Chapter 10
Disgust, Prejudice, and Stigma

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Prejudice is a significant social issue, perpetrated and experienced by many people around the world. In its most benign form, prejudice is merely a heuristic used to conserve mental energy; at its worst, prejudice can lead to biased treatment of individuals or groups, unfair social and political structures, and various forms of abuse, oppression, and violence. Researchers seeking to understand the root causes of prejudice have long considered the role that emotions play in prejudicial attitudes and discriminatory behaviours. In this chapter, we specifically focus on the role that disgust plays in prejudice. We first describe some prominent theoretical frameworks for understanding the role of emotions in intergroup relations and prejudice. We then provide evidence for the connection between disgust and prejudice, followed by a discussion of some mechanisms underlying this connection. Finally, we highlight some unanswered questions and areas of future exploration.

Intergroup Emotions Elicited by Social Groups

The Stereotype Content Model developed by Fiske and colleagues (e.g., Fiske et al. 2002) proposes that social groups can be categorised on two orthogonal dimensions—competence (e.g., competent, intelligent, capable) and warmth (e.g., friendly, warm, sincere)—and that the emotional reactions elicited by a given social group will vary as a function of people's perceptions of their competence and warmth. For example, groups perceived as being high in both competence and warmth (e.g., health care professionals) might elicit admiration and pride; groups perceived as being low in competence but high in warmth (e.g., elderly people) might elicit pity

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and sympathy; groups perceived as being high in competence but low in warmth (e.g., rich people) might elicit envy and jealousy; and groups perceived as being low in both competence and warmth (e.g., welfare recipients) might elicit disgust, contempt, and anger.

Other researchers have argued that emotions in an intergroup context are dependent on the nature of the threat posed by the group. For example, anger is the typical response when valuable resources (such as jobs) are taken, disgust is the typical response when there is the potential for contamination, and fear is the typical response when physical safety is threatened (Cottrell and Neuberg 2005). Related work has further shown that emotional states can influence judgments of social groups, but only when the specific emotion is relevant to the group in question. For example, Dasgupta et al. (2009) showed that eliciting anger in participants led to heightened negative implicit evaluations of Arabs but not homosexuals, presumably because Arabs are associated with threat. In contrast, eliciting disgust led to heightened negative implicit evaluations of homosexuals but not Arabs, presumably because homosexuality is associated with violating particular moral values, values which are associated with disgust (see also Giner-Sorolla et al. 2012; Giner-Sorolla, Chap. 8, this volume). Similarly, because obese people are not generally seen as threatening to others, disgust responses are more relevant than are anger responses in prejudice towards obese people (Vartanian et al. 2013, 2016).

Finally, Rozin et al. (1999) described contempt, anger, and disgust as moral emotions that function to maintain the integrity of social order, and suggested that each of those emotions is uniquely associated with violation of a particular moral code. Contempt is elicited when individuals violate their duties or responsibilities within the community or social hierarchy; anger is elicited when individuals harm others or infringe on the freedom of others; and disgust is elicited when individuals cause impurity or degradation to the self or to others. Hutcherson and Gross (2011) further showed that anger is specifically evoked when the threat or transgression is viewed as being relevant to the self, disgust is associated with intentional immoral behaviours, and contempt seems to be related to judgments of someone being incompetent.

Overall, then, we see that social groups can elicit a variety of emotions, but which specific emotions are elicited seems to depend on the characteristics of the group in question. Disgust seems to be most relevant to groups perceived as low in competence and warmth, and is most likely to be elicited by groups seen as violating certain moral standards.

Evidence that Disgust Is Related to Prejudice Towards Outgroups

Before we begin examining the research evidence connecting disgust to prejudice, a note about terminology is useful for the non-social-psychologist reader. The social groups to which one belongs are typically referred to as “ingroups,” and all other

social groups (to which one does not belong) can be considered "outgroups." What the literature generally shows is that people have more favourable attitudes towards their ingroup (as well as towards individual members of their ingroup) than they do towards outgroups (as well as towards individual members of those outgroups). So, for example, a White American might consider other White Americans as members of their ingroup and consider African Americans (or any other racial minority) as members of outgroups. Of course, the picture is vastly more complicated because of the fact that we belong to so many different social categories (related to sex, ethnicity, nationality, occupation, religion, and many other aspects that define who we are) and thus the lines between an ingroup and outgroup are not always that clear cut. However, understanding the conceptual distinction is important because much of the research described in the rest of this chapter will refer to judgments of outgroup members.

Disgust Reactions to Social Groups

There is evidence that disgust is more strongly associated with some groups than with others. For example, we had participants rate their level of disgust towards 16 different social groups on a 9-point scale (1 = *Not at all disgusted*, 9 = *Extremely disgusted*; Vartanian 2010). The results of this survey are shown in Fig. 10.1. The highest disgust ratings were (in descending order) for drug addicts, smokers, obese people, politicians, and homeless people. These findings are consistent with the theoretical frameworks outlined above in that these social groups can all be viewed,

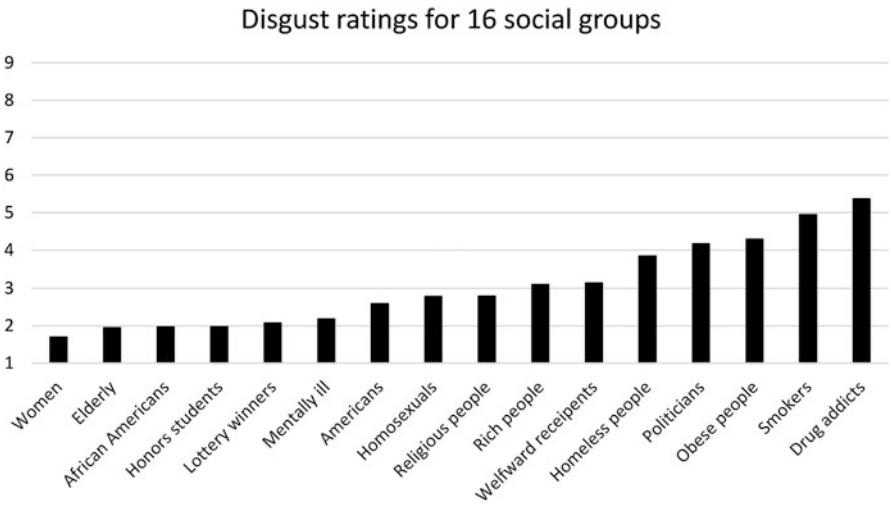

Fig. 10.1 Disgust ratings towards 16 different social groups. (Adapted from data reported in Vartanian (2010))

in some ways, as violating moral standards. In contrast, women, African Americans, the elderly, and individuals with mental illness received some of the lowest ratings of disgust. Other research has similarly shown that gay men received higher disgust ratings than did Mexican Americans and African Americans (Cottrell and Neuberg 2005). It is worth noting that disgust ratings in these studies, even among the groups rated as most disgusting, tend to be only moderately high. This means that people need not view a group as absolutely *repulsive* in order for prejudice to emerge.

Other research from our lab has shown that disgust is not just relevant to social groups at an abstract group level, but is also relevant to judgments of specific target individuals who are members of a particular social group. For example, participants reported more disgust towards a specific individual whose body weight was in the obese range than they did towards an individual whose body weight was in the normal-weight range (Vartanian et al. 2016, 2018). Because prejudice is often experienced at an individual level (i.e., specific individuals are the targets of prejudice), these findings highlight the potential relevance of disgust to interpersonal interactions.

Physiological Indicators of Disgust Towards Social Groups

The findings described in the section above are all based on self-report measures of disgust, and are thus dependent on individuals' willingness to acknowledge having these negative emotional reactions to a particular social group. Other research has attempted to capture emotional reactions to social groups using more direct assessments, specifically examining disgust at the physiological or neurobiological level. Findings from functional neuroimaging studies and brain injury research suggest the unique involvement of the insular cortex in disgust reactions. In particular, the insular cortex appears to play a role in regulating the parasympathetic nervous system and integrating sensory and visceral information in the processing of disgust (Calder et al. 2000, 2001). For example, activation of the anterior insula has been shown to occur in response to facial expressions of disgust (Phillips et al. 1997), as well as in response to photographs of disgusting scenes depicting contamination or mutilation (Wright et al. 2004).

Additionally, there is evidence to suggest that amygdala activation can be modulated by the experience of disgust. For example, fMRI was used to examine neural activity among female participants who viewed either disgusting or neutral images and found increased amygdala activation to disgusting images (Schienle et al. 2005). Furthermore, when disgusting images were presented, thereby inducing disgust, there was more pronounced activity in the right amygdala for participants who self-reported greater disgust sensitivity. Considering the amygdala is usually associated with fear responding and threat detection, this evidence might suggest that the amygdala responds to disgust, as well as fear, threats.

The medial prefrontal cortex (mPFC) has also been implicated in disgust reactions towards outgroups. For example, a number of studies have demonstrated that

compared to familiar ingroups, stigmatised outgroups differentially activate the mPFC (Harris and Fiske 2006, 2007; Krendl et al. 2006). In these studies, participants were presented with photographs of different social groups that each represented one of the quadrants outlined in the Stereotype Content Model (i.e., either low or high competence and either low or high warmth). Participants had significantly reduced activation of the mPFC in response to photographs of outgroups characterised by low competence and low warmth when compared with photographs of all other social groups (Harris and Fiske 2006, 2007). The mPFC is often considered the social cognition region and has been implicated in person perception, for example, inferring individual attitudes, personality, and intent, and has also been implicated in theory of mind, which refers to the capacity to understand others mental and emotional states (Harris et al. 2005). Thus, reduced mPFC activity for groups falling into low competence/low warmth (e.g., homeless, poor, drug addicts) might suggest they are being perceived as so different that they do not experience the same complex emotions as people within the ingroups. That is, the feeling of disgust is facilitating a dehumanisation effect whereby people in the low competence/low warmth outgroups are not being considered to have complex emotions or thought processes thereby creating a "less than" human perception which can encourage prejudicial attitudes and behaviours (Fiske 2009).

Physiological measures such as salivary response (which is associated with experiences of disgust; Proctor and Carpenter 2007) have also been shown to increase when viewing stigmatised outgroups. For example, in one study, heterosexual male participants were exposed to images of either same-sex couples or mixed-sex couples (either kissing or engaging in public displays of affection [PDA]), neutral objects, or disgusting objects (O'Handley et al. 2017). The researchers found increased salivary alpha-amylase responses when participants viewed images of male same-sex couples kissing as well as when participants viewed disgusting images, compared to when they viewed images of same-sex couples engaging in PDA, mixed-sex couples kissing or engaging in PDA, or neutral images. These findings suggest that images that depict same-sex kissing are able to elicit a physiological response that is consistent with responses to disgusting stimuli.

Finally, some studies have used facial electromyography (EMG) to capture micro facial expressions of disgust towards specific social groups. Facial EMG can assess covert muscle activity, that is low levels of muscle contraction that do not necessarily lead to overt facial movements that can be observed visually (Tassinary and Cacioppo 1992). Research has shown that facial EMG responses can predict racial prejudice (e.g., Vanman et al. 1997), and there is evidence that moral transgressions elicit the same facial motor activity that disgusting tastes or exposure to disgusting images do (Chapman et al. 2009). Specifically, the levator labii muscles seem to be implicated in disgust responses. In a series of studies we conducted examining facial EMG responses to obese targets, images of obese individuals elicited slightly more levator activity than did neutral images, but we consistently failed to find any differences in levator activity towards obese versus non-obese individuals (Vartanian et al. 2018). One possible explanation for these findings is that facial EMG is not as sensitive as neurological measures in capturing disgust towards

stigmatised outgroups. Recall that the ratings of disgust towards stigmatised outgroups are only moderately high in even the most extreme cases. It may be that the level of disgust needed to activate the levator muscles is considerably higher. Another possible explanation is that disgust responses to stigmatised groups (or at least obese individuals) are more a cognitive-conceptual response than they are a visceral reaction, such as the one might have in response to faeces or rotting food.

Disgust and Prejudice

In addition to documenting the emotional reactions to different social groups, research has also demonstrated an association between disgust responses and various forms of prejudice (including attitudes, stereotypes, and discriminatory or avoidant behaviour). In the study described earlier on disgust towards various social groups (Vartanian 2010), we found that ratings of disgust towards the 16 social groups (in aggregate) was negatively correlated with how favourable those groups were perceived (in aggregate). We have also found that ratings of disgust towards obese people in particular predicted negative attitudes towards obese people (Vartanian 2010; Vartanian et al. 2016). Research has similarly shown that disgust is associated with the stereotypical characteristics that are attributed to outgroups. For example, disgust towards obese people as a group is correlated with attributing characteristics such as "lazy," "sloppy," and "incompetent" to obese individuals (e.g., Vartanian et al. 2013, 2016).

Finally, studies have shown that disgust predicts discriminatory behaviour towards outgroups. For example, Cottrell et al. (2010) found that participants who expressed more disgust towards gays and lesbians also reported less support for gay rights. In our own work, we showed that disgust predicted a greater desire for social distance from individuals with obesity (Vartanian et al. 2016). In our study, we used two different measures of social distancing. One measure was a self-report questionnaire capturing participants' willingness or reluctance to engage with a target individual (e.g., willingness to work on the same project as the individual or rent a room in your home to the individual). The second measure was a computerised adaptation of the classic Seating Distance Task (Macrae et al. 1994). In the traditional version of this task, participants are led to a room where they believe the other participant has already selected a seat, and the measure of social distance is how far participants choose to sit from the other participant. In the computerised adaptation, participants were shown an image of a table and seven seats with the target individual's seat clearly marked, and they were asked to indicate which seat they would choose for themselves. The distance between the target's seat and the seat that the participants chose for themselves was taken as a measure of social distance. Results showed that disgust was a significant predictor of desire for social distance on both measures.

Disgust Sensitivity and Prejudice

Most research on the connection between disgust and prejudice has focused on individual differences in disgust responses given that there is likely to be substantial variation in the reaction to disgust-inducing stimuli like faeces, blood, or vomit. For example, some people might have a mild aversive reaction to blood, whereas other people might feel nauseous or faint. This variation in disgust response is referred to as *disgust sensitivity* (see Tybur, Chap. 6, this volume). A large body of correlational research has demonstrated that disgust sensitivity is associated with negative attitudes towards various groups, including immigrants, Muslims, homosexuals, and obese people (Choma et al. 2012; Hodson and Costello 2007; Lieberman et al. 2011; Olatunji et al. 2008; Tapias et al. 2007). Disgust sensitivity is also positively associated with attitudes towards one's ingroup (Crawford et al. 2014; Navarrete and Fessler 2006), suggesting that disgust not only generates avoidance of outgroups but may also heighten ingroup attraction, possibly in an attempt to rally support against a common threat (Navarrete and Fessler 2006). Disgust sensitivity has also been shown to predict negative behavioural intentions towards outgroups, such as increased support for discriminative policies and greater avoidance of intergroup contact (e.g., Aarøe et al. 2017). The heightened desire to avoid intergroup contact among those high in disgust sensitivity is important because it may prevent necessary experiences with outgroup members that could help foster acceptance and tolerance, and may thereby perpetuate the cycle of avoidance and prejudice.

Induced Disgust

In order to provide more causal evidence for a link between disgust and prejudice, a number of studies have induced feelings of disgust and then examined how this induced state influenced participants' responses to various outgroups (for more on inducing disgust see Consedine, Chap. 2, this volume). Asking participants to write about, read about, or imagine disgusting scenarios has been shown to influence prejudicial responding to outgroups. For example, Terrizzi Jr. et al. (2010) showed that asking participants to write about a scenario involving eating maggots (vs. eating lettuce in the control condition) can increase subsequent prejudicial attitudes towards homosexuals (this study is described in more detail below in the section on individual differences).

Unpleasant odours have also proven to be powerful elicitors of disgust. Inbar et al. (2012) randomly assigned participants to sit in one of two rooms, one with a noxious odour or one with no odour. Participants who were exposed to the noxious odour subsequently reported less warmth towards gay men than did those not exposed to the odour. Similarly, Cunningham et al. (2013) presented participants with a vial containing either a body odour scent, a parmesan cheese scent, or no odour. During a subsequent picture-viewing task, participants who were exposed to the body odour scent spent less time looking at images of gay couples compared to

images of heterosexual couples. Further, these participants also reported less warmth towards gay (vs. heterosexual) men. These differences were not observed for participants in the other two conditions.

Another approach that researchers have used to examine the connection between disgust and prejudice is to increase the salience of disease or the perceived risk of infection. For example, Faulkner et al. (2004) found that participants who were shown a series of images designed to increase their perceived vulnerability to disease expressed less positive attitudes towards immigrant groups that were unfamiliar to them (but not immigrant groups that were familiar to them). Similarly, Park et al. (2007) manipulated the salience of contagious disease by showing participants a slide show that depicted either infectious disease threats or non-disease-related health threats. In a subsequent Implicit Associations Test, participants in the disease-salient condition showed more pronounced implicit associations between disease-connoting concepts and obese individuals. Moreover, Kenrick et al. (2013) found that parents who were made to feel vulnerable to infection reported more negative attitudes towards their own overweight children but not their normal weight children.

Is Disgust a Unique Emotional Response in Prejudice?

Consistent with the theoretical accounts outlined earlier in this chapter, there appears to be a unique association between disgust and prejudice towards certain outgroups. For example, disgust is more strongly associated with obesity than are either anger or contempt (Vartanian et al. 2013), and disgust is more strongly associated with gay men than are either anger or fear (Cottrell and Neuberg 2005). Furthermore, our research has shown that disgust, but not anger, is related to negative attitudes towards, stereotypes of, and a desire for social distance from, obese people (Vartanian et al. 2013, 2016). Another study by Matthews and Levin (2012) showed that disgust, but not anger, was associated with a desire to avoid Muslim culture (e.g., would consider preventing a child from reading books written by people of the Muslim world). Contempt is a bit more difficult to differentiate from disgust, possibly because of some conceptual overlap between the two constructs. We have found that disgust, but not contempt, was related to prejudice towards obese people (Vartanian et al. 2013, 2016), but others have found that both contempt and disgust are relevant to prejudice towards individuals with obesity (Wirtz et al. 2016).

Explanations for Disgust Towards Outgroups

We now turn our attention to a discussion of some of the possible mechanisms underlying (or explanations for) the association between disgust and prejudice towards an outgroup. Some of these have been discussed in previous chapters, so here we focus on their relevance to prejudice.

Behavioural Immune System

The behavioural immune system (BIS) works outside of conscious awareness utilising disgust to evoke avoidance of pathogens (see Bradshaw and Gassen, Chap. 3, this volume). Specifically, the BIS uses perceptual cues to indicate threat and activate disgust-related aversive emotions and avoidance behaviours (Schaller 2011), which can include distancing and social ostracism/exclusion (Park et al. 2003). Because pathogens themselves are not detectable by human senses, the BIS uses cues that might indicate a person could be carrying threatening pathogens (Tybur and Lieberman 2016). Some of the cues that might signify the presence of a pathogen include skin discoloration, facial and behavioural anomalies, body odour, and blemishes (Murray and Schaller 2016; Park et al. 2003). Thus, any outgroup who possesses one or more of these characteristics can activate the BIS and elicit disgust/avoidance reactions. Because the potential health costs of a false-negative (not detecting a pathogen when it is present) are greater than the costs of a false-positive (assuming the presence of a pathogen when none is present), the BIS has evolved to be overly sensitive. In this way, stigma towards outgroups can be seen as a signal-detection problem in an otherwise adaptive system (Park et al. 2007).

Evidence in support of the BIS explanation comes from a variety of sources. First, there is evidence that certain outgroups (e.g., obese people, people with physical disabilities) are associated with disease-related concepts at an automatic (implicit) level (e.g., Park et al. 2003, 2007). Second, as noted earlier, inducing disgust increases negative attitudes towards outgroups, including obese individuals and immigrants (Faulkner et al. 2004; Park et al. 2007). Finally, research has shown that when the subjective perceived vulnerability to disease is heightened (e.g., during the first trimester of pregnancy, or when participants were exposed to news coverage of the swine flu epidemic), there is increased prejudice towards outgroups (Huang et al. 2011; Navarrete et al. 2007). Furthermore, in this research, among participants who reported higher subjective ratings of perceived vulnerability to disease, prejudicial attitudes towards outgroups were reduced if they were given an opportunity to wash their hands (Huang et al. 2011).

Dehumanisation

Dehumanisation (or infra-humanisation) is considered the worst form of prejudice because it involves viewing outgroups as inhuman or as a lesser form of human (Dalsklev and Kunst 2015). Dehumanisation can include likening outgroup members to animals or machines, and consequently denying them uniquely "human" qualities or characteristics such as intelligence, cognitive abilities, and complex emotions, including love, hope, and guilt (Dalsklev and Kunst 2015). When individuals (or groups) are dehumanised, the failure to consider their mental and emotional experiences may facilitate severe discrimination and interpersonal

violence (Harris and Fiske 2011). Dehumanising an outgroup removes that group from general societal moral protections and can work to justify the perpetration of hate crimes and interpersonal violence (Costello and Hodson 2010). In the same way that animals are often outside of moral protection and exploited by humans, dehumanisation works by rendering the outgroup as more animal-like and thus incapable of experiencing emotion or pain (Costello and Hodson 2010). Consequently, dehumanised groups are viewed as less deserving of the compassion, kindness, and respect that is given to other humans.

The psychological processes underlying dehumanisation can help us understand incidents of hate crimes and genocide (Schaller and Neuberg 2008). Throughout history, hate speech has been used to evoke fear and disgust towards outgroups and, in turn, to justify mass violence and genocide (Harris 2014). The choice of words within hate speech is important because these words are often used to incite disgust by comparing the outgroup to diseases or pathogen-threats such as cancer, faeces, parasites, or vermin. As Harris (2014) notes, these metaphors can also further expand the "us" and "them" divide. For example, the 1994 Rwanda genocide saw the Hutus refer to Tutsis as "cockroaches"; in Hitler's genocide during the Third Reich, the Nazis classified the Jewish people as "parasites" and "rats," relating them to vermin; and in the USA, Trump consistently referred to immigrants as "predators," "animals," and "killers" that "infest" the country (Harris and Fiske 2011; Warnock 2019). The consequence of this type of hate speech is that the outgroup is characterised as a disease that needs to be eradicated, and this mindset can lead to extreme violence towards members of that outgroup (Costello and Hodson 2010).

Even outside of the extreme examples just described, there is evidence that the language used to describe certain groups can impact perceptions of those groups. For example, one study showed how media portrayals can influence perceptions of immigrants. In this study, participants were asked to read a bogus newspaper article that included a cartoon of an immigrant arriving in Canada carrying several suitcases. Half of the participants saw a cartoon in which the suitcases were labelled with various diseases (thus depicting immigrants as carriers of disease); for the other half of participants, the cartoon contained no labels. Participants who viewed the cartoon with the disease labels subsequently showed a significantly higher belief that immigrants were pathogen threats, were more likely to dehumanise immigrants, and had less favourable views towards immigration more generally (Esses et al. 2013). Media representations of outgroups portrayed as vermin (using phrases such as "swarm," "invasion," or "flood") also increase disgust sensitivity and prejudicial attitudes in people who identified more strongly with their ingroup (Marshall and Shapiro 2018). Using this type of terminology facilitates dehumanised perceptions of outgroups, which has a direct impact on increasing prejudicial attitudes and stigmatisation (Esses et al. 2013; Marshall and Shapiro 2018).

Given the reference to disease and pathogens, it is not surprising that disgust is relevant in the context of dehumanisation. Intergroup disgust sensitivity is related to dehumanisation of outgroups (Hodson and Costello 2007), and in particular is associated with likening outgroup members to animals (Dalsklev and Kunst 2015). Disgust also appears to be more relevant to dehumanisation than other emotions. For

example, one study used an experimental manipulation to prime either disgust, sadness, or neutral emotions. Although all participants showed a dehumanising bias towards outgroups, participants primed with disgust demonstrated the greatest associations between outgroups and animals, therefore adopting stronger socially dehumanising cognitions (Buckels and Trapnell 2013). Furthermore, the pattern of neural activity towards outgroups rated highest in disgust (the low-competence/low-warmth quadrant in the Stereotype Content Model) suggests that these groups are perceived as less than human (Harris and Fiske 2006).

Individual Differences in Social Conservatism

We have already discussed one set of individual differences—disgust sensitivity—related to the connection between disgust and prejudice. Here we outline another individual difference that can influence disgust and prejudice responses; namely, social conservatism.

Social conservatism includes a strong preference for ingroups, avoidance of outgroups, and strict obedience to social/cultural norms and rules (Shook et al. 2015). One study found that individuals higher in disgust sensitivity were also higher in social conservatism, which in turn predicted prejudicial attitudes towards homosexuals (Terrizzi Jr. et al. 2010). That is, the strength of the BIS, as measured by disgust sensitivity, was found to be predictive of socially conservative value systems; the more sensitive individuals are to disgust, the more conservative attitudes they favour, suggesting that disgust may promote social conservatism as a mechanism of pathogen avoidance (Shook et al. 2015; Terrizzi Jr. et al. 2010). Of course, the reverse causal path may be true as well, such that social conservatism promotes greater disgust sensitivity. Interestingly, in an eye-tracking study comparing attention to emotional faces among conservative and liberal participants, researchers found that the conservative participants paid significantly more attention to emotional faces depicting disgust (Oosterhoff et al. 2018). In order to avoid disgusting stimuli, greater attention is paid to cues (i.e., facial expressions) that might signal the presence of disgust threats.

This conservative belief system involves active avoidance of subjective pathogen threats and consequently promotes prejudicial behaviours (Terrizzi Jr. et al. 2010). Higher disgust sensitivity also predicts political conservatism, including authoritarianism, but seems to only apply to political issues associated with intergroup relations and pathogen avoidance, issues such as immigration, abortion, homosexuality, medicinal illicit drug use, and euthanasia (Inbar et al. 2009; Terrizzi Jr. et al. 2010). An experiment found that inducing disgust increased negative attitudes towards homosexuals for participants who were politically conservative but decreased negative attitudes for participants who were politically liberal (Terrizzi Jr. et al. 2010). The decrease in negative attitudes observed among the liberal participants may be explained by them having a less rigid definition of their ingroup, such that inducing disgust promotes ingroup preference and liberals include

homosexuals as part of their broader ingroup (Terrizzi Jr. et al. 2010). The studies explained so far have contrasted disgust manipulations with neutral conditions. However, it is possible that these manipulations may have induced other, overlapping affective states, such as fear or anger. Future research that manipulates multiple negative and/or avoidance-promoting emotions would be important to examine these alternative explanations and broaden current understanding regarding the specificity of the disgust effect (see also Consedine, Chap. 2, this volume).

Pro-effort Bias

Our recent research in the domain of obesity stigma has identified a new pathway for understanding disgust and prejudice towards individuals with obesity. Earlier work had conceptualised stigma towards obese individuals in terms of beliefs about the controllability of body weight (e.g., Weiner et al. 1988). That is, believing that obesity is caused by overeating and lack of exercise is associated with more negative attitudes towards obese individuals. However, subsequent research has shown that changing people's beliefs about the controllability of body weight (such as by convincing them that obesity is caused by genetic factors) has very little impact on attitudes and stereotypes (Daníelsdóttir et al. 2010).

In our research, rather than focusing on the causes of the "onset" of obesity (i.e., how the problem developed in the first place), we focused on the "offset" of obesity (i.e., what people are doing to change the problem). We have shown that individuals with obesity elicit less disgust if they are described as putting in effort to lead a healthy lifestyle (i.e., eat healthy and exercise), even if there is no resulting weight loss (Beames et al. 2016; Vartanian et al. 2018). We similarly found that showing participants photographs of obese individuals engaging in healthy behaviours (e.g., eating vegetables, exercising) resulted in lower disgust ratings than did photographs of obese individuals engaging in unhealthy behaviours (e.g., eating junk food, sitting on the couch; Vartanian et al. 2018). We termed this process a "pro-effort bias" because it seemed to operate independently of beliefs about the controllability of the onset of the problem (Beames et al. 2016). It is plausible that this pro-effect bias also exists for other social groups for whom beliefs about their effort to offset the "problem" could be separable from beliefs about the onset of the problem. For example, drug users, smokers, and homeless people could potentially be conceptualised as putting in varying degrees of effort to remedy their situation, regardless of the perceived cause of the onset of the problem. Just as with obesity, perceptions of effort among individuals from these groups should be associated with lower ratings of disgust. If this is the case, then it may be possible to correct misperceptions about effort as a means of reducing prejudice towards these groups.

Unanswered Questions and Future Directions

Although research has provided numerous insights into the role of disgust in prejudice towards outgroups, there is a lot that we still do not fully grasp. For example, the "special" or "unique" place for disgust needs stronger support. Much of the evidence in this regard has come from studies showing that disgust is more strongly correlated with prejudice towards particular groups than are other emotions, such as anger or fear. However, there is little in the way of experimental work showing a causal link between specific emotions and prejudice. Furthermore, most studies in this area (as with much of psychology) has focused on participants from Western cultures, often university students, and the findings might therefore not be generalisable to other populations. If part of the reason that people experience disgust towards a particular social group is that the group is seen as violating a cultural norm, then cultures that have different norms would presumably view the group differently. Thus, further work is needed in these respects. Here we outline two additional areas in need of further exploration.

Differentiating Different Types of Disgust

Throughout this chapter, we have described disgust as though it was more or less a unitary construct. However, Tybur et al. (2009; see also Tybur, Chap. 6, this volume) provide evidence for the functional heterogeneity of disgust. Specifically, they outline three different functions of disgust, each of which solves a qualitatively different adaptive problem. Pathogen disgust, which is most similar to traditional conceptions of disgust, is related to the desire to avoid disease-causing agents. Moral disgust is related to avoidance of individuals who can potentially inflict social harms on oneself or one's social network. Sexual disgust relates to the avoidance of behaviours or partners that could reduce one's long-term reproductive success. Tybur et al. (2009) also suggest that different behavioural responses might be associated with each functional domain of disgust. For example, pathogen disgust might motivate the desire to clean; moral disgust might motivate the desire to punish the offending agent; and sexual disgust might motivate rejection in the context of a romantic relationship, but not in the context of a business partnership. Earlier in this chapter, we noted that different outgroups elicit different emotional reactions. In a similar way, we might expect that different outgroups would elicit different types of disgust reactions. Identifying the domain(s) of disgust that is (are) most central to particular outgroups is an important direction for future research because it could improve our understanding of what drives prejudice towards these groups.

Reducing Disgust as a Vehicle for Reducing Prejudice

A potential benefit of understanding the emotional underpinnings of prejudice is that it could help explain why prejudicial reactions are so difficult to change. Cognitive approaches to eliminating prejudice (e.g., convincing people that obesity is not under the person's control) are typically not very effective (Daníelsdóttir et al. 2010). If prejudice is based on emotional reactions, then we should not expect that challenging cognitions about a particular group would do much to reduce prejudice. Instead, it would be beneficial to identify ways to modify people's emotional reactions to those groups. One example of an approach that could be relevant in this context is increasing contact with outgroup members. Intergroup contact (Pettigrew and Tropp 2006) and even *imagined* intergroup contact (Crisp and Turner 2009) have both been shown to reduce prejudice towards outgroups. One of the mechanisms through which contact reduces prejudice is by reducing intergroup anxiety (Turner et al. 2008). There is also some recent evidence that disgust mediates the effect of intergroup contact on prejudice towards gay men, but not towards Whites, Blacks, or Asians (Seger et al. 2017). These findings suggest that contact with outgroup members may represent a useful way to reduce prejudice, possible by reducing negative emotional reactions to those groups. Further exploring the benefits of intergroup contact for reducing disgust and prejudice is an important direction for future research.

Conclusions

Disgust plays a key role in prejudice, and in particular prejudice towards groups that are viewed as violating moral standards. These disgust reactions could be driven by a highly sensitive behavioural immune system that views outgroup members as potential vectors of disease, by a tendency to view the groups as "less than human," and perhaps in some cases by a tendency to view these groups as not exerting sufficient effort to change their situations. Modifying people's emotional reactions to particular social groups could be a useful means of reducing prejudice towards those groups.

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