right scale. After controlling for the effects of gender, age, the big five personality dimensions, and altruism, core disgust was still a marginally significant positive predictor of the left-wing attitudes pertaining to economic issues, β = .10, p = .07. Altruism (β = .21, p = .003), intellect/imagination (β = .15, p = .01), conscientiousness (β = -.10, p = .08), gender (β = -.13, p = .02), and age (β = .19, p = .001) were also unique predictors of left-wing economic attitudes.

In a separate analysis (controlling for the same factors as above), the whole DS-R scale remained a marginally significant predictor of left-wing attitudes, β = .10, p = .09. On the other hand, pathogen disgust did not remain a predictor of left-wing attitudes pertaining to economic issues, after controlling for gender, age, the big five personality dimensions, and altruism (β = .02, *n.s.*), and neither did contamination disgust, (β = .06, *n.s.*).

Social – Conservatism, the C-scale. As expected, after taking into account the variance explained by control variables, contamination disgust remained the strongest predictor of social-conservatism out of the three DS-R subscales, β = .27, p < .001. From the control variables, only intellect/imagination was a unique predictor of the C-scale, β = -.20, p = .001. In two similar analyses (while controlling for the same abovementioned factors) core disgust (β = .15, p = .014), and animal reminder disgust (β = .17, p = .004) also remained significant predictors of social conservative attitudes.

`

From the TDDS subscales, sexual disgust remained a strong predictor of social conservatism as indicated by the C-scale, even after controlling for the big five personality factors, altruism, gender, and age (β = .48, p < .001). This represented the strongest predictor of social-conservative attitudes from either the DS-R or the TDDS.

Social – Conservatism, the Libertarian-Authoritarian scale. Parallel analyses were performed to check whether the DS-R and TDDS subscales would remain significant predictors of social conservatism as indicated by the Libertarian-Authoritarian scale after accounting for the variance explained by control variables. Results were similar to the C-scale results: sexual disgust was again the strongest predictor of social conservatism (β = .31, p < .001). From the control variables, altruism (β = -.33, p < .001), intellect/imagination (β = -.21, p < .001), and conscientiousness (β = .09, p = .08) were also unique predictors of the Libertarian-Authoritarian scale.

In four separate analyses (which controlled for the same factors as above) significant predictors were also the whole DS-R scale (β = .22, p < .001), as well its subscales: contamination disgust (β = .30, p < .001), core disgust (β = .22, p < .001) and animal-reminder disgust (β = .11, p = .04).

Moderation analyses. In order to test my hypothesis that the relationship between various aspects of disgust sensitivity and left-wing economic attitudes would be particularly strong for British participants, moderated regression analyses were performed.

Pathogen disgust - Left-Right scale (Hypothesis 3). The regression analysis performed on the Left-Right scale with (centred) pathogen disgust, country of origin (United Kingdom, coded as 1, vs. Other, coded as 0), and their interaction as independent

`

factors revealed a significant interaction, β = .29, p < .001. The fact that a significant interaction effect was observed suggests that, as predicted, the relationship between pathogen disgust and left-wing political attitudes was different for British and non-British participants. In order to further examine this interaction effect, simple slope analyses were performed for British and non-British participants in line with the procedures outlined by Aiken and West (1991). For British participants the relationship between pathogen disgust and left-wing economic attitudes was significant and positive (β = .28, p < .001). This result supports my hypothesis that for British participants, pathogen disgust sensitivity would predict more left-wing political attitudes pertaining to economic equality. For non-British participants, this relationship was non-significantly negative, β = -.12, *n.s*. The two slopes are presented in Figure 5.1.

`

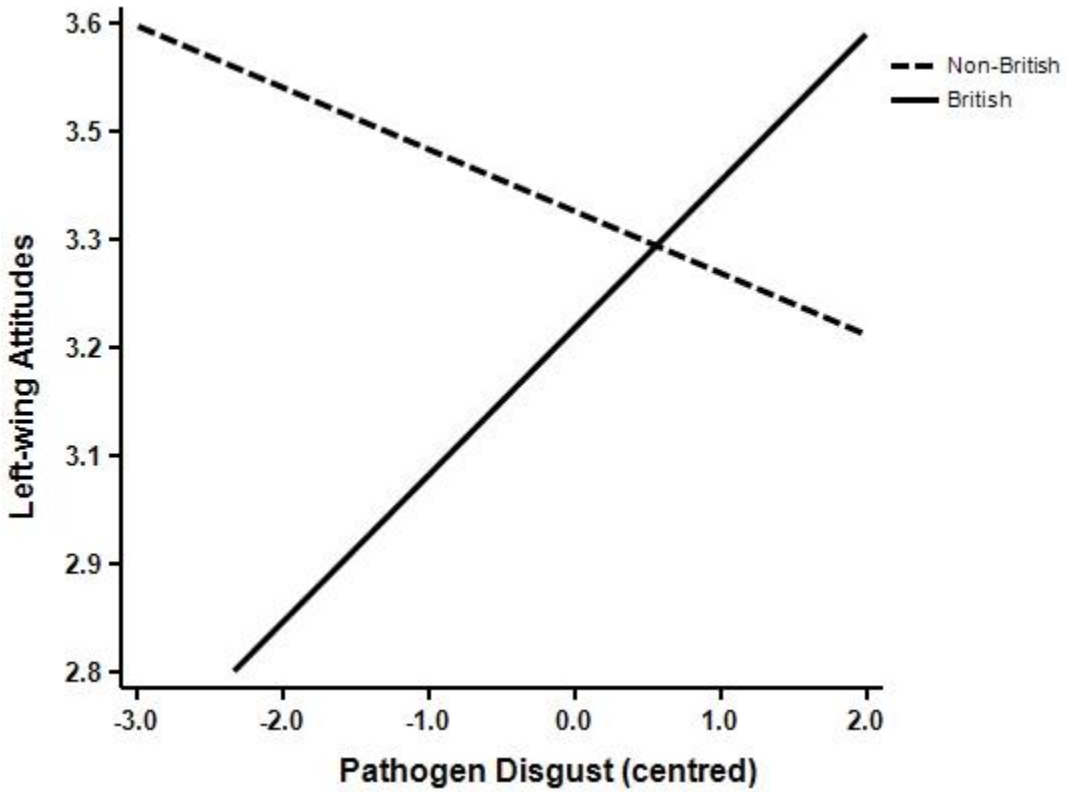

Figure 5.1. Predicted Left-Right scale scores (left-wing economic attitudes) as a function of the pathogen disgust x country of origin interaction.

Core disgust – Left-Right scale (Hypothesis 4). A similar analysis was performed with (centred) core disgust, country of origin (United Kingdom vs. Other), and their interaction as independent factors, and the Left-Right scale as dependent variable. The model was significant F (3, 305) = 4.50, p = .004, R^2 = .04, and the interaction between core disgust and country of origin was a significant predictor of left-wing attitudes, β =.17, p = .03. Subsequently, simple slope analyses (Aiken & West, 1991) were performed to further understand the nature of this relationship. These analyses revealed a similar pattern as in the case of pathogen disgust: for British participants there was a significant

`

positive relation between core disgust and left-wing political attitudes, β = .25, p = .003, whilst for non-British participants there was no such relation, β = -.005, *n.s.* (see Figure 5.2).

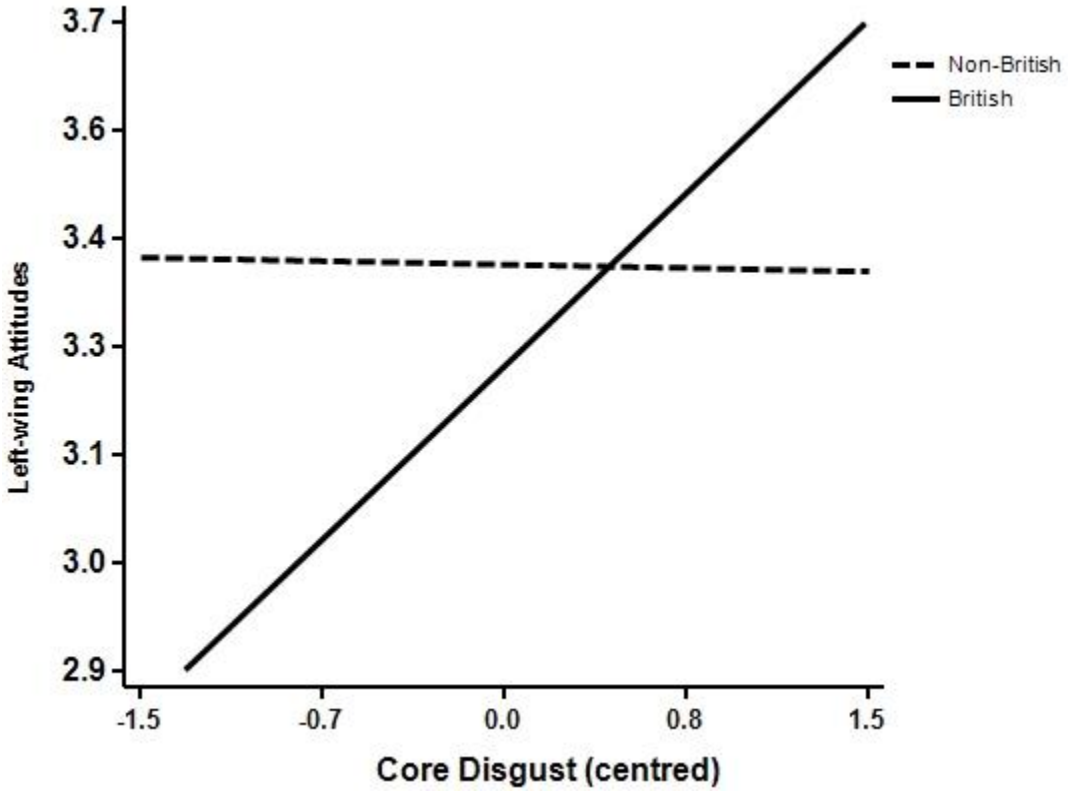

Figure 5.2. Predicted Left-Right scale scores (left-wing economic attitudes) as a function of the core disgust x country of origin interaction.

Exploratory analyses regarding the Left-Right scale. Parallel analyses investigating whether country of origin moderated the relationship between left-wing political attitudes and either sexual disgust, moral disgust, contamination disgust, animal disgust, or the entire DS-R scale were performed in an exploratory manner. With regard

`

to the DS-R scale, the interaction followed the same pattern as the interactions between pathogen disgust and country of origin, and core disgust and country of origin. However, this interaction was only marginally significant, β =.14, p = .08.

The only significant interaction was found for contamination disgust, β = .16, p = .04. Simple slope analyses (Aiken & West, 1991) revealed that for British participants there was a positive relationship between contamination disgust and left-wing attitudes, β =.16, p = .04; for non-British participants there was no such relationship, β = -.03, *n.s.*

Exploratory analyses regarding social conservatism measures. In order to check whether the disgust sensitivity - country of origin interaction is specific to issues of economic equality, similar moderation analyses were performed for the measures of social conservatism (C-scale and Libertarian-Authoritarian scale) and subscales of the DS-R and TDDS.

The sexual disgust – C-scale relationship was moderated by country of origin. The regression analysis performed with C-scale as dependent variable and (centred) sexual disgust scores, country of origin (United Kingdom vs. other) and their interaction as independent factors revealed a significant interaction effect, β = -.19, p = .01. Simple slope analyses revealed that the relationship was similar for the two groups, but the slope was steeper for non-British, β = .58, p < .001, as opposed to British participants, β = .33, p < .001.

The relationship between pathogen disgust and the libertarian - authoritarian scale was also moderated by the country of origin. The pathogen disgust – country of origin interaction was significant, β = -.22, p = .006. Simple slope analyses revealed that for non-British participants there was a positive relation between pathogen disgust and

`

authoritarian attitudes, β = .23, p = .005, whereas for British participants there was no such relationship β = -.08, *n.s.* A similar pattern was observed in a core disgust – country of origin significant interaction effect when predicting libertarian-authoritarian attitudes, β = -.18, p = .006. Simple slope analyses revealed that the relationship was significant for non-British participants, β =.29, p < .001, but not for British participants, β = .03, *n.s.*

None of the other moderation analyses revealed significant interactions (*p*s > .05).

Discussion

The present study investigated the degree to which disgust sensitivity, as assessed by both the TDDS and the DS-R, predicts political attitudes pertaining to social and economic issues. My main hypotheses were supported by the data. First, pathogen disgust predicted left-wing economic attitudes, but this was only true for British participants. Furthermore, core disgust and the entire DS-R scale also significantly predicted left-wing political attitudes, while their interaction with participants' country of origin followed similar patterns to pathogen disgust. Studies 1-3 have already established a causal relation between incidental disgust and liberal economic attitudes; Study 4 shows that sensitivity to pathogen disgust and core disgust can also predict left-wing economic attitudes cross-sectionally. To my knowledge, this is the first study reporting a cross-sectional relationship between proneness to experience disgust and left-wing economic attitudes. These results are in line with studies showing relationships between disgust and fairness (Chapman et al., 2009; Moretti & di Pellegrino, 2010; Sanfey et al., 2003), and with literature suggesting that disgust might sometimes function as a "liberal emotion" (e.g., for instance on the basis of its associations with practices such as animal activism

`

and vegetarianism, Herzog & Golden, 2009; Rozin et al., 1997). On the other hand, these results are in direct opposition to accounts that have directly or indirectly rejected the assumption that disgust is relevant in the context of economic attitudes. For example, disgust has been described as an exclusively conservative emotion, on the basis of its presumed unique association with purity concerns (Horberg et al., 2009).

Both pathogen disgust, a subscale of the TDDS, and core disgust, a subscale of the DS-R, seem to serve similar functions. Core disgust is a "guardian of the mouth" (Haidt et al., 1997, p. 111) against potential ingestion of undesirable substances. It is mainly provoked by foods (e.g., rotten eggs), bodily products (e.g., vomit, faeces), and animals (e.g., cockroaches, rats) (Haidt et al., 1997; Rozin et al., 2008). Pathogen disgust has been described as a part of the "behavioral immune system" (Tybur et al., 2009, p. 105), as it stops us from touching or incorporating things that may transmit pathogens for example bodily products, spoiled foods, and corpses.

The similarity between the two constructs is apparent in the present study as well, where they showed a moderate correlation (r = .58). The correlation between pathogen disgust and left-wing economic attitudes may reflect the relationship between pathogen disgust and fairness concerns. Olatunji and his colleagues found that people who reported high levels of pathogen disgust were more likely to consider matters such as differential treatment of people, unequal distribution of resources between the rich and the poor, or generally treating others fairly, to be issues of moral concern (Olatunji et al., 2012). It seems apparent that the same people would be more likely to adopt left-wing political attitudes with regard to issues of economic fairness, as these attitudes champion such concerns.

`

A similar mechanism could underlie the relationship between core disgust and left-wing economic attitudes. To my knowledge, previous research does not report on the relationship between core disgust and fairness-related concerns. However, given the close correlation between pathogen disgust and core disgust, it seems plausible that core disgust is also related to fairness concerns and motivates the adoption of left-wing attitudes via the same route. These assumptions should represent a topic for future research. Cross-sectional studies including direct measures of fairness-related moral concerns alongside the measures used here could be employed to assess whether greater sensitivity to fairness issues explains the relationship between pathogen disgust, core disgust, and left-wing political attitudes.

A central implication of this newly shown relationship is the importance of assessing social and economic political attitudes as distinct constructs. Although a number of theorists have emphasized this point in the past (e.g., Crowson, 2009; Evans et al., 1996), not all researchers investigating the relation between disgust and political attitudes have followed their advice in practice. For instance Tybur et al. (2010) also investigated the relation between TDDS subscales and political orientation. The authors reported no reliable associations between pathogen disgust and political orientation as assessed by a unidimensional measure and concluded that pathogen disgust is not related to (social conservative) political orientation. In the present study, I replicated this result using a unidimensional conceptualization of political orientation and two measures of social conservatism, but found reliable associations between pathogen disgust and economic liberalism. This supports previous bi-dimensional conceptualizations of political attitudes (e.g., Evans et al., 1996). Moreover, in line with Study 3, economic

`

and social political attitudes correlated moderately both with each other and with the unidimensional measure, suggesting that these measures reflect related but not identical concerns.

It is important to note that the present study also replicates previous research with regard to interrelations between disgust sensitivity and social conservatism. Indeed, as in previous research (Inbar, Pizarro, & Bloom, 2009; Inbar, Pizarro, Iyer, et al., 2012), the DS-R and each of its subscales significantly predicted social conservatism in the present study. Moreover, also in line with previous findings, contamination disgust was the strongest predictor of the three DS-R subscales. With regard to the TDDS and social conservatism, I also successfully replicated previous findings. In particular, only sexual disgust was significantly related to social conservative attitudes as assessed using both the C-scale and the Libertarian-Authoritarian measure. Given that these relationships between social conservatism and disgust sensitivity have been found here, it seems unlikely that the results pertaining to economic-political attitudes can be accounted for by unusual samples or other extraneous variables that could have potentially biased my findings. Indeed, it seems that disgust sensitivity has the potential to sensitize people to both fairness- and purity-related matters.

Are relations between disgust sensitivity and political attitudes specific to British participants? Another central finding of the present research was that associations between the pathogen and core disgust as predictors with left-wing economic attitudes as outcome were moderated (as hypothesized) by participants' country of origin. Moreover, a number of the obtained relationships between disgust sensitivity subscales and political conservatism (sexual disgust – social conservatism,

`

pathogen disgust – authoritarian attitudes, and core disgust – authoritarian attitudes) were weaker or non-existent for British participants. It is important to note that an investigation into the average ratings of British versus non-British participants on the four measures of political orientation indicated no significant differences, only a single trend suggesting that British participants were more conservative than non-British participants with regard to economic issues. Thus, relationships between disgust sensitivity and political attitudes do not seem to depend on participants' level of attitude endorsement. Indeed, Inbar, Pizarro, Iyer, et al. (2012) show that the relationship between disgust and conservative attitudes is present among both liberals and conservatives. The key difference must then be the degree to which disgust is relevant in the adoption of political attitudes. My data indicated that, more so than participants from other countries, British participants' reactions to economic equality are predicted by disgust. Conversely, as compared to other participants, British participants seem to rely less on disgust in the context of social-conservative attitudes. The former result is novel, but in line with experimental findings in Studies 1-3; the later is in line with previous research. In their second study, Inbar, Pizarro, Iyer, et al. (2012) surveyed a large international sample (n = 5457). Participants completed the DS-R and indicated their political orientation on a unidimensional 7-point measure ranging from "very liberal" to "very conservative". In line with the data presented here, across the whole sample and within 10 geopolitical regions, disgust sensitivity was related to self-reported conservatism. More importantly, also in line with the results presented here, this relationship was the *weakest* for the United Kingdom (r = .17, while the strongest was for South Asia, r = .32).

`

Taken together these results indicate that cultural differences strongly impact on associations between disgust and political attitudes. These results also suggest that there might be something "different" about the British culture that leads disgust sensitivity to be less associated with social conservatism and more associated with liberal-economic values than in other cultures. In Study 3, I proposed that this might reflect British-specific concerns regarding economic equality. Furthermore, political debate and discourse in the UK emphasize economic- rather than purity-related issues of abortion and gay rights. It is, of course, impossible to determine whether these effects are unique to the United Kingdom, but I suspect that they are not. The Republic of Ireland for instance, which has had for a large part a common history with the United Kingdom might also show similar patterns of relations. More cross-cultural studies are required to disambiguate this issue. Studies directly assessing the variables that lead to these cultural differences are also needed.

Limitations. One of the limitations of the present study is its cross-sectional nature. The results only show associations between various measures of disgust sensitivity and political attitudes. Therefore, it is theoretically possible that the reported associations might be due to other variables predicting both disgust sensitivity and political attitudes. I think this is unlikely for two main reasons. First, Studies 1-3 have already established a causal relationship between incidental disgust and left-wing economic attitudes. Second, results remained significant even after controlling for the influence of demographic and personality variables including the Big Five dimensions and altruism. It is therefore unlikely that the present results depend on third variables affecting both disgust and political attitudes in parallel.

`

Another limitation of the present study is the sample. I hypothesized that participants' country of origin would moderate the effects of pathogen and core disgust on left-wing economic attitudes. I indeed found this effect but the present sample limits the extent to which these effects can be interpreted as "uniquely British". Unfortunately, no other country was represented sufficiently in my sample to permit specific conclusions about the nature of these relationships for any particular different culture. Moreover, comparing British participants with participants from different countries grouped together might be problematic. It might be the case that this grouping is responsible for the lack of associations between disgust sensitivity and economic attitudes for non-British participants (if, for example, in some cultures there is a positive association between disgust and left-wing economic attitudes and in others there is a negative association). Additional cross-cultural research is therefore necessary to disambiguate these possibilities. The use of an online survey might also have impacted on data quality because the study was conducted in an uncontrolled environment. Finally, studies that are conducted completely online pose an additional concern regarding participant self-selection. These shortcomings can be addressed by future research that ought to include broader and larger samples and conduct studies in a variety of settings.

`

CHAPTER 6: DISGUST AND PREJUDICE

This Chapter presents Experimental Study 5, which was aimed at uncovering a darker side of disgust: its relationship to prejudiced attitudes towards outgroups. A New York City based sample of participants (N = 141; 90 women) completed an online experiment in exchange for entering a raffle to win a $100 prize. Participants were randomly assigned to one of four experimental conditions, equivalent to four induced emotional states: disgust vs. anger vs. sadness vs. neutral. Subsequently, their attitudes towards a novel group, extraterrestrial aliens called the Gs, were assessed. As hypothesized, participants in the disgust condition who had a low self-importance of moral identity (SIMI; Aquino & Reed, 2002) reported higher prejudice towards the Gs than both participants in the sadness and neutral conditions. Effects for participants in the anger condition followed similar patterns but did not reach significance. Contrary to my predictions, the effects were not moderated by the degree to which participants were sensitive to their bodily sensations, as indicated by the private body consciousness scale (PBC; Miller et al., 1981).

Studies 1-3 have clearly established a relationship between incidental disgust and liberal attitudes pertaining to economic matters. Study 4 successfully showed that the DS-R, core disgust, and pathogen disgust dispositions are cross-sectional predictors of left-wing economic attitudes. Furthermore, Studies 3 and 4 have also successfully replicated the relationship between disgust sensitivity and conservative political attitudes pertaining to social issues (in line with Hodson & Costello, 2007; Horberg et al., 2009; Inbar, et al., 2009). The general aim of Study 5 was to complement these studies by addressing the influence of incidental disgust on an extreme form of social conservatism: prejudiced attitudes towards outgroups.

Disgust is an emotion that leads to avoidance and rejection of offensive substances (Rozin et al., 2008). As discussed in previous chapters, there is increasing empirical support for a relation between a predisposition to experience disgust and social

`

conservative attitudes (e.g., Inbar, et al., 2009); therefore, the need to investigate the relationship between disgust and a more extreme aspect of political conservatism - prejudiced attitudes towards outgroups - seems apparent. Indeed, definitions of (racial) prejudice include the emotion of disgust; for example, Gaertner and Dovidio (1986, p. 63) define prejudice as: "negativity [that] involves discomfort, uneasiness, disgust, and sometimes fear, which tend to motivate avoidance rather than intentionally destructive behavior".

Evidence is mounting that disgust plays a role in prejudice, but not towards all groups (e.g., Dasgupta, DeSteno, Williams, & Hunsinger, 2009). The idea that specific emotions are associated with prejudice against specific groups is becoming increasingly accepted by researchers within different traditions (e.g., Cottrell & Neuberg, 2005; Tapias, Glaser, Keltner, Vasquez, & Wickens, 2007). For example, Fiske and her colleagues (Fiske, Cuddy, Glick, & Xu, 2002) proposed that perceptions of outgroups are best accounted for by a bi-dimensional model that takes into account perceived competence and warmth. Emotional reactions to outgroups are triggered by their perceived levels of warmth and competence. From this perspective when one perceives a group (e.g., the elderly) as high on warmth but low on competence, the emotions of pity or sympathy are experienced. Perceiving a group (e.g., Asians, Jews) not to be very warm while being competent, evokes envy and jealousy. Finally, groups perceived as both low on competence and low on warmth, such as homeless people, bring about an array of negative emotions including contempt, disgust, resentment, and to lesser extent anger.

`

With regard to disgust, cross-sectional studies have found that it predicts prejudicial attitudes towards homosexuals (Inbar, Pizarro, Knobe, & Bloom, 2009; Olatunji, 2008; Terrizzi, Shook, & Ventis, 2010), the disabled (Park, Faulkner, & Schaller, 2003), and obese people (Vartanian, 2010). These groups (and others) are sometimes perceived as posing disgust-relevant threats to physical and moral domains. For example, homosexuals are seen by some heterosexuals as posing a threat of contamination; disgust is therefore relevant in the context of prejudice against this group because it leads to rejection of potential sources of contamination as part of the "behavioral immune system" (Terrizzi et al., 2010, p. 587).

Cross-sectional studies are convincing in establishing the existence of a disgust - prejudice relation, but they do not directly address the problem of causation. A limited number of experimental studies have tackled this matter and provided support for a causal relationship between disgust and prejudice. In a recent experiment, regardless of their political orientation, leading participants to experience disgust by exposing them to a disgusting smell resulted in more negative explicit attitudes towards homosexual men, whilst implicit prejudice was not affected (Inbar, Pizarro, & Bloom, 2012). These results underline that disgust can make attitudes towards gay men more negative, but also that implicit and explicit measures may provide different results. This is supported by empirical studies which found different effects on self-report and more implicit measures (e.g., Vanman, Paul, Ito, & Miller, 1997). Explicit measures, such as self-reports, assess processes that operate at a conscious, or controlled, level. On the other hand, implicit measures, such as the implicit association test, assess processes that might operate at an unconscious or automatic level (Greenwald & Banaji, 1995). Evidence suggests that the

`

two types of measures can provide different results (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997) and therefore both self-report measures and implicit measures can reveal relevant information about intergroup attitudes as they may tap into distinct systems.

Dasgupta and colleagues (Dasgupta et al., 2009) have investigated the impact of induced disgust and anger on implicit attitudes towards "minimal groups", homosexuals, and Arabs. The minimal group paradigm was introduced by Tajfel (1970). Investigations employing this paradigm revealed that simply belonging to different groups can create intergroup bias. Participants allocated to groups based on minimal and irrelevant differences (such as liking an artist more than another) readily show intergroup bias in the form of differential allocation of resources between ingroup and outgroup members (Tajfel, 1970; Tajfel & Billig, 1974). Dasgupta et al. (2009) set out to investigate an "emotion-specific hypothesis*"* (p. 585) of intergroup relations: that induced emotions would lead to more unfavorable implicit evaluations only when outgroups are perceived as posing emotion-relevant threats. As explained above, the minimal group paradigm creates outgroups for which there are no pre-existing stereotypes, and it was employed by Dasgupta et al. to test this hypothesis. In line with predictions, when confronted with a minimal group both participants induced to experience disgust and participants induced to experience anger showed more implicit negativity. By contrast, only disgust promoted unfavorable implicit evaluations of gay men and lesbians. Similarly, anger led to more negative implicit evaluations of Arabs, while disgust did not impact on attitudes towards this group. Taken together, these results support the authors' "emotion specific

`

hypothesis" of intergroup relations and their proposition that one function of negative intergroup emotions is to indicate the particular threats an outgroup might pose.

Experimental Study 5

Previous research investigating the disgust-prejudice relationship has focused on implicit and explicit attitudes towards groups posing relevant threats, such as homosexuals (Inbar, Pizarro, & Bloom, 2012). Although there is evidence that disgust is related to prejudice towards disgust-relevant groups, the role of disgust in promoting bias toward new groups has received little attention. Understanding whether disgust can lead to prejudice towards new groups, would provide important insight in the degree to which threats of physical and moral contamination play a role in intergroup conflict. To my knowledge only Dasgupta et al. (2009) have investigated the role of disgust in promoting bias toward new groups, but they only used implicit measures. Therefore, the degree to which induced disgust can affect explicit attitudes toward a novel group remains an open question.

Moreover, a number of issues remain unaddressed by previous research. First, there is the problem of whether previous findings were specific to disgust. For example, Inbar, Pizarro, and Bloom (2012) induced participants to experience disgust by conducting a study in room where a disgusting odor was sprayed. They found that this led to more negative explicit attitudes towards homosexual men. However, the control condition was simply the absence of an odor, and one cannot fully support the claim that these effects are specific to disgust. In order to rule out the possibility that any negative emotional state would promote similar effects, the present study employed two control conditions - neutral emotion and sadness.

`

In addition, in the present study the effects of disgust were compared with that of another moral emotion which is relevant in the context of intergroup relations, anger. Anger has been associated with outgroups that represent a threat to the economic status of the ingroup, or to the liberty and rights of the ingroup. Similarly, outgroups that violate trust elicit anger (Cottrell & Neuberg, 2005). Finally, in the present study I also aimed to complement Dasgupta et al.'s (2009) findings by assessing explicit rather than implicit attitudes[5] and to provide information on how individual differences impact on the relation between incidental disgust and prejudicial attitudes.

The present study addresses an under-investigated question in the disgust-prejudice literature: to what degree does disgust (versus anger) impact on people's explicit attitudes towards a novel group? I made use of a fictional group in order to explore whether incidental disgust vs. anger can lead to prejudice towards a group when there were no pre-existing attitudes. Participants were induced to experience one of four emotional states: disgust, anger, sadness, and neutral. Inclusion of a manipulation of sadness, a negative emotion which is not generally associated with intergroup processes, provided a second control. The inclusion of a sadness condition also allows for continuity with the previous studies reported here. Subsequently, they were presented with the target group and their attitudes were assessed by means of self-report.

[5] Initially, I aimed to include both implicit and explicit attitudes but the final set-up of the experiment did not allow this. As described in the Method section, the experiment was employed completely online and using implicit measures in such an environment proved difficult to implement.

`

As opposed to Studies 1-3, emotional states were induced through a different paradigm. The experiment was conducted completely online, which implied it would have been difficult to ensure participants' compliance with experimental instructions in a paradigm that focused on presenting aversive pictures. The present study therefore employed an emotion-induction paradigm that relied on participants writing about an intense biographic episode in which they experienced the desired emotional state (disgust vs. anger vs. sadness vs. neutral). Biographic episodes have been used successfully to induce various emotional states in previous research (e.g., Dasgupta et al., 2009; Schnall et al., 2008).

The target group were humanoid extraterrestrial aliens, called the Gs, which participants learned represented characters in a science fiction film (e.g., Dasgupta, Banaji, & Abelson, 1999; Castano & Giner-Sorolla, 2006). There are several advantages to using this fictional scenario in a study investigating intergroup attitudes. In line with previous research, a novel alien group was selected because it was unlikely it would evoke group-specific stereotypes. Thus, the stage is set for comparing the capacities of disgust and anger to lead to explicit prejudice towards a neutral, novel, group. As Dasgupta and colleagues show, both disgust and anger can lead to more unfavorable implicit attitudes towards a minimal group (Dasgupta et al., 2009). Similarly, in the present study, participants had no preconceptions of the humanoid characters they had to evaluate; therefore, the present study offers a measure of the impact of these emotions in the formation of explicit attitudes towards a novel group. Second, as the study assessed explicit attitudes, there was a need to circumvent social desirability effects. It is often the case that participants are unwilling to express negative attitudes towards certain groups

`

because of perceived social unacceptability. Assessing extraterrestrial characters in a film is intended to minimize this bias. For both of these reasons, alien scenarios have already been successfully used in previous studies investigating intergroup relations (e.g., Dasgupta et al., 1999; Castano & Giner-Sorolla, 2006).

Although some previous research suggests that effects of anger and disgust on attitudes towards an unknown group were similar (e.g., Dasgupta et al., 2009), there are reasons to believe that disgust should have a stronger effect in promoting intergroup bias. In particular, disgust seems to be more strongly associated with groups perceived to be low on both the competence and warmth dimension such as drug addicts and the homeless (Fiske et al., 2002). Fiske and her colleagues argue that groups regarded as both not very friendly, and not very competent (such as people who rely on welfare) are faced with an array of negative emotions such as contempt, disgust, resentment, and to lesser extent anger. This assumption is supported by neuroscience findings. In a functional magnetic imaging study, Harris and Fiske (2006) exposed participants to pictures of different outgroups. Only the "extreme outgroups" (p. 847), produced an increase in insula and amygdala activation, suggesting that such groups spontaneously elicit disgust. Furthermore, the presentation of extreme outgroups did not lead to activation in areas associated with interacting with others, such as the medial pre-frontal cortex. This led the authors to conclude that "the lowest of the low" (p. 847), are not processed as other human beings and are therefore dehumanized.

Further evidence that disgust rather than anger is involved in extremes forms of prejudice, or bigotry, comes from research conducted by Taylor (2007). In order to understand the role of different emotions in extreme prejudice, Taylor analyzed

`

propagandistic texts, such as Adolf Hitler's (1939/1981) *Mein Kampf*, which encourage intergroup conflict. Results indicated that these "anti-group texts" (p. 597) include more hate- and disgust-relevant words as compared to neutral texts. Conversely, anger and fear do not feature more in these texts than they do in others. According to Taylor the pattern of results supports a "social contamination" (p. 601) hypothesis, which proposes that people who endorse extremely prejudiced attitudes towards outgroups may see them as a source of contamination to the purity of the ingroup.

Taken together, these results suggest that eliciting high levels of disgust may represent a central factor in extreme prejudice. It is important to note that the evidence linking disgust with extreme forms of prejudice is based on disgust explicitly directed at outgroups, whilst the present study dealt with incidental disgust. I assumed that incidental disgust and disgust directed towards outgroups would have comparable effects on prejudice. As reviewed above, previous research supports the assumption that incidental disgust does impact on intergroup attitudes, including implicit prejudice (Dasgupta et al., 2009) and explicit attitudes (Inbar, Pizarro, & Bloom, 2012).

Individual differences

Besides the roles of incidental disgust and anger in prejudice towards the G aliens, I also assessed the influence of personality variables. First, I will discuss the prejudice-relevant personality dimensions of Right Wing Authoritarianism (RWA; Altemeyer, 1988) and social dominance orientation (SDO; Pratto et al., 1994). As already described in Chapter 1, both constructs have been investigated in the tradition linking personality and political attitudes.

`

Starting from the ideas of Adorno and colleagues (Adorno et al., 1950), Altemeyer developed a valid measure of the authoritarian personality. His RWA scale (Altemeyer, 1996) measures three interrelated attitudinal and behavioural clusters: *authoritarian submission* (obedience to traditional authorities and norms), *authoritarian aggression* (aggression against norm violators to protect traditional authorities), and *conventionalism* (strong endorsement of traditions and social norms). RWA was found to predict generalized prejudice (Bäckström & Björklund, 2007) and various specific forms of prejudice, such as racial prejudice (for a recent meta-analysis, see Hall, Matz, & Wood, 2010), homophobia (Stefurak, Taylor, & Mehta, 2010), and sexism (Akrami, Ekehammar, & Yang-Wallentin, 2011).

As already discussed in Chapter 1, the construct of social dominance orientation (SDO) was developed by Sidanius, Pratto, and their colleagues (e.g., Pratto et al., 1994; Sidanius & Pratto, 1999) as a different perspective on the personality - prejudice link. SDO represents a leaning towards social inequality on the basis of group membership, and a desire for ingroups to "dominate and be superior to outgroups" (Pratto et al., 1994, p. 742). Although related, SDO and RWA are different constructs that correlate only modestly in empirical studies (e.g., Altemeyer, 1998). Both constructs are related to prejudice, but for different reasons. Previous research reports that SDO predicts generalized prejudice (Duckitt & Sibley, 2007) and specific forms of prejudiced, such as racism (Sidanius et al., 1992), sexism (Sibley, Wilson, & Duckitt, 2007), and immigration (Danso, Sedlovskaya, & Suanda, 2004).

RWA and SDO measures were included in the present study for two main reasons. First, I was interested in assessing whether these personality factors would

`

predict attitudes towards a fictional and novel group. Previous research has rarely investigated relations between RWA, SDO, and attitudes towards novel groups, and the few existing results have been inconsistent. For instance, Altemeyer (1994) found that RWA predicts ingroup favoritism, when both the ingroup and outgroup were newly formed (two new introductory psychology classes). In a different line of research, Amiot and Bourhis (2005) found that SDO, and not RWA, predicted discrimination against minimal outgroups. These authors assessed the influence of RWA and SDO on the distribution of desirable outcomes (such as a raise), and undesirable outcomes (such as salary reduction), between newly formed ingroups and outgroups. Results revealed that only SDO predicted discrimination in the form of unequal distribution of desirable and undesirable outcomes. On the other hand, Reynolds and her colleagues (Reynolds et al., 2007) found no relation between either SDO or RWA and discrimination towards newly formed outgroups. Therefore, the present study provides an additional measure of the degree to which SDO and RWA predict prejudice against new groups. To my knowledge, no other study has assessed the influence of these personality variables on fictional characters.

Besides the intrinsic value of investigating cross-sectional relations between RWA and SDO on the one hand, and prejudice against the Gs on the other, I was also interested whether RWA and SDO might moderate the relationship between induced disgust and attitudes towards the Gs. Cross-sectional research has already found that a predisposition to experience disgust is associated with both RWA and SDO; in addition, it was the association with these personality factors that mediated the relationship between disgust and prejudiced intergroup attitudes (Hodson & Costello, 2007) .

`

According to Hodson and Costello (2007), the emotion of disgust shares with RWA and SDO the motivation to avoid others and to promote social hierarchy. It is therefore possible that due to these associations, participants who score high on the RWA and SDO measures are also more likely to experience high levels of disgust as a result of exposure to disgust stimuli, and to be more likely to show increased bias towards the Gs.

A third individual-difference construct that has recently been investigated in the context of prejudice is *self-importance of moral identity* (SIMI; Aquino & Reed, 2002; Reed & Aquino, 2003). Aquino and Reed proposed that besides moral reasoning and cognitive moral development, moral identity also has an important role in explaining moral behaviour. They define moral identity as "a self-conception organized around a set of moral traits" (Aquino & Reed, 2002, p. 1424). The authors argue that moral identity is grounded in a set of characteristics that people generally believe are representative for a moral individual.

Aquino and Reed (2002) developed an explicit measure of SIMI. The scale measures two dimensions of moral self-importance – a private one and public one. The private dimension, termed *internalization,* is a direct measure of the degree to which being moral is important to the respondent. The public dimension, termed *symbolization,* measures the degree to which one is attuned to the moral self and the social aspects that communicate one's moral traits. The two dimensions have different predictive validities. For instance, in Aquino and Reed's (2002) study, internalization predicted donation behaviour and moral reasoning, while symbolization predicted religiosity. Both dimensions were predictors of volunteering reports and the degree to which participants naturally described themselves in moral terms.

`

Overall, moral identity was found to negatively predict moral disengagement (Detert, Treviño, & Sweitzer, 2008), and to positively predict moral elevation (Aquino, McFerran, & Laven, 2011), and charitable behaviour (Reed, Aquino, & Levy, 2007). In a different line of research, Reed and Aquino (2003) investigated the relation between moral identity and intergroup relations. Moral identity, represented primarily by its internalization dimension, was associated with increased moral regard for outgroup members, more positive attitudes with regard to helping outgroup members, donating money to outgroup members, and not wanting to take revenge against innocent outgroup members. The authors account for these results by proposing that SIMI leads to an "expanded circle of moral regard" (p. 1273) that is not limited to ingroup members but applies equally to outgroup members. In other words, people who value being moral may broaden the boundaries of their ingroup in such a manner that it also includes members of other groups.

Similar to RWA and SDO, SIMI was included in this study as a potential predictor of attitudes towards the Gs. To my knowledge, moral identity has not been previously investigated in the context of prejudice against novel outgroups. Previous research shows that moral identity does predict positive attitudes towards existing groups such Middle Easterners or people who did not share participants' religious beliefs, but these studies provide little information on the degree to which SIMI spontaneously leads to an increased moral appreciation of outgroups, or whether there is a more protracted process during which specific outgroups are "added" to the "circle of moral regard". The present study is intended to provide insight into this process. If participants who score high on the SIMI measure react more positively to a group to which they have just been

`

introduced, it would be natural to assume that these effects are elicited relatively early in the development of intergroup relations and do not depend on more protracted processes of learning about other groups.

Hypotheses

Study 5 had eight hypotheses. First, at the cross-sectional level, I was interested in predicting attitudes towards the target group (humanoid aliens named the Gs). In line with a whole body of research that links both RWA and SDO (e.g., Sidanius et al., 1992; Sidanius & Pratto, 1993) to prejudice, I expected both RWA (Hypothesis 1) and SDO (Hypothesis 2) to predict negative attitudes towards the target group. On the other hand, SIMI, and particularly its internalization dimension, was found to negatively predict prejudice towards outgroups due to its relation with a broad "circle of moral regard" that includes people of different groups (Reed & Aquino, 2003). In line with this research, I expected that participants scoring high on internalization would be less likely to endorse prejudicial attitudes towards a novel group (Hypothesis 3).

With regard to experimental effects, hypotheses were formulated in line both with research suggesting a relation between anger and disgust on the one hand and prejudice on the other (e.g., Dasgupta et al., 2009); and with research that suggests that only disgust is related to *extreme* prejudice (e.g., Harris & Fiske, 2006; Taylor, 2007). I expected that disgust would lead to more prejudiced attitudes than both the two control groups (Hypothesis 4). Furthermore, incidental anger would lead to increased prejudice against the Gs, when compared to the two control groups (Hypothesis 5). Overall, I expected that effects would be stronger for disgust than for anger.

`

Moreover, in line with previous research (Schnall et al., 2008), and with Studies 2 and 3 reported earlier, hypothesis 8 predicted that disgust would impact on participants' prejudice towards the Gs, but that this impact would occur primarily for participants reporting high levels of sensitivity to their internal bodily sensations as indicated by PBC scores (Miller et al., 1981). I investigated whether the relationship between incidental disgust and prejudice towards the Gs was moderated by RWA and SDO. Given the cross-sectional research suggesting that high-SDO and high-RWA participants are more likely to experience disgust (Hodson & Costello, 2007), I reasoned that these participants would be more likely to be affected by the disgust stimuli. Therefore, it seems likely that effects of induced disgust would be particularly strong among those participants scoring high on measures of RWA (Hypothesis 6) and SDO (Hypothesis 7).

I also expected that moral identity would moderate the relationship between incidental disgust and prejudice towards the Gs. As discussed above, there are theoretical and empirical reasons to expect that disgust should increase prejudice towards a novel group. However, as also argued above, I expect that participants scoring high on the SIMI internalization measure would have an "expanded circle of moral regard" (Reed & Aquino, 2003) that would apply to ingroup members as well as to outgroup members. From this perspective, I hypothesized that participants' reactions towards the Gs would be influenced by the disgust stimuli only if they scored low on internalization (and hence do not include the Gs in their circle of moral regard) (Hypothesis 8).

`

Method

Participants. A New York City based sample of participants (*N* = 141; 90 women) participated in the experiment in exchange for a ticket to a raffle for a $100 prize. They were recruited via ads on Craigslist. Age of participants ranged from 18 to 64 years (*M* = 26.87, *SD* = 8.88). Most participants were American citizens (89.40%) and were native speakers of English (95.70%). The majority of participants had completed higher education (79.40%). Participants identified themselves as Caucasian (41.80 %); Black / African American (14.90%); Asian (14.20%); Hispanic / Latino (13.50%); Native Hawaiian / Pacific Islander (2.10%); Native American (.70%); or other / multiracial (7.10%); while 5.70% declined to respond to this item.

Design. Participants were randomly assigned to one of the four experimental conditions: disgust vs. anger vs. sadness vs. neutral[6].

Procedure. The study was conducted completely online. Electronic consent was obtained from all participants. They were informed that the study consisted of two unrelated parts: the first part included several questionnaires regarding emotions, personality, and attitudes, whilst the second part was a pilot test of how characters in a science fiction film would be perceived. The questionnaires contained demographic

[6] The initial design of the study included two additional conditions, fear and envy, which were not included in the present report. The envy condition was dropped after only running 7 participants due to anticipated lack of sufficient participants, while the fear condition is not included here due to a change in the general theoretical framework of the thesis (fear is not a moral emotion). Data from this condition are available (for the prejudice measure, *M* = 3.33, *SD* = .82). Cross-sectional data from participants allocated to these conditions were not included in the present report either.

`

measures and the personality scales described below. After the questionnaires, the emotion-induction procedure followed. Participants in the disgust condition were instructed to describe for about five minutes an intense biographic event which made them feel physically disgusted. Participants were further instructed to try to re-experience the episode. Participants in the anger and sadness conditions received parallel instructions regarding an episode which made them feel angry or sad. Participants in the neutral condition simply had to describe a regular non-emotional day.

After the emotion-induction procedure, participants were informed that the first part of the study was over and that the second part was unrelated. They were instructed to read a short description of fictional characters supposedly featuring in an upcoming film. In fact, the next part was meant to introduce the Gs and to assess participants' attitudes towards them, which constituted the dependent variable. In describing the Gs, extra care was taken to ensure that they were described in neutral words and that they were very similar to humans without explicitly overstating this fact. Participants read the following text describing the Gs:

> *The action of the movie takes place in the future. Humans are in contact with the alien species called the Gs. The Gs are humanoid aliens living on the faraway planet called Valamika. They are intelligent beings. The Gs have relatively athletic bodies, and are 5Ft 8in tall on average. They have developed a complex society and a remarkable culture. In terms of complexity, their technology is comparable to that of humans. The Gs will interact with humans and together they will establish a common mining operation on the Moon.*

`

Following this short text, participants completed the prejudice measure which ended the experiment. Finally, participants were thanked, debriefed, and offered the opportunity to enter the raffle for the prize.

Questionnaire measures.

Right-wing authoritarianism. RWA was assessed with a 20-item version of the scale developed by Altemeyer (1996). The questionnaire measures three dimensions of *authoritarian submission*, *authoritarian aggression*, and *conventionalism*, but is often used as a unidimensional scale. Sample items include: "Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us" and "It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubts in people's minds" (see Appendix 6.1 for the complete list of items. Participants answered each item on a 7-point scale ranging from 1(Strongly Disagree) to 7 (Strongly Agree). Scores were calculated by averaging individual responses, after reverse scoring when necessary. Results indicated an appropriate measure was obtained (M = 2.48, SD = 1.06, α = .93).

Social dominance orientation. SDO was assessed using the questionnaire developed by Pratto et al. (1994). The SDO is a 16-item scale measuring a preference for unequal intergroup relations. Sample items include: "This country would be better off if we cared less about how equal all people were" and "If people were treated more equally, we would have fewer problems in this country" (reverse scored; see Appendix 6.2 for the full list of items). Participants indicated their opinion about each item on a 7-point scale

`

anchored at each point with values ranging from 1 (Very Negative) to 7 (Very Positive). Individual answers were averaged, after reverse scoring if appropriate (M = 2.21, SD = .80, α = .88).

Self-importance of moral identity. SIMI was assessed using the scale developed by Aquino and Reed (2002). Participants were presented with a list of traits that might describe a person – "caring", "compassionate", "fair", "friendly", "generous", "helpful", "hardworking", "honest", and "kind". After being asked to visualize the kind of person that would have these characteristics, they answered 10 items pertaining to them. Sample items include "It would make me feel good to be a person who has these characteristics" and "The types of things I do in my spare time (e.g., hobbies) clearly identify me as having these characteristics" (see Appendix 6.3 for the full list of items). Participants answered each item on a 5-point scale running from 1 (Strongly disagree) to 5 (Strongly agree). Items for each subscale were averaged to form two measures: internalization (M = 4.43, SD = .50, α = .66) and symbolization (M = 3.39, SD = .70, α = .79).

Private body consciousness. The same questionnaire as in Studies 1-3 was used (Miller et al., 1981). Scores were averaged and formed a scale with adequate reliability (M = 4.59, SD = .81, α = .68).

Prejudice towards the Gs. A prejudice towards the Gs measure was created. Participants had to answer 6 items pertaining to the Gs. Sample items include (e.g., "I do not like the Gs much"; "I do not think that human's collaboration with the Gs will be beneficial for humans") (see Appendix 6.4 for the full list of items). Response options ranged from 1 (Strongly Disagree) to 7 (Strongly Agree). Answers for each item were

`

averaged (after reverse scoring, if appropriate) and a reliable measure of prejudice towards the Gs was obtained (M = 3.03, SD = .86, α = .69).

Results

Cross-sectional results. Zero-order correlations were computed to appraise whether personality variables predicted attitudes towards the Gs. All personality variables that were hypothesized to predict prejudiced attitudes did so: RWA, r (141) = .26, p = .001; SDO, r (141) = .41, p < .001; internalization, r (141) = -.29, p < .001. The symbolization dimension of the self-importance of moral identity scale did not significantly predict prejudice towards the Gs, r (141) = -.08, *n.s.*

In order to assess their unique contributions in predicting prejudice and to control for potential confounding factors, RWA, SDO, and internalization were simultaneously entered as independent factors in a multiple regression analysis together with age, gender, and education level. The dependent variable was prejudice towards the Gs. All three personality variables remained significant predictors of prejudice; out of the three demographic measures, only age was a near-significant independent predictor of prejudice, with older participants showing greater prejudice. Results from this analysis are summarized in Table 6.1.

`

Table 6.1

Summary of the multiple regression analysis performed for Study 5, predicting prejudice towards the Gs

Variable	*B*	*β*
RWA	.15	.19**
SDO	.20	.19**
Internalization	-.31	-.18**
Age	-.01	-.15*
Gender	.18	.10
Education Completed	.11	.08

Note. $^{*}p < .1$. $^{**}p < .05$.

Manipulation Checks. Unfortunately, manipulation checks assessing the success of the emotion induction procedure were not included in the present study. Similar procedures were used successfully in past research to induce various emotions (e.g., Schnall et al., 2008; Dasgupta et al., 2009). Participants who did not engage in this task were excluded before conducting analyses (7 participants indicated that they were not willing to describe a personal episode, or simply did not describe one).

Main effects. An ANOVA with emotion (disgust vs. anger vs. sadness vs. neutral) as independent factor, and the prejudice against the Gs measure as dependent

`

variable was performed in order to appraise whether different emotions had different impact on prejudice. The effect of emotion was not significant F (3, 130) = 1.70, p = .17. However, an investigation of the means for each emotion did suggest a pattern of result consistent with my hypotheses. Participants in the disgust condition (M = 3.28, SD = .94) tended to express somewhat higher levels of prejudice than anger (M = 2.95, SD = .91), sadness (M = 2.85, SD = .81), and neutral (M = 2.92, SD = .72) participants.

Moderation Effects. In order to test my hypothesis that PBC would moderate the disgust – prejudice relationship, a GLM with emotion (disgust vs. anger vs. sadness vs. neutral) as independent factor, prejudice towards the Gs as dependent variable, and standardized PBC scores as continuous independent variable (Dunlap & Kemery, 1987) was performed. This analysis revealed no significant effects, ps > .12. Parallel analyses were performed to check for the potential moderating role of RWA and SDO. None of these analyses revealed significant interaction effects, ps > .18.

Finally, a GLM with emotion (disgust vs. anger vs. sadness vs. neutral) as independent factor, prejudice towards the Gs as dependent variable, and standardized internalization scores as continuous independent variable (Dunlap & Kemery, 1987) was conducted in order to test for the moderating role of internalization. This analysis revealed significant main effects of emotion, F (3, 126) = 3.75, p = .01, η^2 = .08, and of internalization, F (1, 126) = 21.53, p < .001, η^2 = .15. More importantly, as predicted, these main effects were qualified by a significant emotion x internalization interaction effect, F (3, 126) = 4.59, p = .004, η^2 = .10 (see Figure 6.1).

`

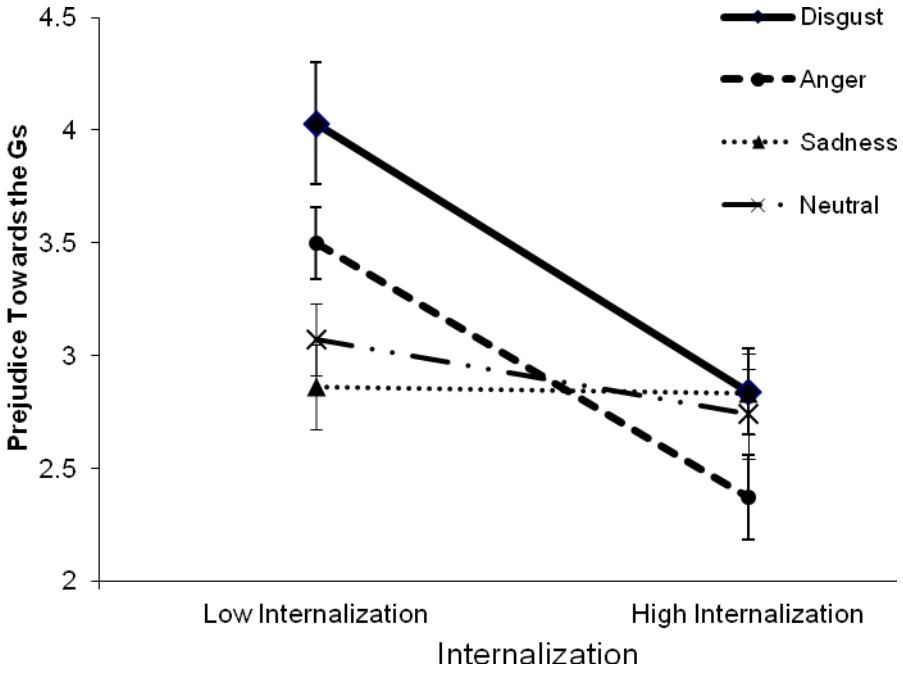

Figure 6.1. Prejudice towards the Gs as a function of the emotion x internalization interaction effect. Error bars represent one standard error.

In order to further examine the significant emotion x internalization interaction effect, simple slope analyses were conducted for high internalization, i.e., one standard deviation above the mean, and for low-internalization scores, i.e., one standard deviation below the mean (Aiken & West, 1991). As expected, for high-internalization participants there were no difference between the experimental conditions (there was no main effect of emotion, F (1, 126) = 1.31, *n.s.*, and no significant contrasts.)

As expected, for low-internalization participants there were significant differences between experimental conditions, F (3, 126) = 5.76, p = .001, η^2 = .12. Contrasts analyses revealed that, indeed, participants in the disgust condition (M = 4.03, SE = .27) reported

`

significantly more prejudiced attitudes than both participants in the neutral (M = 3.07, SE = .19; p =.004) and sadness conditions (M = 2.86, SE = .16; p < .001). On the other hand there was no significant difference between the anger condition and the two control conditions, only a trend which suggested that anger (M = 3.50, SE = .19) led to more prejudice than sadness, p = .06.

Discussion

In Study 5, I investigated the role of incidental disgust vs. anger on prejudice towards a novel group, extraterrestrial humanoid aliens. At a cross-sectional level, I also investigated whether RWA, SDO, and self-importance of moral identity were significant predictors of prejudice against the Gs.

Four of my hypotheses were supported by the findings. First, at the cross-sectional level, prejudice towards the Gs was predicted by all three individual-difference measures: RWA (Hypothesis 1), SDO (Hypothesis 2), and the internalization dimension of the self-importance of moral identity (Hypothesis 3). As mentioned in the introduction, research pertaining to the relation between RWA and SDO on the one hand and prejudice towards novel groups on the other hand, has produced contradictory results in the past (e.g., Altemeyer, 1994; Amiot & Bourhis, 2005; Reynolds et al., 2007). Previous studies employed “minimal group” paradigms, and the present study adds to this knowledge by making use of fictional characters. In my study, both personality dimensions were significant predictors of prejudice, suggesting an important dissociation between this paradigm and minimal group paradigms. It is possible that minimal group paradigms do not always successfully circumvent social desirability concerns. In minimal group

`

paradigms, participants are confronted with novel groups, but they might still be reluctant to express negative attitudes towards the other humans in those groups. The fact that the groups are artificial and newly created ensures no pre-existing bias, but cannot necessarily guarantee that social desirability concerns do not impact strongly on reported attitudes.

For instance, social desirability concerns influence the manner in which right-wing authoritarians present themselves (Altemeyer, 1999). Altemeyer claimed to "have no doubts that High RWAs want to present a wholesome image of themselves to others" (p .161); he nevertheless emphasized that keeping responses anonymous minimizes such concerns. Indeed, in my study anonymity was very strongly emphasized. Unlike traditional paper-and-pencil setups, the online format of the present study facilitated this because participants never actually met the experimenter. Furthermore, the present setup might have been more successful at avoiding social desirability effect by leading participants to believe that their opinions were needed in order to appraise the manner in which fictional characters would be perceived. Since there is no social pressure not to express negative beliefs regarding fictional characters, participants might have felt freer to express any negative evaluations.

Participants with highly relevant moral identities reported less prejudiced attitudes. In line with previous research, this was the case for the *internalization* dimension of the self-importance of moral identity scale, but not for the *symbolization* dimension (Reed & Aquino, 2003). Reed and Aquino found that the internalization dimension predicted positive attitudes towards several *known* outgroups, such as Middle Easterners and people who did not share participants' religious beliefs. The authors

`

argued that people who value being moral may broaden the boundaries of their ingroup thus also include outgroup members in their "circle of moral regard". Thus, these individuals are more likely to support financial assistance for outgroups, for example. This is an informative finding with important implications for prejudice reduction. However, questions remain about whether these effects depend on processes that span over a longer period of time aimed to include specific outgroups within the circle of moral regard, or whether participants who value being moral react positively towards various groups from the first time they are introduced to them.

The present study offers a partial answer to this question. Given that the Gs were a novel group to which participants had never been exposed before, I interpret the existence of a relation between internalization and reduced prejudice as suggesting that people who value being moral naturally extend their "circle of moral regard" to include new outgroups.

Taken together, the cross-sectional results also suggest that participants reacted to the Gs as they would to a real group. RWA (Altemeyer, 1988; Bäckström & Björklund, 2007; Stefurak et al., 2010), SDO (Danso et al., 2007; Duckitt & Sibley, 2007; Sidanius et al., 1992), and (to a lesser extent) self-importance of moral identity (Reed & Aquino, 2003) are established predictors of intergroup attitudes. The fact that these personality dimensions predicted attitudes towards a fictional group created for the purpose of the present study, suggests that this group tapped into the same processes that real groups would activate. I take this to indicate that results uncovered in the present study are applicable to real groups, and reflect psychological processes underlying real-world intergroup relations.

`

At an experimental level, the pattern of results was in line with my hypotheses, but the effect of emotion did not reach significance when no other independent variables were included in the analysis. However, when participants' moral identity was taken into account, effects were significant. Results revealed that induced disgust led to more prejudiced attitudes than the two control conditions, sadness and neutral emotional state, but only for low-Internalization participants. Furthermore, in line with my expectations, induced anger produced similar but non-significant effects. The first implication is that disgust can produce prejudice against previously neutral groups. Prejudice is an emotional experience (e.g., Gaertner & Dovidio, 1986), and the idea that different emotions predict prejudice towards different groups has received empirical support (e.g., Dasgupta et al., 2009). What the present study shows is that disgust can promote explicit prejudice against newly encountered groups. More critically, moral identity seems to "protect" against this bias. As reviewed above, the internalization dimension of moral identity is predictive of an extended "circle of moral regard" towards outgroups (Reed & Aquino, 2003). The moderation effect shows that participants who have strong moral identity do not use extrinsic feelings of anger and disgust when evaluating novel outgroups.

The present findings complement results reported by Dasgupta et al. (2009). Dasgupta and her colleagues have found that both disgust and anger impact on implicit measures of prejudice towards a novel group. The present study found that disgust also impacted on explicit measures of prejudice towards novel groups, but this is only true for participants who do not have a strong sense of moral identity. Results pertaining to anger followed a similar pattern but they did not reach significance. Therefore, the results

`

between the two studies suggest that the influence of disgust on implicit and explicit prejudice follows similar patterns, although some differences exist. Other studies have revealed stronger dissociations. For example, Inbar, Pizarro, and Bloom (2012) found that a disgusting odor led to more negative explicit attitudes towards gay men, but did not impact on implicit reactions. They argue that the reason for this dissociation is the nature of their subtle prime: disgusting smells were simply not strong enough to impact on participants' automatic associations with regard to homosexual men.

As mentioned in the introduction to this study, it is important to have information about both implicit and explicit measures of prejudice as these measures tap into different processes and have different predictive validity. Taking the results uncovered by Dasgupta et al. (2009) together with the ones revealed here, suggests that participants who report high levels of moral identity are able to control for the effects of extrinsic disgust and anger when prejudice is assessed explicitly. Unfortunately, direct comparison between the two measures was not possible here, as implementing an implicit measure of prejudice would have been difficult in an online environment. This is one of the shortcomings of the present study. Future research ought to tackle this problem and focus on both implicit and explicit measures of prejudice in a single study.

Another important finding in the present study is that PBC did not moderate the effects of disgust on prejudice. In Studies 2-3, incidental disgust biased participants' attitudes pertaining to economic issues, but this was only the case for those participants who scored relatively higher on the PBC. Conversely, Study 1 uncovered only a main effect of disgust on political attitudes, and no significant interaction with participants' levels of body consciousnesses. I reasoned that this might be due to participants in Study

`

1 being particularly sensitive to their bodily sensations, overall. It might very well be the case that a similar ceiling effect could have been operating in the present study. An investigation of PBC means for the present study suggests that this possibility may have some face validity; participants in the present study had similarly high scores to those in Study 1. It might also be the case that participants' state body consciousness was raised, leading to a similar ceiling effect of PBC. The experiment was conducted during summer time in New York City; it is possible that the extremely high temperatures might have led participants to be more aware of their bodily sensations. These observations are rather speculative, but what can be concluded with certainty across the four studies is that disgust impacts on participants' attitudes, but that under some circumstances this happens only for a subgroup of participants who are particularly sensitive to their physical sensations.

Finally, the effects of the disgust manipulation were not moderated either by RWA and SDO. Both of these factors independently predicted prejudice towards the Gs (as discussed above). The fact that these personality dimensions did not interact with disgust, while moral identity did, suggests that ideological orientations do not impact on the degree to which people are influenced by incidental disgust. These results are in line with Inbar, Pizarro, and Bloom's (2012) study, which found that political orientation did not moderate the relationship between incidental disgust and attitudes towards homosexual men.

Studies 1-4 uncovered a "brighter" side of disgust – it led people to endorse more egalitarian beliefs pertaining to economic equality. Conversely, Study 5 uncovers one of its darker sides – it promoted prejudice towards a novel group.

`

CHAPTER 7: GUILT, SHAME, AND POLITICAL ATTITUDES

Chapter 7 presents Cross-sectional Study 6 and Experimental Study 7: two studies testing for relationships between guilt, shame, and political attitudes. Study 6 was a cross-sectional investigation of the interrelations between trait guilt and shame (Tangney, Wagner, & Gramzow, 1989) and political attitudes. An international sample of University of Oxford participants and other volunteers (N = 374; 241 women) filled in an online survey. As predicted, main results included a positive association between guilt proneness and left-wing political attitudes, as well as a relationship between shame proneness and social-conservative attitudes. The study also replicated previous findings pertaining to disgust sensitivity and political attitudes. Additionally, the obtained associations between guilt, shame, and political attitudes were compared with those of disgust sensitivity. Study 7 was aimed to directly assess the influence of guilt and shame on the one hand and political attitudes on the other. An international sample of participants (N = 300; 206 women) participated in an online experiment in exchange for a ticket to a lottery to win £50. Participants were randomly assigned to one of four experimental conditions, equivalent to the four induced emotional states: disgust vs. guilt vs. shame vs. neutral. Subsequently, their political attitudes were assessed. Contrary to my expectations, induced guilt did not lead to more left-wing economic attitudes; induced shame did not lead to more social-conservative attitudes. Predictions pertaining to induced disgust were also not supported by the findings. Limitations regarding methodological failure and participant self-selection are discussed.

Studies 1-5 focused on causal and cross-sectional relationships between disgust and political attitudes, although other emotions such as sadness and anger were also assessed for comparison purposes. However, disgust is not the only moral emotion that has potential relevance to political attitudes. As already discussed in Chapter 1, Haidt (2003) classified moral emotions into four "families": "other-condemning" emotions comprise anger, contempt, and disgust; "self-conscious" emotions which result from self-reflection include embarrassment, guilt, and shame; "other-suffering" emotions, such as compassion; and "other-praising" emotions, i.e. gratitude and elevation. So far, the

`

present thesis has focused on disgust, a "member" of the other-condemning family. The next two studies focused on guilt and shame, two self-conscious moral emotions whose relations to political attitudes were assessed at both a cross-sectional and experimental level of investigation.

Tangney (1991) argues that while it is common to not distinguish between "guilt" and "shame", psychological theory and empirical research support the assumption that the two emotions are different. There are commonalities between guilt and shame; in particular, both are negative self-conscious emotions occurring in response to the individual's transgressions or shortcomings. Tangney built on Lewis (1971) who proposed that the main distinction between the two emotions lies in the degree to which the self is implicated in each experience. Lewis argued that guilt experiences reflect less on the self than do shame experiences: "shame is about the self" (p. 37). By contrast guilt is elicited when one perceives one is responsible for a transgression: "guilt is about things in the real world" (p.43).

One example of research providing empirical evidence for these propositions is the work undertaken by Lindsay-Hartz (1984), who investigated the structure of guilt and shame experiences as presented by participants in interviews. In line with Lewis (1971), she found that guilt and shame differ in the extent to which they transform the person's self-image. Shame leads to a complete self-transformation, in which one perceives oneself as shrunken and unworthy. Because of this perceived unworthiness, shame is characterized by wanting to hide, escape, and disappear. On the other hand, guilt is associated with moral disapproval of an isolated transgression, which does not extend to the whole self. Guilt is therefore associated with wanting to confess and leads people to

`

be more open about their guilt experience than their shame experience. Overall, shame was described as the more debilitating and harmful experience of the two.

Generally, guilt is therefore associated with regret directed towards the person that was wronged and promotes reparative action, such as confessing or apologizing. Shame is concerned with the self, as the transgressor is interested in his or her own feelings rather than those of the person that has been wronged (Tangney & Dearing, 2002). Another difference between the two self-conscious emotions is that guilt tends to be associated with adaptive outcomes whereas shame does not (e.g., Tangney & Dearing, 2002; Tangney et al., 2007). Studies report a positive link between guilt and desirable social outcomes, such as behavior that is beneficial to others, a preference for equality, and emotional balance between partners (Baumeister, Stillwell, & Heatherton, 1994).

Further evidence for this differential association of trait shame and guilt or (shame- and guilt-proneness) to (un-) desirable behavior comes from the research undertaken by Tangney and her colleagues. Tangney (1994) investigated the relationships between guilt- and shame-proneness and moral behavior assessed by participants' level of agreement with various statements describing transgressions they would or would not do. Results indicated that guilt proneness showed strong associations with moral behavior whereas shame proneness did not show a correlation with such behavior. In a different study, fifth grade pupils' tendency to experience guilt versus shame was predictive of their behavior as assessed after eight years. Adolescents who had shown guilt-prone tendencies when in fifth grade were generally more responsible, as they showed lower rates of experimenting with alcohol and drunk driving, while they showed higher rates of college application and community work. Shame proneness was associated with more

`

reckless and harmful outcomes such as being suspended from high school, taking drugs, or attempting suicide. Moreover children scoring high on the shame-proneness measure had lower rates of college application and were not involved in community work (Tangney & Dearing, 2002).

Evidence is mounting that shame is detrimental for psychological health and interpersonal relationships. Shame proneness rather than guilt proneness was found to be related to anxiety (Fergus, Valentiner, McGrath, & Jencius, 2010), depression (Kim, Thibodeau, & Jorgensen, 2011; Tangney, Wagner, & Gramzow, 1992), posttraumatic stress disorder (Leskela, Dieperink, & Thuras, 2002), and eating disorders (Murray, Waller, & Legg, 2000). Furthermore, Tangney (1991) found that proneness to experience shame is associated with personal distress and self-focus, while proneness to experience guilt is associated with empathy for others' suffering. Taken together, these results suggest that shame is destructive for interpersonal functioning while guilt has positive implications.

Assessing trait levels of guilt and shame

A widely used approach to measuring trait guilt and shame is a scenario-based self-report method, the Test of Self-Conscious Affect (TOSCA; Tangney, Dearing, Wagner, & Gramzow, 2000; Tangney, Wagner, & Gramzow, 1989). TOSCA presents participants with everyday life scenarios which usually have negative outcomes ("At work, you wait until the last minute to plan a project, and it turns out badly"). In response to each scenario, the self-report measure independently assesses the degree to

`

which participants' reactions are indicative of shame, guilt, detachment, and externalization of blame.

According to Tangney and Dearing (2002), using scenarios to assess self-conscious affect is desirable for several reasons, some of which are directly relevant for the present study. First, they allow guilt to be assessed with respect to a certain actions rather than generally, which tends to be case when other methods such as adjective-scale measures are employed. This is an important advantage, Tangney and Dearing argue, as general assessments tend to better capture shame rather than guilt. Moreover, scenario-based measures manage to avoid the general confusion between shame and guilt by describing the subjective experience of these emotions in context, rather than relying on people's frequently confused interpretations of what guilt and shame might entail. Finally, using scenarios is an appropriate measure to ensure participants will report their feelings accurately and not let social desirably and defensiveness interfere. There is a good chance that participants will admit to feelings of shame or guilt because a specific situation went badly. When guilt and shame are assessed globally, participants may not feel comfortable acknowledging that they usually experience these emotions.

The TOSCA has been employed in a variety of studies (for a review, see Tangney & Dearing, 2002). Indeed, the studies reviewed in the previous section have employed variants of TOSCA to conclude that guilt proneness is generally an adaptive characteristic whilst shame proneness is a maladaptive one.

`

Cross-sectional Study 6

In the present study I assessed the role of guilt- and shame-proneness in predicting political attitudes. In order to maintain consistency across studies, disgust sensitivity was also assessed and its relationship to political attitudes was contrasted with those of guilt- and shame-proneness.

Guilt has been associated with liberal attitudes, but to my knowledge this research has focused mostly on the collective level of guilt. In an American context, Steel defines "White guilt" as the result of Whites' awareness of their group's advantages in comparison to minorities and "the inevitable gratitude one feels for being White rather than Black in America" (Steele, 1990, p. 499). Thus, as opposed to personal guilt, which is the result of an individual's transgression (e.g., Tangney 1991), White guilt is a form of collective guilt, experienced as a result of the ingroup's advantages over other groups. A number of studies have found support for the assumption that this form of collective, group-based guilt is related to liberal attitudes. Empirical evidence suggests that collective guilt predicts the degree to which members of a majority group take part in activities that benefit the cause of an outgroup (Mallett, Huntsinger, Sinclair, & Swim, 2008), compensate the wronged outgroup (Doosje, Branscombe, Spears, & Manstead, 1998), and support reparative actions meant to increase equality, i.e. affirmative action (e.g., Swim & Miller, 1999). A somewhat similar concept to White guilt is *existential guilt.* Montada, Schmitt, and Dalbert (1986) define existential guilt as a "disposition to react with feelings of guilt to perceived differences in one's own favorable lot or position […] and the unfavorable lot of others" (p. 125). Research on existential guilt has found that it predicts equality-enhancing attitudes and behavioural intentions, meant to improve

`

the status disadvantaged groups (e.g., Montada et al., 1986; Schmitt, Behner, Montada, Müller, Müller-Fohrbrodt, 2000).

Given the interest in collective guilt, existential guilt, and political attitudes, it is surprising that a general tendency to experience personal guilt has not been investigated in relation to political attitudes. The present study addresses this gap in the literature by assessing the relationship between proneness to guilt and political attitudes. Given that guilt proneness is associated with feelings of responsibility (Tangney, 1990), a desire for reparative action (Tangney, 1990), and, more importantly, preference for equality (Baumeister et al., 1994) it is expected that a predisposition to experience guilt would be related to more left-wing attitudes pertaining to economic issues.

As with guilt proneness, there has been little systematic investigation of shame proneness in relation to political attitudes. Only a limited number of studies have referred to shame in this context. An example is the research that stems from Tomkins' (e.g., 1995) polarity theory. According to this theory, ideologies can be understood in terms of two dimensions: *humanistic ideology* (corresponding to left-wing ideology), which is characterized by an outlook focusing on the better side of humanity, and *normative ideology* (corresponding to right-wing ideology), and which is characterized by belief that humans are inherently wicked. According to Tomkins, affective states can be grouped based on the ideology they predispose. Joy, fear, distress, and shame, sensitize towards humanist ideology; excitement, surprise, contempt, disgust, and anger relate to normative ideology.

According to Tomkins, shame represents an actor's response to disruptions in interpersonal communication, but once shame is overcome communication can be

`

resumed. Conversely, disgust and contempt constitute negative appraisals of other people, and lead to the cessation of communication. There is some empirical evidence to support Tomkins' claims regarding emotions and ideology. Aubin (1996) found that participants who reported high levels of humanism, recalled more joy, distress, fear, and shame in an autobiographical task. On the other hand, participants who reported normative orientation had more anger-related memories. Empirical evidence also supports other claims derived from polarity theory. For example, several studies have found that disgust is related to conservative ideology (Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009). However, with regard to other emotions, empirical evidence contradicts Tomkins' propositions. For example, evidence converges on the conclusion that fear is associated with conservative, or normative, ideology, and not with left-wing, humanistic beliefs (for a review, see Jost et al., 2003). Similarly, in contrast to polarity theory, I propose that a predisposition to experience shame should be related to conservative rather than liberal attitudes. I argue that shame proneness should predict political attitudes in a similar manner to disgust sensitivity. There are theoretical and empirical reasons to argue for a connection between the self-critical emotion of shame and the other-critical emotion of disgust (e.g., Giner-Sorolla & Espinosa, 2011; Hutcherson & Gross, 2011). Hutcherson and Gross asked participants which emotion they would least want to inspire in others. In this study more participants preferred to inspire anger or sadness, rather than moral disgust. A significant proportion of these participants named feelings of shame as reason for their preference. In line with these findings, Giner-Sorolla and Espinosa found that disgust facial expressions triggered feelings of shame in the person the emotion was directed at (while anger was related to

`

guilt). Results also showed the resulting feelings of shame were explained by which norm participants thought had been violated. The authors argue that shame and disgust have common elicitors: transgressions involving the body, for example inappropriate sexual practices or poor hygiene. Following from this logic, shame proneness and disgust sensitivity ought to be related to each other as they both reveal disapproval of the same type of violations. When these violations are the result of someone else's behavior, one reacts with disgust. However, when one violates the same norms oneself, one reacts with shame. Therefore it is reasonable to assume that both shame and disgust predict political attitudes pertaining to purity-related matters.

Besides guilt and shame proneness, I also assessed altruism's relation to political attitudes in the present study. Altruism was already assessed in the Study 4 as a control variable, because previous research has linked it to both political attitudes and moral emotions. For example, Zettler and Hilbig (2009) investigated the degree to which dispositional altruism predicts left- versus right-wing political orientation. These authors adopted Fowler and Kam's (2007) definition of altruism as "a willingness to pay a personal cost to provide benefits for others" (p. 813). They found that dispositional altruism predicted left-wing political orientation even after controlling for the effects of traditional personality factors. Political orientation was operationalized as a unidimensional construct with values ranging from left-wing to right-wing. As described in the Chapter 1, such an approach may be over-restrictive. As in my previous studies, the present study assessed economic and social-political attitudes as separate concepts. Given the relationship between altruism and empathy and concerns for others' wellbeing, it was

`

expected that altruism would predict liberal attitudes pertaining to economic issues, but not to purity-related issues[7].

Altruism is not only related to left-wing attitudes, but also to guilt. As discussed above, guilt proneness is related to empathy towards others' suffering (Tangney, 1991). According to Tangney, this relation underlies some of the beneficial effects of guilt, as empathy is associated with altruistic behavior. Experimental research also directly links guilt to altruistic behavior (Regan, 1971; Regan, Williams, & Sparling, 1972). In these studies, participants were induced to experience guilt (as opposed to control) by having them believe they were responsible for a transgression. Subsequently, they were given the chance to behave altruistically by donating to charity (Regan, 1971) or by informing a passerby about dropping a candy (Regan et al., 1972). In both studies, participants in the guilt condition were more likely to behave altruistically than controls. According to Regan and his colleagues (Regan et al., 1972), this altruistic behavior is motivated by a need to redeem feelings of guilt.

Taking into account the relations between guilt and altruism and between altruism and left-wing political orientation, I predicted that the relationship between guilt proneness and left-wing political attitudes would be mediated by altruism. On the other hand, there are no theoretical reasons to expect altruism to be associated with political attitudes pertaining to social issues or with shame proneness. For this reason, the

[7] This pattern of results was already observed in Study 4 (pp. 104-105), although no specific hypotheses were formulated in that study.

`

relationship between shame proneness and political attitudes should not be mediated by altruism.

Emotion Regulation, Political Attitudes, Guilt- and Shame Proneness

A second goal of the present study was to provide further insight into the nature of guilt and shame. More specifically, I was interested in the way proneness to experience guilt and shame relates to emotion-regulation styles. As discussed in Chapter 3, two emotion-regulation strategies have received most attention in recent research – cognitive reappraisal and expressive suppression. Cognitive reappraisal consists of construing stimuli that could lead to emotional reactions in manner that reduces their emotional effect. On the other hand, expressive s*uppression* entails consciously restraining the expression of emotion during the experience of emotion (Gross, 1998a; Gross & Levenson, 1993). Gross and John (2003) proposed that people show stable individual differences in their use of reappraisal and suppression. Habitual use of reappraisal versus suppression is measured using the emotion regulation questionnaire (ERQ). Habitual reappraisal is generally associated with positive outcomes such as higher levels of positive affect, lower levels negative affect, and enhanced social connectedness. Conversely, habitual suppression of emotional expression is related to negative outcomes, such as lower positive affect and higher negative affect, worse interpersonal relationships, and decreased levels of well-being.

To the best of my knowledge, habitual reappraisal and suppression have been investigated in relation to guilt- and shame-proneness in only one study. Hughes, Gullone, and Watson (2011) investigated maladaptive emotions and emotion regulation

`

styles among children and adolescents. In their study, shame proneness was related to unhealthy emotion regulation: there were negative relationships between shame proneness and emotional control and self-awareness, and a positive relationship between shame proneness and suppression. Guilt proneness was related to healthier styles of coping, as suggested by the positive association with emotional control. Neither guilt- nor shame-proneness was associated with habitual reappraisal.

The present study aimed to reassess these relations and show that a tendency to suppress emotions is associated with shame proneness but not with guilt proneness. A further aim was to explore the relationships between emotion-regulation styles and political orientation. According to Leone and Chirumbolo (2008), political conservatism and the motivational concerns of people for whom emotions are a source of uncertainty and dysfunction are congruent. In their cross-sectional study, various indices of political conservatism were found to be related to *emotion avoidance*. These results were consistent with the authors' assumption that conservatives are likely to be emotionally avoidant or to prefer emotions of low intensity. According to Leone and Chirumbolo, avoiding emotions might represent a form of "coping" when someone cannot manage negative emotions, and this low tolerance of negativity might help to explain conservatives' negative perspective on humanity. In light of these findings, in the present study I investigated whether expression avoidance, i.e. suppression, would show a similar association with political conservatism.

Although I expected that emotional suppression would be related to both shame proneness and political conservatism (and that these latter variables would also be related), it is unclear which of the predictor variables mediates the effects of the other (or

`

indeed whether neither is a mediator). There is no reason to assume, for example, that the relationship between shame proneness and political conservatism is explained by habitual suppression. As already mentioned, shame proneness is expected to predict political conservatism due to the norm violations shame is associated with, whereas suppression is expected to predict conservatism due to the ambivalence conservatives have towards emotions. I therefore expected that both emotional suppression and shame proneness would be independent predictors of political conservatism.

Hypotheses

First, I was interested in investigating the associations between political attitudes and both guilt- and shame-proneness. I expected proneness to guilt to be related to left-wing political attitudes regarding economic issues (Hypothesis 1), and this relationship to be mediated by altruism (Hypothesis 2). Shame proneness was expected to predict social conservative attitudes (Hypothesis 3). On the other hand, no relationships between guilt proneness and social conservatism, and shame proneness and left-wing economic attitudes were expected.

With regard to disgust sensitivity and social conservative attitudes, I aimed to replicate results reported by previous research (Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009), and by Study 4 of the present thesis. I therefore expected DS-R and all of its subscales to predict social conservative attitudes, and that contamination disgust would be the strongest predictor (Hypothesis 4). I also aimed to replicate results uncovered by Study 4, in which the DS-R and core disgust predicted left-wing political attitudes, and this relationship was moderated by participants' country of origin. I

`

therefore expected that for British participants, there would be a positive relationship between DS-R and core disgust on the one hand, and left-wing economic attitudes on the other hand.

A second aim of the present research was to explore other dispositional predictors of political orientation that might potentially be related to guilt- or shame-proneness. With regard to emotion-regulation strategies (Gross & John, 2003), I expected suppression to be related to both shame-proneness (Hypothesis 5) and political conservatism (Hypothesis 6, although no mediation hypotheses were formulated with regard to this relationship). Moreover, given the proposed relationship between shame and disgust (Giner-Sorolla & Espinosa, 2011; Hutcherson & Gross, 2011), I expected shame proneness to be related to disgust sensitivity.

With regard to guilt-proneness and emotion-regulation strategies, in the absence of clear theoretical reasons, I did not formulate any specific hypotheses. Given that guilt proneness is generally associated with positive psychological functioning it makes intuitive sense that guilt proneness would either be unrelated to unhealthy emotion regulation styles or would predict healthy emotion regulation.

Method

Participants. An international sample of students and faculty associated with the University of Oxford, and other volunteers (N = 374; 241 women) filled in the survey online in exchange for a ticket for a raffle to win £50 or for partial course credit. Methods were similar to Study 4; recruitment was done by advertising on University Departments' mailing lists, on a specialized departmental website, and on Facebook. Participants' ages

`

ranged from 18 to 61 years (M = 26.65, SD = 5.87). Similar to Study 4, more than a third of the participants had completed higher education (35.80%), while a similar proportion had also completed postgraduate studies (35.00%).

A large proportion of participants identified themselves as White (77.0%). Other categories represented were Asian, or Pacific Islander (9.40%), multi-racial or any other category (8.30%), Hispanic (1.30%), and Black (.50%). 13 participants (3.50%) declined to provide an answer to this item. The largest group of participants came from the United Kingdom (41.70%), and a large number were native English speakers (70.60% of the total sample). Large numbers of participants who were not British came from the United States (12.00 % of the total sample), Romania (6.70% of the total sample), Germany (3.50% of the total sample), Canada (3.20 % of the total sample), Australia (2.70% of the total sample), and France (2.20%).

Questionnaire measures.

Proneness to guilt versus proneness to shame: TOSCA -3. Proneness to guilt and proneness to shame were assessed by the TOSCA-3 (Tangney et al., 1989; Tangney et al., 2000). TOSCA-3 is a scenario-based scale composed of 11 negative and 5 positive scenarios and measures shame proneness, guilt proneness, and detachment (see Appendix 7.1 for the full list of items). The scenarios involve personal transgressions (e.g., "You are taking care of your friend's dog while your friend is on vacation, and the dog runs away"). Participants indicated the likelihood of reacting to each situation with a guilt response (e.g., "You would vow to be more careful next time"); with a shame response (e.g., "You would think, 'I am irresponsible and incompetent'"); with detachment (e.g.,

`

"You would think your friend could just get a new dog"); and with blame externalization (e.g., "You would think your friend must not take very good care of the dog or it wouldn't have run away"). Respondents answered each item on a 5-point scale ranging from 1 (not likely) to 5 (very likely). Scores were summed to form reliable measures of guilt proneness (M = 65.19, SD = 7.77, α =.80) and shame proneness (M = 49.70, SD =10.03, α =.80). The detachment and externalization of blame scales are not reported in this thesis, as these dimensions are not central enough to the focus of the present research.

Disgust sensitivity: DS-R. Similar to Studies 2-4, participants filled in the DS-R (Haidt at al., 1994, modified by Olatunji et al. 2007). Scores were averaged, after reverse-coding items where appropriate, and a reliable scale was obtained (M = 1.74, SD = .59, α = .86). Items pertaining to the three subfactors also formed scales of acceptable levels of reliability: core (M = 1.98, SD = .61, α = .72), animal-nature (M = 1.83, SD = .85, α =.81), and contamination (M = 1.03, SD = .65, α =.54).

Altruism. Altruism was assessed in a manner similar to Study 4. Participants filled in the 8 items pertaining to altruism from the HEXACO-PI measure (Ashton & Lee, 2008; Lee & Ashton, 2004). The 8 items were averaged after reverse scoring when appropriate and a reliable measure of altruism was obtained (M = 3.92, SD = .58, α = .77).

***Emotion Regulation Strategies*.** Similar to Study 2, habitual emotion regulation styles were assessed with the emotion regulation questionnaire (ERQ, Gross & John, 2003). Scores for the two factors were averaged and results indicated that two

`

uncorrelated measures were obtained: cognitive reappraisal (M = 4.77, SD = 1.00, α = .76) and expressive suppression (M = 3.52, SD = 1.24, α = .77).

Self-importance of moral identity. Self-importance of moral identity dimensions were assessed as control variables. The two dimensions were measured with same instrument as in Study 5, the scale developed by Aquino and Reed (2002). Items for each subscale were averaged to form to reliable measures: internalization (M = 4.34, SD = .64, α = .82) and symbolization (M = 2.69, SD = .75, α = .79).

Left-Right scale. Similar to previous studies, political attitudes pertaining to economic issues were measured with the scale developed by Evans et al. (1996). The scale showed similar properties (M =3.45, SD = .70, α = .68).

Libertarian-Authoritarian scale. The same scale as used in Study 4 was administered in order to assess political attitudes pertaining to non-purity related social issues Answers for the 10 items were averaged (after reverse coding when appropriate) and formed a reliable scale (M =2.36, SD = .60 α = .80).

C-scale. The same measure of social conservatism that was used in my previous studies (Wilson & Patterson, 1968, short version by Henningham, 1996) was administered. Participants indicated their agreement or disagreement with each of the 12 items on a 3-point scale ranging from “no” to “yes” (the middle point represented an “undecided” opinion). Scores for each item were averaged, after reverse scoring when appropriate, and a reliable scale was obtained (M =1.38, SD = .32, α = .76).

`

Results

Partial correlations. Shame- and guilt-proneness were substantially correlated (*r* = .53). Partial correlations were therefore computed in order to account for this overlap. Associations between guilt- and shame-proneness and the dependent variables: the Left-Right scale, the Libertarian-Authoritarian scale, the short version C-scale, and the 1-item political orientation measure were investigated.

As expected, after controlling for shame proneness, guilt proneness was related to left-wing attitudes regarding economic issues (*r* = .15), altruism (*r* = .58), and self-importance of moral identity dimensions (*r* = .48 for internalization, and *r* = .17 for symbolization). Although not hypothesized, guilt proneness was related to healthy emotion regulation, as indicated by its positive association to cognitive reappraisal (*r* = .25) and its negative association to suppression (*r* = -.15). Similarly, after controlling for guilt-proneness, shame proneness was predictive of the Libertarian-Authoritarian scale (*r* = .17), externalization (*r* = .32), disgust sensitivity (*r* = .16), and expressive suppression (*r* = .25).

Zero-order correlations. Zero-order correlations were performed in order to investigate associations between variables, not including guilt- and shame-proneness. These correlations are summarized in Table 7.1. It is important to note that results found here replicated previous research regarding a relationship between the DS-R and social conservatism as indicated by the C-scale. Furthermore, the DS-R subscales were predictors of the C-scale, with contamination disgust again being the strongest predictor. A similar pattern of associations was found between the DS-R and the Libertarian-Authoritarian scale, with contamination disgust being the strongest predictor. Neither the

`

DS-R nor any of its subscales was related to left-wing attitudes regarding economic issues.

Table 7.1.

Intercorrelations between variables in Study 6 (excluding guilt- and shame-proneness)

Variable	1	2	3	4	5	6	7	8	9	10
1. DS-R	—	.74***	.85***	.90***	-.02	.01	.16***	.00	.29***	.21***
2. Contam.		—	.47***	.61***	.00	.07	.09*	-.03	.39***	.31***
3. Animal			—	.58***	-.03	.05	.14***	.02	.18***	.14***
4. Core				—	.00	-.06	.15***	.00	.24**	.17***
5. Reappraisal					—	-.01	.18***	.06	-.08	.04
6. Suppression						—	-.05	-.03	.12**	.15***
7. Altruism							—	.28***	-.10*	.06
8. Left-Right								—	-.29***	-.10*
9. Auth. - Lib.									—	.62***
10. C - Scale										—

Note. Pearson's *r* values are shown.

*$p < .1$. **$p < .05$. ***$p < .001$.

Multiple regression analyses. Following correlations multiple regression analyses were performed in order to investigate whether the specific relationships uncovered above could be accounted for by different variables. First a number of multiple

`

regression analyses were performed with guilt and shame proneness as independent factors, and the various measures of political orientation as dependent variables, after partialing out the effects of the control variables.

Guilt-proneness. Guilt proneness did not remain a significant predictor of left-wing economic attitudes β = -0.12, *n.s.*., after controlling for the variance explained by demographic variables, shame proneness, and factors hypothesized to relate to both self-conscious moral emotion and to political attitudes: altruism and emotional regulation styles (reappraisal and suppression). On the other hand, in the same analysis, altruism remained a significant independent predictor of left-wing attitudes, β =.28, p = .001.

Shame-proneness. Because partial correlations indicated that guilt-free shame was a predictor of conservative attitudes as indicated by the Libertarian-Authoritarian scale, multiple regression analyses were performed to check whether this relationship would remain significant even after controlling for the variance explained by control factors. Shame proneness remained a significant predictor of the Libertarian-Authoritarian scale, β =.12, p = .08, even when simultaneously partialling out the effects of age, gender, expressive suppression, altruism, guilt proneness and disgust sensitivity. In the same analysis, altruism (β = -.20, p = .005), and disgust sensitivity, β = .31, p < .001, were also significant independent predictors of conservative attitudes.

Social – conservatism, the C-scale. Neither guilt-proneness nor shame-proneness was a significant predictor of scores on the C-scale. However, a multiple regression analysis was performed in order to appraise whether other variables of interest were uniquely associated with social conservatism as indicated by the C-scale. Significant

`

predictors were disgust sensitivity (β = .23, p < .001), gender (β = -.14, p = .01, with men being more conservative than women), and expressive suppression (β = .13, p = .01).

Mediation analysis. A mediation analysis was performed to test my hypothesis that the relationship between guilt-proneness and left-wing political attitudes (as confirmed by the correlational analysis) would be mediated by altruism (following the recommendations formulated by Baron & Kenny, 1986). Because of the guilt-shame overlap, the variance explained by shame-proneness was controlled for.

In the first regression equation, the predictor (guilt-proneness) was related to the mediator (altruism), β =.60, p < .001. In the second regression, as already reported above, the predictor (guilt-proneness) was associated with the dependent factor (left-wing economic attitudes), β =.18, p = .01. The predictor was not related to the dependent factor, when controlling for the mediator, β = -.01, *n.s.* On the other hand, the mediator was associated with the dependent factor, when controlling for the predictor, β =.29, p < .001. Subsequently, a Sobel test (Sobel, 1982) was computed in order to test whether the indirect effect of guilt proneness on left-wing political attitudes was significant. That was indeed the case, z = 3.09, p < .001.

Moderation analysis. As already reported, there was no relation between disgust sensitivity and left-wing political attitudes pertaining to economic issues (r = .004, *n.s.*). A moderation analysis was performed in order to check whether this relationship existed among British participants. This regression analysis was conducted with (centred) disgust sensitivity, country of origin, United Kingdom (1) vs. other (0), and their cross-product as independent factors, while the dependent measure was the Left-Right scale. As expected, the interaction term was significant, β = .201, p = .02, A significant interaction factor

`

suggests that as expected, the relationship between disgust sensitivity and left-wing political attitudes was different for British versus non-British participants. Simple slope analyses revealed a significant relationship between disgust sensitivity and left-wing economic-political attitudes for British participants (β = .15, p = .09). This result supports the hypothesis that for British participants there would be a positive association between disgust and left-wing political attitudes. For non-British participants, the relationship was negative, but non-significantly so (β = -.12, *ns.*). The significant interaction is depicted in Figure 7.1.

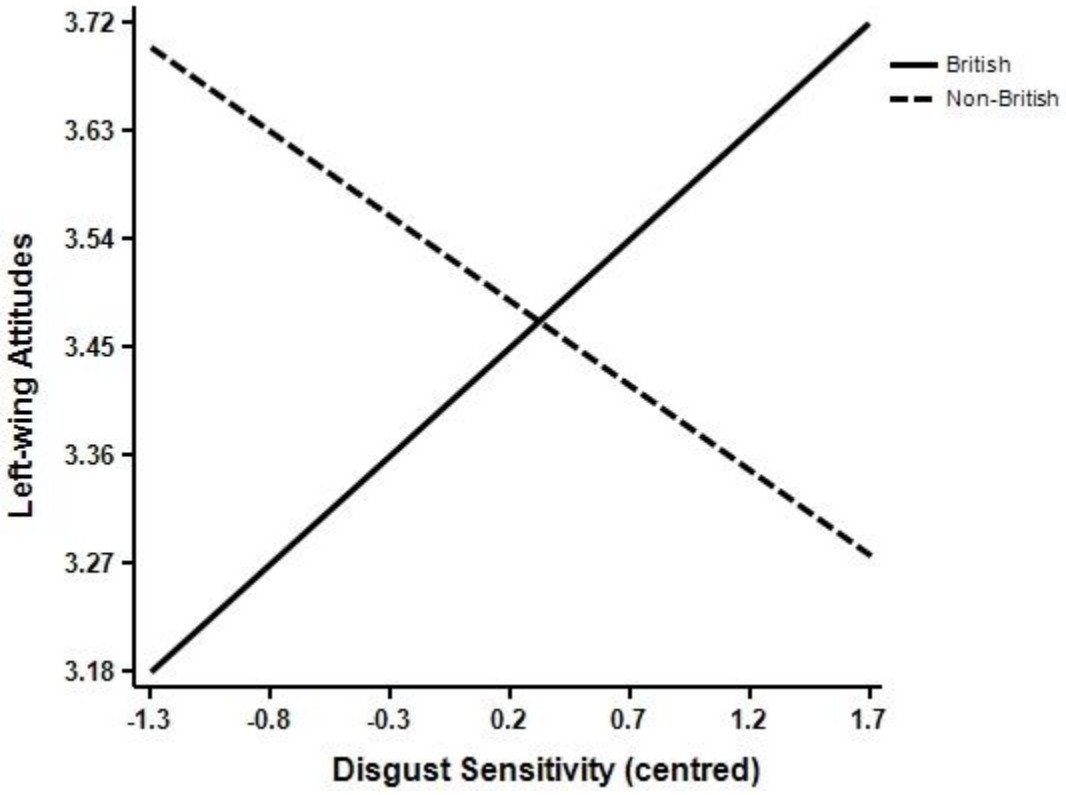

Figure 7.1. Predicted Left-Right scale scores (left-wing economic attitudes), as a function of the disgust sensitivity x country of origin interaction.

`

Relationships between core disgust, country of origin, and left-wing political attitudes followed a similar pattern. Although the model was only marginally significant, F (3, 301) = 2.54, p = .06, R^2 = .03, the core disgust x country of origin interaction effect was significant, β = .17, p = .03. Simple slope analyses revealed expected patterns: for British participants there was a positive non-significant relationship between core disgust and left-wing attitudes, β =.13, p = .14, while for non-British participants this relationship was reversed β = -.13, p = .10.

Parallel analyses were performed in an exploratory manner to check whether the relationships with political attitudes of guilt- and shame-proneness were moderated by participants' country of origin. That was not the case; the guilt proneness – country of origin interaction effect was not significant, β = -.004, t (301) = - .05, *n.s.;* the same was the case for the shame-proneness – country of origin interaction effect, β = .001, *n.s.*

Discussion

The central aim of Study 6 was to investigate the relationships between two self-conscious moral emotions - guilt and shame – and political orientation. As expected "shame-free" guilt-proneness was related to left-wing attitudes regarding economic matters, while "guilt-free" shame-proneness predicted social-conservative attitudes. These results are consistent with research shaped by the moral foundations framework, which proposes that morality plays a central role in the adoption of political attitudes (Graham et al., 2009; Haidt et al., 2009).

Furthermore, as expected, the relationship between guilt-proneness and political conservatism was mediated by altruism. The importance of altruism in the adoption of

`

left-wing political attitudes was recently emphasized by Zettler and his colleagues (Zettler & Hilbig, 2010; Zettler, Hilbig, & Haubrich, 2011). According to Zettler et al. promoting social equality though assisting vulnerable others is compatible with both altruism and liberalism. Furthermore, they argue that promotion of change is usually the instrument through which a state of equality can be reached. In line with these arguments, the present study found that participants who were higher in altruism were more likely to adopt left-wing attitudes. The present study also adds to these findings and shows that altruism is not related to attitudes concerning all political matters; there was no relationship between altruism and the C-scale, a measure of conservatism that includes purity-related issues.

The pattern of results suggests that it might be the case that guilt-proneness predisposes people to endorse altruistic attitudes. Future research employing longitudinal studies could help test this proposition. Another important implication of this mediation effect is that it might be the case that other relationships between guilt proneness and various factors might be explained by altruism. For example, a number of studies report that guilt-proneness is related to desirable psychological traits such as empathic responsiveness (Tangney, 1991) or moral behaviour (Tangney, 1994). It may well be the case that some of these associations could be explained through increased altruism. Finally, it is important to note that even though the pattern of results uncovered here is consistent with a mediation model, it is still possible that other causal models could explain the relations. For example, unmeasured third variables might have caused the observed associations.

`

As expected, shame proneness was related to social conservatism as indicated by the Libertarian-Authoritarian scale (Evans et al., 1996). In line with the arguments formulated in the introduction, this relationship might be due to the norm violations to which shame is responsive. Shame may be sensitive to improper usage of the body (e.g., Giner - Sorolla & Espinosa, 2011), a feature which is similar to disgust. The results obtained here indicate that there might be a relationship between sensitivity to certain violations and conservative political attitudes; shame and disgust might reflect *different facets* of emotional disapproval of these violations. Violations may be perceived in others, as is the case with disgust, or in the self, as is the case for shame, and reacting emotionally in this context predicts social conservative attitudes. These emotional reactions are therefore related, as indicated also by the correlation between shame proneness and disgust sensitivity. However, there are also clear distinctions between shame and disgust, for instance shame is concerned with the self, whereas disgust is usually concerned with external objects or events, including interpersonal ones. A dissociation was also evident in the present study; the relationship between shame proneness and conservatism was not explained by disgust sensitivity (nor by any other control variable). Therefore, shame proneness appears to have a unique relationship with social conservative attitudes.

These results complement the findings of Inbar, Pizarro, and Bloom (2009) and show that not only a predisposition to find certain violations disgusting, but also to find similar violations shameful is associated with social-conservative attitudes. In this context, it is surprising that shame-proneness was not related to conservative scores on the C-scale, a measure that relates more to purity-related concerns. When purity-related

`

items were singled out, shame-proneness did indeed predict such concerns, but it was not a unique predictor (when partialling out the influence of control variables, the relationship between shame-proneness and purity concerns did not remain significant). This suggests that although related, shame-proneness and disgust sensitivity may still tap into distinct aspects of political conservatism. One reason for this might be simply that some of the purity-related issues may not apply to all participants personally (for example, gay marriage) and therefore disgust sensitivity rather than shame proneness would be the best predictor.

It is also noteworthy that social-conservative political attitudes (the C-scale) were predicted by habitual expressive suppression. Leone and Chirumbolo's (2008) have found that political conservatism is at least to some degree motivated by a need to avoid affect. According to Leone and Chirumbolo, conservatives find emotions disturbing, and prefer instead self-control and composure. The authors argue that this conceptualization fits well in the "motivated social cognition" framework (Jost et al., 2003), which depicts conservatives as favoring order, stability, and certainty. Emotions are therefore distrusted and seen as perturbations to good self-control. The present study complements these findings and shows that not only avoiding emotions, but also avoiding their expression predicts political conservatism. It might be the case that when emotions cannot be avoided, political conservatives try to cope with their effects by controlling their symptoms. This proposition might represent a direction for future research. A direct implication of the present study is that conservative ideological orientations are associated with an unhealthy approach to emotions – suppression. Due to the cross-sectional nature of the present study, it is not possible to draw conclusions with regard to

`

the causal nature of these relationships, but it seems more likely that emotion-regulation patterns emerge before political attitudes are formulated.

The present study also successfully replicated the relationship between disgust sensitivity and left-wing political attitudes uncovered by Study 4. As in Study 4, for British (but not non-British) participants, there was a significant relationship between disgust sensitivity and liberal attitudes with regard to economic issues. The existence of this relationship strengthens my argument that there is a relationship between disgust and fairness-related concerns (e.g., Chapman et al., 2009; Moretti & di Pellegrino, 2010; Sanfey et al., 2003). Furthermore, these results are in line with previous findings suggesting that disgust is not an exclusively conservative emotion and might sometimes be related to liberal practices (Herzog & Golden, 2009; Rozin et al., 1997).

Finally, as expected, guilt proneness was related to a number of positive outcomes: increased levels of symbolization, internalization, cognitive reappraisal, and decreased suppression. Conversely, shame-proneness was related to increased suppression and decreased reappraisal, but was unrelated to the self-importance of moral identity dimensions. Taken together, these results fit in well with the literature suggesting that guilt is generally beneficial while shame has generally bad effects. It is, of course, hard to formulate assumptions regarding the causal paths, but it seems likely that emotional predispositions develop before coping mechanisms. It makes intuitive sense to assume, for instance, that if one is likely to experience shame, one would also be likely to attempt suppressing these feelings, since shame is a painful experience. On the other hand, if one feels guilty, one is likely to reappraise these feelings once reparative action (e.g., apologizing) has been taken.

`

Experimental Study 7

Study 6 established two essential relationships: between guilt proneness and left-wing economic attitudes, and between shame proneness and social-conservative attitudes. As mentioned throughout the previous chapter, one limitation of this study was the cross-sectional nature of its design. Although a number of control variables were assessed, it is still possible that other unmeasured factors impacted on both self-conscious emotions and political attitudes. Furthermore, it is difficult to draw definite conclusions about whether guilt- and shame-proneness influenced political attitudes or vice versa. As mentioned in Chapter 2, Inbar Pizarro and Bloom (2009) argue that it is "unlikely that political attitudes would shift a person's general emotional dispositions, particularly when it comes to disgust, a basic emotion that emerges long before individuals form political attitudes" (2009, p. 10)

Although this argument seems compelling, it still possible that political attitudes have shaped the development of dispositional emotional tendencies during socialization later in life. Direct evidence is therefore still required in order to refute alternative explanations. For these reasons, Study 7 used an experimental design to directly address the causal relationship between guilt and shame on the one hand and political attitudes on the other.

A secondary goal was to replicate studies 1-3's finding that incidental disgust led participants (particularly those scoring relatively higher on measures of private body consciousness and women) to endorse more strongly left-wing economic attitudes. In Study 7, I aimed to replicate these effects in a different setting (the experiment was carried out completely on-line), and using a different emotion-induction procedure. This

`

not only permits replication, but also provides an opportunity to compare and contrast the effect on political attitudes of incidental disgust, an other-blaming emotion, with those of guilt and shame, both self-blaming emotions.

Participants were induced to experience one of four emotional states: guilt, shame, disgust and neutral (control). Subsequently their political attitudes regarding economic and social issues were assessed.

Hypotheses and Aims

The first aim of Study 7 was to investigate the effects of incidental guilt and shame on political attitudes. In line with the correlational findings reported in Study 6, I expected incidental guilt to lead to more left-wing political attitudes regarding economic issues (Hypothesis 1). This hypothesis is also in line with previous research suggesting that collective guilt in response to group-based inequality is predictive of broadly liberal outcomes such as supporting affirmative action (e.g., Swim & Miller, 1999), compensating outgroup members (Doosje et al., 1998), or taking collective action in the name of outgroups (Mallett et al., 2008). It is important to note that this research pertains to non-incidental guilt, i.e., feelings of guilt and subsequent reparative action dealt with the same stimulus. To date, individual-level incidental guilt was not investigated in relation to political attitudes.

Furthermore, incidental shame was expected to predict social-conservative attitudes (Hypothesis 2) in line with the cross-sectional findings of Study 6. As discussed in Study 6's introduction section, there seems to be a functional commonality between shame and disgust. Giner-Sorolla and Espinosa (2011) have found that disgust facial

`

expressions act as social cues that the target at which these expressions are directed should feel ashamed. Giner-Sorolla and Espinosa explain this relationship by arguing that disgust and shame might deal with norm violations of the same nature (such as inappropriate uses of the body). This assumption received direct empirical support in the research conducted by Giner-Sorolla and Espinosa, and indirect support in Study 6 in which shame proneness correlated with disgust sensitivity and predicted political attitudes in a similar manner. These empirical findings and theoretical arguments are consistent with the proposition that disgust and shame share a function in condemning purity-related violations, but there are no reasons to assume that shame also shares with disgust a concern for fairness violations. Therefore, it makes sense to predict that incidental shame would influence attitudes regarding social issues but there is no comparable basis for hypothesizing that shame would also bias fairness-related attitudes pertaining to economic issues.

A second aim was to replicate Studies 1-3's findings that incidental disgust leads to left-wing attitudes pertaining to economic issues, primarily among people who score high on the PBC scale. I also aimed to recruit a large sample of participants, in order to be able to replicate the moderating effect of gender found in Study 3. In particular, I expected that disgust would lead to more left-wing economic attitudes particularly for women, as opposed to men. Finally, the study also aimed to compare the effects of incidental guilt, shame, and disgust on political attitudes.

With regard to cross-sectional relationships, Study 7 was mainly intended to replicate and extend a number of relationships uncovered primarily in Study 6. A central finding revealed in Study 6 was that altruism predicted left-wing economic attitudes. This

`

result replicates the relationship reported by Zettler and his colleagues (Zettler & Hilbig, 2010; Zettler et al., 2011), who found that altruism predicted liberalism as assessed through unidimensional measures. Study 6 revealed that altruism predicted equality-enhancing attitudes pertaining to economic issues, but it was not related to attitudes pertaining to purity issues. Moreover, altruism mediated the relationship between guilt-proneness and left-wing attitudes. It was therefore important to show that altruism consistently predicts left-wing economic attitudes.

In more general terms, the study aimed to investigate correlates of liberal and conservative attitudes. I investigated interrelations between anxiety, self-esteem, moral identity, and emotion-regulation styles on the one hand and political attitudes on the other. Generally, previous research has reported that anxiety and related constructs are associated with conservative attitudes (e.g., Jost et al., 2003). In my previous studies (Study 6), suppression was also found to predict conservative attitudes, whilst internalization was found to predict liberal attitudes. I expected to replicate these results.

Finally, I was interested in the degree to which political involvement and political orientation are associated. It is conceivable that disgust influenced mostly economic attitudes rather than social ones in Studies 1-3 because the sampled participants did not feel as strongly about economic issues as they did about social issues. This seems unlikely for the reasons underlined in Chapter 4 discussion section, most critically that the economic dimension of political attitudes was highly predictive of participants' overall political orientation. However, to address this possibility empirically, the present study investigated whether attitudes pertaining to economic and social issues were associated with political involvement. Moreover, I tested for possible moderation by level

`

of political involvement of the relationship between incidental disgust and political attitudes. More specifically I tested the proposition that incidental disgust would bias political attitudes primarily for those participants whose political involvement is relatively weak. It seems plausible that participants who hold strong attitudes and are politically involved would be less likely to shift their attitudes as a result of experimental manipulations of the emotion they happen to be experiencing at the current moment.

Method

Participants. An international sample of participants (N = 300; 206 women) participated in the experiment in exchange for a ticket to a raffle to win a £50 prize. The experiment was designed as part of a practical laboratory class for undergraduate students, ran by the author of this thesis. Undergraduate students were in charge of recruiting a large proportion of the total sample of participants. Recruitment was done by advertising on University Departments' mailing lists, and by individually emailing interested participants. Participants' age ranged from 16 to 61 years (M = 25.69, SD = 9.82). The majority of participants came from the United Kingdom (63.30%). Similarly, most participants and were native speakers of English (77.30%). About one third of participants had completed higher education (31.70%), and a significant proportion had also completed postgraduate education (21.70%). Participants identified themselves as Caucasian (80.00 %); Asian (10.30%); other / multiracial (6.00%), Hispanic / Latino (3.00%); or Black / African (.30%); whist 2.30% declined to respond to this item.

Design. Participants were randomly assigned to one of the four experimental conditions (emotion: guilt vs. shame vs. disgust vs. control).

`

Procedure. Participants completed the study online. The study was presented as an investigation into the relationships between emotional states and personality. Participants were informed that the study consisted of a number of questionnaires which they were asked to fill in with all seriousness and once started not to stop until completion. Electronic consent was obtained from all participants. At the beginning of the study participants had to provide demographic information and to complete personality measures. Subsequently, the emotion-induction procedure followed. The emotion-induction procedure was similar to that employed in Study 5. Participants were instructed to recall and describe for about five minutes an intense biographic event which made them experience one of the four desired emotional states. While writing down a description of the episode, participants were encouraged to mentally re-enact and re-experience what had happened at the time. In order to circumvent possible confusion between shame and guilt, the two emotion states were described in terms of subjective experiences and action tendencies. Participants in the guilt condition were told that such a state implied feeling that they have done something "bad" which made them feel remorse, tension, and a need to confess. Participants in the shame condition were told that shame implied feeling like they were a "bad person", and this made them want to hide and to disappear. Participants in the disgust condition were instructed to recall an episode that made them feel "physically disgusted", for instance seeing or touching something disgusting which made them sick to the stomach. Finally, participants in the control condition were instructed to recall and write down the events of an uneventful and unemotional day. Finally, participants in the control condition were instructed to recall and write down the events of an uneventful and unemotional day. As mentioned in Study

`

5, autobiographical episodes have been used successfully in previous research to induce desired emotional states (e.g., Dasgupta et al., 2009; Schnall et al., 2008).

Following the emotion-induction procedure, participants reported their political attitudes on various measures (see below) Finally, participants completed manipulation check items, assessing the degree to which they felt various emotional states (guilt, anger, happiness, relaxation, happiness, disgust, sadness, shame, and confusion) at that moment.

Questionnaire measures.

Private body consciousness. The same 5-item scale used in Studies 1, 2, 3, and 5 was again used here (Miller et al., 1981); scores were averaged and formed a scale of adequate reliability (M = 3.90, SD = .93, α = .69).

Altruism. Altruism was assessed with the same items from the HEXACO-PI personality measure (Ashton & Lee, 2008; Lee & Ashton, 2004) that were used in Studies 4 and 6. The 8 items were averaged, after reverse scoring where appropriate, and a reliable measure of altruism was obtained (M = 3.96, SD = .49, α = .69).

Emotion regulation strategies. Similar to Studies 2 and 6, habitual emotion-regulation styles were assessed using the emotion regulation questionnaire (ERQ) developed by Gross and John (2003). Scores for the two factors were averaged and results indicated two uncorrelated measures were obtained: cognitive reappraisal (M = 4.69, SD = 1.08, α = .83) and expressive suppression (M = 3.55, SD = 1.23, α = .74).

Self-importance of moral identity. Self-importance of moral identity was measured with same instrument as in Study 5, the scale developed by Aquino and Reed (2002). Items for each subscale were averaged to form to reliable measures:

`

internalization (M = 4.39, SD = .54, α = .73) and symbolization (M = 2.97, SD = .74, α = .80).

Political involvement. Political involvement was measured with three modified items taken from Lindeman (1993). The three items measure attitude intensity ("How strongly do you feel about the party you support?"); centrality of attitudes ("How important to you are the issues dealt with in politics?"); and political involvement ("Have you ever participated in political actions (e.g., written a letter, given money, participated in election campaign) for or against political issues"). Participants answered each item on a 7-point scale. The items were averaged and the resulting measure was used as an indicator of participants' degree of involvement in politics (M = 3.74, SD = 1.37, α = .71).

Left-Right scale. Consistent with the previous studies 1-4 and 6, political attitudes pertaining to economic issues were measured with the scale developed by Evans et al. (1996). The scale showed similar properties (M = 3.29, SD = .74, α = .72).

Libertarian-Authoritarian scale. The same scale as used in Study 4 was administered in order to assess political attitudes pertaining to non-purity related social issues. Answers for the 10 items were averaged (after reverse coding when appropriate) and formed a reliable scale (M =2.44, SD = .61 α = .80).

Overall political orientation. A 1-item general political orientation item was also included. As before, the scale ranged from 1 (extremely liberal or left-wing) to 7 (extremely conservative or right-wing).

`

Results

Zero-order correlations. As expected, there was a negative relationship between left-wing attitudes pertaining to economic issues and social-conservative attitudes (r = -.26). Predictors of left-wing attitudes were anxiety (r = .17), political involvement (r = .15), self-esteem (r = .17), and altruism (r = .21). Social-conservative attitudes were predicted by internalization (r = .15) and political involvement (r = -.25).

Multiple regression analyses. Multiple regression analyses were performed in order to check whether the predictors uncovered above would remain significant when accounting for their shared variance and for the variance explained by demographic variables (age, gender, and education). First, a multiple regression analysis was conducted with anxiety, political involvement, self-esteem, altruism, age, gender, and education completed entered simultaneously as independent factors, and left-wing economic attitudes as dependent variable. The model was significant, F (7, 290) = 7.36, p < .001, R^2 = .16. Altruism (β =. 19, p < .001), political involvement (β = .14, p = .009), and education level (β = .25, p < .001) were significant independent predictors of left-wing economic attitudes; age (β = -.11, p = .09) only marginally predicted liberal economic attitudes. Anxiety and self-esteem did not remain significant predictors of left-wing economic attitudes, after controlling for the aforementioned factors.

Similarly, a regression analysis with the liberal-authoritarian scale as dependent variable and its cross-sectional predictors (internalization, political involvement) together with demographic variables as independent variables was conducted. This model was also significant, F (5, 292) = 5.75, p < .001, R^2 = .09. Only political involvement (β = -

`

.26, $p < .001$) and internalization ($\beta = .17$, $p = .001$) were significant independent predictors of conservative attitudes pertaining to social issues.

Manipulation checks. Before conducting manipulation checks, participants' entries on the emotion-induction task were inspected in order to check whether participants provided a response. A total of 20 participants (6.70%) refused to write about a biographic episode and were therefore excluded from experimental analyses.

A MANOVA with emotion (guilt vs. shame vs. disgust vs. control) as independent factor and experienced guilt, shame, and disgust as dependent variables was performed in order to check whether the emotional states were successfully induced. The emotion effects on experienced shame and guilt were significant, F (3, 279) = 2.74, p = .04, η^2 = .03, and F (3, 279) = 4.78, p = .003, η^2 = .05. The emotion induction effect on reported disgust was marginally significant, F (3, 279) = 2.49, p = .06, η^2 = .03. Post-hoc tests (LSD) revealed that for the shame and disgust experimental conditions the desired emotions were experienced more strongly than for the other conditions, although not all differences were significant. Participants in the disgust condition reported more disgust (M = 1.82, SD = 1.36) than participants in either the guilt (M = 1.44, SD = .97, p = .04), shame (M = 1.70, SD = 1.23, p = .18), or neutral conditions (M = 1.38, SD = .85, p = .02). Similarly, participants in the shame condition reported more feelings of shame (M = 2.46, SD= 1.62) than participants in the disgust (M = 1.54, SD = 1.20, $p < .001$), guilt (M = 1.94, SD = 1.51, p = .04), or neutral condition (M = 1.83, SD = 1.34, p = .01). On the other hand, participants in the guilt condition reported more feelings of guilt (M = 2.84, SD = 1.74) than those in the disgust (M = 2.51, SD = 1.65, p = .51) and neutral conditions

`

(*M* = 2.71, *SD* = 1.75, *p* = .74), but less feelings of guilt than participants in the shame condition (*M* = 3.35, *SD* = 1.94, *p* = .09).

Generally, the results from these analyses indicated that disgust and shame were relatively successfully induced, whereas guilt was not. Although results indicate that guilt was not successfully induced, the guilt experimental condition was kept for further analyses, as ratings on the manipulation check items may have been misleading due to common confusions between the meanings of shame and guilt (e.g., Tangney, 1991).

Main effects. An ANOVA with emotion (guilt vs. shame vs. disgust vs. control) as independent factor and the Left-Right scale as dependent factor was performed in order to check whether there were any differences in reported political attitudes between the four experimental conditions. The main effect of emotion was not significant, *F* (3, 276) = 1.24, *n.s.* Participants in the disgust condition reported the highest levels of left-wing attitudes endorsement (*M* = 3.39, *SD* = .82), followed by participants in the shame condition (*M* = 3.38, *SD* = .76), participants in the guilt condition (*M* = 3.18, *SD* = .72), and the neutral condition (*M* = 3.25, *SD* = .75).

Similar analyses were performed with the Libertarian-Authoritarian scale and the 1-item political attitudes measure as dependent variables. Neither of these analyses revealed significant results, *F*s < 1.

Moderation effects.

PBC. In order to test my hypothesis that PBC would moderate the relationship between disgust and left-wing political attitudes, a GLM with emotion (guilt vs. shame vs. disgust vs. control) as independent factor, political attitudes (the Left-Right scale) as

`

dependent variable, and standardized PBC scores as continuous independent variable (Dunlap & Kemery, 1987) was conducted. The emotion x PBC interaction effect was not significant, F (3, 272) = 1.27, *n.s.*

Parallel analyses were performed with the liberal-authoritarian measure of social conservative attitudes and the 1-item political orientation measure as dependent variables. As with the previous analysis, the interaction effects were not significant, Fs < 1.

Political involvement. In order to test my hypothesis that political involvement would moderate the relationship between induced emotions and political attitudes, standardized political involvement scores were entered in analyses as continuous independent variables. First, a GLM with emotion and political involvement as independent factors, and left-wing economic attitudes as dependent variable was performed. This analysis revealed a main effect of political involvement, F (1, 272) = 11.10, p = .001, η^2 = .04, corresponding to the correlational effect already discussed in the cross-sectional analyses section. The emotion x political involvement interaction effect did not reach significance, F < 1.

Similar analyses conducted with the liberal-authoritarian scale and the 1-item political orientation measure revealed similar main effects of political orientation (and no interaction effects), F (1, 175) = 22.34, p < .001, η^2 = .08, and F (1, 272) = 9.29, p = .003, η^2 = .03 respectively.

Gender. A GLM with emotion (guilt vs. shame vs. disgust vs. control) and gender (man vs. woman) as independent factor, and the Left-Right scale as dependent variable was performed. There were no significant effects, ps > .20. Similar analyses were performed on the Libertarian-Authoritarian scale and the one-item political orientation

`

measure. These analyses also failed to support a moderation hypothesis, as they revealed non-significant interactions, *p*s > .18.

Discussion

The central aim of Study 7 was to extend the cross-sectional results uncovered in Study 6 by testing whether there are causal relationships between guilt and shame on the one hand, and political attitudes on the other. I hypothesized that induced guilt would lead to more left-wing economic attitudes and that induced shame would lead to more social-conservative attitudes. Neither of these predictions was supported by the data. In fact, none of the experimental hypotheses that were formulated in this study were supported by the results. For instance there was no direct effect of disgust on left-wing political attitudes pertaining to economic issues and no moderation by private body consciousness. Effects of disgust on left-wing political attitudes were consistently obtained in Studies 1-3, suggesting that the theoretical reasoning on which Study 7 was also based is sound. It seems therefore likely that methodological failure was responsible for the absence of effects in the present study.

First, manipulation checks indicated that at least one emotional state, guilt, was not successfully induced, as participants in the guilt condition reported more shame than guilt. Moreover, for disgust, the effects on manipulation-check measures were only marginally significant. This was a central issue with the present study, which was likely due to the fact that the experiment was conducted completely online. Participants must have found the emotion-induction procedure unpleasant, or they did not properly grasp the difference between the desired emotional states. In might also have been the case that

`

the open-ended nature of the emotion-induction procedure led participants to recall episodes that involved mixed emotions, making it difficult to disentangle the effects of individual emotions.

Another potential problem in the present study was participant self-selection. Because the study was conducted completely online, it was possible that a subgroup of participants was less likely to complete the experiment. As mentioned in the methods section, 300 participants completed the study, but a total of 487 initially started the experiment. Therefore a total 187 participants decided not to complete the study and were therefore not included in the analyses. An extra 20 participants refused to complete the emotion-induction procedure. At this point, it is not possible to know whether these participants who did not end up in the final analyses were systematically different from those that were included in analyses. It seems possible either that these participants were particularly prone to experience the desired emotions intensely, or that they were less likely to experience such emotions. Taken together these problems suggest that there is a possibility that analyses were conducted on a non-random sample of participants.

On the basis of this experiment only, it is therefore not possible to infer whether incidental guilt and shame genuinely influence political attitudes. Future research should address this problem using experimental designs that ensure participant compliance and minimize the chances of self-selection. Research should also focus on developing experimental procedures for inducing guilt and shame that can successfully distinguish between these two emotional states.

With regard to the cross-sectional part of the study, results were more in line with the previous studies. The main finding was that altruism predicted left-wing political

`

attitudes pertaining to economic issues, and this relationship remained significant even after controlling for the variance explained by control factors, as in Study 6. As already argued, this finding complements research by Zettler and his colleagues (Zettler & Hilbig, 2010; Zettler et al., 2011) who proposed that both altruism and left-wing ideology value social equality and a need for change. In line with this proposition, it is important to note that altruism was only related to economic aspects of political attitudes, and not with social issues.

Another interesting finding was that the political involvement measure correlated positively with left-wing economic attitudes, and negatively to social-conservative attitudes. Overall, this suggests that liberal participants were more involved in political life than were conservative participants. Political involvement did not interact with disgust in predicting political attitudes, thus ruling out the interpretation that induced disgust only biases political attitudes for those participants who hold weak attitudes to begin with. However, given the methodological issues described above, it is not possible to refute this proposition conclusively solely on the basis of the present results, and further research is required.

`

CHAPTER 8: SUMMARY, CONCLUSIONS, AND POTENTIAL LIMITATIONS

Chapter 8 summarizes the main theoretical propositions and empirical findings of the present thesis. Implications are discussed in the context of research and theory regarding moral emotions and political attitudes, but also more general frameworks such as somatic marker hypothesis, the affect-as-information hypothesis, and the social intuitionist model. Limitations, applied implications, and directions of future research are discussed. It is proposed that the present research is relevant for understanding political behaviour and that future research ought to focus also on the relationship between the remaining other-condemning emotions – anger and contempt – and political attitudes and behaviour.

The present thesis reports research investigating the general proposition that moral emotions influence the adoption of political attitudes. My approach was based on research steaming from moral foundations theory (Haidt et al., 2009; Haidt & Joseph, 2004). As reviewed Chapter 1, research in this tradition has found that political conservatives and liberals have different moral values (Haidt & Graham, 2007). Besides moral foundation theory, the research reported here also fits in frameworks that emphasize the importance of affective states in (moral) judgments, such as the somatic marker hypothesis (Damasio, 1994; 1995), the affect-as-information hypothesis (Schwarz & Clore, 1983), and the social intuitionist model (Haidt, 2001). Across seven studies, causal relationships and cross-sectional associations between disgust, guilt, and shame on the one hand side and political attitudes on the other were investigated.

In addition to this central aim, the present thesis investigated associations between political attitudes and a variety of individual-differences measures, such as emotional uncertainty, need for structure, SDO, RWA, altruism, moral identity, and emotion-

`

regulation styles. Below I review the main findings, formulate conclusions, and address potential limitations.

Results Pertaining to Disgust

The central finding of Studies 1-3 was that incidental disgust, as opposed to sadness, led participants to adopt more left-wing attitudes with regard to economic issues. In Study 1, this was the case for all participants in the disgust condition, whereas in Studies 2-3 disgust impacted on participants' economic attitudes if they reported high levels of PBC, as opposed to low levels of PBC. Moreover, in Study 3, only women's attitudes were affected by induced disgust.

The relationship between disgust and left-wing economic attitudes was found also at a cross-sectional level of investigation. For example, in Study 4, a predisposition to experience disgust (and particularly core disgust and pathogen disgust) was predictive of stronger endorsement of liberal attitudes pertaining to economic issues. Interestingly, these associations were moderated by participants' country of origin: the relationship was present only for British participants, as opposed to non-British participants. Equally important, Study 4 also replicated the established finding (e.g., Inbar, Pizarro, & Bloom, 2009) that disgust sensitivity and particularly contamination disgust predicted social-conservative attitudes.

The conceptual inspiration for Studies 1-3 was the research conducted by Haidt and his colleagues (Schnall et al., 2008; Wheatley & Haidt, 2005). These studies induced participants to experience disgust (through hypnosis, odours, videos, pictures, and biographic recollections) and found that these markers led to stronger moral

`

condemnation of certain violations. The present research extended these findings by showing that even political attitudes can be affected by induced disgust. To my knowledge, these studies are the first to report that induced disgust impacts on participants' political attitudes. Given that associations between disgust sensitivity and political attitudes have been consistently reported in the last five years (Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009; Inbar, Pizarro, Iyer et al., 2012) it is surprising that causal evidence has been completely absent up to this point.

Inbar and his colleagues (Inbar, Pizarro, & Boom, 2012) have investigated the influence of disgusting odors on attitudes towards different social groups and on attitudes towards a variety of political issues. These authors did not find an influence of incidental disgust on political attitudes, although explicit liking of homosexuals was affected. In fact, Inbar and colleagues mention a series of failed attempts to uncover an influence of disgust on political attitudes. Although these authors focused on the relationship between disgust and social issues, economic attitudes were also assessed. They account for the absence of effects by suggesting that it might reflect an inherent problem with disgust-inducing stimuli: when these stimuli are too weak, they cannot affect political attitudes, when they are strong enough to potentially impact on these attitudes, they are also sufficiently salient for participants to be aware of their effects and to correct for them. While this explanation has face validity, it might also be the case that Inbar et al. did not assess the moderating role of sensitivity towards bodily sensations (there is no mention of this measure in their article). In the present research, for two out of three studies, disgust influenced the attitudes of participants who scored high on PBC measure, but not of those who scored low. These results led to the interpretation that disgust has a visceral effect on

`

those participants who are more sensitive to such sensations, and only those participants' attitudes are affected.

Another potential difference might have to do with the samples of participants: Inbar, Pizarro, & Bloom, 2012's (2012) study, as well as the majority of studies in field, focused on American samples, whereas participants in the present experiments were predominantly British. It is important to stress that in the research presented here only economic attitudes were affected, while social attitudes were not (with one exception which was discussed at the end of Study 3). The cross-sectional investigations reported here showed that only for British participants (and not for non-British participants), there were significant associations between sensitivity to disgust and left-wing economic attitudes. In studies 1-3, the majority of participants were British. Taken together, these results led me to propose that this relationship between disgust and left-wing economic attitudes might reflect specific British processes. These effects also underlined the importance of culture in associations between moral emotions and political attitudes. Given the small sample sizes, it was not possible to assess potential moderation by country of origin for the experimental studies, but future research should address the possibility that participants' country of origin could also moderate incidental effects of disgust on political attitudes.

One potential limitation of Studies 1-3 is represented by the control condition. In these studies, participants in the control condition were induced to experience sadness. Sadness was selected as the control condition in order to assess the specificity of effects; comparing the effects of disgust with that of another negative emotion ensures that results attributed to disgust could not be accounted for by a general negative state. However,

`

critics might argue that the differences between conditions in these findings might equally reflect effects of sadness as effects of disgust. In other words, an alternative account of these findings is that sadness leads participants to adopt more right-wing economic attitudes, and not that disgust leads them to adopt more left-wing attitudes. I argue that such accounts are unlikely, in line with models underlining the importance of appraisal tendencies in the context of emotional influences on judgments and choices (Lerner & Keltner, 2000). Lerner and Keltner emphasize that specific emotions activate cognitive processes that drive subsequent perception and judgment. Shaver and his colleagues (Shaver, Schwartz, Kirson, & O'Connor, 1987) describe prototypical sadness as being associated with withdrawal from other people, having a negative perspective, and feeling hopeless (for a broader description of prototypical sadness see, Keltner & Lerner, 2010). On the other hand, as described in Chapter 1, disgust leads to avoidance and rejection of offensive stimuli, including stimuli that are offensive from a moral perspective (Rozin et al., 2008).

As a result of these differences, sadness and disgust have different effects on judgments and attitudes. In fact, sadness has already been used as a control for disgust in previous research, precisely because it is seen as a negative emotion with no moral or political connotation (e.g., Horberg et al., 2009; Moretti & di Pellegrino, 2010; Schnall et al., 2008). For the present studies, the most relevant previous research is the work that focused on fairness, as the theoretical rationale for a relationship between disgust and left-wing attitudes was centred on fairness concerns. For example, Chapman et al. (2009) investigated facial activity and subjective experience evoked by distaste, basic disgust, and moral disgust (conceptualized as unfair behavior in economic games). In this study,

`

subjective disgust was associated with rejection of unfair offers in the economic game, while sadness was not correlated with rejection of such offers. Similarly, Moretti and di Pellegrino (2010) found that incidental disgust led participants to reject unfair offers in economic games at higher rates than both sadness and neutral states. In the same experiment, induced sadness did not lead to an increased rejection of unfair offers in comparison to neutral condition. To my knowledge, a single study reports a relationship between sadness and fairness, but the direction of this relationship is the same as that between disgust and fairness: induced sadness led to higher rejection of unfair offers in an ultimatum game (Harlé & Sanfey, 2007). It is worth noting, however, that this study did not include a second negative emotion, such as anger or disgust. Overall, most research findings suggest that sadness is not related to fairness concerns, and a single study proposes a relationship in the same direction as the disgust – fairness relationship. Therefore, in sum, theoretical and empirical findings indicate that sadness cannot account for the findings presented here. A second reason for which the present results are likely due to disgust and not sadness is the PBC modulation which suggests that visceral gut feelings played a role in the present findings. In line previous research, this embodied view of emotions applies particularly well to disgust (Schnall et al., 2008).

Besides this new "bright side" of disgust, the research reported in the present thesis also explored a "darker side": its capacity to promote prejudicial attitudes towards outgroups. In an online experiment, participants induced to experience disgust expressed more negative attitudes towards a fictional group than both participants induced to experience sadness and neutral emotion. This was only true if participants scored relatively low on the internalization subscale of the moral identity measure (Reed &

`

Aquino, 2003), suggesting that a developed sense of moral identity protects against the biases brought about by incidental disgust. It is noteworthy that incidental anger did not significantly affect prejudice towards the fictional group. These findings are in line with the research conducted by Harris and Fiske (2006) and Taylor (2007), which underline the importance of disgust in extreme prejudice. Harris and Fiske (2006) found that participants exposed to pictures of "extreme outgroups", such as the homeless or drug addicts, had increased insula and amygdala activation, brain structures associated with disgust. Taylor (2007) brought further evidence that disgust is involved in extreme forms of prejudice, or bigotry. Taylor found that disgust-related words are more often encountered in propagandistic texts aimed against minorities than in neutral texts (anger and fear were not more encountered in propagandistic texts than they were in neutral language). Taken together with the present study, results uncovered by Harris and Fiske (2006) and by Taylor (2007) are consistent with the idea that high levels of disgust play a central role in extreme prejudice.

Results Pertaining to Guilt and Shame

With regard to guilt and shame, the central novel findings were significant associations between tendencies to experience these self-conscious emotions and political attitudes. Guilt proneness was predictive of left-wing economic attitudes, and this relationship was mediated by altruism; shame proneness was related to social conservative attitudes. Group-level guilt, or White guilt, has been associated with liberal attitudes in previous research (eg Swim & Miller, 1999). To my knowledge this is the first study to show that guilt- and shame-proneness are predictors of political attitudes,

`

underlining that self-conscious emotions, and not only other-blaming emotions may play a role in the adoption of political attitudes. It is also important to note that guilt proneness was related to several positive outcomes, such as higher levels of moral identity, increased likelihood to engage in cognitive reappraisal, and decreased levels of emotion suppression. On the other hand, shame-proneness was related to unhealthy emotion regulation: increased suppression and decreased reappraisal. Moreover, shame proneness was unrelated to self-importance of moral identity.

One limitation of these findings is that they were not mirrored by experimental findings: Study 7 failed to support the hypotheses that induced guilt leads to more left-wing economic attitudes and induced shame leads to more right-wing social attitudes. Therefore it is still possible, theoretically, that the cross-sectional findings are due to other unmeasured factors affecting both self-conscious emotions and political attitudes; it is also still possible that political attitudes lead to self-conscious emotions and not the other way around. Given the limitations of Study 7, future research needs to replicate these cross-sectional findings and to aim to uncover their causal nature.

Implications for Applied Issues and Future Research

One direction future research could take is to address the influence of the remaining other-condemning emotions – anger and contempt – on political attitudes and behaviour. Distinguishing between these emotions and disgust might be difficult in a laboratory setting, but a number of studies have reported dissociations. For example, Horberg et al. (2009) found that disgust, and not anger, was associated with violations of purity. In a different line of research, anger aroused by the perceived favorable position

`

of the ingroup relative to an outgroup positively predicted participants' readiness to support compensation for outgroups (Leach, Iyer, & Pedersen, 2006). These findings suggest that anger is related to left-wing economic attitudes, rather than social conservative attitudes. With regard to contempt, research is scarcer. According to the CAD triad hypothesis (Rozin, Lowery, Imada et al., 1999) the emotion of contempt is linked to Shweder's ethic of community (Shweder et al., 1997), and is aroused by others' norm-related transgressions, such as hierarchy. Given this hierarchy-maintaining function, it seems plausible that contempt would be related to political attitudes promoting hierarchy, such as conservatism.

The most pertinent implication for applied issues that needs to be addressed is whether the findings reported in the present thesis aid the understanding of political behavior. Although neither voting intentions nor actual voting behavior were assessed here, results from previous research support the proposition that the present findings are relevant in this context. In one study, Inbar and his colleagues (Inbar, Pizarro, Iyer et al., 2012) investigated whether DS-R scores predict US participants' voting intentions in the 2008 presidential election (the survey was completed in 2008). In line with the reported relationship between DS-R and conservative attitudes, the DS-R negatively predicted participants' plans to vote for Barack Obama (r = -.10). Furthermore, aggregated DS-R scores (more specifically the contamination subscale) of sampled citizens from individual American States (calculated on the basis of participants' postal codes), were predictive of actual voting outcomes in the respective states: higher levels of contamination disgust in a particular state predicted lower odds for Obama to win in that state. Another study, conducted in Germany, revealed that the same HEXACO-PI-R measure of altruism as

`

used in this thesis predicted participants' left-wing political attitudes and their support for left-wing political parties, measured by their voting intentions and self-reported voting behavior in parliamentary elections (Zettler et al., 2011).

It therefore seems probable that the findings reported here could be relevant to the understanding of voting behavior. I propose, in line with the present findings, that in Britain, a predisposition to experience disgust would be predictive of political party preference. Given that disgust sensitivity was associated with both left-wing economic attitudes and social-conservative attitudes in the research reported here, it is not easy to predict whether disgust sensitivity might be associated with support for only one specific political party (e.g., Conservative, Labour, or Liberal Democrats). In line with the propositions formulated throughout the present thesis, I believe that British political debate is focused more on economic issues and therefore it seems more plausible that disgust sensitivity (especially core and pathogen disgust) would be associated with support for political parties that endorse economic liberalism, for example Labour and the Liberal Democrats. Future research should investigate these assumptions. Similar research questions could be formulated with regard to guilt- and shame-proneness: would guilt proneness be associated with voting for political parties championing economically liberal policies, and would shame proneness be associated with support for conservative parties?

With regard to induced disgust, results are clearer. Here, I found that induced disgust only led to stronger endorsement of liberal-economic attitudes. These findings have applied value. For example, political campaigns could make use of the present findings in promoting left-wing economic measures. Inducing people to experience

`

disgust could potentially increase their support for equality-promoting policy, such as universal healthcare and affirmative action. Future research should also address whether this stronger endorsement of left-wing attitudes, directly translates to a stronger endorsement of political parties supporting compatible policy.

`

REFERENCES

Abler, B., Erk, S., Herwig, U., & Walter, H. (2007). Anticipation of aversive stimuli activates extended amygdala in unipolar depression. *Journal of Psychiatric Research, 41*, 511-522.

Adorno, T. W., Frenkel-Brunswik, E., Levinson, D. J., & Sanford, R. N. (1950). *The authoritarian personality*. New York: Harper.

Aiken, L. S., & West, S. G. (1991). *Testing and interpreting interactions in multiple regression.* Newbury Park: Sage Publications.

Akrami, N., Ekehammar, B., & Yang-Wallentin, F. (2011). Personality and social psychology factors explaining sexism. *Journal of Individual Differences, 32*, 153-160.

Altemeyer, B. (1988). *Enemies of freedom: Understanding right-wing authoritarianism*. San Francisco: Jossey-Bass.

Altemeyer, B. (1994). Reducing prejudice in right-wing authoritarians. In M. P. Zanna & J. M. Olson (Eds.), *The psychology of prejudice: The Ontario Symposium* (Vol. 7, pp. 131–148). Hillsdale, NJ: Erlbaum.

Altemeyer, B. (1996). *The authoritarian specter*. Cambridge, MA: Harvard University Press.

`

Altemeyer, B. (1998). The other "authoritarian personality". In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 47–91). New York: Academic Press.

Altemeyer, B. (1999).To thine own self be untrue: Self-awareness in authoritarians. *North American Journal of Psychology, 1,* 157–165.

Amiot, C., & Bourhis, R. (2005). Ideological beliefs as determinants of discrimination in positive and negative outcome distributions. *European Journal of Social Psychology, 35,* 581-598.

Anderson, A. K., Christoff, K., Panitz, D., De Rosa, E., & Gabrieli, J. D. (2003). Neural correlates of the automatic processing of threat facial signals. *Journal of Neuroscience, 23,* 5627–5633.

Arnold, M. B. (1961). *Emotion and personality*. London: Cassell. (Original work published 1960).

Aquino, K., McFerran, B., & Laven, M. (2011). Moral identity and the experience of moral elevation in response to acts of uncommon goodness. *Journal of Personality and Social Psychology, 100,* 703-718.

Aquino, K., & Reed, A. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology, 83,* 1423-1440.

`

Ashton, M. C., & Lee, K. (2008). The prediction of Honesty-Humility-related criteria by the HEXACO and Five-Factor models of personality. *Journal of Research in Personality*, 42, 1216–1228.

Aubin, E. (1996). Personal ideology polarity: Its emotional foundation and its manifestation in individual value systems, religiosity, political orientation, and assumptions concerning human nature. *Journal of Personality and Social Psychology, 71*, 152-165.

Bäckström, M., & Björklund, F. (2007). Structural modeling of generalized prejudice: The role of social dominance, authoritarianism, and empathy. *Journal of Individual Differences, 28*, 10-17.

Banaji, M., & Greenwald, A. (1995). Implicit gender stereotyping in judgments of fame. *Journal of Personality and Social Psychology, 68*, 181-198.

Baron, R., & Kenny, D. (1986). The moderator mediator variable distinction in social psychological-research - conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Batson, C. D., Harris, A. C., McCaul, K. D., Davis, M., & Schmidt, T. (1979). Compassion or compliance: Alternative dispositional attributions for one's helping behaviour. *Social Psychology Quarterly, 42*, 405-409.

Baumeister, R., Stillwell, A., & Heatherton, T. (1994). Guilt - an interpersonal approach. *Psychological Bulletin, 115*, 243-267.

`

Bechara, A., Damasio, H., Tranel, D., & Damasio, A. (1997). Deciding advantageously before knowing the advantageous strategy. *Science, 275*, 1293-1295.

Bechara, A., Tranel, D., Damasio, H., & Damasio, A. R. (1996). Failure to respond autonomically to anticipated future outcomes following damage to prefrontal cortex. *Cerebral Cortex, 6*, 215-225.

Beckford, M. (2010, May 4). Gay couples could be allowed to marry under Tory election plans. *The Telegraph.* Retrieved June 23, 2012, from http://www.telegraph.co.uk

Calder, A. J., Beaver, J. D., Davis, M. H., van Ditzhuijzen, J., Keane, J., & Lawrence, A. D. (2007). Disgust sensitivity predicts the insula and pallidal response to pictures of disgusting foods. *European Journal of Neuroscience, 25*, 3422-3428.

Carlson, J. M., & Mujica-Parodi, L. R. (2010). A disposition to reappraise decreases anterior insula reactivity during anxious anticipation. *Biological Psychology, 85*, 383-385.

Carney, D. R., Jost, J. T., Gosling, S. D., & Potter, J. (2008). The secret lives of liberals and conservatives: Personality profiles, interaction styles, and the things they leave behind. *Political Psychology, 29*, 807-840.

Carver, C. S., & Scheier, M. F. (1994). Situational coping and coping dispositions in a stressful transaction. *Journal of Personality and Social Psychology, 66*, 184-195.

`

Castano, E., & Giner-Sorolla, R. (2006). Not quite human: Infrahumanization in response to collective responsibility for intergroup killing. *Journal of Personality and Social Psychology, 90,* 804-819.

Chapman, H. A., Kim, D. A., Susskind, J. M., & Anderson, A. K. (2009). In bad taste: Evidence for the oral origins of moral disgust. *Science, 323,* 1222-1225.

Cooper, H. (1993). In search of a social fact: A commentary of the study of interpersonal expectations. In P. D Blanck (Ed.), *Interpersonal expectations: Theory, research and application*. Cambridge: Cambridge University Press.

Cottrell, C., & Neuberg, S. (2005). Different emotional reactions to different groups: A sociofunctional threat-based approach to "prejudice". *Journal of Personality and Social Psychology, 88,* 770-789.

Crowson, H. M. (2009). Are all conservatives alike? A study of the psychological correlates of cultural and economic conservatism. *Journal of Psychology, 143*, 449-463.

Damasio, A. R. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York: Putnam.

Damasio, A. R. (1995). On some functions of the human prefrontal cortex. *Annals of the New York Academy of Sciences, 769,* 241-252.

`

Damasio, A. R., Tranel, D., & Damasio, H. (1990). Individuals with sociopathic behaviour caused by frontal damage fail to respond autonomically to social stimuli. *Behavioural Brain Research, 41*, 81-94.

Danso, H. A., Sedlovskaya, A., & Suanda, S. H. (2007). Perceptions of immigrants: Modifying the attitudes of individuals higher in social dominance orientation. *Personality and Social Psychology Bulletin, 33*, 1113-1123.

Darwin, C. (1965). *The expression of the emotions in man and animals.* Chicago: University of Chicago Press. (Original work published 1872).

Dasgupta, N., Banaji, M., & Abelson, R. (1999). Group entitativity and group perception: Associations between physical features and psychological judgment. *Journal of Personality and Social Psychology, 77*, 991-1003.

Dasgupta, N., DeSteno, D., Williams, L. A., & Hunsinger, M. (2009). Fanning the flames of prejudice: The influence of specific incidental emotions on implicit prejudice. *Emotion, 9*, 585-591.

Derryberry, D., & Reed, M. A. (2002). Anxiety-related attentional biases and their regulation by attentional control. *Journal of Abnormal Psychology, 111*, 225-236.

Derryberry, D., Reed, M. A., & Pilkenton–Taylor, C. (2003). Temperament and coping: Advantages of an individual differences perspective. *Development and Psychopathology, 15*, 1049-1066.

`

Detert, J. R., Trevino, L. K., & Sweitzer, V. L. (2008). Moral disengagement in ethical decision making: A study of antecedents and outcomes. *Journal of Applied Psychology, 93*, 374-391.

Dollinger, S. J. (2007). Creativity and conservatism. *Personality and Individual Differences, 43*, 1025–1035.

Doosje, B., Branscombe, N., Spears, R., & Manstead, A. (1998). Guilty by association: When one's group has a negative history. *Journal of Personality and Social Psychology, 75*, 872-886.

Dovidio, J., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology, 33*, 510-540.

Druschel, B., & Sherman, M. (1999). Disgust sensitivity as a function of the big five and gender. *Personality and Individual Differences, 26*, 739-748.

Duckitt, J. (2001). A dual-process cognitive-motivational theory of ideology and prejudice. In M. P. Zanna (Ed.), *Advances in experimental social psychology.* (Vol. 33, pp. 41-113.) New York: Academic Press.

Duckitt, J., & Sibley, C. G. (2007). Right-wing authoritarianism, social dominance orientation and the dimensions of generalized prejudice. *European Journal of Personality, 21*, 113-130.

`

Dunlap, W., & Kemery, E. (1987). Failure to detect moderating effects - is multicollinearity the problem. *Psychological Bulletin, 102*, 418-420.

Ekehammar, B., & Sidanius, J. (1982). Sex-differences in socio-political attitudes - a replication and extension. *British Journal of Social Psychology, 21*, 249-257.

Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion, 6*, 169-200.

Ekman, P. (1994). All Emotions Are Basic. In P. Ekman & R. Davidson (Eds.), *The nature of emotion: Fundamental questions* (pp. 15-19). New York: Oxford University Press.

Erikson, R.S. & Tedin, K.L. (2003). *American Public Opinion* (6th ed.). New York: Longman.

Evans, G., Heath, A., & Lalljee, M. (1996). Measuring left-right and libertarian-authoritarian values in the British electorate. *The British Journal of Sociology, 47*, 93-112.

Fergus, T. A., Valentiner, D. P., McGrath, P. B., & Jencius, S. (2010). Shame- and guilt-proneness: Relationships with anxiety disorder symptoms in a clinical sample. *Journal of Anxiety Disorders, 24*, 811-815.

Fiske, S., Cuddy, A., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*, 878-902.

`

Fowler, J. H., & Kam, C. D. (2007). Beyond the self: Social identity, altruism, and political participation. *Journal of Politics, 69,* 813-827.

Freud, S. (1961). A short account of psychoanalysis. In J. Strachey (Ed. & Trans.), *The standard edition of the works of Sigmund Freud,* (Vol. 19, pp. 191–209). London: Hogarth Press. (Original work published in 1923).

Frijda, N.H. (1986). *The emotions.* Cambridge: Cambridge University Press.

Frijda, N. H. (1988). The laws of emotion. *American Psychologist, 43,* 349-358.

Furnham, A. (1985). Adolescents sociopolitical attitudes - a study of sex and national differences. *Political Psychology, 6,* 621-636.

Gaertner, S. L., & Dovidio, J. F. (1986). The aversive form of racism. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism* (pp. 61-89). Orlando: Academic Press.

Giner-Sorolla, R., & Espinosa, P. (2011). Social cuing of guilt by anger and of shame by disgust. *Psychological Science, 22,* 49-53.

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain personality measures. *Journal of Research in Personality, 40,* 84-96.

`

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology, 96*, 1029-1046.

Greco, V., & Roger, D. (2001). Coping with uncertainty: The construction and validation of a new measure. *Personality and Individual Differences, 31*. 519-534.

Greenwald, A., & Banaji, M. (1995). Implicit social cognition - attitudes, self-esteem, and stereotypes. *Psychological Review, 102*, 4-27.

Gross, J. J. (1998a). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*, 271-299.

Gross, J. J. (1998b). Antecedent-and response-focused emotion regulation: divergent consequences for experience, expression, and physiology. *Journal of personality and social psychology*, *74*(1), 224.

Gross, J.J. (2001). Emotion regulation in adulthood: Timing is everything. *Current Directions in Psychological Science, 10*, 214-219.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*, 348-362.

`

Gross, J. J., & Levenson, R. W. (1993). Emotional suppression: Physiology, self-report, and expressive behaviour. *Journal of Personality and Social Psychology, 64*, 970-986.

Gross, J. J., Richards, J. M., & John, O. P. (2006). Emotion regulation in everyday life. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 13-35). Washington, DC: American Psychological Association.

Gyurak, A., & Ayduk, O. (2007). Defensive physiological reactions to rejection: The effect of self-esteem and attentional control on startle responses. *Psychological Science, 18*, 886-892.

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review, 108*, 814-834.

Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852-870). Oxford: Oxford University Press.

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research, 20,* 98-116.

Haidt, J., Graham, J., & Joseph, C. (2009). Above and below left-right: Ideological narratives and moral foundations. *Psychological Inquiry, 20,* 110-119.

`

Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus, 133,* 55-66.

Haidt, J., Koller, S. H., & Dias, M. G. (1993). Affect, culture, and morality, or is it wrong to eat your dog. *Journal of Personality and Social Psychology, 65,* 613-628.

Haidt, J., Mccauley, C., & Rozin, P. (1994). Individual-differences in sensitivity to disgust - a scale sampling 7 domains of disgust elicitors. *Personality and Individual Differences, 16,* 701-713.

Haidt, J., Rozin, P., Mccauley, C., & Imada, S. (1997). Body, psyche, and culture: The relationship between disgust and morality. *Psychology & Developing Societies, 9,*107-131.

Hall, D. L., Matz, D. C., & Wood, W. (2010). Why don't we practice what we preach? A meta-analytic review of religious racism. *Personality and Social Psychology Review, 14,* 126-139.

Harle, K. M., & Sanfey, A. G. (2007). Incidental sadness biases social economic decisions in the ultimatum game. *Emotion, 7,* 876-881.

Harris, L. T., & Fiske, S. T. (2006). Dehumanizing the lowest of the low - neuroimaging responses to extreme out-groups. *Psychological Science, 17,* 847-853.

Henningham, J. (1996). A 12-item scale of social conservatism. *Personality and Individual Differences, 20,* 517-519.

`

Herzog, H. A., & Golden, L. L. (2009). Moral emotions and social activism: The case of animal rights. *Journal of Social Issues, 65*, 485-498.

Hirsh, J. B., DeYoung, C. G., Xu, X., & Peterson, J. B. (2010). Compassionate liberals and polite conservatives: Associations of agreeableness with political ideology and moral values. *Personality and Social Psychology Bulletin, 36*, 655-664.

Hitler, A. (1981). *Mein Kampf* (J.V. Murphy, Trans.). London: Hurst and Blackett. (Original work published 1939)

Hodson, G., & Costello, K. (2007). Interpersonal disgust, ideological orientations, and dehumanization as predictors of intergroup attitudes. *Psychological Science, 18*, 691-698.

Horberg, E. J., Oveis, C., Keltner, D., & Cohen, A. B. (2009). Disgust and the moralization of purity. *Journal of Personality and Social Psychology, 97*, 963-976.

Hughes, E. K., Gullone, E., & Watson, S. D. (2011). Emotional functioning in children and adolescents with elevated depressive symptoms. *Journal of Psychopathology and Behavioural Assessment, 33*, 335-345.

Hume, D. (1966). *An enquiry concerning the principles of morals.* La Salle, III: Open Court. (Original work published 1777)

Hunter, J. D. (1991). *Culture wars: The struggle to define America*. New York: Basic Books.

`

Hutcherson, C. A., & Gross, J. J. (2011). The moral emotions: A social-functionalist account of anger, disgust, and contempt. *Journal of Personality and Social Psychology, 100,* 719-737.

Inbar, Y., Pizarro, D. A., & Bloom, P. (2009). Conservatives are more easily disgusted than liberals. *Cognition and Emotion, 23,* 714-725.

Inbar, Y., Pizarro, D. A., & Bloom, P. (2012). Disgusting smells cause decreased liking of gay men. *Emotion, 12,* 23-27.

Inbar, Y., Pizarro, D. A., Knobe, J., & Bloom, P. (2009). Disgust sensitivity predicts intuitive disapproval of gays. *Emotion, 9,* 435-439.

Inbar, Y., Pizarro, D., Iyer, R., & Haidt, J. (2012). Disgust sensitivity, political conservatism, and voting. *Social Psychological and Personality Science, 3,* 537-544.

Iyer, R., Koleva, S., Graham, J., Ditto, P., & Haidt, J. (2012). Understanding libertarian morality: The psychological dispositions of self-identified libertarians. *PloS One, 7,* 1-23.

Jamison, W. V., & Lunch, W. M. (1992). Rights of animals, perceptions of science, and political activism: Profile of American animal rights activists. *Science, Technology and Human Values, 17,* 438-458.

Joe, V., Jones, R., & Ryder, S. (1977). Conservatism, openness to experience and sample bias. *Journal of Personality Assessment, 41,* 527-531.

`

John, O., & Gross, J. (2004). Healthy and unhealthy emotion regulation: Personality processes, individual differences, and life span development. *Journal of Personality, 72*, 1301-1333.

Jost, J. T. (2006). The end of the end of ideology. *American Psychologist, 61*, 651-670.

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*, 339-375.

Kant, I. (1998). *Groundwork of the metaphysics of morals* (M. J. Gregor, trans). Cambridge, U.K: Cambridge University Press. (Original work published 1785)

Katkin, E. S. (1985). Blood, sweat, and tears: Individual differences in autonomic self-perception. *Psychophysiology, 22*, 125-137.

Keltner, D. & Lerner, E.J. (2010). Emotion. In S.T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 317 - 352). New Jersey: John Wiley & Sons.

Kim, S., Thibodeau, R., & Jorgensen, R. S. (2011). Shame, guilt, and depressive symptoms: A meta-analytic review. *Psychological Bulletin, 137*, 68-96.

Kirk, R. (2001). *The conservative mind: From Burke to Eliot*. Washington: Regnery. (Original work published in 1953)

`

Kohlberg, L. (1971). From is to ought: How to commit the naturalistic fallacy and get away with it in the study of moral development. In T. Mischel (Ed.) *Cognitive development and epistemology* (pp. 151 – 235). New York: Academic Press.

Laird, J. D., Alibozak, T., Davainis, D., Deignan, K., Fontanella, K., et al. (1994). Individual differences in the effects of spontaneous mimicry on emotional contagion. *Motivation and Emotion, 18*, 231-247

Laird, J. D. (1984). The real role of facial response in the experience of emotion: A reply to Tourangeau and Ellsworth, and others. *Journal of Personality and Social Psychology, 47*, 909-917.

Lazarus, R. (1982). Thoughts on the relations between emotion and cognition. *American Psychologist, 37*, 1019-1024.

Lazarus, R. (1984). On the primacy of cognition. *American Psychologist, 39*, 124-129.

Lazarus, R. S. (1991a). *Emotion and adaptation*. New York: Oxford University Press.

Lazarus, R. S. (1991b). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist, 46*, 819-834.

Lazarus, R. S., & Alfert, E. (1964). Short-circuiting of threat by experimentally altering cognitive appraisal. *The Journal of Abnormal and Social Psychology, 69*, 195-205.

`

Leach, C. W., Iyer, A., & Pedersen, A. (2006). Anger and guilt about ingroup advantage explain the willingness for political action. *Personality and Social Psychology Bulletin, 32*, 1232-1245.

Lee, K. & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioural Research, 39,* 329-358.

Leeper, R. W. (1948). A motivational theory of emotion to replace "emotion as disorganized response". *Psychological Review, 55,* 5-21.

Leone, L., & Chirumbolo, A. (2008). Conservatism as motivated avoidance of affect: Need for affect scales predict conservatism measures. *Journal of Research in Personality, 42,* 755-762.

Lerner, J., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion, 14,* 473-493.

Lerner, J., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology, 81,* 146-159.

Leskela, J., Dieperink, M., & Thuras, P. (2002). Shame and posttraumatic stress disorder. *Journal of Traumatic Stress, 15,* 223-226.

Lewis, H. B. (1971). *Shame and guilt in neurosis*. New York: International Universities Press.

`

Lindeman, M. (1993). Strength in positive and negative political-attitudes. *European Journal of Social Psychology, 23,* 465-469.

Lindsay-Hartz, J. (1984). Contrasting experiences of shame and guilt. *American Behavioural Scientist, 27,* 689-704.

Linehan, M.M., Bohus, M., & Lynch, T.R. (2007). Dialectical behaviour therapy for pervasive emotion dysregulation: Theoretical and practical underpinnings. In J. Gross (Ed.), *Handbook of emotion regulation* (pp. 581-605). New York: Guilford Press.

Mallett, R. K., Huntsinger, J. R., Sinclair, S., & Swim, J. K. (2008). Seeing through their eyes: When majority group members take collective action on behalf of an outgroup. *Group Processes and Intergroup Relations, 11,* 451-470.

Maltby, J. (1997). The concurrent validity of a short measure of social conservatism among English students. *Personality and Individual Differences, 23,* 901-903.

Marcus, G. F. (2004). *The Birth of the mind: How a tiny number of genes creates the complexities of human thought*. New York: Basic Books.

McCanne, T. R., & Anderson, J. A. (1987). Emotional responding following experimental manipulation of facial electromyographic activity. *Journal of Personality and Social Psychology. 52*, 759-768.

`

Mill, J. S. (1998). *Utilitarianism.* Oxford: Oxford University Press. (Original work published in 1863)

Miller, L. C., Murphy, R., & Buss, A. H. (1981). Consciousness of body: Private and public. *Journal of Personality and Social Psychology, 41,* 397-406.

Montada, L., Schmitt, M., and Dalbert, C. (1986). Thinking about justice and dealing with one's own privileges: A study of existential guilt. In H.W. Bierhoff, R. L. Cohen, & J. Greenberg (Eds.), *Justice in Social Relations* (pp. 125–143.), New York: Plenum Press.

Moretti, L., & Di Pellegrino, G. (2010). Disgust selectively modulates reciprocal fairness in economic interactions. *Emotion, 10,* 169-180.

Moskowitz, G. B. (1993). Individual differences in social categorization: The influence of personal need for structure on spontaneous trait inferences. *Journal of Personality and Social Psychology, 65,* 132-142.

Murray, C., Waller, G., & Legg, C. (2000). Family dysfunction and bulimic psychopathology: The mediating role of shame. *International Journal of Eating Disorders, 28,* 84-89.

Neuberg, S. L., & Newsom, J. T. (1993). Personal need for structure: Individual differences in the desire for simpler structure. *Journal of Personality and Social Psychology, 65,* 113-131.

`

Oatley, K., & Johnson-laird, P. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion, 1,* 29-50.

Olatunji, B. O. (2008). Disgust, scrupulosity and conservative attitudes about sex: Evidence for a mediational model of homophobia. *Journal of Research in Personality, 42,* 1364-1369.

Olatunji, B. O., Adams, T., Ciesielski, B., David, B., Sarawgi, S., & Broman-Fulks, J. (2012). The three domains of disgust scale: Factor structure, psychometric properties, and conceptual limitations. *Assessment, 19*, 205-225.

Olatunji, B. O., Williams, N. L., Tolin, D. F., Abramowitz, J. S., Sawchuk, C. N., Lohr, J. M., & Elwood, L. S. (2007). The disgust scale: Item analysis, factor structure, and suggestions for refinement. *Psychological Assessment, 19,* 281-297.

Park, J., Faulkner, J., & Schaller, M. (2003). Evolved disease-avoidance processes and contemporary anti-social behaviour: Prejudicial attitudes and avoidance of people with physical disabilities. *Journal of Nonverbal Behaviour, 27,* 65-87.

Parkinson, B. (1996). Emotions are social. *British Journal of Psychology, 87,* 663-683.

Peterson, B. E., & Lane, M. D. (2001). Implications of authoritarianism for young adulthood: Longitudinal analysis of college experiences and future goals. *Personality and Social Psychology Bulletin, 27,* 678-690.

`

Pettigrew, T. F. (1959). Regional differences in anti-negro prejudice. *The Journal of Abnormal and Social Psychology, 59,* 28-36.

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology, 67,* 741-763.

Pratto, F., Stallworth, L. M., & Sidanius, J. (1997). The gender gap: Differences in political attitudes and social dominance orientation. *British Journal of Social Psychology, 36,* 49-68.

Raftery, J. N., & Bizer, G. Y. (2009). Negative feedback and performance: The moderating effect of emotion regulation. *Personality and Individual Differences, 47,* 481-486.

Reed, A., & Aquino, K. (2003). Moral identity and the expanding circle of moral regard toward out-groups. *Journal of Personality and Social Psychology, 84,* 1270-1286.

Reed, A., Aquino, K., & Levy, E. (2007). Moral identity and judgments of charitable behaviors. *Journal of Marketing, 71,* 178-193.

Regan, D., Williams, M., & Sparling, S. (1972). Voluntary expiation of guilt - field experiment. *Journal of Personality and Social Psychology, 24,* 42-45.

Regan, J. (1971). Guilt, perceived injustice, and altruistic behaviour. *Journal of Personality and Social Psychology, 18,* 124 – 132.

`

Reynolds, K. J., Turner, J. C., Alexander Haslam, S., Ryan, M. K., Bizumic, B., & Subasic, E. (2007). Does personality explain in-group identification and discrimination? evidence from the minimal group paradigm. *British Journal of Social Psychology, 46,* 517-539.

Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology, 79,* 410–424.

Richerson, P. J., & Boyd, R. (2005). *Not by genes alone: How culture transformed human evolution*. Chicago: University of Chicago Press.

Rozin, P., Haidt, J., & Fincher, K. (2009). From oral to moral. *Science, 323,* 1179-1180.

Rozin, P., Haidt, J., & McCauley, C. R. (2008). Disgust. In M. Lewis, J. M. Haviland-Jones & L. F. Barrett (Eds.), *Handbook of Emotions,* 3rd ed. (pp. 757-776). New York: Guilford Press.

Rozin, P., Haidt, J., McCauley, C., Dunlop, L., & Ashmore, M. (1999). Individual differences in disgust sensitivity: Comparisons and evaluations of paper-and-pencil versus behavioural measures. *Journal of Research in Personality, 33,* 330-351.

Rozin, P., Lowery, L., Imada, S., & Haidt, J. (1999). The CAD triad hypothesis: A mapping between three moral emotions (contempt, anger, disgust) and three moral codes (community, autonomy, divinity). *Journal of Personality and Social Psychology, 76,* 574-586.

`

Rozin, P., Markwith, M., & Stoess, C. (1997). Moralization and becoming a vegetarian: The transformation of preferences into values and the recruitment of disgust. *Psychological Science, 8,* 67-73.

Rubinstein, W. D. (1977). Wealth, elites and the class structure of modern Britain. *Past and Present, 76*, 99-126.

Sanfey, A., Rilling, J., Aronson, J., Nystrom, L., & Cohen, J. (2003). The neural basis of economic decision-making in the ultimatum game. *Science, 300*, 1755-1758.

Schaller, M., Boyd, C., Yohannes, J., & O'Brien, M. (1995). The prejudiced personality revisited: Personal need for structure and formation of erroneous group stereotypes. *Journal of Personality and Social Psychology, 68*, 544-555.

Schmitt, M., Behner, R., Montada, L., Müller, L., & Müller-Fohrbrodt, G. (2000). Gender, ethnicity, and education as privileges: Exploring the generalizability of the existential guilt reaction. *Social Justice Research, 13*, 313-337.

Schnall, S., Abrahamson, A., & Laird, J. D. (2002). Premenstrual syndrome and misattribution: A self-perception, individual differences perspective. *Basic and applied social psychology, 24*, 215-228.

Schnall, S., Haidt, J., Clore, G. L., & Jordan, A. H. (2008). Disgust as embodied moral judgment. *Personality and Social Psychology Bulletin, 34*, 1096-1109.

`

Schwarz, N., & Clore, G. (1983). Mood, misattribution, and judgments of well-being - informative and directive functions of affective states. *Journal of Personality and Social Psychology, 45*, 513-523.

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge - further exploration of a prototype approach. *Journal of Personality and Social Psychology, 52*, 1061-1086.

Shweder, R. A., Mahapatra, M., & Miller, J. G. (1987). Culture and moral development. In J. Kagan & S. Lamb (Eds.), *The emergence of morality in young children* (pp. 1-82). Chicago: University of Chicago Press.

Shweder, R. A., Much, N. C, Mahapatra, M., & Park, L. (1997). The "Big Three" of morality (autonomy, community, divinity) and the "Big Three" explanations of suffering. In A. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 119-169). New York: Routledge.

Sibley, C. G., & Duckitt, J. (2008). Personality and prejudice: A meta-analysis and theoretical review. *Personality and Social Psychology Review, 12*, 248-279.

Sibley, C. G., Wilson, M. S., & Duckitt, J. (2007). Antecedents of men's hostile and benevolent sexism: The dual roles of social dominance orientation and right-wing authoritarianism. *Personality and Social Psychology Bulletin, 33*, 160-172.

`

Sidanius, J., Devereux, E., & Pratto, F. (1992). A comparison of symbolic racism theory and social-dominance theory as explanations for racial policy attitudes. *Journal of Social Psychology, 132*, 337-395.

Sidanius, J., & Ekehammar, B. (1980). Sex-related differences in sociopolitical ideology. *Scandinavian Journal of Psychology, 21*, 17-26.

Sidanius, J., & Pratto, F. (1993). Racism and support of free-market capitalism - a cross-cultural-analysis. *Political Psychology, 14*, 381-401.

Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression.* Cambridge, UK: Cambridge University Press.

Smith, K. B., Oxley, D., Hibbing, M. V., Alford, J. R., & Hibbing, J. R. (2011). Disgust sensitivity and the neurophysiology of Left-Right political orientations. *Plos One, 6*, 1-9.

Smith, M. R., & Gordon, R. A. (1998). Personal need for structure and attitudes toward homosexuality. *The Journal of Social Psychology, 138*, 83-87.

Sobel, M. E., (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological Methodology* (pp. 290-312). Washington, DC: American Sociological Association.

`

Speisman, J. C., Lazarus, R. S., Mordkoff, A., & Davison, L. (1964). Experimental reduction of stress based on ego-defense theory. *The Journal of Abnormal and Social Psychology, 68*, 367-380.

Steele, S. (1990). White guilt. *American Scholar, 59*, 497-506.

Stefurak, T., Taylor, C., & Mehta, S. (2010). Gender-specific models of homosexual prejudice: Religiosity, authoritarianism, and gender roles. *Psychology of Religion and Spirituality, 2*, 247-261.

Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology, 54*, 768-777.

Swim, J., & Miller, D. (1999). White guilt: Its antecedents and consequences for attitudes toward affirmative action. *Personality and Social Psychology Bulletin, 25*, 500-514.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American, 223*, 96-102.

Tajfel, H., & Billic, M. (1974). Familiarity and categorization in intergroup behaviour. *Journal of Experimental Social Psychology, 10*, 159-170.

Tangney, J. P. (1990). Assessing individual-differences in proneness to shame and guilt - development of the self-conscious affect and attribution inventory. *Journal of Personality and Social Psychology, 59*, 102-111.

`

Tangney, J. P. (1991). Moral affect - the good, the bad, and the ugly. *Journal of Personality and Social Psychology, 61*, 598-607.

Tangney, J. P. (1994). The mixed legacy of the superego: Adaptive and maladaptive aspects of shame and guilt. In J. M. Masling & R. F. Bornstein (Eds.), *Empirical perspectives on object relations theory* (pp. 1-28). Washington, DC: American Psychological Association.

Tangney, J. P., & Dearing, R. L. (2002). *Shame and guilt*. New York: Guilford Press.

Tangney, J. P., Dearing, R. L., Wagner, P. E., & Gramzow, R. (2000). The Test of Self-Conscious Affect–3 (TOSCA-3). Fairfax, VA: George Mason University.

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behaviour. *Annual Review of Psychology, 58*, 345-372.

Tangney J.P., Wagner P.E., Gramzow R. (1989). *The Test of Self-Conscious Affect (TOSCA)*. Fairfax, VA: George Mason University.

Tangney, J. P., Wagner P.E., Gramzow R. (1992). Proneness to shame, proneness to guilt, and psychopathology. *Journal of Abnormal Psychology, 101*, 469-478.

Tapias, M. P., Glaser, J., Keltner, D., Vasquez, K., & Wickens, T. (2007). Emotion and prejudice: Specific emotions toward outgroups. *Group Processes and Intergroup Relations, 10*, 27-39.

`

Taylor, K. (2007). Disgust is a factor in extreme prejudice. *British Journal of Social Psychology, 46,* 597-617.

Terrizzi, J. A., Jr., Shook, N. J., & Ventis, W. L. (2010). Disgust: A predictor of social conservatism and prejudicial attitudes toward homosexuals. *Personality and Individual Differences, 49,* 587-592.

Thompson, M., Naccarato, M., Parker, K., & Moskowitz, G. (2001). The personal need for structure and personal fear of invalidity measures: Historical perspectives, current applications, and future directions. In G. B. Moskowitz (Ed.), *Cognitive social psychology: The Princeton symposium on the legacy and future of social cognition* (pp. 19-39). Mahwah, NJ: Lawrence Erlbaum.

Thompson, R.A. (1994). Emotion regulation: A theme in search of definition. In N.A. Fox (Ed.), *The development of emotion regulation: Biological and behavioural aspects. Monographs of the Society for Research in Child Development, 59,* (Serial No. 240), 25 - 52.

Thornhill, R., Fincher, C. L., & Aran, D. (2009). Parasites, democratization, and the liberalization of values across contemporary countries. *Biological Reviews, 84*, 113-131.

Tomkins, S. S. (1995). Ideology and affect. In E. V. Demos (Ed.), *Exploring affect: The selected writings of Silvan S. Tomkins* (pp. 109–167). New York: University of Cambridge Press.

`

Turiel, E. (1983). *The development of social knowledge: Morality and convention*. Cambridge: Cambridge University Press.

Tybur, J. M., Lieberman, D., & Griskevicius, V. (2009). Microbes, mating, and morality: Individual differences in three functional domains of disgust. *Journal of Personality and Social Psychology, 97,* 103-122.

Tybur, J. M., Merriman, L. A., Hooper, A. E. C., McDonald, M. M., & Navarrete, C. D. (2010). Extending the behavioural immune system to political psychology: Are political conservatism and disgust sensitivity really related? *Evolutionary Psychology, 8,* 599-616.

Van Den Bos, K., Euwema, M. C., Poortvliet, P. M., & Maas, M. (2007). Uncertainty management and social issues: Uncertainty as an important determinant of reactions to socially deviating people. *Journal of Applied Social Psychology, 37,* 1726-1756.

Van den Bos, K., van Ameijde, J., & van Gorp, H. (2006). On the psychology of religion: The role of personal uncertainty in religious worldview defense. *Basic and Applied Social Psychology, 28,* 333-341.

Van Hiel, A., & Kossowska, M. (2007). Contemporary attitudes and their ideological representation in Flanders (Belgium), Poland, and the Ukraine. *International Journal of Psychology, 42,* 16-26.

`

Van Hiel, A., & Mervielde, I. (2004). Openness to experience and boundaries in the mind: Relationships with cultural and economic conservative beliefs. *Journal of Personality, 72,* 659-686.

Vanman, E., Paul, B., Ito, T., & Miller, N. (1997). The modern face of prejudice and structural features that moderate the effect of cooperation on affect. *Journal of Personality and Social Psychology, 73,* 941-959.

Vartanian, L. R. (2010). Disgust and perceived control in attitudes towards obese people. *International Journal of Obesity, 34,* 1302-1307.

Volokhov, R. N., & Demaree, H. A. (2010). Spontaneous emotion regulation to positive and negative stimuli. *Brain and Cognition, 73,* 1-6.

Wheatley, T., & Haidt, J. (2005). Hypnotic disgust makes moral judgments more severe. *Psychological Science, 16,* 780-784.

Wicker, B., Keysers, C., Plailly, J., Royet, J., Gallese, V., & Rizzolatti, G. (2003). Both of us disgusted in my insula: The common neural basis of seeing and feeling disgust. *Neuron, 40,* 655-664.

Wilson, G. D. (1973). A dynamic theory of conservatism. In G. D. Wilson (Ed.), *The psychology of conservatism* (pp. 257–265). London: Academic Press.

Wilson, G. D., & Patterso J.R. (1968). A new measure of conservatism. *British Journal of Social and Clinical Psychology, 7,* 264-269.

`

Women and Equality Unit. (2003). *Civil partnership: A Framework for the legal recognition of same-sex couples.* London: DTI Publications.

Wright, P., He, G., Shapira, N. A., Goodman, W. K., & Liu, Y. (2004) Disgust and the insula: fMRI responses to pictures of mutilation and contamination. *NeuroReport, 15,* 2347–2351.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35,* 151-175.

Zettler, I., & Hilbig, B. E. (2010). Attitudes of the selfless: Explaining political orientation with altruism. *Personality and Individual Differences, 48,* 338-342.

Zettler, I., Hilbig, B. E., & Haubrich, J. (2011). Altruism at the ballots: Predicting political attitudes and behaviour. *Journal of Research in Personality, 45,* 130-133.

APPENDICES

Appendix 2.1. Private Body Consciousness Scale

(PBC; Miller et al., 1981)

I am sensitive to internal bodily tensions.

I know immediately when my mouth or throat gets dry.

I can often feel my heart beating.

I am quick to sense the hunger contractions of my stomach.

`

I am very aware of changes in my body temperature.

Appendix 2.2. Left-Right scale (Evans et al., 1996)

Government should redistribute income from the better off to those who are less well off.

Big business benefits owners at the expense of workers.

Ordinary working people do not get their fair share of the nation's wealth.

There is one law -for the rich and one for the poor.

Management will always try to get the better of employees if it gets the chance.

Appendix 3.1. The Revised Disgust Sensitivity scale

(DS-R; Haidt at al., 1994, modified by Olatunji et al. 2007)

I might be willing to try eating monkey meat, under some circumstances (R).

It would bother me to be in a science class, and to see a human hand preserved in a jar.

It bothers me to hear someone clear a throat full of mucous.

I never let any part of my body touch the toilet seat in public restrooms.

I would go out of my way to avoid walking through a graveyard.

Seeing a cockroach in someone else's house doesn't bother me (R).

It would bother me tremendously to touch a dead body.

If I see someone vomit, it makes me sick to my stomach.

`

I probably would not go to my favorite restaurant if I found out that the cook had a cold.

It would not upset me at all to watch a person with a glass eye take the eye out of the socket (R).

It would bother me to see a rat run across my path in a park.

Even if I was hungry, I would not drink a bowl of my favorite soup if it had been stirred by a used but thoroughly washed flyswatter.

It would bother me to sleep in a nice hotel room if I knew that a man had died of a heart attack in that room the night before.

You see maggots on a piece of meat in an outdoor garbage pail.

While you are walking through a tunnel under a railroad track, you smell urine.

You take a sip of soda, and then realize that you drank from the glass that an acquaintance of yours had been drinking from.

Your friend's pet cat dies, and you have to pick up the dead body with your bare hands.

You see someone put ketchup on vanilla ice cream, and eat it.

You see a man with his intestines exposed after an accident.

You discover that a friend of yours changes underwear only once a week.

A friend offers you a piece of chocolate shaped like dog-doo.

You accidentally touch the ashes of a person who has been cremated.

You are about to drink a glass of milk when you smell that it is spoiled.

As part of a sex education class, you are required to inflate a new unlubricated condom, using your mouth.

You are walking barefoot on concrete, and you step on an earthworm.

`

Appendix 3.2. The Emotion Regulation Questionnaire

(ERQ; Gross & John, 2003).

When I want to feel more positive emotion (such as joy or amusement), I change *what I'm thinking about.*

I keep my emotions to myself.

When I want to feel less negative emotion (such as sadness or anger), I change *what I'm thinking about*.

When I am feeling positive emotions, I am careful not to express them.

When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.

I control my emotions by not expressing them.

When I want to feel more positive emotion, I change the way I'm thinking about the situation.

I control my emotions by changing the way I think about the situation I'm in.

When I am feeling negative emotions, I make sure not to express them.

When I want to feel less negative emotion, I change the way I'm thinking about the situation.

Appendix 4.1. Openness to Experience measure

(International Personality Item Pool; Goldberg et al., 2006)

I believe in the importance of art.

`

I have a vivid imagination.

I tend to vote for liberal political candidates.

I carry the conversation to a higher level.

I enjoy hearing new ideas.

I am not interested in abstract ideas (R).

I do not like art (R).

I avoid philosophical discussions (R).

I do not enjoy going to art museums (R).

I tend to vote for conservative political candidates (R).

Appendix 4.2. Conscientiousness measure

(International Personality Item Pool; Goldberg et al., 2006)

I am always prepared.

I pay attention to details.

I get chores done right away.

I carry out my plans.

I make plans and stick to them.

I waste my time (R).

I find it difficult to get down to work (R).

I do just enough work to get by (R).

I don't see things through (R).

I shirk my duties (R).

`

Appendix 4.3. Social Conservatism scale

(C-scale; Henningham, 1996)

Death penalty.

Multiculturalism (R).

Stiffer jail terms

Voluntary euthanasia (R).

Bible truth

Gay rights (R).

Premarital virginity

Immigration of foreigners (R).

Church authority

Legalized abortion (R).

Condom vending machines (R).

Legalized prostitution (R).

Appendix 5.1. The Three Domains Disgust Scale

(TDDS; Tybur et al.,2009)

Standing close to a person who has body odor (pathogen).

Shaking hands with a stranger who has sweaty palms (pathogen).

Stepping on dog poop (pathogen).

Accidentally touching a person's bloody cut (pathogen).

Seeing some mold on old leftovers in your refrigerator (pathogen).

Sitting next to someone who has red sores on their arm (pathogen).

`

Seeing a cockroach run across the floor (pathogen).

Bringing someone you just met back to your room to have sex (sexual).

Watching a pornographic video (sexual).

A stranger of the opposite sex intentionally rubbing your thigh in an elevator (sexual).

Having anal sex with someone of the opposite sex (sexual).

Hearing two strangers having sex (sexual).

Performing oral sex (sexual).

Finding out that someone you don't like has sexual fantasies about you (sexual).

Forging someone's signature on a legal document (moral).

Intentionally lying during a business transaction (moral).

Stealing from a neighbor (moral).

A student cheating to get good grades (moral).

Shoplifting a candy bar from a convenience store (moral).

Deceiving a friend (moral).

Cutting to the front of a line to purchase the last few tickets to a show (moral).

Appendix 5.2. The Big Five Personality Traits, mini-IPIP

(Goldberg et al., 2006; E = extraversion, A = agreeableness; C = conscientiousness; N = neuroticism; I = intellect/imagination)

I am the life of the party. (E)

I sympathize with others' feelings. (A)

I get chores done right away. (C)

`

I have frequent mood swings. (N).

I have a vivid imagination. (I)

I don't talk a lot. (E)

I am not interested in other people's problems. (A)

I often forget to put things back in their proper place. (C)

I am relaxed most of the time. (N)

I am not interested in abstract ideas. (I)

I talk to a lot of different people at parties. (E)

I feel others' emotions. (A)

I like order (C)

I get upset easily (N)

I have difficulty understanding abstract ideas (I)

I keep in the background (E)

I am not really interested in others (A)

I make a mess of things (C)

I seldom feel blue (N)

I do not have a good imagination (I)

Appendix 5.3. Altruism: HEXACO-PI-R dimension

(Ashton & Lee, 2008; Lee & Ashton, 2004)

I am a soft hearted person.

I would feel very badly if I were to hurt someone.

I have sympathy for people who are less fortunate than I am.

`

I try to give generously to those in need.

I try to respect other people's feelings.

It wouldn't bother me to harm someone I didn't like. (R)

I like the idea that only the strong survive. (R)

People see me as a hard-hearted person. (R)

Appendix 5.4. The Libertarian – Authoritarian scale

(Evans et al., 1996)

Young people today don't have enough respect for traditional British values.

For some crimes, the death penalty is the most appropriate sentence.

Schools should teach children to obey authority.

The laws should always be obeyed even if a particular law is wrong.

Censorship of films and magazines is necessary to uphold moral standards.

People who break the law should be given stiffer sentences.

The welfares state makes people nowadays less willing to look after themselves.

Organizing public meetings to protest against the government should be allowed.(R)

Publishing leaflets to protest against the government should be allowed. (R)

Organizing protest marches and demonstrations should be allowed. (R)

Appendix 6.1. Right-wing Authoritarianism

(RWA; Altemeyer, 1996)

`

Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.

It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubts in people's minds.

Gays and lesbians are just as healthy and moral as anybody else.

Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly.

The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.

There is absolutely nothing wrong with nudist camps.

Our country needs free thinkers who have the courage to defy traditional ways, even if this upsets many people.

Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.

The “old-fashioned ways” and the “old-fashioned values” still show the best way to live.

You have to admire those who challenged the law and the majority’s view by protesting for women’s abortion rights, for animal rights, or to abolish school prayer.

What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.

`

Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the "normal way things are supposed to be done."

God's laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.

There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.

A "woman's place" should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past.

Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the "rotten apples" who are ruining everything.

There is no "ONE right way" to live life; everybody has to create their own way. Homosexuals and feminists should be praised for being brave enough to defy "traditional family values".

This country would work a lot better if certain groups of troublemakers would just shut up and accept their group's traditional place in society.

Appendix 6.2. Social dominance orientation

(SDO; Pratto et al., 1994)

Some groups of people are simply inferior to other groups.

In getting what you want, it is sometimes necessary to use force against other groups.

It's OK if some groups have more of a chance in life than others.

`

To get ahead in life, it is sometimes necessary to step on other groups.

If certain groups stayed in their place, we would have fewer problems.

It's probably a good thing that certain groups are at the top and other groups are at the bottom.

Inferior groups should stay in their place.

Sometimes other groups must be kept in their place.

It would be good if groups could be equal.

Group equality should be our ideal.

All groups should be given an equal chance in life.

We should do what we can to equalize conditions for different groups.

Increased social equality is beneficial to society.

We would have fewer problems if we treated people more equally.

We should strive to make incomes as equal as possible.

No group should dominate in society.

Appendix 6.3. The Self-Importance of Moral Identity scale

(SIMI; Aquino & Reed, 2002)

It would make me feel good to be a person who has these characteristics.

Being someone who has these characteristics is an important part of who I am.

I often wear clothes that identify me as having these characteristics.

I would be ashamed to be a person who had these characteristics. (R)

I strongly desire to have these characteristics.

`

The types of things I do in my spare time (e.g., hobbies) clearly identify me as having these characteristics.

Having these characteristics is not really important to me. (R)

The fact that I have these characteristics is communicated to others by my membership in certain organizations.

I am actively involved in activities that communicate to others that I have these characteristics.

The kinds of books and magazines that I read identify me as having these characteristics.

Appendix 6.4. Prejudice Towards the Gs scale

I think the Gs are a peaceful species. (R)

I do not think that human's collaboration with the Gs will be beneficial for humans.

I think humans and the Gs will get along just fine. (R)

I do not like the Gs much.

It would be appropriate for the Gs to work more than humans on the mining station.

I think the Gs are an intelligent species. (R)

Appendix 7.1. Test of Self-Conscious Affect

(TOSCA-3; Tangney et al., 1989)

`

You make plans to meet a friend for lunch. At 5 o'clock, you realize you stood your friend up.

a. You would think: "I'm inconsiderate".
b. You will think, "Well, my friend will understand."
c. You' d think you should make up to your friend as soon as possible.
d. You would think: "My boss distracted me just before lunch."

You break something at work and then hide it.

a. You would think: This is making me anxious. I need to either fix it or get someone else to.
b. You would think about quitting.
c. You would think: "A lot of things aren't made very well these days."
d. You would think: "I was only an accident."

You are with your friends one evening, and you're feeling especially witty and attractive. Your best friend's spouse seems to particularly enjoy your company.

a. You would think: "I should have been aware of what my best friend was feeling."
b. You would feel happy with your appearance and personality.
c. You would feel pleased to have made such a good impression.
d. You would think your best friend should pay attention to his/her spouse.
e. You would probably avoid eye-contact for a long time.

At work, you wait until the last minute to plan a project, and it turns out badly.

a. You would feel incompetent.

`

b. You would think: “There are never enough hours in a day.”

c. You would feel: “I deserve to be reprimanded for mismanaging the project.”

d. You would think: “What’s done is done.”

You make a mistake at work and you find out a co-worker is blamed for the error.

a. You would think the company did not like the co-worker.

b. You would think “Life is not fair”.

c. You would keep quiet and avoid the co-worker.

d. You would feel unhappy and eager to correct the situation.

For several days you put off making a difficult phone call. At the last minute you make the call and are able to manipulate the conversation so that all goes well.

a. You would think:”I guess I’m more persuasive than I thought.”

b. You would regret that you put it off.

c. You would feel like a coward.

d. You would think: “I did a good job.”

e. You would think you shouldn’t have to make calls you feel pressured into.

While playing around you throw a ball and it hits your friend in the face.

a. You would feel inadequate that you can’t even throw a ball.

b. You would think maybe your friend needs more practice at catching.

c. You would think it was just an accident.

d. You would apologize and make sure your friend feels better.

`

You have recently moved away from your family and everyone has been very helpful. A few times you needed to borrow money, but you paid it back as soon as you could.

a. You would feel immature.

b. You would think: “I sure ran into some bad luck.”

c. You would return the favour as quickly as you could.

d. You would think: “I am a trustworthy person.”

e. You would be proud that you repaid your debts.

You are driving down the road, and you hit a small animal.

a. You would think the animal shouldn’t have been on the road.

b. You would think: “I’m terrible.”

c. You would feel: “Well, it was an accident.”

d. You would feel bad you hadn’t been more alert driving down the road.

You walk out of an exam thinking you did extremely well. Then you find out you did poorly.

a. You would think: “Well, it’s just a test.”

b. You would think: “The instructor doesn’t like me.”

c. You would think: “I should have studied harder.”

d. You would feel stupid.

You and a group of co-workers worked very hard on a project. Your boss singles you out for a bonus because the project was such a success.

a. You would feel the boss is rather short-sighted.

`

b. You would feel alone and apart from your colleagues.

c. You would feel your hard work had been paid off.

d. You would feel competent and proud of yourself.

e. You would feel you should not accept it.

While out with a group of friends, you make fun of a friend who's not there.

a. You would think: "It was all in fun; it doesn't matter."

b. You would feel small . . . like a rat.

c. You would think that perhaps that friend should have been there to defend him/herself.

d. You would apologize and that about that person's good points.

You make a big mistake on an important project at work. People were depending on you, and your boss criticizes you.

a. You would think your boss should have been more clear about what was expected of you.

b. You would feel like you wanted to hide.

c. You would: "I should have recognized the problem and done a better job."

d. You would think: "Well, nobody's perfect."

You volunteer to help the local Special Olympics for handicapped children. It turns out to be frustrating and time consuming work. You think seriously about quitting, but then you see how happy the kids are.

a. You would feel selfish, and you would think you are basically lazy.

`

b. You would feel you were forced into doing something you did not want to do.
c. You would think: “I should be more concerned about people who are less fortunate.”
d. You would feel great that you had helped others.
e. You would feel satisfied with yourself.

You are taking care of your friend’s dog while your friend is on vacation, and the dog runs away.

a. You would think: “I am irresponsible and incompetent.”
b. You would think your friend must not take very good care of the dog, or the dog wouldn’t have run away.
c. You would vow to be more careful next time.
d. You would think your friend could just get a new dog.

You attend your co-worker’s house warming party and you spill red wine on a new cream-colored carpet, but you think no one notices.

a. You think your co-worker should have expected some accidents at such a big party.
b. You would stay late to help clean up the stain after the party.
c. You would wish you were anywhere but at that party.
d. You would wonder why your co-worker chose to serve red wine with the new light carpet.

`