

Specific emotions as mediators of the effect of intergroup contact on prejudice: Findings  
across multiple participant and target groups

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Abstract

Emotions are increasingly being recognized as important aspects of prejudice and intergroup behavior. Specifically, emotional mediators play a key role in the process by which intergroup contact reduces prejudice towards outgroups. However, which particular emotions are most important for prejudice reduction, as well as the consistency and generality of emotion-prejudice relations across different ingroup-outgroup relations, remain uncertain. To address these issues, in Study 1 we examined 6 distinct positive and negative emotions as mediators of the contact-prejudice relations using representative samples of U. S. White, Black, and Asian American respondents (N = 639). Admiration and anger (but not other emotions) were significant mediators of the effects of previous contact on prejudice, consistently across different perceiver and target ethnic groups. Study 2 examined the same relations with student participants and gay men as the outgroup. Admiration and disgust mediated the effect of past contact on attitude. The findings confirm that not only negative emotions (anger or disgust, based on the specific types of threat perceived to be posed by an outgroup), but also positive, status- and esteem-related emotions (admiration) mediate effects of contact on prejudice, robustly across several different respondent and target groups.

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Intergroup contact reduces prejudice toward an outgroup, across a wide variety of perceiver and target groups (Allport, 1954; Brown & Hewstone, 2005; Pettigrew & Tropp, 2006). For example, contact improves attitudes towards gay men (Barron, Struckman-Johnson, Quevillon & Banka, 2008), the elderly (Caspi, 1984), Bosnian Serbs (Cehajic, Brown, & Castano, 2008), and Irish Catholics and Protestants (Hewstone, Cairns, Voci, Hamberger, & Niens, 2006). Recent work has emphasized the role of affective rather than cognitive processes in mediating this relationship. While information gained through contact can reduce prejudice by breaking down inaccurate negative stereotypes about the outgroup, several types of evidence suggest that this mediating process is of limited importance (Brown & Hewstone, 2005). The general consensus now seems to be that whereas changed beliefs about the outgroup play a small role in explaining reductions in prejudice, affective processes play a more critical mediational role (Tropp & Pettigrew, 2005; Miller, Smith, & Mackie, 2004). But which specific emotions are the most important mediators?

*Negative threat-related emotions.* Past theorizing has mostly focused on negative emotions<sup>1</sup> associated with different types of intergroup threats (e.g., Cottrell & Neuberg, 2005; Mackie, Devos, & Smith, 2000; Smith, 1993). For example, people might experience anxiety when an outgroup is perceived as physically or symbolically dangerous (or when interacting with outgroup members creates feelings of unease), anger at an outgroup that is seen as demanding unfair advantages, or disgust at an outgroup that

is perceived as potentially contaminating the ingroup.

Much research has examined the anxiety experienced during intergroup interactions (Stephan & Stephan, 1985). Although this emotion may arise for relatively benign reasons (e.g., a desire not to appear prejudiced, or ignorance about how to interact with the outgroup) it nevertheless has negative effects. It may narrow one's attention and lead to expectancy confirming biases, while amplifying threat-related appraisals of the outgroup (Van Zomeren, Fischer, & Spears, 2007). Intergroup anxiety is generally associated with an unwillingness to engage in intergroup contact (e.g., Islam & Hewstone, 1993; Voci & Hewstone, 2003), which obviously may be misconstrued by observers as dislike or outright prejudice.

Anger is an emotion associated with threats to personal or group resources (Cottrell & Neuberg, 2005). It is particularly related to economic threats (Cottrell & Neuberg, 2005; Tapias, Glaser, Keltner, Vasquez & Wickens, 2007), and increases the perceived certainty that an ingroup has been wronged (Kamans, van Zomeren, Gordijn, & Postmes, 2014). As a result, Van Zomeren, Spears, Leach and Fischer (2004) demonstrate that group-based anger leads to collective action tendencies against an outgroup.

In addition to anxiety and anger, disgust is also relevant for intergroup relations. Group-based disgust, at the most basic level, relates to a threat to group health via contagion, and is associated with groups such as homosexuals (Cottrell & Neuberg, 2005) or those that are perceived as posing moral threats or violating ingroup moral norms (Hutcherson & Gross, 2011).

Thus, several negative emotions may be relevant, depending on the type of threat perceived to be posed by the target group. Whereas anxiety is typically associated with avoidance of the outgroup, anger (an approach-oriented emotion) is associated with increased support for collective and hostile action (Miller, Cronin, Garcia & Branscombe 2009). Van Zomeren et al. (2007) demonstrated that high levels of intergroup anxiety can lead to an increase in feelings of threat, but that it is the resulting anger from this threat, not anxiety itself, that proximally relates to action tendencies towards the outgroup. In keeping with this, Tam et al. (2007) showed that intergroup contact improved attitudes toward an outgroup, mediated by a reduction in anger. Thus, anger plausibly plays a major role in explaining how contact changes intergroup attitudes and behavior. However, this may depend in part on the nature of the groups involved. For instance, Tapias et al. (2007) showed that while dispositional levels of anger predicted prejudice against ethnic outgroups, dispositional disgust predicted heterosexuals' prejudice against gay men. Thus, the role of specific emotions within an intergroup context may depend on the particular groups involved.

This view is in keeping with the idea (Cottrell & Neuberg, 2005) that different types of outgroups pose their own unique patterns of perceived threats to the ingroup, which generate distinct emotional reactions. Cottrell and Neuberg (2005) did not directly address the implications of their threat-based emotion model for the mediation of contact effects on prejudice. However, the implications are clear, though untested. If intergroup contact reduces perceptions of a particular type of threat, this would lead to a decrease in the specific corresponding threat-based emotion. Thus, one would expect that positive

contact with an outgroup would reduce the specific emotion tied to the threat perceived from that group (e.g., anger or disgust). Different negative emotions would then mediate the prejudice-reducing effects of contact depending on the specific combination of perceiver and target groups.

*Positive emotions.* But threat-based emotions are not the only ones that are potentially relevant to prejudice; positive emotions are important as well. Miller et al. (2004) found that past intergroup contact is associated with both a reduction in negative emotions and an increase in positive emotions. Moreover, the relationship between contact and prejudice was strongly mediated by positive emotions whereas negative emotions had a marginal effect. Theoretical analyses of the intergroup contact effect specifically emphasize the positive emotions that arise from a close friendship with an outgroup member (Brown & Hewstone, 2005; Ellison & Powers, 1994; Pettigrew & Tropp, 2006; Tropp, 2007). Intergroup friendship is associated with feelings of sympathy and admiration toward the friend's group (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). While contact may reduce threat-related emotions such as anxiety or anger, it may also increase positive emotions and approach behavior.

Although positive emotions are generally less differentiated than negative emotions (Fredrickson, 1998), we will examine two distinct forms, sympathy/pity and respect/admiration. Intergroup sympathy or pity occurs when outgroups are unable to fairly reciprocate to the ingroup for reasons out of their control (Cottrell & Neuberg, 2005). Pity or sympathy may motivate positive intergroup behavior such as donating to help refugees. Still, it is not necessarily an ideal mediator of prejudice reduction, as it

suggests a large status differential between groups and intergroup contact is most effective when there is equal status between groups or individuals (Pettigrew & Tropp, 2006).

Recent theoretical and empirical work has highlighted the potential role of admiration in intergroup relations (Sweetman, Spears, Livingstone, & Manstead, 2013). Admiration results from appraisals of an individual or group as high in perceived competence (closely tied to status) and/or warmth (Cuddy, Fiske, & Glick, 2008; Algoe & Haidt, 2009). The conceptualization of admiration as a distinct emotion is bolstered by work demonstrating that it has unique psychophysiological and neurological correlates including nonconscious systems such as hormone regulation and blood pressure (Immordino-Yang, McColl, Damasio, & Damasio, 2009). Experimental studies demonstrate the importance of admiration as a driver of intergroup attitudes and behavior. For example, heterosexuals who think about admired gays and lesbians exhibit less implicit antigay prejudice and more positive voting intentions toward gay rights (Dasgupta & Rivera, 2008). Similarly, priming Whites with admired Black and disliked White exemplars has been shown to reduce implicit bias against Blacks (Dasgupta & Greenwald, 2001). Bergsieker, Shelton, and Richeson (2010) demonstrated that in interracial interaction, racial minorities are especially focused on the desire to be respected or admired, a goal they seek by emphasizing their competence. Finally, Ray, Mackie, and Smith (2012) found that measured and manipulated admiration is a strong predictor of attitudes toward several specific social groups.

Admiration also plays an important role in regulating intergroup behavior,

because when a group is admired, people tend to take action supporting that group's goals. Sweetman et al. (2013) demonstrated that admiration toward dominant groups motivates deference toward them, thus inhibiting support for social change. In contrast, admiration toward oppressed or minority groups motivates support for those groups, including action aimed at changing social hierarchies. In either of these cases – whether with a high-status or low-status outgroup – admiration relates to positive attitudes (i.e., reduced prejudice) toward that outgroup. Sweetman et al. found that admiration had stronger effects on behavior compared to other emotions such as contempt, pity, and sympathy.

All this research suggests that to the extent intergroup contact induces feelings of admiration and respect for outgroup members, it should reduce prejudice – in other words, admiration should be an emotional mediator of the effect of contact on prejudice.

*Summary of hypotheses.* Thus, our two central hypotheses for these studies are:

1. Effects of contact on prejudice reduction should be partially mediated by reductions in negative emotions (e.g., anger, disgust, or anxiety) related to the specific type of threat perceived to be posed by the outgroup.

2. Effects of contact on prejudice reduction should be partially mediated by increases in the positive emotion of admiration toward the outgroup (Sweetman et al., 2013).

*Limitations of previous literature.* We have argued that affective mediators are central in the effect of intergroup contact on prejudice reduction, and that positive as well as negative emotions may play a significant role. However, conclusions based on



previous research are necessarily limited and tentative for a number of reasons. First, much existing research uses convenience samples such as student or community samples, and probes the effects of contact with only a single target group. Such a strategy is suitable for specific theory testing but is less able to demonstrate which emotions mediate the effect of contact on prejudice across a broader diversity of perceiver and target groups. Questions about whether similar or different emotional mediators operate in different intergroup situations cannot be answered if studies use non-comparable sample-selection procedures, measures of emotions and contact, or analytic approaches.

Second, of the studies that have used representative national samples to examine relationships between contact and prejudice, few have measured emotions as potential mediators. Moreover, the majority of studies that do focus on emotion mediators have examined only one or two emotions, often anxiety (e.g., Greenland & Brown, 1999; Islam & Hewstone, 1993). Such studies are incapable of determining if other emotions, potentially correlated with anxiety, are the actual mediators of the contact-prejudice relationship. Studies that measure only negative emotions but neglect positive emotions such as admiration might also present an incomplete picture, in light of the evidence reviewed above. Overall, we concur with Pettigrew's (1997, p. 181) advice that "research involving changes in prejudice should routinely include a range of affect measures."

Finally, different studies have measured affective mediators in two distinct ways. Some studies have assessed the emotions experienced within an actual or imagined contact situation, by asking how one would feel when interacting with an individual

outgroup member (e.g., Binder et al., 2009; Turner, Hewstone & Voci, 2007). Other studies, in contrast, have measured more general emotions toward an outgroup, for example the extent to which one feels angry, afraid, or disgusted about the group as a whole, driven by appraisals of the group (Cottrell & Neuberg, 2005; Miller et al., 2004). Although presumably related, these two measurement approaches are not directly comparable.

*The current studies.* To remedy several concerns regarding the existing literature, our first study uses a unique dataset. Most notably, it includes representative samples from three ethnic groups in the U.S. (White, Black, and Asian Americans) and randomly assigns each respondent one of the other two groups as a target, allowing unconfounded comparisons of responses to the different target groups by holding constant sample selection and question wordings. It also incorporates measures of multiple emotions, both positive and negative, felt toward the outgroup as a whole. Study 2 adds measures of emotions expected in a specific intergroup contact situation for a group that is predicted to elicit a different type of threat, gay men. Both studies examine a range of positive and negative emotions, to examine which ones mediate the effects of contact on prejudice for different groups. For studies 1 and 2, we report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures that we analyzed.

### **Study 1**

Our first study uses representative samples of U. S. Whites, Blacks, and Asians. Each respondent was randomly assigned one of the other two ethnic groups as a target for

questions about contact, emotions, and prejudiced attitudes. This study measures six distinct positive and negative emotions, allowing us to examine what emotions are the most important mediators of contact effects on prejudice, and whether the mediational processes are the same across the six possible perceiver-target group combinations.

## **Method**

*Data set.* The data were collected by Time-sharing Experiments for the Social Sciences (TESS), following a design proposed to TESS by Catherine Cottrell and Steven Neuberg. Following its standard policy, TESS made the data available exclusively to the proposers for 9 months, and then published the data for general research use. The present authors had no role in designing this study, including determining the sample size or question wordings.

These data were collected online between August 25-September 3, 2004 from a subset of the Knowledge Networks online panel. The panel is designed to be representative of the entire U.S. population. Panel households were initially recruited by random digit dialing, and then provided with computers and internet access if needed. (For a more complete description of the panel recruitment and general methodological approach, see <http://www.experimentcentral.org/data/data.php?pid=280>.) For the current study, roughly equal numbers of respondents self-identifying as White, Black, and Asian in ethnicity (and not claiming more than one ethnicity) were randomly selected from the panel. Each respondent was randomly assigned one of these three ethnic groups as a target for questions, and we analyzed only those respondents who were assigned an outgroup (i.e., omitting those who answered questions about their own ethnic group).

The total N is 639, meaning an average N of slightly over 100 for each of the 6 combinations of groups.

*Variables used in the analysis.* Five socio-demographic background variables were used as control variables in all analyses, because these variables might affect contact and/or prejudice levels and we wished to control for any potential spurious relationships. These are age (in years), education (coded as 1=less than high school, 2=high school, 3=some college, 4=bachelor's degree or higher), region of residence (Northeast, Midwest, South, West), gender (male, female), and ethnicity (White, Black, Asian). The ethnicity variable was combined for analysis with the randomly assigned target outgroup (also White, Black, Asian) used in the contact, emotion, and prejudice questions. The average age of the sample was 47.0 years, gender was 55% female, and the average education was 2.92 scale units (i.e., between high school and some college).

Contact with the target group was measured with the following question:

“Looking across your entire life, what kind of contact have you had with [WHITE/BLACK/ASIAN] Americans? As you read down this list, please select the first item that you come to that describes your experience.” (1) I have had a best friend or romantic partner who is [WHITE/BLACK/ASIAN] American. (2) ... many close friends ... (3) ... one close friend ... (4) ... a friend ... (5) ... a casual acquaintance or co-worker ... (6) I have seen [WHITE/BLACK/ASIAN] Americans in my neighborhood and around the community. (7) I have had no contact at all with [WHITE/BLACK/ASIAN] Americans. We reversed the direction of scoring (so that higher numbers indicate more contact) for ease of interpretation.

Emotions toward the group were measured with the wording “In general, how much respect or admiration do you have for [WHITE/BLACK/ASIAN] Americans, as a group?” with a response scale anchored at 1 (no respect or admiration at all), 4 (a moderate amount of respect or admiration), and 7 (an extreme amount of respect or admiration). The other emotions measured were angry or resentful (“In general, how angry or resentful are you towards...”); fearful or anxious; disgusted or sickened; jealous or envious; and pity or sympathy. Cottrell and Neuberg designed these questions with two related emotion labels in each question (e.g., respect and admiration), presumably to attain the advantages of a multi-item scale (i.e., increased conceptual breadth and reliability compared to just a single item), while taking less interview time than asking separately about each emotion and then averaging the responses. Finally, general prejudice toward the target group was measured with “In general, how do you feel toward [White/Black/Asian] Americans, as a group?” with responses from (1) extremely unfavorable to (7) extremely favorable, again reverse scored so higher numbers mean more prejudiced attitudes.

The order of these questions was varied across respondents. After the attitude question and the respect/admiration emotion item, the order of the other 5 emotion measures was randomized for each respondent. The contact question always came last.

***Analytic approach.*** We assume a path model (shown in Figure 1) from contact to emotions as mediators, with prejudice as the final dependent variable, consistent with the generally accepted idea that prejudice represents an attitude that summarizes and is based

on affective, cognitive, or behavioral types of information. All analyses also include the background variables listed above.

[INSERT FIGURE 1 ABOUT HERE]

## Results

*Descriptive statistics.* The mean attitudes, emotions, and contact for each pair of groups are presented in Appendix A.

*Predictors of prejudice.* In a regression including only the background variables, the main effect of Group (i.e., the six combinations of perceiver and target groups), and contact as predictors (without the emotion mediators), contact significantly related to prejudice,  $b = -0.17$ ,  $p < .001$ . Thus, replicating many previous studies (Pettigrew & Tropp, 2006) in our sample contact is associated with lower prejudice across all combinations of perceiver and target groups. To begin investigating the mediation of this effect, we added the six measured emotions to this regression as predictors. This preliminary analysis, shown in Table 1, found that anxiety, disgust, envy, and sympathy were not significant independent predictors of prejudice, all  $p$ 's  $> .35$ . These emotions were dropped from further analyses, leaving anger and admiration as the two candidate emotion mediators.

[INSERT TABLE 1 ABOUT HERE]

*Mediation model.* The structural equation model to examine mediation was run using the *sem* function of the “lavaan” package (v 0.5-20; Rosseel, 2012) under R version 3.2.0 (R Core Team, 2015). We used a multiple-groups analysis, allowing all regression coefficients except those of immediate interest to be estimated freely in each of the six

groups. This reflects the assumption that the sociodemographic determinants of emotions, prejudice, etc. may vary across groups and are not our central question in this paper. For each of the four parameters relevant to our questions about mediation, we tested whether constraining the parameters to be equal across the six groups led to a significant decrease in model fit; this is a test of the equality of the parameters across groups. For the effect of admiration on prejudice, this test showed significant differences across groups ( $\text{Chi-sq}(5) = 22.46, p < .001$ ). For the other three key parameters differences between groups were nonsignificant: effect of contact on admiration ( $\text{Chi-sq}(5) = 2.16, p = .83$ ); effect of contact on anger ( $\text{Chi-sq}(5) = 8.08, p = .15$ ); effect of anger on prejudice ( $\text{Chi-sq}(5) = 6.49, p = .26$ ).

Table 2 shows the results for the WB group, White perceivers and Black targets. (Results for all groups, as well as the correlation matrix combining all six groups, are included in supplementary online material.) In this model, the three parameters just listed were constrained to be equal for all groups, while the effect of admiration on attitude was allowed to vary. Overall the fit of this model to data is excellent, with a cumulative fit index of .995 and RMS error of approximation of .040. A nonsignificant chi-square(15) = 17.482,  $p = .29$  indicates deviations from fit are nonsignificant.

In the WB group, contact is not a significant predictor of attitude, suggesting that its effect is fully mediated by emotions. The same is true in four of the other five groups (all but AB). Anger has a significant positive effect on prejudice ( $b = .12$ ), which as noted above does not statistically vary across groups. Admiration has a strong and significant negative effect, estimated at  $-.59$  if it is constrained to be equal across groups. The

difference between the absolute value of these two coefficients is significant (Chi-sq(1) = 56.75,  $p < .0001$ ; tested through the decrement in model fit if they are constrained to be equal, after reflecting the anger variable so the coefficients have the same sign).

However, as noted above, the effect of admiration varies if estimated separately in each group (significant in each case). The effect was strongest for Asians evaluating Whites ( $b = -.85$ ) and weakest for Blacks evaluating Asians ( $b = -.36$ ).

[INSERT TABLE 2 ABOUT HERE]

Based on these regression coefficients, the *sem* function computes the indirect effects, mediated by admiration (computed separately in each group) and by anger (constrained to be equal across groups as discussed above). The standard errors and significance tests are calculated using the Bollen-Stine bootstrap procedure, using default parameters for the function (Rosseel, 2012). Results are shown in Table 3. Overall, admiration is a strong and highly significant mediator for each pair of perceiver and target groups, though the magnitude of the effects varies across groups by a little over 2:1. The mediation by anger is descriptively smaller and similar in size across groups.

[TABLE 3 ABOUT HERE]

*Effects of anxiety.* Additionally, we ran an analysis including fear/anxiety as the sole emotion measure to see if this data set could replicate typical results found with such an analysis. In a regression also including contact and the background variables, anxiety is a highly significant predictor of prejudice ( $b = .19$ ,  $p < .001$ ). Contact still has a significant effect ( $b = -.15$ ,  $p < .001$ ), indicating that only a small portion of its total effect (-.02 of -.17) is mediated through anxiety.



## Discussion

Using a unique sample that is representative of three ethnic groups in the U.S. and that allowed us to examine respondents and targets representing all possible pairs of those groups, we investigated the relationships between contact, emotions, and prejudice using identical sampling designs, measures, and analytic models.

The most important result of Study 1 is that the causal processes that predict prejudice (Figure 1) are generally similar across all combinations of perceiver and target ethnic groups. Increased intergroup contact is associated with an increase in a positive emotion that reflects appraisals of warmth and status (admiration) and a decrease in a threat-based emotion (anger) toward the outgroup. In turn, both of these emotions predict reduced prejudice toward the outgroup, with admiration having the stronger effect. Four other emotions (anxiety, disgust, envy, and sympathy) had no significant independent effects on prejudice.

Even though we find that the mediating processes underlying the relations between contact and prejudice are similar across these ethnic groups, we certainly accept the idea that distinct perceived threats create different emotional responses depending on the perceiver and target groups (e.g., Cottrell & Neuberg, 2005). However, the fact that one group elicits a high *level* of a particular emotion from another does not mean that emotion is necessarily an important *mediator* of contact effects. Here, mediational effects were similar across all group pairs. Admiration and anger mediate the effects of contact on prejudice for ethnic groups, whether in a majority-minority context (i.e., for a

majority group perceiver and a minority group target), a minority-majority context, or a minority-minority context.

Admiration has a larger effect on prejudice, and mediates more of the contact-prejudice link, than anger. This effect is consistent with previous work showing that admiration for an outgroup promotes positive attitudes and supportive actions toward that group (Sweetman et al., 2013). The effect of admiration on prejudice was the one key parameter in our multi-group model that varied significantly across groups. Generally, the effect of admiration was relatively strong when Whites were the target group, and weakest in the Asian-Black pairings (see Table 3). The generally greater effect of admiration directed toward Whites makes sense since that emotion is strongly tied to perceived status or competence (Sweetman et al., 2013; Bergsieker et al., 2010). Thus, minority group members who acknowledge Whites' high status through feelings of respect and admiration are also likely to hold more generally positive attitudes toward Whites. Anger, the other mediator that we found effective, is a key variable for both attitudes and action tendencies directed towards many types of outgroups (e.g., Smith, Seger, & Mackie, 2007; Tam et al. 2007). For relations among ethnic groups in the U.S., the relevant intergroup threats seem mainly economic; such threats seem generally likely to involve feelings of anger (e.g., Cottrell & Neuberg, 2005; Tapias et al., 2007), consistent with the pattern found in this study.

*The issue of intergroup anxiety.* In contrast to some previous research, we did not find intergroup anxiety to have a significant mediational effect on prejudice, despite our study's large N. However, some previous research showing an effect for anxiety

measured only that one emotion, not a range of emotions, and as reported above we replicate that finding in our sample when anxiety is considered alone. However, when the effects of all six emotions are examined simultaneously, the results change because emotions are generally correlated with each other. Anger and admiration have significant independent predictive power, but anxiety, disgust, envy, and sympathy do not.

Another difference between this study and some previous research is that intergroup anxiety has often been conceptualized and measured as a feeling of unease and discomfort about a real or imagined intergroup interaction. For example, Binder et al. (2009) measured anxiety in an imagined intergroup interaction and considered it as a mediator of effects on reactions to the outgroup. In contrast, in Study 1 (as in other previous research such as Cottrell & Neuberg, 2005; Miller et al., 2004) the emotion measure tapped feelings of anxiety directed at the outgroup as a whole. These two approaches are related but clearly not identical, and the difference in measurement approach may partially account for the differences in findings with regard to anxiety.

## **Study 2**

Study 2 therefore aimed to examine the relations between prejudice and specific emotions felt in intergroup contact situations as well as general emotions. This study would reveal whether the mediational relationships are similar for both of these emotion measurement approaches that have been used in the literature. We also sought to test the generality of our findings with another type of target group, gay men. We chose gay men because antigay prejudice is linked specifically to threats of moral contamination which result in feelings of disgust (Cottrell & Neuberg, 2005; Herek & Capitanio, 1996; Inbar et

al., 2009; Tapias et al., 2007)<sup>2</sup>. Hence in study 2 we expected that disgust may have a more important mediational role than anger or other negative emotions. Furthermore, we take a more typical approach by measuring separately each emotion in the pairs used in Study 1.

### **Method**

*Participants.* We attempted to obtain 100-120 participants, comparable to the size of each group in Study 1. Participants (N = 119) were first-year college students enrolled at a Midwestern University. Their mean age was 18.98 years ( $SD = 1.59$  years). Most participants reported themselves as female (81.5%), White (75.6%), heterosexual (95.8%) and citizens of the United States (92.4%). They received course credit for completing the study.

*Materials and Procedure.* Participants completed a series of computer-administered questionnaires.<sup>3</sup> Participants first reported prejudice toward gay men using a 7-point Likert-scale that asked how they felt in general toward the target group. We scaled this so higher numbers indicated more prejudice.

Participants were then asked to report how they would feel if they were to meet a gay man in the future. Specifically, they reported the extent to which they anticipated feeling twelve emotions. We averaged their responses across admiration + respectful, angry + resentful, anxious + fearful, disgusted + sickened, envious + jealous, and sympathy + pity to replicate the emotion pairs assessed in Study 1. Each item used a 7-point Likert scale anchored at “not at all” and “very much.” Higher numbers indicated experiencing the emotion with greater intensity. The order of these emotion items was

randomized.<sup>4</sup> After reporting their emotions in a specific contact situation, participants rated the extent to which they felt these emotions toward *gay men in general*.

Specifically, participants were instructed: “Now we would like to ask you about the feelings you have toward gay men IN GENERAL. Please note that these feelings may be SIMILAR OR DIFFERENT from what you just reported regarding your expected feelings when meeting a PARTICULAR gay man.” The individual items emphasized that they were about the group as a whole: “In general, how much [emotion] do you have for gay men, as a group?” Participants rated the same twelve emotions, in randomized order.

Next, participants reported their previous contact experiences. We wished to improve on the ad-hoc single item contact measure used in study 1, so we adapted the 12-item previous contact questionnaire used by Islam and Hewstone (1993). The questionnaire consists of three sub-scales that assess the quantity of previous contact (five items), the quality of previous contact (five items), and the intergroup nature of previous contact (two items). Sample items from each sub-scale include: “Please rate the frequency of visits you have made to a gay man’s home (can be their apartment, dorm room, etc.)” (quantity), “To what extent were your previous interactions with gay men superficial or close?” (quality), and “Please rate the extent to which you usually saw the gay men with whom you had contact as typical gay men?” (intergroup). Each item was rated on a 7-point Likert scale, with higher numbers indicating greater quantity, greater quality, or the contact being of a more intergroup nature. The subjective nature of judgments about quality of contact means that the respondent’s attitude toward the group

could contaminate this measure, so we used the quantity of contact subscale in all analyses reported here. (Analyses using quality instead produce highly similar results.)

Finally, participants provided information about their age, gender, racial/ethnic categorization, citizenship status, and sexual orientation. The five participants who reported other than heterosexual orientation were excluded from analysis, leaving a final N of 114.

## Results

First, we examined whether general emotions toward the outgroup overall relate to prejudice in the same way as in Study 1. Study 1 controlled for a range of background and demographic variables. Similarly, all analyses for Study 2 include controls for participant's gender and race, coded as White/non-White because individual non-White groups were too small in number. (On the other variables controlled in Study 1, our student sample is quite homogeneous.) This model also includes intergroup contact. In this model, participant race and previous contact had significant effects on prejudice (see Table 4, left side). Two of the emotion measures, admiration and disgust, had effects each with  $p < .001$ . Admiration is associated with lower levels of prejudice, and disgust with higher levels.

[INSERT TABLE 4 ABOUT HERE]

To examine the parallel mediational model as in Study 1, we looked at indirect effects of past contact on prejudice, through these two emotions of admiration and disgust (with gender and race included as control variables). The relevant regression analyses are shown on the left side of Table 5. The effects of contact on admiration ( $b = 0.45$ ,  $p <$

.001) and disgust, ( $b = -0.35, p < .001$ ) were significant. As research typically finds (e.g., Herek, 2002), women also reported significantly less disgust than men. Because both admiration and disgust also had significant effects on prejudice ( $p < .001$ ), both of these emotions were mediators of the contact effect. In contrast to study 1, the magnitude of these coefficients did not differ significantly. Bootstrapped estimates of the indirect effects using the Bollen-Stine procedure were  $-.162$  (CI:  $-.062, -.262; p = .001$ ) for admiration and  $-.148$  (CI:  $-.038, -.258; p = .007$ ) for disgust.

[INSERT TABLE 5 ABOUT HERE]

*Emotions in specific contact situations.* Study 1 measured only general emotions toward the outgroup as a whole, whereas this study also examined emotions felt in a specific intergroup encounter. We performed the same analysis described in the previous section with the emotions felt in a specific interaction, obtaining highly similar results (see Table 4, right side). Besides significant effects of previous contact and race, admiration and disgust were again the only significant emotional predictors of prejudice (with  $p$ 's  $\leq .001$ ).

The right side of Table 5 shows the mediation model. The results for admiration and disgust in contact situations are highly similar to the general-emotion analyses just reported. Bootstrapped estimates of the indirect effects using the Bollen-Stine procedure were  $-.138$  (CI:  $-.040, -.236; p = .005$ ) for admiration and  $-.153$  (CI:  $-.019, -.287; p = .02$ ) for disgust.

## **Discussion**

In summary, whether the measures assess emotions felt toward the group in general or those felt in a specific contact situation, the mediation analyses show near-identical patterns. In predicting prejudice toward gay men, increased levels of a positive emotion (admiration) and decreased levels of a threat-based emotion (disgust) mediate the effects of previous contact with the group. Other emotions were not independently related to prejudice and so were not significant mediators of this effect. The strong effect of admiration replicates Study 1, but this study finds effects of a different threat-based emotion (disgust rather than anger), consistent with the idea that different types of groups are perceived as posing different types of intergroup threats (Tapias et al., 2007).

### **General Discussion**

In two studies, participants reported past contact and rated their emotions and attitudes toward ethnic outgroups (Study 1) and gay men (Study 2). Unlike previous research, which has often focused on only one or two emotions, these studies measured six distinct emotions. In both studies, respect/admiration, a positive emotion that reflects perceived warmth and competence or status, significantly mediated effects of contact on attitudes toward the target groups. Anger was a mediator for prejudice toward ethnic groups and disgust for prejudice toward gay men, consistent with the distinct threats perceived to be posed by those groups under the sociofunctional threat model (Cottrell & Neuberg, 2005; Tapias et al., 2007). Other emotions were not significant mediators. In Study 2 almost completely parallel results were found both for measures of general emotions felt toward the outgroup and measures of specific emotions in a hypothetical intergroup encounter.



The similarity of the results is remarkable considering the several differences between these two studies. First, the studies use a representative sample of the U. S. population versus college student volunteers. Therefore, the replication suggests that the findings are not limited to a specific sample. Second, the target group was an ethnic outgroup in Study 1 but gay men in Study 2. Gay men are typically perceived as posing a different type of threat (i.e., contamination to ingroup; Cottrell & Neuberg, 2005) compared to ethnic groups (probably mostly economic threats). Third, in Study 1 the order of the emotion items was randomized except for respect/admiration, which was always measured first. That study left open the possibility that the strong effect of that emotion could be due to a theoretically uninteresting order effect. However, Study 2 replicated the effect of admiration while fully randomizing the order of all emotion items for each participant, removing any plausibility of this explanation.

Finally, Study 2 obtains parallel findings with measures of emotions toward groups in general versus emotions expected in specific interactions. Thus, this difference in measurement strategy is not a plausible explanation of differences in results between these studies and other research that finds anxiety to be a major influence on intergroup attitudes (e.g., Paolini, Hewstone, Cairns, & Voci, 2004; Stephan & Stephan, 1985; Voci & Hewstone, 2003). Even when emotions expected in specific interactions were considered, admiration and disgust rather than anxiety were the dominant predictors of prejudice. And these parallel findings could not be due to responses to general emotion questions influencing measurement of specific emotions, since the specific emotions were measured first.

Beyond negative threat-based emotions, both studies point to the significant role of admiration. Indeed, positive emotions such as admiration have long been thought to be a critical factor in mediating the contact-prejudice relationship, and these studies clearly document its importance in shaping intergroup attitudes. Admiration, defined as an other-praising emotion by Haidt (2003), implies a sense of approval toward the outgroup as a whole, and may motivate positive behaviors toward group members (Algoe & Haidt, 2009). Admiration is associated with positive behaviors such as intergroup cooperation (e.g., Aronson & Patone, 1997) and the tendency to act to support the admired group's goals (Sweetman et al., 2013). It also relates to a positive status or social image, suggesting that a group is respected and valued in the eyes of others<sup>5</sup> (Cuddy et al., 2008; Wolfensberger, 1983). As noted earlier, recalling or seeing admired outgroup individuals can reduce prejudice toward an entire social group (Dasgupta & Greenwald, 2001). Therefore, it is no surprise that admiration, the emotion most strongly associated with a positive social image, had a strong role in mediating the effect of contact on attitudes.

The other positive emotion in our studies, sympathy/pity, did not have such an effect. Similarly, Sweetman et al. (2013) found admiration significantly predicted political action in favor of an outgroup while sympathy did not. This could be because sympathy toward a group is associated with perceptions that it is lower in status or has a more negative image (e.g., sympathy for refugees or AIDS patients), in contrast to admiration which reflects positive appraisals of warmth and/or status. Sympathy is often felt when people are attitudinally ambivalent toward members of stigmatized groups (Katz, Wackenhut, & Hass, 1986; Fiske, Cuddy, Glick, & Xu, 2002), so it would be

unlikely to relate to unambiguously positive attitudes. In this regard, one limitation of our studies is that the questions for Study 1 combined sympathy and pity into a single item, but recent work suggests that these are not exact synonyms (Harth, Kessler, & Leach, 2008; Stellar & Keltner, 2014). Future research should use more precise wordings to measure these emotions.

### **Implications and Conclusion**

These results add to a growing body of research suggesting that emotions play a key role in intergroup attitudes and behaviors, specifically in mediating the effect of contact on prejudice (Brown & Hewstone, 2005; Miller et al., 2004; Pettigrew & Tropp, 2005; Smith et al., 2007). Study 1 especially is based on a unique dataset from a representative national sample, that affords clean comparisons of results across 6 distinct combinations of perceiver and target groups, without the methodological differences that usually confound comparisons across studies. Our two studies robustly show that a positive friendship-related emotion, admiration, plus specific threat based emotions mediate the effects of contact on prejudice toward outgroups. The consistency of results is impressive in view of between-group differences in overall attitudes, emotions, levels of contact, group status, and historical/structural relationships among groups.

These studies add a dynamic dimension to the study of intergroup emotions. Much past work (e.g., Cottrell & Neuberg, 2005; Mackie et al., 2000) has been aimed at understanding the group-based appraisals that cause such emotions, or the effects of emotions on such important variables as collective action (e.g., van Zomeren et al., 2004). Here we move beyond looking at causes and consequences of the *levels* of

particular emotions experienced in specific intergroup situations, to examine how *changes* in these emotions participate in the well-documented causal pathway from intergroup contact to prejudice. In this way, our work bridges the literatures on contact and prejudice and on intergroup emotions, which have had surprisingly little intersection to date.

Overall, our findings provide strong support for the generalizability of the affective processes that underlie intergroup attitudes – generalizability across multiple perceiver and target groups, across the entire U.S. population (based on the representative sample in Study 1), and across emotions felt in general and emotions felt in response to a more specific intergroup situation (Study 2). The robustness of these effects should encourage researchers to examine further the impact of positive emotions, specifically admiration, as well as a range of negative threat-based emotions, in prejudice and intergroup behavior.

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Table 1. Unstandardized parameter estimates for the effects of emotions, contact, and background variables on prejudice, Study 1 (R-squared = .40).

Parameter	Estimate	Std. Err.	t-value
Contact	-.021	.028	-.762
Age	-.001	.003	-.519
Education	-.063	.047	-1.328
Region (Midwest)	.018	.140	.132
Region (South)	.046	.127	.358
Region (West)	.087	.137	.638
Region (Northeast)+	.000	--	--
Gender (Female)	-.117	.086	-1.369
Group (WA)	.041	.146	.283
Group (BW)	-.009	.146	-.062
Group (BA)	.134	.153	.871
Group (AW)	-.074	.172	-.430
Group (AB)	.461	.165	2.789**
Group (WB)+	.000	--	--

Table 1, continued

Admiration	-.557	.038	-14.733***
Anger	.119	.046	2.589**
Anxiety	.036	.041	.870
Disgust	.038	.046	.816
Envy	-.044	.043	-1.023
Sympathy	-.008	.031	-.252

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ ; two-tailed tests.

+ reference category of a categorical variable

Table 2. Unstandardized parameter estimates for the three equations of our structural model, for the WB group (White perceivers, Black targets). The three parameters shown with (a), (b), and (d) are constrained to be equal across all six groups, while (c) and all other regression coefficients shown are freely estimated in each group. Results for the other five groups are contained in online supplemental material.

	Estimate	Std. err.	Z value
Admiration predicted by:			
Age	.002	.007	.239
Region (Midwest)	-.457	.306	-1.495
Region (South)	-.675	.317	-2.131*
Region (West)	-.823	.339	-2.428*
Region (Northeast)+	.000	--	--
Education	-.117	.117	-1.001
Gender (Female)	.253	.207	1.219
Contact (a)	.160	.030	5.272***
Anger predicted by:			
Age	.009	.007	1.217
Region (Midwest)	.075	.320	.233
Region (South)	-.261	.332	-.786
Region (West)	-.417	.355	-1.175
Region (Northeast)+	.000	--	--
Education	.037	.122	.299



Table 2, continued.

Gender (Female)	-.402	.217	-1.853
Contact (b)	-.154	.030	-5.100***
Prejudice predicted by:			
Age	-.001	.006	-.137
Region (Midwest)	-.088	.255	-.345
Region (South)	-.009	.268	-.035
Region (West)	-.537	.289	-1.858
Region (Northeast)+	.000	--	--
Education	.163	.097	1.681
Gender (Female)	-.053	.173	-.309
Contact	.015	.056	.270
Admiration (c)	-.762	.081	-9.452***
Anger (d)	.118	.033	3.548***

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ ; two-tailed tests.

+ reference category of a categorical variable

Table 3. Estimates and bootstrap significance tests of indirect (mediated) effects,  
Study 1.

Effect of contact on prejudice mediated through:	Group	Estimate	Std. Error	Z value
Admiration	WB	-.122	.026	-4.604***
Admiration	WA	-.089	.020	-4.354***
Admiration	BW	-.096	.022	-4.340***
Admiration	BA	-.058	.018	-3.222***
Admiration	AW	-.135	.030	-4.568***
Admiration	AB	-.069	.018	-3.777***
Anger	(all)	-.018	.006	-2.912**

\*\*  $p < .01$  \*\*\*  $p < .001$ ; two-tailed tests.

Table 4. Unstandardized parameter estimates for the effect on prejudice toward gay men of contact, background variables, and general emotions (left side) and emotions in specific contact situations (right side), Study 2 (R-squared = .73 and .70 respectively).

Parameter	Emotions toward outgroup in general		Emotions in specific contact situation	
	Estimate	t-value	Estimate	t-value
Contact	-.322	-4.139***	-.323	-3.847***
Gender (Female)	-.553	-1.942	-.601	-1.944
Race (White)	-.575	-2.44*	-.502	-2.004*
Admiration	-.354	-4.783***	-.338	-3.695***
Anger	-.0555	-.342	-.016	-.086
Fear	-.197	-1.244	-.023	-.124
Envy	.088	.388	-.271	-1.544
Pity	-.078	-.992	-.006	-.066
Disgust	.532	4.646***	.561	4.227***

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ ; two-tailed tests.

Table 5. SEM unstandardized parameter estimates for the effect of contact and background variables on prejudice, mediated by general emotions of admiration and disgust toward the outgroup (left side) and emotions in specific contact situations (right side), Study 2

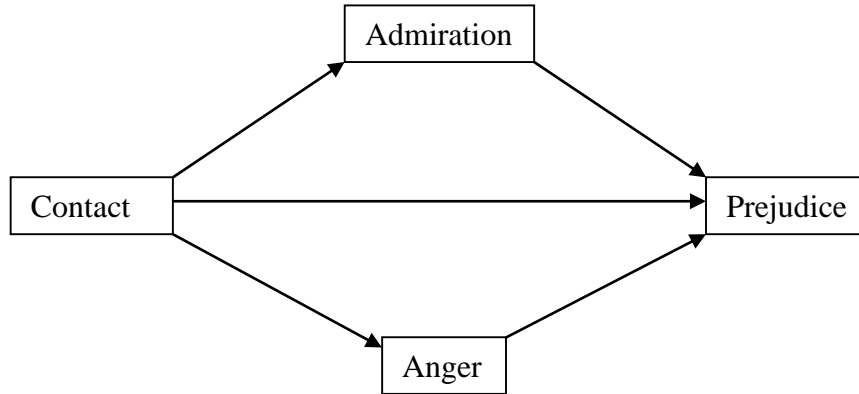
	General emotions toward group			Emotions in specific contact situation		
	Estimate	Std. err.	Z value	Estimate	Std. err.	Z value
Admiration						
predicted by:						
Gender (F)	.769	.415	1.855	.354	.378	.938
Race (W)	-.494	.349	-1.418	-.442	.318	-1.390
Contact	.445	.109	-3.348***	.384	.099	3.869***
Disgust						
predicted by:						
Gender (F)	-.856	.403	-2.127*	-.923	.324	-2.847**
Race (W)	.313	.339	.924	.336	.273	.218
Contact	-.354	.106	-3.348***	-.311	.085	-3.645***
Prejudice						
predicted by:						
Gender (F)	-.537	.274	-1.958*	-.591	.292	-2.026*
Race (W)	.534	.226	2.363*	.519	.240	2.166*

Table 5, continued.

Contact	-.331	.078	-4.262***	-.349	.082	-4.236***
Admiration	-.364	.060	-6.077***	-.361	.070	-5.180***
Disgust	.418	.062	6.776***	.494	.081	6.092***

\*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Figure 1. Path model showing the effect of contact on prejudice, as mediated by admiration and anger.



## Appendix A

Mean attitude, emotion, and intergroup contact for each group pair in Study 1.

Respondent Group	Target Group	N*	Prejudice	Anger	Admiration	Anxiety
White	Black	110	3.37ab	1.87ab	4.26	2.26b
White	Asian	121	3.32b	1.55a	4.38	1.52a
Black	White	126	3.35b	2.27c	4.3	1.72a
Black	Asian	110	3.34b	1.55a	4.5	1.50a
Asian	White	81	3.03b	2.04bc	4.65	2.15b
Asian	Black	88	3.73a	2.08bc	4.38	2.65c
Overall test for between-group differences			F(5, 628) = 2.46, $p < .05$	F(5, 630) = 6.21, $p < .001$	F(5, 629) = 1.27, ns	F(5, 627) = 14.21, $p < .001$

Appendix A, continued.

Respondent Group	Target Group	Disgust	Envy	Sympathy	Contact
White	Black	1.89ab	1.28a	2.45b	2.22b
White	Asian	1.51a	1.31a	1.89a	1.86a
Black	White	2.09b	1.58ab	2.32b	2.59c
Black	Asian	1.60a	1.51a	1.94a	1.73a
Asian	White	2.25b	2.30c	2.51b	2.67c
Asian	Black	2.24b	1.89b	3.07c	2.17b
Overall test for between-group differences		F(5, 629) = 6.67, $p < .001$	F (5, 628) = 11.15, $p < .001$	F(5, 626) = 8.49, $p < .001$	F(5, 633) = 37.46, $p < .001$

\* The N may vary slightly across each column, due to a small number of invalid responses.



ENDNOTES

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<sup>1</sup> In this study we do not measure emotions in the sense of episodic reactions to appraisals of a specific event, but broader emotional sentiments directed toward a target (as one might feel anger toward the landlord or fear of a dog). Work on intergroup emotions describes how such group-targeted emotions may become associated with groups, after building up on the basis of repeated emotional episodes (e.g., Mackie, Devos, & Smith, 2000; Cottrell & Neuberg, 2005).

<sup>2</sup> Attitudes toward lesbians may be more multifaceted than attitudes towards gay men, especially for male respondents (Herek, 2000). Therefore, gay men rather than homosexuals or ‘gays and lesbians’ were used as the target group.

<sup>3</sup> These questionnaires were completed at the end of an unrelated study that assessed evaluations of target individuals who had a large versus small number of outgroup friends. That study focused on racial groups and consequently was judged as being sufficiently unrelated to the content of this study.

<sup>4</sup> Additional questions, not analyzed here, asked about feeling awkward, competent, happy, relaxed, and self-conscious.

<sup>5</sup> Of course, seeing a potentially competing group as competent without warmth or positive valuation in such a situation may lead to negative attitudes and feelings of anger, envy, or anxiety (Fiske, Cuddy, Glick, & Xu, 2002).