



elimination. These three emotions are elicited by violations of different moral codes: (1) anger is triggered by violations of individual rights and autonomy and appraisals of self-relevance; (2) contempt by violations of communal codes and hierarchy and appraisals of other's incompetence or lack of intelligence; and (3) disgust by violations of codes for purity and sanctity and appraisals of other's moral untrustworthiness (Hutcherson & Gross, 2011; Rozin, Lowery, Imada, & Haidt, 1999).

In terms of functions, anger facilitates the removal of obstacles, contempt makes a statement about inherent moral superiority, and disgust helps to eliminate or repulse contaminated objects (Rozin, Lowery et al., 1999). Anger has been associated with more short-term attack responses but also long-term reconciliation, in which individuals seek a less negative outcome by coercing change in another person's behavior (Fischer & Roseman, 2007). Contempt is longer lasting, characterized by rejection, derogation, and social exclusion of others in both short and long term, implying more negative and permanent changes in beliefs about another person. Contempt is the feeling when one judges another person to be an inferior human being (Fischer, 2011). Anger has been related to normative social actions, such as participating in demonstrations, signing petitions, or participating in acts of civil disobedience, whereas contempt is related to non-normative social actions, such as sabotage, violence, or terrorism (Tausch et al., 2011). Contempt has also been implicated in theories of prejudice (Brewer, 1999), and disgust has been central to theories and empirical work on dehumanization (Buckels & Trapnell, 2013; Cortes, Demoulin, Rodriguez, Rodriguez, & Leyens, 2005; Demoulin et al., 2004) and prejudice (Dasgupta, DeSteno, Williams, & Hunsinger, 2009; Levin, Pratto, Matthews, Sidanius, & Kteily, 2013).

Recent studies have demonstrated a link between intergroup aggression and the combination of anger, contempt, and disgust (Matsumoto, Hwang, & Frank, 2013, 2014a, 2014b). These studies examined the verbal and nonverbal behavior produced by leaders of ideologically motivated groups that subsequently either committed an act of aggression or engaged in an act of non-violent resistance against an opponent outgroup. Speeches of leaders as they talked about their opponent outgroups were obtained at three points in time leading up to the identified acts. Verbal and nonverbal behavior associated with those three emotions (and others) were assessed. Leaders of groups that eventually committed acts of aggression expressed metaphorical appraisals and nonverbal behavior related to anger, contempt, and disgust toward their opponent outgroups; other emotions did not differentiate groups that committed acts of aggression from those that did not.

These latest findings have led to the anger, contempt, and disgust (ANCODI) hypothesis of intergroup aggression, namely that this combination is a deadly mix that fuels intergroup hostility through condescension, dehumanization, and elimination, and that may serve as the basis of intergroup hatred (Matsumoto et al., 2013, 2014a, 2014b; Matsumoto, Frank, & Hwang, 2015). According to the ANCODI hypothesis, not only anger but also contempt and disgust are important emotions to consider for intergroup aggression because they represent a shift from making a temporary assessment about an act committed by a group (anger) toward a permanent assessment of the nature of the opponent group (contempt) and its future status (disgust). Contempt provides moral justification for aggression by claiming the righteousness of one's existence and actions; disgust provides the impetus for elimination through perceptions of contamination. These emotions are ameliorated through elimination of the disgusting items, and in combination with anger fuel intergroup aggression and violence, are likely to form the basis of intergroup hatred.

The ANCODI hypothesis allows a more precise specification of the emotional factors that contribute to intergroup aggression and allows for a possible redefining of "hatred." Thus, for intergroup aggression, it may be better to focus on the constellation of these three emotions to predict behavior rather than on single emotions. In Matsumoto et al.'s (2013, 2014a, 2014b) studies, words, language-based appraisals, and nonverbal behavior associated with anger by themselves did not differentiate groups that committed acts of aggression from those that did not; contempt and disgust were linked to the expressions of anger when it came to actual, real world violence. Anger, contempt, and disgust were also intercorrelated when expressed prior to acts of aggression; they were not correlated, however, prior to acts of resistance. Anger, in the absence of hatred (contempt and disgust, in the ANCODI paradigm), can be constructive (Halperin, Russell, Dweck, & Gross, 2011).<sup>1</sup>

## Overview of the Studies and Hypotheses

One major limitation concerning previous findings that led to the ANCODI combination hypothesis (Matsumoto et al., 2013, 2014a, 2014b) was that they

<sup>1</sup>There are also methodological implications to considering the ANCODI combination. Halperin and Gross (2010) assessed anger and fear and their synonyms, but did not assess contempt or disgust. Spanovic et al. (2010) assessed 27 emotion descriptors, reporting results for anger and fear scales, but not for those related to contempt or disgust. Had these studies included assessments of contempt and disgust along with anger, they may have also demonstrated the importance of the ANCODI combination.

were correlational. Thus it was not clear that the ANCODI combination actually *caused* individuals to produce hostile cognitions or language. The purpose of the studies reported here was to examine whether or not the ANCODI mix causally produces hostile cognitions and language. If so, it would provide further evidence that the ANCODI combination contributes to intergroup hostility.

In Study 1, participants were randomly assigned to a condition in which either the ANCODI combination or a combination of fear and sadness (FESA) was primed. The FESA combination was included as a comparison because fear has been implicated in models of intergroup aggression (e.g., Halperin & Gross, 2010), and sadness has been linked to mood effects on judgments (Forgas & Bower, 1987). Also, fear and sadness represented different negative emotions, and it was important to distinguish whether the effects produced using the ANCODI elicitation could have been produced with any negative emotions. If the same effects were observed with the FESA combination, it would provide evidence for a more diffuse “negative affect” view of the role of emotion (Berkowitz, 1989).

In Study 2 the ANCODI mix was compared with a disgust only condition. This allowed us to examine whether the effects that were observed by ANCODI could be elicited using only one of the emotions from the ANCODI combination. We selected disgust because we could use the same emotion elicitation technique to elicit ANCODI.

Because the ANCODI hypothesis was generated in studies examining political aggression between groups, in both studies we recruited participants who were members of ideologically based groups and who had an identified opponent outgroup with a cause that was opposed to the participant’s ingroup’s cause. The design of the studies therefore included conditions in which the target of the participant’s hostile cognitions and behavior was either the opponent outgroup, or a neutral outgroup in order to examine whether the effects of ANCODI were specific to the opponent outgroups or not.

In Study 1 the dependent variables were produced in a modified version of a well-known word completion task designed to assess aggressive cognitions (Anderson, Carnagey, & Eubanks, 2003; Anderson et al., 2004). We predicted that participants primed with ANCODI would have more aggressive cognitions toward their opponent outgroup than toward a neutral group, but that this would not be the case for participants primed by FESA.

In Study 2 the dependent variables were two measures commonly employed in economic game theory—Ultimatum and Proposer. These measures allowed the assessment of competitive, non-cooperative decision

making. We predicted that participants primed with ANCODI would engage in more competitive, non-cooperative decision making toward the opponent outgroup than the neutral outgroup, whereas this would not be the case with participants primed only with disgust.

## STUDY 1—AGGRESSIVE WORD COMPLETION TASK

### Methods

**Experimental design.** The study was a 2 (Outgroup) × 2 (Emotion Prime) between-subjects design. The Outgroup condition consisted of two levels: *Opponent Outgroup* vs. *Neutral Outgroup*; the *Emotion Prime* condition consisted of ANCODI vs. FESA. Participants were randomly assigned to one of the four cells prior to the experiment and assignments were conducted in blocks of four to ensure equal distributions across the cells as the experiment progressed. This also helped protect the random distribution to conditions of members of any given group as we were not certain if they would arrive in waves.

**Participants.** Individuals were recruited for the study if they were members of an ideologically motivated group, that is, a group with a political or ideological cause; there were other groups in existence that were opposed to the participant’s group’s cause; and there was evidence of past conflict between the groups, either reported in the news or self-reported by potential participants. Potential participants were recruited from university and college campus groups located in the San Francisco Bay Area and from the surrounding communities, who responded to an ad for an “emotion and intergroup relations study.” After excluding all participants who did not complete the procedures correctly, the final total sample in this study was  $N = 87$  participants (33 males, 54 females;  $M_{\text{age}} = 23.46$ ,  $SD = 7.13$ ). Participants were provided \$10 compensation.

### Self-Report Measures

**Individual difference measures.** Participants completed the NEO-Five Factor Inventory (Costa & McCrae, 1992), the Aggression Questionnaire (Buss & Perry, 1992), Social Dominance Orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), a Machiavellianism Scale (Christie, 1970), and the Self-Monitoring Scale (Snyder, 1974). These were not used in this study, so no further mention of them will be made. They also completed a standard demographic questionnaire that asked age, sex, marital status, household living situation, and religious background and practices.

**Emotion checklist.** Participants rated how much of each of 14 emotions they were currently experiencing using a 9-point scale labeled 0 (*none*), through 4,

(*moderate amount*), to 8 (*extremely strong amount*). The 14 emotions were guilt, fear, anger, embarrassment, worry, contempt, excitement, disgust, amusement, nervousness, surprise, interest, sadness, and pride. These ratings were collected at three points in time: Pre-, Mid-, and Post-Session.

**Stereotype content model (SCM) emotion ratings (Fiske et al., 2002).** Participants rated how much each of 25 emotions was felt about either their opponent or non-opponent outgroup “as viewed by society and your organization.” Ratings were completed using 5-point scales labeled 1 (*not at all*) to 5 (*extremely*) and included the following emotions: disappointed, fearful, sympathetic, envious, uneasy, proud, angry, disgusted, respectful, pitying, hateful, frustrated, jealous, admiring, resentful, inspired, contemptuous, compassionate, tense, ashamed, comfortable, fond, anxious, secure, and sadness. According to the procedures described by Fiske et al. (2002), an Admiration scale was produced using the mean of admiring, fond, inspired, proud, and respectful ( $\alpha = .89$ ); a Contempt scale used the mean of angry, ashamed, contemptuous, disgusted, frustrated, hateful, resentful, uneasy ( $\alpha = .93$ ); an Envy scale used the mean of envious and jealous ( $\alpha = .77$ ); and a Pity scale used the mean of pity and sympathetic ( $\alpha = .77$ ).

**Outgroup manipulation.** Prior to the session, participants named an opponent outgroup that was opposed to the participant’s ingroup and where there was evidence of conflict between the groups in the past; they also confirmed these nominations before and during the experimental procedures. We classified the types of opponent outgroups into four categories: religious groups (e.g., American Martyrs, Mormon Church of Latter Day Saints, 33% of the total sample), political groups (e.g., SF Hillel, General Union of Palestine Students, 25.0%), government related groups (e.g., Israel, U.S. federal government, 21.5%), and social and sexual orientation groups (e.g., Queer Alliance, 20.1%). Participants were assigned to either the *Opponent Outgroup* or *Neutral Outgroup* conditions. The *Opponent Outgroup* was the outgroup specifically named by the participant as the group opposed to the participant’s ingroup. The *Neutral Outgroup* was “the National Book Club” for all participants assigned to the *Neutral Outgroup* condition. This fictional entity was used because it was very unlikely that participants would harbor any positive or negative feelings toward them.

**Emotion elicitation.** Emotions were elicited using selected images from the International Affective Pictures System (IAPS; Lang, Bradley, & Cuthbert, 1997). Two groups of IAPS images were used to elicit a combination of either ANCODI or FESA. A different group of images was used to elicit Positive emotions.

The ANCODI and FESA images were selected on the basis of a pilot study involving 20 images, 10 of which had the highest Anger ratings in Mikels et al. (2005) and 10 of which had the highest combination of fear and sadness in that study.<sup>2</sup> Contempt was not a rated category in the Mikels et al. (2005) study; thus we had to obtain those ratings. Participants ( $N = 34$ ) were shown each of the images, one at a time and in a random order, and rated how much each image made them feel on seven emotion categories (anger, contempt, disgust, fear, joy, sadness, and surprise) using 7-point scales, labeled Not at All (0) to A Lot (6). T-tests comparing the ANCODI vs. FESA means were computed and the differences between the two sets of means were rank ordered according to Cohen’s  $d$  effect sizes. We also computed ANOVAs testing the interaction between the ratings and sex and followed significant interactions with simple effects analyses (males and females may have reacted differently to the stimuli). We selected for use in the main study those images with the highest Cohen’s  $d$ s and where the interactions with sex were either not significant or significant but indicated differences in degree but not direction. Six images were selected for ANCODI (9810, 6360, 9800, 9252, 6540, and 6212); these contained images of violence threatened or perpetrated against others, and White supremacy). Six images were selected for FESA (images 9600, 9620, 9611, 2205, 9050, and 3230); these contained images of ships sinking, airplane crashes, and dying hospital patients.

Positive images were selected on the basis of another pilot study involving 20 images, 10 of which had the highest Total Positive ratings and 10 of which had the lowest total sum of all emotions in Mikels et al. (2005). Participants ( $N = 35$ ) were shown the images in the same manner as above and made the same ratings. For the Positive images we selected the six images with the highest Joy ratings (5910, 8190, 5480, 5626, 5621, and 8185).

**Aggressive word completion task.** From the list of words provided by Anderson et al. (2003, 2004), we first sorted the words by the number of letters in the word and the number of letters missing in order to have a listing that was ordered in difficulty. We then identified

<sup>2</sup>We began the selection task by using a combined anger-disgust mean ratings criterion from Mikels et al. (2005), as we did for the FESA combination (the Mikels et al. data set did not include a contempt rating). Doing so produced a listing of images that essentially overlapped with using a “highest anger rating” criterion, but also a few images that were driven by visceral disgust (mutilated bodies). We noticed that using a “highest anger rating” criterion eliminated those images, still retained anger-disgust mean ratings as quite high, and measured interpersonal disgust along with the anger. Thus we opted to use images with the highest anger ratings in our pilot study.

the words that could produce either an aggressive or non-aggressive word when completed (e.g., h\_t could result in “hat” or “hit”). The first 20 words identified in this manner were presented to participants in the order sorted.<sup>3</sup> Participants were also asked to use the word in a sentence related to the group condition assigned to ensure that the completed word was indeed a word associated with an aggressive cognition, and that the aggressive cognition was related to the assigned group.

**Procedures.** Upon arrival participants were told that they would complete some questionnaires, view a slide show, and complete ratings about the images. Then they participated in a creativity task called the Directed Word Completion Task that required them to fill in the blanks of incomplete words and make up sentences with the words created, such that the words and sentences created were in relation to a group. Participants were told that they would be given 2 min to do as many of these as they could.

Participants then completed the Pre-session Emotion Checklist and the remaining individual difference measures. They subsequently saw two neutral images (not used elsewhere in the study) from the IAPS used for practice, and then the six images corresponding to their emotion elicitation condition. Each image was presented for 10 sec, after which participants were given 30 sec to state orally “the most salient aspects of the image” into a speaker on the computer. After presentation of all images, participants then completed the Mid-Session Emotion Checklist.

After emotion elicitation, participants were introduced to the word completion task:

“Now you will be asked to do a creativity task, which is a word completion task. You will be presented with words that contain missing letters. For example, you might be presented with something like this:

B\_\_E

For each word, your task is to first fill in the blank to complete the word and say the word out loud, and second, to use the word in a sentence about the GROUP listed here: <OUTGROUP NAME>.

You do not need to type for this task. Simply speak your answers out loud. When you are finished with the two tasks for each word, click “Continue” to move on to the next word.

You will be given a total of 2 min to complete this task for as many words as you can. Please click “Continue” when ready to proceed.”

The name of the outgroup appropriate to the condition was inserted above, that is, either the opponent outgroup

named by the participant or the National Book Club. Participants’ responses were captured by a webcam attached to the computer monitor.

After finishing the word completion task participants saw the positive emotion images, completed a Post-Session Emotion Checklist, were debriefed, paid, and excused. All experimental procedures were administered using Medialab.

**Scoring of aggressive cognitions.** One point was assigned to each completed word that matched an aggressive word according to Anderson et al. (2003, 2004). One point was also assigned to each completed sentence when two independent coders blind to the condition agreed that the word was used in an aggressive manner in a produced sentence. A Total Aggressive Cognitions score was computed by summing both the number of aggressive word completions and sentence productions.

## RESULTS

### Manipulation Checks

**Self-reported emotion.** We examined changes in ANCODI and FESA means from pre- to mid-session (immediately after the emotion elicitation task), separately for the two emotion elicitation conditions. In the ANCODI condition, ANCODI means significantly increased from pre- to mid-session,  $t(43) = 6.78$ ,  $P < .001$ ,  $d = 1.16$ ; FESA means also increased,  $t(43) = 2.88$ ,  $P = .006$ ,  $d = .56$ . In the FESA condition FESA means increased significantly,  $t(40) = 4.33$ ,  $P < .001$ ,  $d = .79$ , but there was no change in ANCODI means,  $t(40) = .25$ ,  $ns$ ,  $d = .06$ .

We also examined changes in specific emotions by computing the simple effects of emotion for the five target emotions (anger, contempt, disgust, fear, and sadness) and the two emotion prime conditions (see Table I). As intended, anger, contempt, and disgust each increased in the ANCODI condition, and fear and sadness increased in the FESA condition. But sadness also increased in the ANCODI condition.

Intercorrelations were computed among anger, contempt, and disgust ratings, separately at pre-, mid-, and post-session. Across the three sessions the mean correlations were .36, .69, and .37 for anger–contempt, anger–disgust, and contempt–disgust, respectively.

**Outgroup ratings.** We examined differences in SCM ratings between the *Opponent* and *Neutral* outgroups. Our main focus was on SCM Admiration and Contempt. The *Neutral* outgroup was rated significantly higher on Admiration,  $F(1, 83) = 12.40$ ,  $P < .001$ ,  $\eta_p^2 = .13$  whereas the *Opponent* outgroups were rated higher on Contempt,  $F(1, 83) = 48.84$ ,  $P < .001$ ,  $\eta_p^2 = .37$ ; Thus it appeared that the outgroup

<sup>3</sup>The specific list of words that were provided to the participants were as follows, in this order: h-t, c-t, wa-, b-rn, ha-e, sl-p, r-pe, r-de, spea-, cho-e, sho-t, sn-re, sm-ck, -unch, a-use, s-ash, en-age, w—m, ki-, and t-p-.

**TABLE I. Differences Between Pre- and Mid-Session Target Emotion Means, Both Studies**

Study	Primed Emotion	Emotion	Pre-Session M (SE)	Mid-Session M (SE)	df	F	P	$\eta_p^2$
1	ANCODI	Anger	2.71 (.35)	4.91 (.35)	1, 44	24.62	.000	.36
		Contempt	2.82 (.30)	3.69 (.41)	1, 44	6.30	.050	.08
		Disgust	2.44 (.32)	6.47 (.25)	1, 44	91.79	.000	.67
		Fear	2.98 (.36)	3.20 (.33)	1, 44	.224	Ns	.01
		Sadness	3.22 (.38)	5.20 (.41)	1, 44	21.62	.000	.33
	FESA	Anger	2.95 (.38)	2.83 (.31)	1, 40	.067	Ns	.00
		Contempt	3.22 (.30)	2.59 (.31)	1, 40	2.50	Ns	.06
		Disgust	2.07 (.30)	2.56 (.32)	1, 40	1.383	Ns	.03
		Fear	3.14 (.29)	3.81 (.32)	1, 40	4.00	.050	.03
		Sadness	3.27 (.36)	5.85 (.39)	1, 40	31.87	.000	.44
2	ANCODI	Anger	2.61 (.24)	5.04 (.30)	1, 71	68.38	.000	.49
		Contempt	3.23 (.32)	3.85 (.35)	1, 71	1.90	Ns	.04
		Disgust	1.92 (.17)	6.67 (.28)	1, 71	271.07	.000	.79
	Disgust	Anger	2.33 (.23)	2.29 (.24)	1, 79	.02	Ns	.02
		Contempt	2.98 (.25)	2.78 (.24)	1, 79	.51	Ns	.01
		Disgust	1.78 (.19)	5.39 (.32)	1, 79	117.66	.000	.60

manipulations worked as intended. The Opponent outgroups were also rated higher on Envy and Pity,  $F(1, 83) = 13.07, P < .001, \eta_p^2 = .14$ ; and  $F(1, 83) = 9.05, P < .01, \eta_p^2 = .10$ , respectively.

**Aggressive cognitions.** We computed a 2 (Emotion Prime) by 2 (Outgroup Type) ANOVA on the aggressive word scores (see Table II for descriptive statistics). The main effects of both *Emotion Prime* and *Outgroup Type* were significant,  $F(1, 83) = 22.02, P < .001, \eta_p^2 = .13$ ; and  $F(1, 83) = 6.65, P = .012, \eta_p^2 = .07$ , respectively. Importantly, the interaction was also significant,  $F(1, 83) = 13.34, P < .001, \eta_p^2 = .14$ , indicating that, as predicted, participants primed with ANCODI produced more aggressive word completions in the opponent outgroup condition than the neutral outgroup compared to participants primed with FESA.

A 2 (Emotion Prime) by 2 (Outgroup Type) ANOVA on the aggressive sentences produced a significant main effect for *Outgroup Type*,  $F(1, 83) = 22.46, P < .001, \eta_p^2 = .21$ ; but did not produce a significant main effect for *Emotion Prime*,  $F(1, 83) = 2.65, P = .107, \eta_p^2 = .03$ . The interaction was also significant,  $F(1, 83) = 9.18,$

$P = .003, \eta_p^2 = .10$ , indicating that, as predicted, participants primed with ANCODI produced more aggressive sentences in the opponent outgroup condition than the neutral outgroup compared to participants primed with FESA.

A 2 (Emotion Prime) by 2 (Outgroup Type) ANOVA on Total Aggressive Cognitions produced significant main effects of both *Emotion Prime* and *Outgroup Type*,  $F(1, 83) = 22.53, P < .001, \eta_p^2 = .24$ ; and  $F(1, 83) = 27.89, P < .001, \eta_p^2 = .25$ , respectively. The interaction was also significant,  $F(1, 83) = 25.83, P < .001, \eta_p^2 = .24$ , indicating that, as predicted, participants primed with ANCODI produced more Total Aggressive Cognitions in the opponent outgroup condition than the neutral outgroup compared to participants primed with FESA (see Fig. 1).

**Emotion contribution analyses.** We computed correlations between the target emotions (anger, contempt, disgust, fear, and sadness) assessed right after the IAPS manipulation and each of the dependent variables, once for the entire sample and then separately for *Neutral* and *Opponent Outgroups* (see Table III for findings for the entire sample). Anger and disgust were

**TABLE II. Means and Standard Deviations (in Parentheses) for Each of the Dependent Variables, Study 1**

Primed Emotion	Emotion	Neutral Outgroup	Opponent Outgroup
ANCODI	Aggressive words	3.30 (2.16)	6.22 (2.83)
	Aggressive sentences	1.04 (1.02)	3.83 (2.25)
	Total aggressive cognitions	4.35 (2.40)	10.04 (2.77)
FESA	Aggressive words	2.82 (1.76)	2.32 (1.64)
	Aggressive sentences	1.55 (1.41)	2.16 (1.74)
	Total aggressive cognitions	4.36 (2.75)	4.47 (2.20)

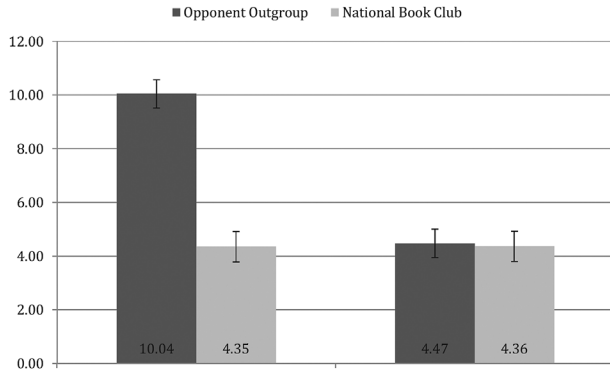


Fig. 1. Difference in total aggressive cognitions according to emotion prime and outgroup type, Study 1. Note: error bars are standard errors.

individually correlated with all three dependent variables; contempt was correlated with Aggressive Sentences. Neither fear nor sadness was correlated with any of the dependents.

This pattern of correlations demonstrated that anger, contempt and disgust individually contributed to the dependent variables, but fear and sadness did not, despite the increase in sadness in the ANCODI condition. We recomputed the correlations between the dependent variables and anger, partialling mid-session contempt and disgust. No effects were statistically significant. Reversing these analyses, however, indicated that disgust was significantly correlated with aggressive words and Total Aggressive Cognitions even after partialling anger and contempt,  $r_p(81) = .23$ ,  $P = .018$ ; and  $r_p(81) = .25$ ,  $P = .013$ , respectively. Contempt was marginally significantly correlated with aggressive words even after partialling anger and disgust,  $r_p(81) = .15$ ,  $P = .093$ . These results indicated that disgust, and to a lesser extent contempt, contributed uniquely to the dependent variables.

To deal with the multicollinearity among the target emotions and to assess their possible mediational effects, both singly and in combination, we computed the indirect effects of the target emotions and their interactions on the relationship between the emotion prime conditions and the dependent variables using a

multiple mediator analysis with bootstrapping (Preacher & Hayes, 2008; 1,000 bootstrap samples were computed). All four possible interaction terms among the target emotions were included along with their main effects. Total indirect effects were computed and tested according to the procedures described by Preacher and Hayes (2008).

The results are reported in Table IV. The total indirect effects were significant for all three dependents,  $z(87) = 1.98$ ,  $P = .024$ ;  $z(87) = 2.98$ ,  $P = .001$ ; and  $z(87) = 2.53$ ,  $P = .006$ , for aggressive words, aggressive sentences, and total aggression, respectively. Moreover, the mean, bootstrapped coefficients were positive for all mediators. Analysis of bias corrected 95% CIs that did not include zero indicated that anger and contempt uniquely mediated aggressive words; anger, contempt, and the anger  $\times$  disgust interaction uniquely mediated aggressive sentences; and contempt uniquely mediated Total Aggression.

## DISCUSSION

Participants primed with the ANCODI mix produced more aggressive cognitions relative to their opponent outgroup than to a neutral outgroup, whereas this effect did not occur for participants primed with FESA. Anger, contempt, and disgust were each associated with the dependent variables, and when the effects of contempt and disgust were controlled, the effects of anger were non-significant. Contempt and disgust, however, predicted the dependents even when the effects of the other two emotions were controlled. Multiple mediation analyses indicated that anger, contempt, and disgust, singly and in various combinations contributed to the effects of the priming conditions.

The FESA combination did not produce an increase in aggressive cognitions toward the opponent outgroups compared to the neutral outgroup. This is not surprising when considered vis-à-vis the functions of those emotions. The function of fear is to reduce the threat of harm, while the function of sadness is to recoup resources (Frijda, Kuipers, & ter Schure, 1989; Lazarus, 1991). Neither should incite aggressive cognitions

TABLE III. Correlations Between Target Emotions and Dependent Variables, Both Studies

Study	Variable	Mid-Session Anger	Mid-Session Contempt	Mid-Session Disgust	Mid-Session Fear	Mid-Session Sadness
1	Aggressive word completions	.217*	.111	.225*	-.105	-.056
	Aggressive sentences	.246*	.248*	.304*	-.043	.026
	Total aggressive cognitions	.270*	.176	.384*	-.103	-.028
2	Accept/reject decisions	.180*	.153*	.191*		N/A
	Proposed amounts	-.217*	-.261**	-.165*		

\* $P < .05$ , all significances one-tailed.

**TABLE IV. Mediation of the Effects of Emotion Prime Conditions on All Dependent Variables Through Mid-Session Anger, Contempt, Disgust, and Their Interactions, Studies 1 and 2**

Study	DV	Mediator	Bootstrapped Coefficient	SE
1	Aggressive words	Anger	0.804	0.936
		Contempt	0.417	0.474
		Disgust	0.107	1.242
		Anger × contempt	0.747	1.842
		Anger × disgust	0.175	1.749
		Contempt × disgust	0.421	1.241
	Aggressive sentences	Anger × contempt × disgust	0.150	2.501
		Anger	0.782	0.870
		Contempt	0.393	0.597
		Disgust	0.216	1.259
		Anger × contempt	0.179	1.549
		Anger × disgust	1.904	2.056
	Total aggression	Contempt × disgust	0.819	1.441
		Anger × contempt × disgust	-0.063	2.176
		Anger	0.067	1.337
		Contempt	0.826	0.880
		Disgust	0.322	1.731
		Anger × contempt	0.890	2.394
2	Accept/reject	Anger × disgust	1.787	2.780
		Contempt × disgust	1.303	2.044
		Anger × contempt × disgust	0.044	3.318
		Anger	2.494	2.438
		Contempt	0.078	0.320
		Disgust	0.101	0.304
	Proposed amount	Anger × contempt	3.623	2.681
		Anger × disgust	2.588	2.398
		Contempt × disgust	-0.068	0.632
		Anger × contempt × disgust	3.209	2.586
		Anger	-20.956	19.571
		Contempt	-1.451	3.080
		Disgust	-1.621	2.709
		Anger × contempt	-22.235	20.003
		Anger × disgust	-19.446	19.944
		Contempt × disgust	-3.740	5.379
		Anger × contempt × disgust	-21.139	19.764

differentially as does ANCODI. (To be sure, their inclusion did allow for a comparison of ANCODI against *any* negative emotions, which was important for the purposes of this study.) Whether the FESA combination would produce greater amounts of aggressive cognitions than a neutral prime, however, is not known as that condition was not included in this study.

In Study 1 the comparison emotion prime condition to ANCODI was the FESA condition. If the effects of ANCODI were due to the combination of anger, contempt, and disgust and not to any one of these emotions individually, then it would be necessary to compare the combined emotion mix to anger, contempt, and disgust individually. Because we wanted to employ the same priming procedures, we examined the norms for the IAPS images to identify images that would elicit these emotions individually. Unfortunately there were no images that elicited anger without disgust, according to the norms published by Mikels et al. (2005) or from

our own pilot data from Study 1. Likewise there were no images that elicited contempt without anger or disgust. There were, however, IAPS images that were rated high on disgust and low on anger in the Mikels et al. (2005) database. We thus chose the six IAPS images with the highest disgust and lowest anger ratings according to those norms for use in Study 2 (images 1111, 1274, 1280, 3160, 3250, and 9373). We compared the ANCODI mix with disgust only.<sup>4</sup>

In Study 2 the dependent variables were aggressive, non-cooperative decision making produced by using two measures commonly employed in economic game theory—Ultimatum and Proposer. In Ultimatum

<sup>4</sup>The disgust-only images used in Study 2, however, appeared to evoke a physical, visceral type of disgust (e.g., feces, vomit, insects) as opposed to interpersonal disgust toward other humans, which is more in line with the type of disgust referred to in the ANCODI hypothesis. We discuss this limitation in more detail below.



participants act as responders in which they are told that another entity (in our case, either the opponent or neutral outgroup) has received funds that they need to split with the participant's group; thus the outgroup will make an offer to the participant's group. The participant will make a decision to either accept or reject the offer. If accepted both groups get the funds split as offered; if rejected neither group will get anything. All participants were presented with a low offer that would be appraised as unfair and elicit anger and frustration; previous research has shown that anger mediates rejections of unfair offers (Ben-Shakhar, Bornstein, Hopfensitz, & van Winden, 2007; Pillutla & Murnighan, 1996; Srivastava, Espinoza, & Fedorikhin, 2009; Yamagishi et al., 2009). Immediately after Ultimatum participants played the role of proposer; that is, they were then placed in the position of deciding how much money to split with the outgroup. The dependent variables were whether the participant accepted or rejected the initial offer, and then how much money they subsequently offered. We predicted that participants primed with ANCODI would reject more offers from the opponent outgroup and offer lower amounts to them relative to the neutral outgroup, whereas this would not be the case with participants primed only with disgust.

## STUDY 2—COMPETITIVE DECISION MAKING

### Methods

**Experimental design.** The design of the study was a 2 (Outgroup)  $\times$  2 (Emotion Prime) between-subjects design. The Outgroup condition consisted of two levels: *Opponent Outgroup vs. Neutral Outgroup*; the *Emotion Prime* condition consisted of the ANCODI combination vs. disgust only. Participants were randomly assigned to one of the four cells prior to their arrival in the laboratory and assignments were conducted in blocks of four to ensure equal distributions across the cells as the experiment progressed.

**Participants.** The same recruitment procedures and inclusion criteria used in Study 1 were used here, resulting in an  $N$  of 152 participants (49 males, 103 females;  $M_{\text{age}} = 22.70$ ,  $SD = 7.16$ ). As in Study 1, participants generally were members of religious groups, government, social and sexual orientation groups, or political groups. Participants were provided \$10 compensation.

**Self-report measures.** The same self-report measures used in Study 1 were used here.

**Outgroup manipulation.** The same procedures for identifying the opponent and neutral outgroups as used in Study 1 were used here. Reliabilities were  $\alpha = .88$ ,  $.92$ ,  $.85$ , and  $.57$  for Admiration, Contempt, Envy, and Pity, respectively.

**Procedures.** Upon arrival participants were told that they would complete some questionnaires, view a slide show, and complete some ratings about the images. Then they were to make two decisions concerning donations made to organizations like theirs. In the first, another group will offer to split some money they received with their group, and the participants will need to accept or reject their offer. In the second the participants were told that they would decide how much of a donation their group received to share with another group. No mention of a specific group was made at this time.

Participants then completed the Pre-Session Emotion Checklist and the remaining individual difference measures. They then saw two neutral images (not used elsewhere in the study) from the IAPS used for practice, and then the six images corresponding to their emotion elicitation condition (ANCODI or disgust). Each image was presented for 10 sec, after which participants were given 30 sec to state orally "the most salient aspects of the image" into a speaker on the computer. After presentation of all images, participants then completed the Mid-Session Emotion Checklist.

After the emotion elicitation participants were introduced to the decision making task:

Screen 1: "Now your task is to make a decision in two situations regarding your group, <INGROUP NAME>, and the group listed below:

<OUTGROUP NAME>

Remember that your answers will be confidential and the other group will not know your answers. Click "Continue" to proceed."

Screen 2: "The group named here: <OUTGROUP NAME> has received \$100 from a foundation that aids groups, with the condition that they must split the money with your group <INGROUP NAME>.

- They can make whatever offer they wish to split their money with you.
- You can either accept or reject their offer on behalf of your group.
- If you accept their offer both groups will receive the monies as offered.
- If you reject their offer both groups will receive nothing.

Their Offer is this: \$90 for their group and \$10 for your group.

Do you accept or reject their offer? Click the appropriate button."

Screen 3: "Please describe the reason why you made this decision." An open-ended response text box was provided.

Screen 4: “Now your group has been awarded \$100 from a foundation that aids groups, with the condition that you split the money with the group named here: <OUTGROUP NAME>.”

- You can make whatever offer you wish to split your money with them.
- They (<OUTGROUP NAME>) will have a chance to accept or reject your offer.
- If they accept your offer both groups get the proposed split.
- If they reject your offer both groups get nothing.

How much would you like to offer to this group: <OUTGROUP NAME>? Write in your offer:” Participants could write in any amount from 0 to 100.

Screen 5: “Please describe the reason why you made this decision.”

The name of the outgroup appropriate to the condition was inserted above as both the group offering the split and the group to which the participant offered a split, that is, either the opponent outgroup named by the participant or the National Book Club. After finishing the decision making task participants then saw the positive emotion images, completed a Post-Session Emotion Checklist, were debriefed, paid, and excused. All experimental procedures were administered using Medialab.

## RESULTS

### Manipulation Checks

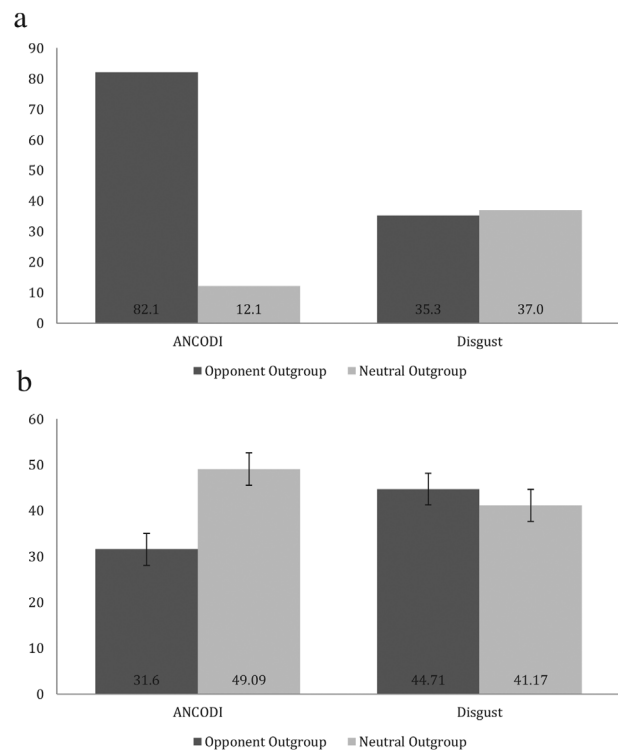
**Self-reported emotion.** We examined changes in specific emotions by computing the simple effects of emotion for anger, contempt, and disgust individually for the two emotion prime conditions (see Table I). As intended, anger and disgust each increased in the ANCODI condition, and only disgust increased in the Disgust condition. Contempt did not increase significantly in the ANCODI condition, but the means were in the predicted direction and the effect size was not negligible.

As in Study 1 we computed intercorrelations among anger, contempt, and disgust ratings, separately at pre-, mid-, and post-session. Across the three sessions the mean correlations were .28, .73, and .27 for anger–contempt, anger–disgust, and contempt–disgust, respectively.

**Outgroup ratings.** Once again, the Neutral outgroup was rated significantly higher on Admiration,  $F(1, 150) = 29.90, P < .001, \eta_p^2 = .17$ , whereas the Opponent outgroups were rated higher on Contempt,  $F(1, 150) = 59.56, P < .001, \eta_p^2 = .28$ ; thus the outgroup manipulations worked as intended. The Opponent outgroups were also rated higher on Pity,  $F(1, 150) = 16.89, P < .001, \eta_p^2 = .10$ ; there were no differences on ratings of Envy,  $F(1, 150) = 1.04, ns, \eta_p^2 = .01$ .

**Competitive decision making.** To examine condition differences on the first decision (whether to accept or reject the outgroup’s offer), we computed a 2 (*Emotion Prime*)  $\times$  2 (*Outgroup Type*) chi-square on the accept/reject decision, which was significant,  $\chi^2(2, 152) = 34.99, P < .001$ . We thus examined the differences in the percentage of participants accepting or rejecting the offers according to *Outgroup Type* separately for those primed with ANCODI or disgust. The chi-square for the ANCODI condition was significant,  $\chi^2(1, 72) = 34.97, P < .001$ , indicating that, as predicted, participants were more likely to reject the offer when made by the opponent outgroup than the neutral outgroup (82.1% vs. 12.1%). The chi-square for participants primed with disgust was not significant,  $\chi^2(1, 80) = .02, ns$ , indicating that there were no differences in the percentage of participants accepting or rejecting offers according to outgroup type within that condition (Fig. 2a).

To examine condition differences on the second decision (i.e., how much to offer to the outgroup), we computed a 2 (*Emotion Prime*)  $\times$  2 (*Outgroup Type*) ANOVA on the proposed amount. As predicted, the interaction was significant,  $F(1, 148) = 9.34, P = .003$ ,



**Fig. 2. a:** Percentage of participants rejecting the other group’s offer in ultimatum as a function of emotion elicitation and outgroup type, Study 2. **b:** Mean amounts proposed by participants as a function of emotion elicited and outgroup type, Study 2. Note: error bars are standard errors.

$\eta_p^2 = .06$ . Participants primed with ANCODI offered less to the opponent outgroup than to the neutral outgroup,  $F(1, 70) = 16.59, P < .001, \eta_p^2 = .19$ , whereas there were no differences between the outgroups for participants primed with disgust,  $F(1, 78) = .45, ns, \eta_p^2 = .01$  (Fig. 2b).

**Emotion contribution analyses.** As in Study 1 we computed correlations between the target emotions (anger, contempt, and disgust) assessed right after the emotion prime and the two dependent variables (see Table III for findings for the entire sample). All three emotions were correlated with both decisions, indicating that anger, contempt, and disgust individually contributed to the dependent variables. We then recomputed the correlations between the dependent variables and anger, partialling mid-session contempt and disgust. No effects were statistically significant. Reversing these analyses indicated that contempt and disgust were significantly correlated with proposed amount even after partialling the other two emotions,  $r_p(148) = -.30, P < .001$ ; and  $r_p(148) = -.29, P < .001$ , respectively. (The partial correlations were not significant on accept/reject ratios.) Thus contempt and disgust contributed uniquely to at least one of the dependent variables.

Also as in Study 1, we computed the indirect effects of the target emotions and their interactions on the relationship between the emotion prime conditions and the dependent variables using a multiple mediator analysis with bootstrapping (Preacher & Hayes, 2008; 1,000 bootstrap samples were computed). The total indirect effects were significant for both dependents,  $z(87) = 7.41, P < .001$ ;  $z(87) = 7.01, P < .001$ , for accept/reject and proposed amount, respectively (Table IV). The mean, bootstrapped coefficients were positive for all mediators except one for accept/reject, and negative for all mediators for proposed amount (the direction of the latter indicated that greater amounts of the emotions were associated with *less* amounts proposed). Analysis of bias corrected 95% CIs that did not include zero indicated that the anger  $\times$  contempt and anger  $\times$  disgust interactions uniquely mediated accept/reject, and that the anger  $\times$  contempt, anger  $\times$  disgust, and the anger  $\times$  contempt  $\times$  disgust interactions uniquely mediated proposed amount.

## DISCUSSION

Participants primed with ANCODI rejected more offers from their opponent outgroup than to a neutral outgroup, whereas there were no differences in acceptance/rejection for participants primed with disgust only. Participants primed with ANCODI also offered significantly less money to the opponent outgroup than the neutral group, whereas this difference did not exist for

participants primed with disgust only. Anger, contempt, and disgust were each individually associated with the dependent variables, and when the effects of contempt and disgust were controlled, the effects of anger were non-significant. Contempt and disgust, however, did predict proposed amounts even when the effects of the other two emotions were controlled. Multiple mediation analyses indicated that anger, contempt, and disgust, singly and in various combinations, contributed to the effects of the priming conditions. These findings were important because they demonstrated that disgust alone was not sufficient to produce differences in aggressive decision-making; rather, the combination of ANCODI produced the differences.

These findings may have been limited to the specific type of disgust elicited in this study. As others have noted in the past (Ekman, 2003; Lazarus, 1991; Rozin, Haidt, & McCauley, 1999; Rozin, Lowery et al., 1999), disgust has at least two forms, one visceral, having to do with physical disgust, and the other interpersonal, having to do with disgust directed toward the existence of other people. The disgust referred to in the ANCODI hypothesis is the latter; consequently the disgust portion of the IAPS images used to elicit the ANCODI combination is also the interpersonal type of disgust. The disgust elicited in the disgust-only IAPS images in Study 2, however, was more of the visceral, physical type of disgust. This may have explained why the disgust-only condition did not produce greater amounts of rejections and less proposed amounts of offers in Study 2. The elicitation of visceral disgust may have reduced aggressive cognitions toward people, which would further explain the non-findings on the disgust-only condition. Future studies will need to test the ANCODI hypothesis against an interpersonal version of disgust (if one can be elicited without anger and contempt).

## GENERAL DISCUSSION

The results from both studies extend our understanding of the role of emotions in intergroup aggression by demonstrating that the ANCODI mix causally produces hostile cognitions, thoughts, and decisions. To be sure, these findings were not produced without limitations. One concerned the fact that we elicited ANCODI in combination. We did so because the previous literature that led to the ANCODI combination hypothesis (Matsumoto et al., 2013, 2014a, 2014b) suggested that the combination was the mix of emotions that fueled intergroup aggression. Because the purpose of the study was to provide initial evidence for the causal effects of the ANCODI combination on hostile cognitions, language, and behavior, we operationalized this

combination as a first experimental test of the model. Future studies will need to test the effects of the ANCODI combination against anger, contempt, and disgust separately in order to demonstrate that the combination does indeed produce effects that each of the emotions singly do not (although Study 2 did test disgust only). That, however, is a different research question that would require a different experimental design.

Another limitation concerned the emotions that were elicited. In both studies, the target anger, contempt, and disgust means did indeed increase in the ANCODI conditions; fear and sadness means increased in the FESA condition (Study 1), and the disgust mean increased in the Disgust condition (Study 2). But sadness also increased in the ANCODI conditions. This was not surprising, given the elevated levels of sadness in our pilot data and as reported previously (Mikels et al., 2005). To mitigate this concern we correlated each of the target emotions with the dependents. In both studies anger, contempt, and disgust correlated individually with the dependent variables, but sadness and fear did not. Thus, even though sadness was elevated in the ANCODI conditions, it did not play a role in contributing to hostility. In fact sadness and fear do appear to play a role in intergroup conflict (Bar-Tal, Halperin, & De Rivera, 2007), but are probably more related to assessments of ANCODI-associated situations and do not affect impulses to hostility despite the potential opposite effects of the functions of these emotions to disengage rather than engage. ANCODI is likely to provide the more immediate impulse to hostility. That anger, contempt, and disgust did not increase in the FESA conditions in Study 1, and that anger and contempt did not increase in the Disgust condition in Study 2, also mitigated concerns about the actual emotions elicited.

Another potential limitation of the findings concerned the possible role demand characteristics may have played in influencing the findings. In both studies, participants were recruited and screened by asking questions about their group and “their opposition group”; thus they may have been aware that the studies were about an oppositional relationship with the target group. Completion of some of the individual difference measures, such as Aggression Questionnaire and the Social Dominance Orientation scale may have given participants the idea that they were expected to respond aggressively toward this opponent group. Also, the task instructions in both studies specified responses made to specific groups. None of our participants mentioned awareness of specific knowledge concerning differential effects of different emotion primes on different outgroups. Moreover, this demand did not seem to drive up hostility to an unknown group (the National Book Club).

Nevertheless, future research will need to consider more subtle methodologies that render potential demand characteristics even less likely.

A final limitation of the studies concerned the fact that the elicited emotions were not necessarily tied specifically to any perceived actions of an outgroup, but rather were incidental. But this would suggest that any findings related to outgroup hostility would be attenuated, which would present an acceptable Type II error. That we obtained positive findings despite the incidental nature of the emotion indicated that even incidental elicitation of the target ANCODI emotions may elicit hostile cognitions toward opponent outgroups, a finding that is consistent with other literature on incidental affect (Lerner & Keltner, 2001; Loewenstein & Lerner, 2003). Future studies should elicit emotions that are attributed more directly to the outgroup.

The current findings contribute to the literature by providing direct evidence that elicitation of ANCODI produces cognitions and decisions associated with hostility and aggression, thus providing a better picture of the socio-psychological factors that contribute to intergroup hostility. Of particular note in our findings is the fact that ANCODI affected hostility directed toward known opponent outgroups but not to relatively unknown neutral outgroups. These findings demonstrated that the effects of ANCODI vis-à-vis intergroup hostility were specific to certain groups and not others. That the ANCODI effects occurred when directed to outgroups that were already disliked suggested that the elicited ANCODI engaged hostile cognitions that pre-existed concerning the opponent outgroups, and that because such hostile cognitions did not exist toward the neutral outgroups the elicited ANCODI did not have the same effects. Whether ANCODI directed toward neutral outgroups can turn them into hostile opponent outgroup targets is an interesting question for future research.

The pattern of results for contempt was interesting. Although contempt was not significantly correlated in Study 1 with aggressive words or total aggression, the correlations were still positive and in the predicted direction; and contempt was (marginally) significantly correlated with aggressive words after partialling anger and disgust. In Study 2 contempt did not significantly increase in the ANCODI condition, but the means were in the predicted direction. Further inspection of those means suggested that participants in Study 2 had pre-session contempt ratings that were slightly higher than average; their mid-session means were comparable to the mid-session means on contempt in Study 1. Still, there was a greater degree of variability in the contempt findings than those for anger and disgust. One reason for this is that contempt is a “cool” emotion (Fischer, 2011; Fischer & Roseman, 2007); it provides the justification

for aggressive cognitions and actions, but not the impulse. This may be the reason that contempt means did not increase as much as those for anger and disgust in the ANCODI conditions, and that correlations with contempt were not as clear as those with anger or disgust. Anger and disgust are likely to be more associated with the impulse to aggression, which is more proximal to hostile cognitions. Moreover, the emotion of contempt is also less clear to North American participants (Matsumoto & Ekman, 2004).

Our findings are consistent with studies examining other socio-psychological factors associated with intergroup aggression, all of which tie into these themes. These include (1) the perception of conflicts of interests between a person's own group and an outgroup (Struch & Schwartz, 1989); (2) perceived trait inhumanity and dissimilarity (Struch & Schwartz, 1989); (3) models of dehumanization (Buckels & Trapnell, 2013; Cortes et al., 2005; Demoulin et al., 2004) and vicarious retribution (Lickel, Miller, Stenstrom, Denson, & Schmader, 2006); (4) examinations of the perceived justification for violence (De Becker, 1999); and (5) examinations of the role of prejudice and anger in predicting attitudes concerning the willingness to use violence against minorities (Wagner & Christ, 2007). Together with the current findings, these studies provide a better picture of the psychological motives associated with intergroup hostility. Our findings also contribute to knowledge about the appraisal processes related to anger, contempt, and disgust (Hutcherson & Gross, 2011; Rozin, Haidt et al., 1999; Rozin, Lowery et al., 1999); to studies highlighting the role of contempt and disgust in interpersonal conflicts (Gottman & Levenson, 2002; Gottman, Levenson, & Woodin, 2001); to studies of intergroup emotions and prejudice (Cottrell & Neuberg, 2005; Dasgupta et al., 2009; Fiske et al., 2002; Levin et al., 2013); and to studies of disgust and dehumanization (Buckels & Trapnell, 2013; Cortes et al., 2005; Demoulin et al., 2004; Harris & Fiske, 2006). By examining ANCODI emotions in combination, the ANCODI hypothesis contributes to the literature by allowing for a more precise specification of the emotional factors that contribute to intergroup aggression and that potentially comprise the concept of hatred.

Although this study closed one gap in the literature (concerning the causal relationship between ANCODI and hostile cognitions), it is important to acknowledge what this study did *not* do. A more comprehensive evaluation of the ANCODI hypothesis of intergroup aggression requires a thorough review of the literature on emotion and aggression, on both the individual- and group-levels, and of contempt and disgust. Such an effort also requires consideration about why the ANCODI combination is so volatile, especially compared to anger, contempt, and disgust (and other

emotions such as hubris) separately. In line with such efforts, future studies will need to test the effects of the ANCODI combination against anger, contempt, and disgust separately in order to demonstrate that the combination does indeed produce effects that each of the emotions singly do not (which is a very different research question than what was addressed in the current study, and that would require a different experimental design). To be sure, doing so will not be easy because it is very difficult to elicit these emotions singly without an elevation in the others. For example, there were no IAPS stimuli that had elevated levels of anger without elevated levels of contempt or disgust as well, despite the fact that the modal rating was anger and thus the stimuli were called "anger." And there were no IAPS stimuli that elicited contempt only without elevated levels of anger and disgust. Thus an emotion elicitation that can be specific to single emotion would be desirable, but we are uncertain what that manipulation would be.

Future research could seek to replicate the current findings with different dependent variables and examine the independent contributions of anger, contempt and disgust to intergroup hostility and aggression. These future studies should include dependent variables that are even closer to actual intergroup aggression than the ones we tested here, and should especially include behavioral measures. In addition, there are likely to be wide individual differences in the effects of ANCODI elicitation, and future studies will need to examine the important role of individual differences in the propensity for hostility and the enactment of aggression. Such studies can examine the role of variables such as motivation for aggression, as well as personality traits such as social dominance orientation (Pratto et al., 1994) or aggressiveness (Buss & Perry, 1992). One interesting individual level variable to examine may be the need for social affiliation or group identity. Future research may also examine the degree to which the ANCODI hypothesis is relevant for understanding aggression and violence on the individual level.

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