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**Intergroup Disgust Sensitivity as a Predictor of Islamophobia:
The Modulating Effect of Fear¹**

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Abstract

The present research investigated whether *intergroup* disgust sensitivity (ITG-DS) predicts greater Islamophobia, and whether this positive association is modulated (strengthened or weakened) by the experience of concurrent incidental non-disgust emotions (fear, sadness, anger, happiness). In Study 1 ($N = 225$) participants completed measures of ITG-DS (an emotionally charged individual difference variable reflecting heightened tendency to experience disgust and revulsion reactions toward ethnic outgroup encounters) and dispositional measures of fear, sadness, anger, and happiness. Results revealed that among those experiencing greater (*vs.* lower) fear or sadness, the positive relation between ITG-DS and Islamophobia was significantly stronger. In Study 2 ($N = 174$), fear, sadness, and happiness were experimentally induced. Among those induced to experience fear, the positive relation between ITG-DS and prejudice toward Muslims was significantly strengthened relative to control. Overall, specific negative emotions, especially fear, interacted with individual differences in intergroup-relevant disgust sensitivity to inform outgroup evaluations.

Keywords: intergroup disgust sensitivity; Islamophobia; incidental emotion;
modulating emotion; intergroup relations

Intergroup Disgust Sensitivity as a Predictor of Islamophobia:

The Modulating Effect of Fear

In July 2011, an armed gunman went on a killing spree in Norway, killing 76 non-Muslims to “save Europe from ‘Muslim colonization’” (CBC, 2011). Anders Breivik appears to have lashed out because his Norwegian ingroup is embracing Muslim immigrants and their culture, blogging that there is a need to “turn this evil trend [of] Islamisation all across our continent” (Taylor, 2011). His actions connote a sense of revulsion and disgust, the psychological concern that outgroup taint can spread to and contaminate the ingroup, exacerbated by fear. Such prejudices are not isolated but rather are becoming increasingly common. Islamophobia, or prejudice toward Muslims (Brown, 2000; Poynting & Mason, 2007; Runnymede Trust, 1997), was higher than prejudice toward other immigrant groups across Europe in 2000 (Stabac & Listhaug, 2008). The September 11, 2001 attacks amplified this negativity (Allen & Nielsen, 2002; Fetzer & Soper, 2003; Sheridan & Gillet, 2005). Despite some decline in Islamophobia following the initial post-9/11 backlash, negativity toward Islam in the U.S. grew from 2005 to 2010 (PEW, 2010), as did hate crimes against Muslims in Canada (Dauvergne & Brennan, 2011). The recent Norway killings have sparked concerns about growing Islamophobia in the West, with Muslims becoming the “new Jews of Europe” (Reeves, 2011). We focus on prejudice against Muslims given this widespread rise of Islamophobia.

Efforts to explain prejudice have turned increasingly to the role of emotions (e.g., Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001; Cottrell & Neuberg, 2005; Fiske, Cuddy, Glick, & Xu, 2002; Mackie & Smith, 2002). Understandably, this research has focused on fear and anxiety. Comparatively under-researched, *disgust* also plays an important role in expressions of intergroup attitudes (e.g., Hodson & Costello, 2007; Inbar, Pizarro, & Bloom, 2009; Olatunji,

2008; Terrizzi, Shook, & Ventis, 2010). We seek to (a) confirm that individual differences in *intergroup* disgust sensitivity predict greater prejudice against Muslims among non-Muslims (see Hodson et al., 2011); and (b) test the boundary conditions for this effect, addressing whether this association is strengthened or weakened by the concurrent experience of non-disgust emotions (e.g., fear).

Disgust: Revulsion, Avoidance, and Prejudice

Relative to other emotions, disgust has received less empirical attention (Rozin, Haidt, & McCauley, 2009). Yet disgust is widely considered a basic emotion (Ekman, 1992, Tomkins, 1963), one that concerns “something revolting, primarily in relation to the sense of taste, as actually perceived or vividly imagined ... to anything which causes a similar feeling, through the sense of smell, touch, or even eyesight” (Darwin, 1872/1965, p. 250). Disgust presumably evolved from earlier psychological processes involving ingestible substances (e.g., food), hence protecting the physical body, but also extended to the service of social or moral regulation (Rozin, Haidt, McCauley, & Imada, 1997; Rozin et al., 2000). Responses indicative of disgust – including revulsion, withdrawal, and avoidance – share commonalities across physical (e.g., food) and social (e.g., groups) domains. Outgroups can elicit revulsion as can rotten food or open wounds. Disgust may therefore play a key role in the “behavioral immune system”, protecting us by eliciting avoidance or rejection of other people, particularly foreigners carrying diseases (e.g., Faulkner, Schaller, Park, & Duncan, 2004; Park, Faulkner, & Schaller, 2003; Schaller & Park, 2011). Naturally, people differ systematically in sensitivity to such disgust-eliciting stimuli (Haidt, McCauley, & Rozin, 1994), with individual differences falling into three disgust domains: Core (food rejection, concerns of disease from objects), animal-reminder (reminders of

humans as animals, such as sex and mortality), or interpersonal (contamination from ill or immoral individuals) (Haidt et al., 1994; Olatunji, Haidt, McKay, & David, 2008).

Researchers have recently considered the relation between disgust sensitivity and intergroup prejudice. Those higher in disgust sensitivity are more prejudiced toward immigrants, foreigners, deviant or low status groups, the obese, and gays and lesbians (Hodson & Costello, 2007; Inbar et al., 2009; Navarrete & Fessler, 2006; Olatunji, 2008; Terrizzi et al., 2010; Vartanian, 2010). Some specific disgust sub-scales are especially predictive of particular types of prejudice. For instance, interpersonal disgust particularly predicts anti-immigrant prejudice (Hodson & Costello, 2007), whereas core disgust particularly predicts anti-homosexual bias (Olatunji, 2008). Although these studies offer valuable insights into the disgust-prejudice relation, prejudice is ultimately an *intergroup* outcome. Theoretically, individual differences in disgust-sensitivity concerning outgroup contact and associations are more relevant and represent a theoretically stronger predictor of negative outgroup evaluations.

Intergroup Disgust Sensitivity (ITG-DS)

Hodson and colleagues (2011) recently introduced the concept of intergroup disgust sensitivity (ITG-DS) – an affect-laden construct reflecting individual differences in the tendency to experience disgust and revulsion reactions toward ethnic outgroups. Specifically, some people are more likely than others to feel repulsed and disgusted by outgroups, particularly foreign but also socially deviant outgroups, with this heightened sensitivity predicting more negative evaluations toward outgroups (Hodson et al., 2011, Study 1, Samples 1-5). In these studies individuals higher in ITG-DS were especially prejudiced toward Muslims (mean $r=.42$) compared to homosexuals, Jews, or Blacks (mean $r_s=.27-.29$). This recently uncovered association between an emotionally-charged dispositional construct (ITG-DS) and negative

outgroup evaluations held even after statistically controlling for conceptually related variables such as general disgust sensitivity, intergroup anxiety, or intergroup ideologies (e.g., authoritarianism). ITG-DS is related to greater negative affect (Hodson et al., 2011, Study 1, Sample 2), and those higher (*vs.* lower) in ITG-DS are especially likely to translate their outgroup disgust reactions into prejudices toward experimentally manipulated, disgust-eliciting outgroups (Hodson et al., 2011, Study 2).

Modulating Emotions: Can Non-Disgust Emotions Influence ITG-DS Effects on Prejudice?

Contemporary prejudice research has considered how specific emotions connect to particular appraisals, attitudes and actions toward specific social groups (Fiske et al., 2002; Mackie & Smith, 2002; Mackie, Silver, & Smith, 2004; Neuberg & Cottrell, 2005; Tapias, Glaser, Keltner, Vasquez, & Wickens, 2007). For example, threats to ingroup health or values are proposed to elicit disgust, whereas threats to the group's economic resources or freedoms are proposed to elicit anger (Cottrell & Neuberg, 2005; Smith, 1999). Many of these theoretical approaches emphasize specific emotional reactions to specific types of outgroups or threats. Also, multiple discrete emotions can apply to a single outgroup: Thinking about Blacks elicits similar levels of anger and disgust among Whites (see Cottrell & Neuberg, 2005). In intergroup contexts, therefore, more than one emotion can be experienced.

Such co-occurrence of emotions is well-documented in the broader affect literature (Diener, 1999; Schimmack & Colcombe, 2007; Watson & Tellegen, 1985). These “concurrent emotions” can be of similar or opposing valence (Larsen, McGraw, & Cacioppo, 2001; Schimmack 2001). For instance, an individual might feel disgusted and angry in one instance (e.g., Hutcherson & Gross, 2011), yet disgusted and amused in another (e.g., Hemenover & Schimmack, 2007). The modulating effect of one emotion on another has been empirically

supported: Exposure to equally arousing unpleasant and pleasant stimuli diminishes the pleasure of positive stimuli and lessens displeasure of negative stimuli, respectively (Schimmack & Colombe, 2007). Thus positive or negative affect can modulate the impact of other emotions on evaluations of targets. In intergroup contexts, the impact of an affective reaction (disgust/repulsion) on an outgroup evaluation (prejudice) can theoretically be modulated by another affective reaction (fear). This conceptual relation is presented in Figure 1: The relation between ITG-DS (an affect-laden orientation of disgust toward outgroups) and expressions of Islamophobia could be modulated by positive emotions (e.g., happiness - attenuating prejudice) or negative emotions (e.g., fear - accentuating prejudice).

Our approach considers whether the effect of an individual difference variable (ITG-DS) on intergroup attitudes can be modulated by emotions that are dispositional (i.e., individual differences in Study 1) or contextual (i.e., experimentally manipulated in Study 2). Theoretical accounts of modulation have a strong history in the prejudice literature. For example, right-wing authoritarianism (RWA; Altemeyer, 1998) strongly predicts prejudice, with this relation amplified under threat exposure (e.g., Cohrs & Asbrock, 2009; Duckitt & Sibley, 2009). Similarly, the relation between social dominance orientation (characterized by endorsement of group-based dominance) and anti-immigrant prejudice or discrimination is strengthened under manipulated threat (Costello & Hodson, 2011). Further, relations between belief in a dangerous world and stereotyping is increased in threatening (*vs.* non-threatening) contexts (Schaller, Park, & Mueller, 2003). Employing a similar rationale, we consider whether the relation between ITG-DS and prejudice is modulated by non-disgust emotions. To disambiguate emotional effects, we consider *incidental* modulating emotions (those not elicited by the outgroup), rather than integral emotions (those elicited by the outgroup) (Bodenhausen et al., 2001). If incidental non-disgust

emotions (e.g., fear) modulate the effects of ITG-DS on prejudice this will clearly highlight the importance of the non-disgust emotion per se, not emotions associated with the outgroup.

The idea that incidental emotions affect prejudice expressions is also long standing and well established (Allport, 1954; Bodenhausen et al., 2001; Fiske, 1998; Mackie, Queller, Stroessner, & Hamilton, 1996). It is unknown, however, whether incidental non-disgust emotions influence the relation between ITG-DS and prejudice (see Figure 1). We tested two main hypotheses. First, we predicted that ITG-DS would predict greater Islamophobia (see Hodson et al., 2011). Second, we hypothesized that incidental emotions (dispositional in Study 1 and experimentally-induced in Study 2) would modulate the positive relation between ITG-DS and Islamophobia. We examined fear, sadness, anger, and happiness—the most widely studied incidental emotions—as potential modulators of ITG-DS effects on prejudice. Given that individuals experiencing negative moods/emotions such as fear, sadness, or anger demonstrate greater prejudice or stereotyping (e.g., Bodenhausen, Sheppard, & Kramer, 1994; DeSteno, Dasgupta, Bartlett, & Caidric, 2004; Esses & Zanna, 1995), these negative emotions were each expected to *strengthen* associations between ITG-DS and prejudice. As a counter-point, we also considered the impact of *positive* emotion. Although positive moods can increase stereotype application (Bodenhausen, Kramer, & Süsner, 1994; Mackie et al., 1996), positive moods generally decrease the impact of negative emotions on evaluations (liking of a target) (e.g., Schimmack & Colombe, 2007). We explored whether incidental happiness interferes with the negative impact of ITG-DS on evaluations in either direction (i.e., strengthen or weaken).

Study 1

In Study 1 we consider whether the association between ITG-DS and Islamophobia (see Hodson et al., 2011) is modulated by *dispositional* emotion levels. For example, is the relation in

question strengthened among those generally fearful in nature? Is the relation strengthened or weakened among those generally happy in nature?

Method

Participants and procedure. Students ($n = 230$; 87.4% female; $M_{\text{age}} = 20.25$) at a Canadian university participated for course credit or \$5. The majority of participants self-identified as White (84.3%). Three individuals self-identifying as Muslim, and two others left this item blank; omitting these individuals left 225 non-Muslims. After consenting, participants were seated in private cubicles and completed a computer-administered survey of disgust sensitivity, ITG-DS, dispositional emotion experience (fear, sadness, anger, happiness), and Islamophobic attitude. Finally, participants were debriefed.

Measures.

Disgust Sensitivity. The 25-item Disgust Scale Revised (Olatunji et al., 2008) was administered. The first 13 items ranged from 1-*strongly disagree* to 7-*strongly agree*, with the remaining 12 items from 1-*not disgusting* to 7-*very disgusting*. Three subscores were calculated: *Core disgust* (12 items, e.g., “If I see vomit, it makes me sick to my stomach”; $\alpha = .78$); *animal-reminder disgust* (8 items, e.g., “It would bother me to be in a science class, and see a human hand preserved in a jar”; $\alpha = .83$), and *contamination disgust* (5 items, e.g., “I never let any part of my body touch the toilet seat in a public washroom”; $\alpha = .67$). An overall disgust sensitivity score averaged all items ($\alpha = .87$), with higher scores indicating greater generalized disgust sensitivity.

Intergroup disgust (ITG-DS) sensitivity. Participants completed the 8-item Intergroup Disgust Sensitivity scale on a response scale from 1-*strongly disagrees* to 7-*strongly agree* (for scale validation, see Hodson et al., 2011). This measure taps revulsion at intergroup contact and

concerns of contamination by ethnic outgroups (e.g., “After interacting with another ethnic group, I typically desire more contact with my own ethnic group to ‘undo’ any ill effects from intergroup contact”; “I feel disgusted when people from other ethnic groups invade my personal space”; “When socializing with members of a stigmatized group, one can easily become tainted by their stigma” $\alpha = .67$; mean $\alpha = .75$ in Hodson et al., 2011). Higher scores indicate greater intergroup disgust sensitivity with regard to outgroup interaction. The scale makes no reference to Muslims.

Dispositional emotions. Individuals dispositionally high in specific emotions should experience those emotions more intensely and frequently (Gross, Sutton, & Ketelaar, 1998; Larsen & Ketelaar, 1989; Lazarus, 1994; Lerner & Keltner, 2001). A modified version of the Carstenson Emotion Questionnaire (CEQ; Gross et al., 1997) was administered, assessing four basic emotions: Fear, sadness, anger and happiness. Participants indicated how intensely and frequently they experience each emotion from 0-*never/not at all* to 6-*nearly always/extremely intensely*. Trait emotion scores were created by averaging the intensity and frequency items for each of the four emotions, reflecting previous conceptualizations of dispositional emotion experience (e.g., Gross et al., 1998; Lerner & Keltner, 2001). Higher scores indicate greater tendencies to habitually experience a particular emotion (e.g., sadness).

Islamophobia. Attitudes towards Muslims were measured with a widely-used thermometer scale ranging from 0-*extremely unfavorable* to 100-*extremely favorable*, along intervals of 10 (i.e., a 0 to 10 scale). After reversing, higher scores indicate greater Islamophobia.

Results

Descriptive statistics. Means, standard deviations, and correlations among Study 1 variables are reported in Table 1. Only ITG-DS correlated with Islamophobia: Greater ITG-DS

was associated with significantly stronger Islamophobic attitudes. Notably, the correlation between ITG-DS and Islamophobia was unchanged after controlling for generalized disgust sensitivity, $pr = .43, p < .001$. In fact, no significant association between generalized disgust sensitivity and prejudice emerged (see also Hodson et al., 2011, Samples 1-5). Given that generalized disgust sensitivity and its subscales were uncorrelated with Islamophobia, the remaining analyses focus exclusively on ITG-DS.

Do dispositional emotions modulate the positive relation between ITG-DS and Islamophobia? To evaluate whether dispositional emotions modulate the positive association between ITG-DS and Islamophobia, separate regression analyses were conducted for each emotion (fear, sadness, anger, happiness). ITG-DS and emotions were treated as standardized continuous variables, along with interactions, to increase statistical power. ITG-DS and a proposed modulating emotion (e.g., sadness) were entered on Step 1, with their interaction entered on Step 2 (see Results summary in Table 2). Simple slope analyses were conducted to explore significant interactions (see Aiken & West, 1991). Simple slopes were probed at 1SD above and 1SD below the mean ITG-DS scores.

Fear. Greater ITG-DS (but not fear) uniquely predicted heightened prejudice against Muslims in Step 1. In Step 2, the interaction between fear and ITG-DS was significant (Table 2). Simple slope analyses with Islamophobia regressed onto ITG-DS demonstrated that the slope was significant at higher, $b = .59, sr^2 = .19, t(221) = 7.28, p < .001$, and lower, $b = .26, sr^2 = .03, t(221) = 2.96, p = .003$, levels of fear. ITG-DS was correlated positively with Islamophobia, and this association was significantly stronger among those higher (*vs.* lower) in dispositional fear (Figure 2), as predicted.

Sadness. Greater ITG-DS (but not sadness) uniquely predicted heightened prejudice against Muslims in Step 1. In Step 2, the interaction between sadness and ITG-DS was significant (Table 2). Simple slope analyses with Islamophobia regressed onto ITG-DS demonstrated that the slope was significant at higher, $b = .57$, $sr^2 = .19$, $t(221) = 7.39$, $p < .001$, and lower, $b = .28$, $sr^2 = .04$, $t(221) = 3.41$, $p = .001$, levels of sadness. The positive association between ITG-DS and Islamophobic evaluations was significantly stronger among those higher (vs. lower) in sadness, matching the pattern for fear (Figure 2).

Anger. In Step 1, ITG-DS was a significant positive predictor, and anger was marginally significant ($p = .080$). In Step 2, the interaction between anger and ITG-DS was marginally significant ($p = .102$) (see Table 2). The interaction pattern matched that for fear and sadness (Figure 2), with the positive relation between ITG-DS and Islamophobia somewhat stronger among those higher (vs. lower) in anger.

Happiness. ITG-DS positively predicted Islamophobia in Step 1. Neither dispositional happiness, nor the interaction term, predicted Islamophobia (see Table 2).

Discussion

ITG-DS predicted greater Islamophobia, as hypothesized (see also Hodson et al., 2011). Study 1 demonstrated that the impact of ITG-DS on Islamophobia is modulated by (negative) dispositional emotions. As predicted, the link between greater ITG-DS and prejudice towards Muslims was stronger among those habitually experiencing greater fear, sadness, or anger (the latter effect being marginal). In contrast the interaction between ITG-DS and happiness was not significant.

Study 2

Study 1 provides evidence of the proposed modulating effect of incidental non-disgust emotions on the positive relation between ITG-DS and Islamophobia. In Study 2 we tested whether experimentally induced fear, sadness, or happiness modulate the ITG-DS-prejudice relation. We reasoned that manipulated emotions would foster immediate and intense feelings of fear, sadness, or happiness, providing an experimental analogue to the dispositional measure of emotion frequency and intensity in Study 1. That is, inducing an incidental emotion experimentally parallels the experience of an intense and present dispositional emotion. We omitted anger from this study because anger did not significantly modulate effects in Study 1, channeling our resources into the two negative emotions modulating disgust effects in our initial study. Happiness was manipulated in Study 2 – despite not showing modulating effects in Study 1 – to provide a counterpoint to the negative emotions, and because manipulated happiness modulates the impact of emotional variables in non-intergroup contexts (e.g., Schimmack & Colombe, 2007). We included a control condition to compare manipulated emotion effects to a neutral condition. We predicted that fear and sadness would strengthen the association between ITG-DS and Islamophobia relative to control.

Method

Participants. First-year Canadian university students ($n = 181$; 86.8% female; $M_{\text{age}} = 19.27$) participated for course credit or \$5. The majority self-identified as White (84.4%). Seven self-identified Muslims were excluded from analyses, leaving 174 non-Muslims.

Procedure and manipulation. Participants completed the study on computers, equipped with headphones, in individual cubicles. After completed several measures, including the ITG-DS scale, they were randomly assigned to one of four conditions: Fear, sadness, happiness or

control. Film clips were used to manipulate emotion given their established effectiveness (see meta-analysis by Westermann, Spies, Stahl, & Hesse, 1996). Clips for the emotion conditions were selected based on previous research demonstrating the utility of each in inducing the specific emotion of interest (Rottenberg, Ray, & Gross, 2007; see also Gross & Levenson, 1995; Hewig, et al., 2005). Participants were instructed to “pay close attention to the following film.” Those in the *fear condition* watched clips from “The Shining” and “Silence of the Lambs”; those in the *sadness condition* viewed clips from “The Lion King” and “Return to Me”; those in the *happiness condition* viewed clips from “Robin Williams Live” and “Whose Line Is It Anyways?”; participants in the *neutral condition* watched clips from “Pacific Crest Trail” and “Introduction to Earth’s Geology.”¹ Immediately following each clip, participants indicated emotions experienced as a result of the film. Participants then indicated attitudes toward Muslims and completed demographic questions.

Measures.

Intergroup disgust (ITG-DS) sensitivity. The ITG-DS scale was administered (see Study 1). Higher scores reflect greater disgust sensitivity toward associating with outgroups ($\alpha = .71$).

Experience of emotions (manipulation check). After each film clip, participants indicated their experience of each emotion while watching the film clip (0-*not at all* to 8-*extremely*). Ratings were averaged across the two clips to create emotion scores. Induced fear was computed by averaging six items (i.e., ratings of anxiety, fear, scared for clip 1 and clip 2, $\alpha = .95$). To calculate induced sadness the average of four items (i.e., ratings of downhearted and sadness for clip 1 and clip 2, $\alpha = .92$) was computed. Induced happiness was created by averaging six items (i.e., ratings of amusement, joy, happiness for clip 1 and clip 2, $\alpha = .93$).

Results

Manipulation check. A one-way multivariate analysis of variance was conducted to evaluate whether emotions were successfully manipulated. Experimental condition was entered as the between-subjects variable with the three manipulation check variables (i.e., induced fear, sadness, or happiness) entered as dependent measures. The multivariate effect for condition was significant, Wilks' Lambda $F(9, 409.02) = 99.41, p < .001, \eta^2 = .61$. The follow-up univariate tests were also significant for induced fear, $F(3, 170) = 79.65, p < .001, \eta^2 = .58$, induced sadness, $F(3, 170) = 159.06, p < .001, \eta^2 = .74$, and induced happiness, $F(3, 170) = 84.24, p < .001, \eta^2 = .60$. Pairwise comparisons showed that, compared to other conditions, those in the fear condition reported the most fear ($ps < .001$); those in the sadness condition reported the greatest sadness ($ps < .001$); and those in the happiness condition reported the greatest happiness ($ps < .001$; see Table 3). Therefore, manipulations of fear, sadness, and happiness were successful.

Do induced incidental emotions modulate the positive relation between ITG-DS and Islamophobia? We conducted a multiple-groups analysis using AMOS 18, testing whether the positive relation between ITG-DS and Islamophobia was modulated by induced non-disgust emotions, as conceptualized in Figure 1. Multiple-groups analysis assesses the viability of modeled relations across groups (see Kline, 2005). Multiple-groups analyses are especially applicable for evaluating interactions where the proposed moderator is manipulated or categorical (see e.g., Sidanius, Pratto, & Bobo, 1996). Our multiple-groups analysis simultaneously assessed (a) the relation between ITG-DS and Islamophobia within each condition, and (b) whether the nature or strength of those relations significantly differs between conditions. AMOS tests all possible comparisons between conditions, but we focus on three hypothesized comparisons: fear *vs.* neutral, sadness *vs.* neutral, and happiness *vs.* neutral. Critical

ratios of differences between parameters (which are standardized values) were examined to assess our hypothesis that induced emotion modulates the relation between ITG-DS and Islamophobia relative to control. These standardized values are provided for each comparison (e.g., fear *vs.* neutral), with scores exceeding ± 1.96 (i.e., $p < .05$) indicating that the path between ITG-DS and Islamophobia differs significantly between these contrasted conditions (Arbuckle, 2009; Byrne, 2001). As shown in Figure 3, greater ITG-DS predicted greater Islamophobia within each condition (this path was only marginally significant in the neutral condition, $p = .065$). Examination of the critical ratios for the three planned comparisons revealed a significant difference in the strength of the ITG-DS-Islamophobia link between the fear *vs.* neutral condition ($z = -2.38, p = .02$), as predicted. Contrary to expectation, the sadness *vs.* neutral and happiness *vs.* neutral contrasts were not statistically significant ($ps > .162$).

Discussion

As expected, Study 2 revealed that the positive relation between ITG-DS and Islamophobia is modulated by induced incidental emotions, with this effect restricted to the experience of fear. As hypothesized, the link between ITG-DS and prejudice towards Muslims was stronger among those induced to experience fear compared to a neutral condition. Although the predicted association was positive in the sadness condition, consistent with Study 1, induced sadness did not significantly enhance the association between ITG-DS and prejudice relative to control. Manipulated happiness did not influence the ITG-DS – prejudice association. Overall, fear uniquely strengthened the prediction of ITG-DS on Islamophobia relative to the control condition.

General Discussion

Researchers are increasingly considering the role of emotions in intergroup prejudice (e.g., Bodenhausen et al., 2001; Cottrell & Neuberg, 2005; Fiske et al., 2002; Mackie & Smith, 2002; Mackie, Smith, & Ray, 2008). The implications of disgust, a basic emotion characterized by revulsion, withdrawal, and avoidance (Rozin et al., 1997), has been relatively overlooked in this domain. We investigated intergroup disgust sensitivity (ITG-DS), an emotionally charged construct reflecting individual differences in the degree to which people feel repulsed and disgusted by ethnic outgroups (Hodson et al., 2011). We investigated the modulating effects of incidental non-disgust emotions (dispositional in Study 1, experimentally induced in Study 2) on the positive relation between ITG-DS and Islamophobic attitudes.

Individuals higher (*vs.* lower) in ITG-DS reported greater Islamophobia in each study. However, we found evidence that incidental emotions, emanating from sources outside of an intergroup context, significantly modulated this relation. The positive association between ITG-DS and Islamophobia was significantly amplified among those experiencing greater dispositional (Study 1) or experimentally-induced (Study 2) fear. The ITG-DS-prejudice relation was similarly strengthened among individuals dispositionally higher in sadness (and marginally for anger, see Study 1), but in Study 2 manipulated sadness did not significantly strengthen relations between ITG-DS and Islamophobia *relative to control*.² Overall this indicates that specific negative emotions, especially fear, interact with individual differences in intergroup-relevant disgust sensitivity, enhancing the connection between greater ITG-DS and prejudice.³

Conflict between the West and Islam is often characterized as a “clash of civilizations” (Huntington, 1996), pitting cultural values against each other. Value threats are theoretically associated with disgust reactions (Cottrell & Neuberg, 2005), and Westerners higher in ITG-DS

react toward Muslims with increased prejudice (Hodson et al., 2011). Across two studies presented here, fear consistently amplified these effects of ITG-DS. Given the emphasis on fear of Muslims in the media (Richardson, 2004), it is understandable that heightened fear enhances the relation between ITG-DS and prejudice towards Muslims. In keeping with this assertion, Dasgupta, DeSteno, Williams, and Hunsinger (2009) proposed that incidental emotions can fuel prejudice “if the emotion is *applicable to a specific outgroup*” (p. 585, emphasis added), finding that incidental anger uniquely affected prejudice toward Arabs. In other words, emotions not caused by an outgroup are nonetheless more prone to influencing prejudices to the extent that an incidental emotion is relevant to the outgroup. Non-disgust emotions in the present studies, particularly fear, served as modulators of the relation between ITG-DS and prejudice toward Muslims, as conceptualized in Figure 1. Future researchers might explore whether specific incidental emotions serve as specialized modulators for other types of prejudice (e.g., against homosexuals), or different contexts. For example, anger might significantly modulate the ITG-DS-Islamophobia relation among Americans. Indeed, Hodson, Esses, and Dovidio (2006) found that, following 9/11, American (*vs.* Canadian) college students perceived Middle-Easterners as greater national threats, and more strongly endorsed military action (a behavior linked with anger, see Skitka, Bauman, Aramovich, & Morgan, 2006). Anger, even incidental in nature, might be more “applicable to” outgroups actively acting against one’s ingroup, thereby sharpening the predictive influence of ITG-DS on attitudes.

Across studies, happiness was not a significant modulator, although associations between ITG-DS and Islamophobia tended to be weaker in the positive than negative emotion conditions. It is possible that positive mood states exert competing effects that cancel each other out. That is, positive moods might increase stereotyping (Bodenhausen et al., 1994; Mackie et al., 1996) but

also diminish the impact of negative emotion experiences (Schimmack & Colombe, 2007). This potential can be explored in future research on intergroup disgust.

Past research on the direct effects of incidental emotions on prejudice or stereotyping has produced mixed outcomes. Incidental emotions in the present research did not *directly* affect Islamophobia, similar to research on sadness by Bodenhausen et al. (1994), but contrary to Esses and Zanna (1995), who found sad mood to enhance stereotypes. Future research investigating the potential role of “applicable” emotions (Dasgupta et al., 2009), the nature of the outgroup in question, and the specific measure of intergroup bias (evaluation *vs.* stereotyping) can address these seeming inconsistencies. With respect to the current studies, compared to an emotion (i.e., ITG-DS) more directly pertaining to an intergroup contact, incidental emotions were more diffuse and less directly predictive of prejudice. Incidental emotions exerted influence on the relation between ITG-DS and Islamophobia rather than on Islamophobia directly.

Our findings have implications for the emotion literature generally. Across two studies we demonstrated that the impact of an affective-laden reactivity (ITG-DS) on an evaluation (prejudice against Muslims) can be systematically influenced by another affective reaction (e.g., fear) – one emotion modulates prejudice-relevant effects of another emotion. Thus, in the domain of prejudice, we conceptually replicated studies showing that “concurrent emotions” interact to inform evaluations in non-prejudice contexts (e.g., Schimmack & Colombe, 2007).

A final note about the relation between generalized disgust sensitivity and prejudice: General disgust sensitivity or its sub-domains were unrelated to attitudes toward Muslims (Study 1). This finding replicates recent findings (Hodson et al., 2011, Study 1, Samples 1-5) where weak associations between generalized disgust sensitivity and various prejudices were observed. In conjunction with such past findings, the present results suggest that disgust sensitivity specific

to the intergroup context, rather than disgust sensitivity in general, has particularly strong implications for intergroup prejudice. Consequently, the field may need to revisit the presumed relation between basic disgust sensitivity and prejudice (Hodson & Costello, 2007; Inbar et al., 2009; Navarrete & Fessler, 2006; Olatunji, 2008; Terrizzi et al., 2010; Vartanian, 2010).

Conclusion

As noted by Mackie et al. (2008, p. 1867), “it is only by changing [intergroup] emotions that intergroup behavior can change.” Our results highlight the importance of negative emotions, especially fear, in modulating the positive relation between intergroup disgust sensitivity and prejudice, and future research can examine the behavioral implications. Conceptually similar to how the relation between authoritarianism, social dominance, or belief in a dangerous world and prejudice are strengthened under threats (e.g., Cohrs & Asbrock, 2009; Costello & Hodson, 2011; Schaller et al., 2003), the association between ITG-DS and prejudicial attitudes can be influenced by dispositional or experimentally-induced incidental emotions (especially fear). We found consistent evidence for negative emotions exacerbating prejudice, but little benefit of positive emotions. Understanding how emotions can be elicited in ways that reduce the tendency for intergroup disgust sensitive people to endorse negative outgroup evaluations represents a valuable goal for future research. Such research would benefit by considering diverse samples, including non-Canadians and non-Whites, and studying additional target groups (e.g., homosexuals). Such endeavors will assist not only in understanding prejudice, including incidents like the recent anti-Muslim fuelled shootings in Norway, but hopefully uncover strategies for preventing disgust-based bias.

Footnotes

¹ Full details of film clips are available from the first author.

² However, ITG-DS and Islamophobia were strongly associated in the sadness condition.

³ Follow-up analyses involving only White participants produced the same patterns in Studies 1 and 2. We thank a reviewer for recommending this analysis.

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Table 1

Means, standard deviations and correlations among Study 1 variables

	<i>Mean (SD)</i>	1	2	2a	2b	2c	3	4	5	6
1. Intergroup Disgust	2.24 (0.96)									
2. Disgust Sensitivity	4.55 (0.93)	.17**								
2a. Core Disgust	4.97 (0.96)	.15*	.91***							
2b. Animal-Reminder Disgust	4.74 (1.30)	.08	.86***	.65***						
2c. Contamination Disgust	3.23 (1.21)	.23***	.63***	.43***	.35***					
3. Fear	2.94 (0.98)	-.00	.30***	.30***	.27***	.09				
4. Sadness	3.20 (0.84)	-.07	.13	.15*	.09	.04	.34***			
5. Anger	2.88 (0.98)	.04	.17*	.14*	.12	.17**	.24***	.44***		
6. Happiness	4.26 (0.82)	-.21**	-.01	.08	-.03	-.13*	-.00	-.21***	-.26***	
7. Islamophobia	3.17 (2.13)	.44***	-.07	-.08	-.02	-.08	-.04	.02	-.12	.08

Note. $N = 225$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Regressions predicting Islamophobia (Study 1)

Modulating Emotions											
Fear			Sadness			Anger			Happiness		
Step	1	2		1	2		1	2		1	2
ITG-DS	.44***	.42***	ITG-DS	.44***	.42***	ITG-DS	.44***	.42***	ITG-DS	.44***	.42***
Fear	.04	.04	Sadness	.01	-.00	Anger	.10°	.10°	Happiness	.00	.01
ITG-DSxFear		.16**	ITG-DSxSadness		.14**	ITG-DSxAnger		.09‡	ITG-DSxHappiness		-.06
R ²	.19***	.22**	R ²	.19***	.22**	R ²	.20***	.21	R ²	.19***	.19
R ² Change		.03**	R ² Change		.03**	R ² Change		.01‡	R ² Change		.00

Note. $N = 225$. ‡ $p = .10$, ° $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Unstandardized coefficients are reported (variables were standardized before analyses).

Table 3

Means and standard deviations for manipulation check measures by condition (Study 2)

	Manipulation Emotion			
	Fear (<i>n</i> =44)	Sadness (<i>n</i> =44)	Happiness (<i>n</i> =41)	Neutral (<i>n</i> =45)
Experienced Fear	4.81 (2.24)	2.81 (1.98)	0.23 (0.63)	0.51 (0.81)
Experienced Sadness	1.82 (1.76)	5.68 (1.54)	0.44 (0.79)	0.47 (0.74)
Experienced Happiness	1.17 (1.05)	1.25 (1.08)	5.75 (2.07)	2.34 (1.66)

Note. Standard deviations in parentheses.

Figure 1

Proposed Modulating Emotions Hypothesis

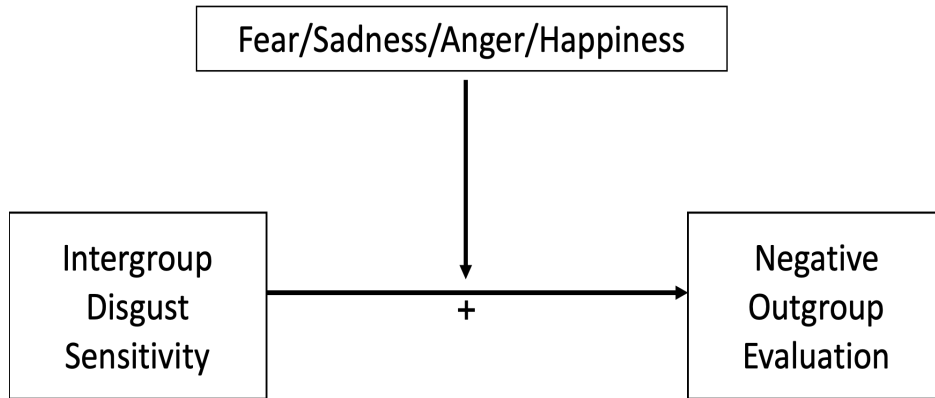


Figure 2

Modulating effects of Fear on the ITG-DS-Islamophobia Relation (Study 1)

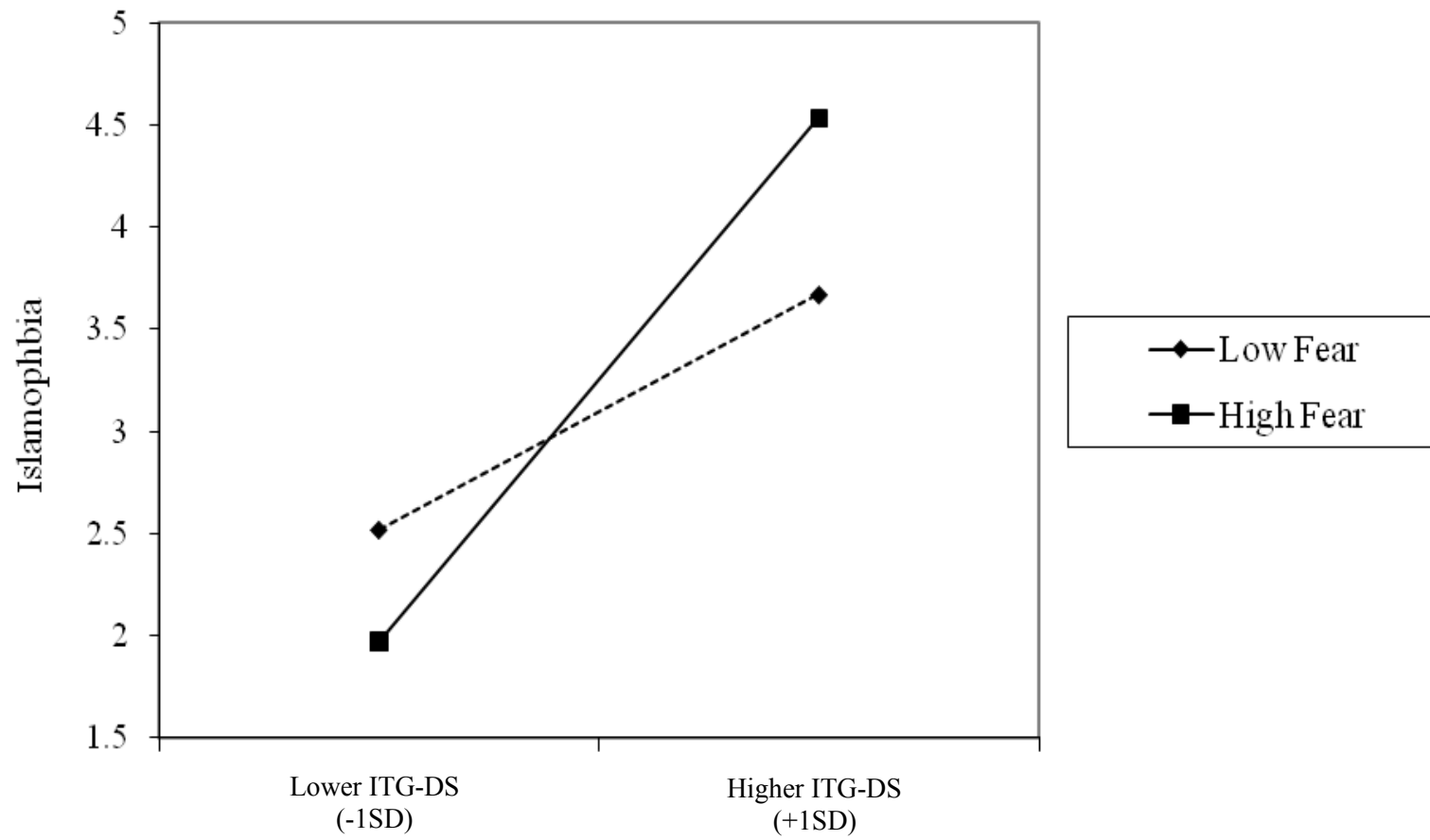
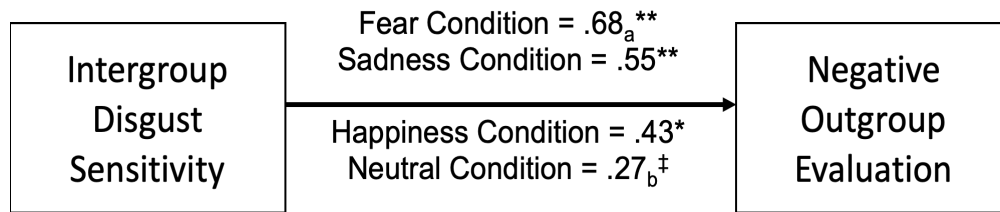


Figure 3

Standardized Path Coefficients between ITG-DS and Islamophobia by Condition (Study 2)



Note. $N = 174$. ‡ $p = .065$, * $p < .05$, ** $p < .001$. Reported values represent standardized path weights from ITG-DS to Islamophobia. ITG-DS accounted for 47%, 30%, 20% and 7% of the variance in Islamophobia in the fear, sadness, happiness, and neutral conditions, respectively. Differing subscripts denotes a significant difference between conditions, $p < .05$.