Personality and Social Psychology Bulletin
2016, Vol. 42(5) 688–700

DOI: 10.1177/0146167216642196
pspb.sagepub.com
SAGE

Living in a Genetic World: How Learning About Interethnic Genetic Similarities and Differences Affects Peace and Conflict

Sasha Y. Kimel[1], Rowell Huesmann[2], Jonas R. Kunst[1,3,4], and Eran Halperin[5]

Abstract

Information about the degree of one's genetic overlap with ethnic outgroups has been emphasized in genocides, is frequently learned about through media reporting, and is increasingly being accessed via personal genetic testing services. However, the consequence of learning about whether your own ethnic group is either genetically related to or genetically distinct from a disliked ethnic group remains unknown. Across four experiments, using diverse samples, measures and contexts, we demonstrate that altering perceptions of genetic overlap between groups in conflict—in this case Arabs and Jews—impacts factors that are directly related to interethnic hostility (e.g., aggressive behaviors, support of conflict-related policies). Our findings indicate that learning about the genetic difference between oneself and an ethnic outgroup may contribute to the promotion of violence, whereas learning about the similarities may be a vital step toward fostering peace in some contexts. Possible interventions and implications are discussed.

Keywords

essentialism, genetics, conflict, culture/ethnicity, genocide

Received August 19, 2015; revision accepted February 28, 2016

> "Specialists in human genetics tell us that the small population of Tutsi is due to the fact that they only marry one another . . . a cockroach cannot give birth to a butterfly. A cockroach gives birth to another cockroach."
>
> —Kangura (March 1993, p. 155, as cited in Eltringham 2006)

> "The Abraham Fund—named for the common ancestor of both Jews and Arabs and dedicated to transforming the landscape of Jewish–Arab relations in Israel."
>
> —The Abraham Fund (2014)

As shown in the above quotes, some of the most extreme efforts to instigate violent conflicts and genocides (e.g., Rwandan Genocide, Bosnian Genocide[1]) have been accompanied by rhetoric that emphasizes genetic differences between ethnic groups. Conversely, in an effort to promote peace, some conflict reduction programs (e.g., The Abraham Fund) highlight that ethnic groups actually share genetic qualities. Meanwhile, the popular media is increasingly reporting new discoveries on the genetic differences between ethnic and racial groups, many of who already have a history of interethnic conflict. For instance, *Discover Magazine* recently reported on the genetic differences between the Tutsi and Hutu,[2] the *Medical Daily* on those between Jews and Arabs,[3] and *The Telegraph* on those between White-Europeans and the Roma.[4] Moreover, using personal genetic testing services (e.g., 23andMe, Geno 2.0) to determine one's degree of genetic overlap with various ethnic or racial groups is growing rapidly (Wolinsky, 2006), and over 3 million tests have now been sold worldwide.[5] But, what are the actual consequences of learning about genetic differences and similarities between ethnic groups who are engaged in conflict?

There is reason to believe that learning about how your racial or ethnic group is genetically related to, or distinct from, an enemy group may powerfully influence your attitudes and behaviors toward members of that group. Genetic information can activate an evolutionary-based preference for individuals who share the greatest proportion of one's

[1]Harvard University, Cambridge, MA, USA
[2]University of Michigan, Ann Arbor, USA
[3]University of Oslo, Norway
[4]University of Aarhus, Denmark
[5]Interdisciplinary Center, Herzliya, Israel

Corresponding Author:
Sasha Y. Kimel, Psychology Department, Harvard University, 33 Kirkland Street, Cambridge, MA 02138, USA.
Email: skimel@fas.harvard.edu

genes (Colman, Browning, & Pulford, 2012). Just like earlier historical emphases on "blood" and "spirits," it can also trigger folk psychological notions about racial and ethnic groups' immutable, underlying nature (Gelman, 2003). Possibly more so than other scientific (Dar-Nimrod & Heine, 2011) or biological information (Shiloh, Rashuk-Rosenthal, & Benyamini, 2002), this "genetic essentialist" way of thinking can make groups appear deeply distinctive from each other (Dar-Nimrod & Heine, 2011). Indeed, research shows that emphasizing low (vs. high) genetic overlap within the global human population may lead people to evaluate ingroup and outgroup faces in a more dichotomous way (Plaks, Malahy, Sedlins, & Shoda, 2012), while priming people with the alleged genetic underpinnings of racial and ethnic categories can increase factors associated with stereotyping and prejudice (Keller, 2005; No et al., 2008; Williams & Eberhardt, 2008). Yet, despite theorizing that thinking about the genetic basis of racial or ethnic dissimilarities may lead to some of the most severe forms of interethnic hostility (Yzerbyt, Judd, & Corneille, 2004), the consequences remain vastly unknown. For instance, previous work has not yet systematically examined the consequences of emphasizing genetic differences and similarities between groups, nor has it examined its impact within a context of conflict. Finally, how intergroup conflict is affected by genetic information, more broadly, as well as by any kind of essence placeholder also remains missing.

It is well known that drawing ones' attention to group differences tends to increase processes associated with group antipathy (Tajfel & Turner, 1979), whereas bringing awareness to intergroup similarities can *sometimes* attenuate these effects (see Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990). Given peoples' limited understanding of genetics (Lanie et al., 2004), the widespread belief that genes provide hard evidence of causation (Cheung & Heine, 2015; Haslam, 2011), and that they can both activate an evolutionary-based preference for genetic kin (Colman et al., 2012) and make groups appear deeply distinctive from each other (Dar-Nimrod & Heine, 2006), it is likely that genetic information may indeed be powerful in both exacerbating and mitigating ethnic conflict. Importantly though, not all commonality-based interventions have been found to be effective and many attempts have actually increased bias by threatening groups' desire to maintain their distinctness from an enemy group (Crisp, Walsh, & Hewstone, 2006; Gaertner, Mann, Murrell, & Dovidio, 1989; Hewstone & Brown, 1986; Hornsey & Hogg, 2000; Wenzel, Mummendey, & Waldzus, 2007). Yet, because genes evoke views of essences that are perceived to be "underlying, deep and unobserved" (Dar-Nimrod & Heine, 2011), genetic similarities may actually lead to the desired decrease in conflict by uniting groups in a way that still allows for differentiation on observable characteristics (e.g., culture). Using the context of Jewish–Arab intergroup relations, here, we test the impact of emphasizing genetic similarities and differences between groups in conflict.

One of the most entrenched and consequential conflicts of the last 50 years is the conflict between Jews and Arabs in the Middle East. While the Arab and Jewish people continue to engage in an ongoing pattern of intractable violent conflict, research has only recently begun exploring their degree of genetic relatedness, resulting in conflicting perspectives. Whereas some studies claim considerable genetic overlap between Jews and Arabs living in the Middle East as well as in the diaspora communities (Hammer et al., 2000), others argue that these groups are genetically distinct (Costa et al., 2013). Regardless of which is most accurate, framing this information in terms of considerable genetic *similarities* or *differences* may critically impact these groups' level of hostility toward one another.

To explore this, we ran four experimental studies. First, we examine whether giving Jews and Arabs information about either their substantial genetic similarities or differences impacts their degree of explicit and implicit antipathy toward each other (Study 1). Next, we test whether these effects go beyond mere attitudinal bias and also affect Jews' actual physical aggression toward an Arab individual during a competitive task (Study 2). Taking the paradigm to the Israeli–Palestinian conflict and outside a controlled laboratory, we then examine the impact on attitudes toward more abstract war-related policies among American Jews recruited online (Study 3). Last, we replicate our experimental paradigm in a field study with Jewish participants in Israel—a context high in violent conflict (Study 4). Across the studies, we predict that learning about genetic differences will exacerbate processes directly related to sustaining intergroup hostility, while learning about genetic similarities will help mitigate these effects.

Study 1

Method

Participants. A total of 123 Jewish and 57 Arab participants (M_{age} = 18.71, SD_{age} = 1.00; 52.2% females) were recruited via subject pool prescreening procedures at University of Michigan's Ann Arbor and Dearborn campuses. Participants received course credits for taking part in the study.

Procedure. To reduce demand characteristics that might induce participants to change their behaviors according to the assumed purpose of this experiment, participants were recruited in such a way that no one was aware that they were selected because of their ethnicity. In addition, the paradigm was masked as a "Memory and Distraction" study. This procedure was followed in each study presented in this article. Specifically, participants were informed that they would complete various tasks intended to disrupt their memory for the content of our manipulation (i.e., the article), before taking a memory test at the end. This included filler tasks that were explicitly chosen to bolster the cover story (e.g., searching for article-relevant words and rating attitudes about article-related content; see online appendix for all filler

tasks). Crucially, our actual dependent variables were embedded within these fillers as "distraction tasks."

Participants were first randomly assigned to read and memorize one of two ostensible *BBC News* articles (adapted from an actual *BBC* article which reported on genetic similarities between Jews and Arabs): "Jews and Arabs are 'genetic brothers'" (i.e., *genetic siblings condition*) or "Jews and Arabs are not 'genetic brothers'" (i.e., *genetic strangers condition*). These articles were one page, carefully matched in terms of length and language complexity, and reported new research published in a highly ranked scientific journal that found either striking similarities or differences between both groups' DNA (see online appendix for the articles).

After reading the article, participants completed the various "distraction tasks" which included measures of implicit and explicit outgroup antipathy toward Arabs and Jews. At the end, they completed a "memory test" in which they recalled up to 10 aspects of the article. This test was intended to check whether they were paying attention to its content and, hence, would allow us to exclude participants who were inattentive to the main focus of the article. Before being probed for suspicion regarding the true purpose of the study[6] and being debriefed, participants completed a manipulation check and a demographics questionnaire.

Measures

Perceived genetic similarity. As a check that we had indeed manipulated perceptions of genetic relatedness (i.e., the manipulation check), participants rated how much they agreed with the statement "Jews and Arabs are genetically similar" on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*).

Explicit outgroup antipathy. Participants rated "typical" Arab- and Jewish Americans on four-bipolar dimensions (i.e., Peaceful–Violent, Friendly–Unfriendly, Nice–Mean, Helpful–Unhelpful) using an 8-point scale (Bar-Tal & Labin, 2001). Moreover, to test whether our manipulation would solely affect attitudes toward genetically related groups or, instead, elicit positivity toward outgroups more generally, participants also rated African Americans on the same scale. In line with previous research (Castano, Yzerbyt, Paladino, & Sacchi, 2002), difference scores were created by subtracting ingroup ratings from outgroup ratings. Based on these scores, mean scores for antipathy toward Jewish and Arab Americans ($\alpha = .81$) and African Americans were computed ($\alpha = .70$).

Implicit outgroup antipathy. An Implicit Association Test (Greenwald, Nosek, & Banaji, 2003), consisting of Arab and Jewish names, paired with pleasant and unpleasant categories was used (Huesmann, Dubow, Boxer, Souweidane, & Ginges, 2012). Consistent with common scoring procedures (Greenwald et al., 2003), upper-bound and lower-bound outliers were removed and an error penalty for incorrect responses was given when creating the D-score.

Results

Confirming the effectiveness of our manipulation, a 2 (Condition: Genetic strangers vs. Genetic siblings) by 2 (Ethnicity: Arab vs. Jewish) analysis of variance (ANOVA) showed that participants generally perceived more genetic similarity between Jews and Arabs in the genetic siblings condition ($M = 5.17$, $SE = .17$) than in the genetic strangers condition, ($M = 3.17$, $SE = .18$; $\Delta M = 1.96$, 95% confidence interval [CI] [1.47, 2.45]), $F(1, 175) = 62.36$, $p < .001$, $\eta_p^2 = .26$. The interaction between ethnicity and condition remained insignificant, $F(1, 175) = .20$, $p = .654$, indicating that the manipulation had invariant effects in both ethnic groups.

When it came to the test of our hypothesis, participants in the genetic siblings condition showed less explicit antipathy toward their respective genetically similar outgroup ($M = .95$, $SE = .16$) compared with those in the genetic strangers condition, as expected ($M = 1.39$, $SE = .18$; $\Delta M = -.51$, 95% CI [−.98, −04]), $F(1, 176) = 4.66$, $p = .032$, $\eta_p^2 = .03$, see Figure 1. Again, this effect did not interact with participants' ethnicity, $F(1, 175) = .73$, $p = .393$. No effects were observed for explicit antipathy toward African Americans, a group that was not mentioned as genetic siblings or strangers in the manipulation, $F(1, 168) = .06$, $p = .809$, and for implicit antipathy (i.e., the D-score), $F(1, 169) = .56$, $p = .457$.

Preliminary Discussion

This first study provided initial evidence that heightening Arabs' and Jews' awareness of their genetic similarities and differences impacts their explicit antipathy toward one another. As expected, attitudes toward African Americans were unaltered, suggesting that our manipulation did not influence antipathy levels toward genetically distant ethnic groups. Implicit antipathy was also unaffected, which may be due to the difficulties of changing peoples' automatic attitudes (Crandall & Eshleman, 2003) and the very weak relationship between implicit measures and explicit attitudes generally (Oswald, Mitchell, Blanton, Jaccard, & Tetlock, 2013).

While the present study provides initial support for our predictions, it is limited as it only tested effects on attitudinal bias. Given that the Jewish–Arab conflict is characterized by high levels of interethnic aggression between group members, it is crucial to test whether experimental effects can also be observed on behavioral bias. We addressed this question in the next study.

Study 2

Method

Participants. To facilitate recruitment, and since no differences were observed between Arabs and Jews in the first study, we focused on Jewish participants here. A total of 131 participants were recruited through the same procedure as in

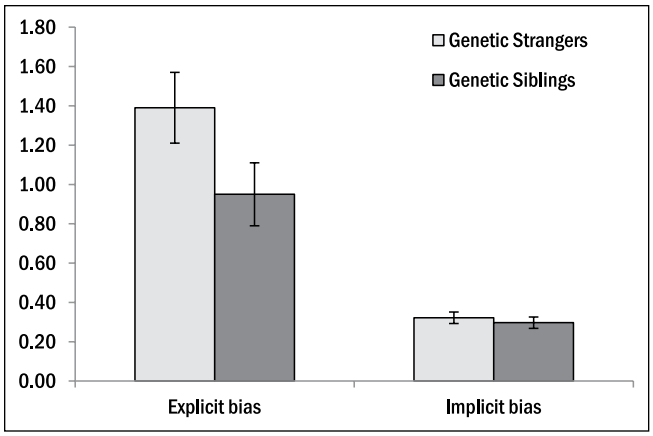

Figure 1. Participants in the genetic siblings (vs. strangers) condition show significantly less explicit bias toward the genetically similar outgroup in Study 1.
Note. Error bars represent standard errors.

Study 1. After excluding 16 participants who incorrectly answered the "critical question" about the article's content and, hence, failed to pay attention to the manipulation (see the new memory test described below) as well as two extreme outliers who had *z*-scores exceeding the ±3 *SD* cutoff in the Competitive Reaction Time (CRT) noise blast task (see Anderson & Carnagey, 2009 for similar procedures), the final study sample comprised 113 participants (M_{age} = 19.43, SD_{age} = .89, 54.1% females).

Procedure. The procedure was identical to Study 1 with the exception that the CRT noise blast task—a reliable, valid, and well-established measure of behavioral aggression (see Anderson & Dill, 2000)—constituted our dependent measure. As in the previous study, this task was again disguised as a "distraction task" amidst filler tasks. Here, participants were led to believe that they would be competing with a randomly chosen opponent who happened to have "Mohammed" as his/her *last name*. To keep gender constant, the alleged opponent had the same gender as the participant. A pretest had shown that participants perceived both the opponent to be real and his/her last name to be of Arabic origin in this experimental set-up.

After the alleged random opponent assignment, participants were told that they and their purported opponent would press a button as fast as they could on each of nine trials and that whoever was slower would receive loud blasts of noise from the winner. Crucially, participants set the level of noise that their opponent would receive, from 60 dB (Level 1) to 105 dB (Level 10, about the same volume as a fire alarm) in advance of each trial. A nonaggressive no-noise option (Level 0) was also provided. Moreover, participants could also control how long their opponent suffered by setting the noise duration from 0 to 2.5 s.

In the first trial, when the participant sets the intensity and duration, they have no information yet about what levels their opponent will set for them. However, after the first trial, participants become aware of their opponents' aggressive tendencies and their response patterns mirror their opponent's behavior (Bremner, Koole, & Bushman, 2011). Thus, in line with previous studies (Bremner et al., 2011), we were interested in the baseline aggression in Trial 1, where participants have received no noise from their opponent yet and, therefore, have not been provoked to respond in a particular manner. However, to bolster the cover story that this was merely a distracting reaction-time task, participants completed all nine trials.

As in Study 1, participants were given a memory test at the end. In this study and all remaining studies, it included a five-question multiple-choice test that included a "critical question" about the main findings reported in the article (i.e., "The study found that the Jewish and Arab populations share [very few/a common set of] . . . a. genetic factors; b. biological factors; c. cultural factors"). Finally, before being debriefed, they completed the manipulation check from Study 1 and a demographic questionnaire.

Results

Supporting the effectiveness of our manipulation, participants in the genetic siblings condition perceived more genetic similarity (M = 4.95, SE = .20) between Arabs and Jews than those in the genetic strangers condition (M = 4.08, SE = .20; ΔM = .87, 95% CI [.32, 1.43]), $F(1, 111) = 9.74$, $p = .002$, $\eta_p^2 = .08$.

A significant effect of the experimental condition was also observed on the intensity of punishment given to the outgroup opponent: Jewish participants in the genetic siblings condition punished their alleged Arab opponent with less intense noise blasts (M = 3.61, SE = .28) than those in the genetic strangers condition, (M = 4.50, SE = .30; ΔM = −.87, 95% CI [−1.69, −.06]), $F(1, 111) = 4.50$, $p = .036$, $\eta_p^2 = .04$, see Figure 2. Length of the noise blasts given to the opponent was not affected, $p = .648$, which may be due to high levels of participant error and confusion when varying the noise duration, as observed in earlier research (see Anderson & Dill, 2000).

Preliminary Discussion

Using a behavioral measure, Study 2 demonstrated that awareness of interethnic genetic similarities and differences also impacts actual physical aggression between members of groups in conflict, with aggression being lower when similarities are emphasized than when differences are emphasized. Although our first two studies indicated that genetic information may indeed alter intergroup attitudes and behavior, they give no information about whether it is awareness of genetic similarities that leads to *less* bias or whether it is awareness of differences that leads to *more* bias. To examine this, we included a plain control condition in the next study. We also

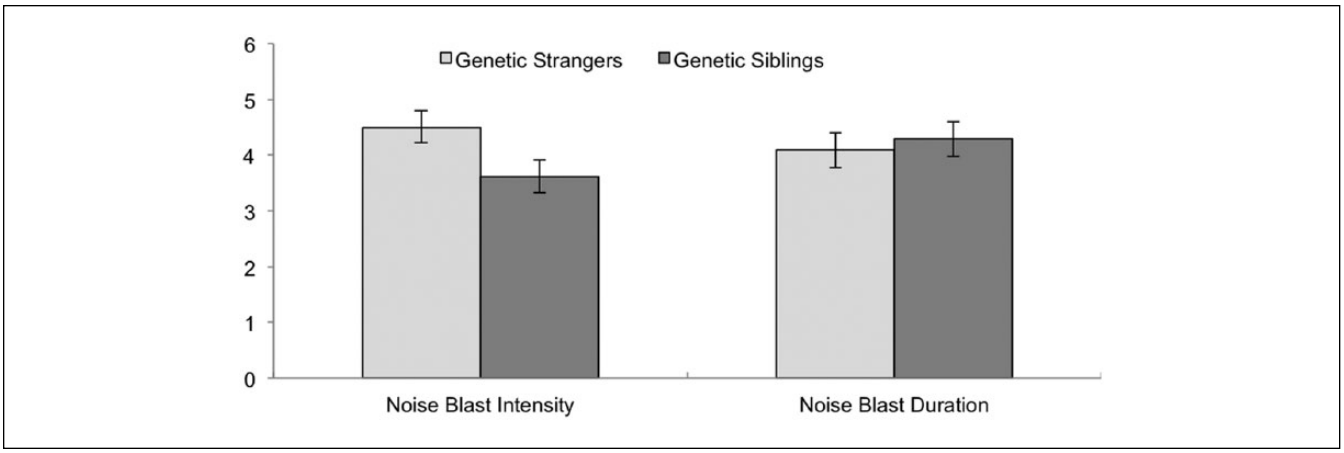

Figure 2. In the CRT noise blast task from Study 2 (Trial 1), participants in the genetic siblings (vs. strangers) condition punished the Arab opponent with less aggression.
Note. CRT = Competitive Reaction Time.

examine our paradigm's ecological validity by testing whether our manipulation would impact more abstract political attitudes about a relevant, real-life interethnic conflict scenario (i.e., the Israel–Palestine conflict), among a more representative Jewish sample that was tested outside the laboratory. Moreover, we test whether the impact on attitudinal group antipathy observed in Study 1 may underlie and, hence, mediate experimental effects on political attitudes as it did in similar research (Kunst, Thomsen, Sam, & Berry, 2015).

Study 3

Method

Participants. Two hundred and twenty-two Jewish participants were recruited via various listservs from Jewish communities across the United States. In exchange for participating in this online study, respondents could enter into a lottery for a $100 Amazon gift card. Eleven participants were discarded due to failing to pay attention to the manipulation as indicated by incorrect answers to the "critical question" (described in Study 2). Because the study was run online where attention is particularly likely to wax and wane, it was critical to use an additional check to measure how attentive participants were throughout the study (Maniaci & Rogge, 2014). Thus, to assess this, we used participants' rating of how well they remembered "the details of the article, right now" (1 = *not at all*, 12 = *completely*). A total of 189 participants (M_{age} = 24.33, SD_{age} = 8.86; 59.3% females) were retained for analyses, as they scored on or above the midpoint (> 6) on this composite measure (i.e., attention across four time points, α = .96) and, hence, paid sufficient attention throughout the study.

Procedure. The procedure was similar to the previous studies, except that the study was run online and a new neutral *BBC News* article was added (i.e., "New BBC channels get launch dates"; see online appendix) to provide a plain control condition. After reading the article, participants answered the usual filler questions, the explicit outgroup antipathy measure from Study 1 (α = .93), and a measure of the extent to which Israel should pursue diplomatic negotiations with the Palestinians (i.e., Support for Peacemaking). The study ended with the manipulation check, memory test, demographics, and debriefing.

Measures

Support for peacemaking. Support for peacemaking was assessed using an adapted nine-item measure developed by Vail and Motyl (2010). In our version, Jewish participants rated the extent to which Israel should pursue diplomatic negotiations with the Palestinians (e.g., "In order to achieve its goals, Israel should pursue peaceful diplomacy with the Palestinians instead of using aggressive actions") on a 10-point scale (1 = *strongly disagree*, 10 = *strongly agree*; α = .91).

Results

An ANOVA showed a main effect of condition on the manipulation check, $F(2, 185) = 56.35$ $p < .001$, $\eta_p^2 = .38$. Participants in the genetic siblings condition perceived the most genetic similarities between Jews and Arabs ($M = 5.96$, $SE = .18$), followed by participants in the control ($M = 5.41$, $SE = .20$) and the genetic strangers condition ($M = 3.32$, $SE = .19$). Simple contrasts revealed that all groups differed significantly from each other at $ps < .001$—.043 (similarity vs. control: $\Delta M = .54$, 95% CI [.02, 1.07]; difference vs. control: $\Delta M = 2.10$, 95% CI [1.56, 2.62]; similarity vs. difference: $\Delta M = 2.64$, 95% CI [2.12, 3.15]).

The main effect of experimental condition on antipathy toward Arabs was marginally significant, $F(2, 186) = 2.67$, $p = .072$, $\eta_p^2 = .03$. Replicating the effects of Study 1, simple

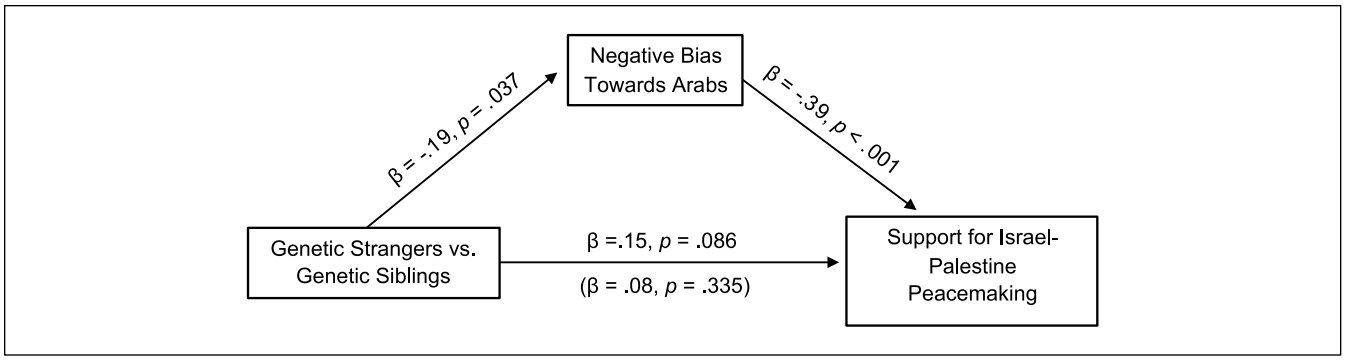

Figure 3. A reduction of outgroup bias mediates the marginal experimental effect on support for peacemaking.
Note. Estimate in parentheses represents coefficient after the mediator was added to the model.

contrasts revealed that participants in the genetic siblings condition had less antipathy toward Arabs (M = .37, SE = .17) than participants in the genetic strangers condition (M = .94, SE = .18; simple contrast: p = .022, ΔM = −.57, 95% CI [−1.06, −.08]). Although the strength of antipathy of participants in the control condition fell in between these means (M = .63, SE = .18), it did not differ compared with the siblings (p = .291) or strangers condition (p = .235).

Also, the main effect of experimental condition on support for peacemaking was marginally significant, $F(2, 186)$ = 2.54, p = .082, η_p^2 = .03) and simple contrasts revealed that participants in the genetic siblings condition showed significantly more support for peacemaking (M = 6.72, SE = .23) than those in the strangers (M = 6.09, SE = .24; p = .054, ΔM = .64, 95% CI [−.01, 1.28]) and control conditions (M = 6.08, SE = .24; p = .055, ΔM = .64, 95% CI [−.01, 1.30]). The control and strangers condition did not differ significantly from each other (p = .977).

As it was the genetic strangers and siblings conditions that differed significantly for antipathy as well as for support for peacemaking, we used the standard regression approach to test a mediational model with an experimental dummy variable as predictor (0 = genetic strangers condition, 1 = genetic siblings condition), outgroup antipathy as mediator, and support for peacemaking as the dependent variable. While the experimental design did not allow us establish the causal direction between the mediator (e.g., outgroup antipathy) and dependent variables (e.g., support for peacemaking), this order was chosen based on previous research showing downstream effects of attitudinal bias on policy support (Kunst et al., 2015) and also followed the presentation order in the survey. To start with, the experimental condition predicted more support for peacemaking to marginally significant extent (β = .15, p = .086), $F(1, 123)$ = 3.00, p = .086, as well as significantly lower values on the mediator outgroup antipathy toward Arabs (β = −.19, p = .037), $F(1, 123)$ = 4.45, p = .037. In the final mediation model, $F(2, 122)$ = 12.56, p < .001, antipathy emerged as the only significant predictor of support for peacemaking and, hence, fully mediated the experimental effects (see Figure 3). Bootstrapping with 5,000 random resamples showed that the resulting indirect effect, going through antipathy toward Arabs, was significant (B = .27, 95% CI [.02, .60]).

Preliminary Discussion

Results showed that heightening awareness about interethnic genetic similarities versus differences can also impact war-sustaining political views about a relevant conflict, in this case, the one between Israel and Palestine. Moreover, compared with both the genetic strangers condition *and* the baseline control conditions, emphasizing genetic similarities was related to more support for peacemaking, highlighting its potential to mitigate conflicts. When comparing the genetic strangers and siblings condition, our mediation model suggested that the marginally higher support for peacemaking in the genetic similarities condition was due to lower levels of explicit outgroup antipathy. Although the causal relationship between the mediator and dependent variable cannot be established with certainty, this suggests that our manipulation primarily affects more direct forms of bias, with downstream effects on more abstract political attitudes.

So far, the three first studies have provided evidence of the broad range of effects in a U.S. context. In the next and last study, we wanted to answer the question of whether our paradigm could also have an impact in a context that is characterized by protracted interethnic violence and deeply entrenched negative attitudes. To address this, we conducted a field experiment in Israel. Furthermore, previous research suggests that increasing constructive emotions about intractable conflicts, including hope, is critically related to their resolution (Cohen-Chen, Halperin, Porat, & Bar-Tal, 2014). Hence, we also examine the impact on a set of such emotions and expect them, similar to negative outgroup bias in Study 3, to mediate effects on political attitudes.

Study 4

Method

Participants. One hundred and eighty-four Jewish Israelis were recruited and participated in our paper-and-pencil study on commuter trains from Tel Aviv to BeerSheva and Haifa (Northern and Southern Israel, respectively) in exchange for several chocolates. Seven participants were discarded due to failing to pay attention to the manipulation as indicated by incorrect answers to the "critical question." Because of the highly uncontrolled and noisy environment, adding an additional attention check at the *beginning* of the study was crucial to both motivate participants to read the article's content as well as to screen out participants who did not. Thus, at the bottom of the article, we included two fill-in-the-blank sentences taken from the main content of the article. If participants were uncertain about how to answer these basic questions, glancing at the article again would provide them with these answers and thus indicate that they were indeed paying attention to the content of the article. Possibly due to the highly noisy setting in which, despite our request to limit outside distractions, participants were often listening to music, making phone calls, texting, or interacting with other passengers, only 93 participants (M_{age} = 28.82, SD_{age} = 12.46; 53.8% females) showed that they were paying attention to the article's content by accurately completing these simple questions and, hence, were retained for analyses (see Thomas & Clifford, 2016 and Berinsky, Huber, & Lenz, 2012 for comparable rates in other non-laboratory contexts).

Procedure. Analogous to Study 3, participants were randomly assigned to read one of three news articles. However, while the articles were the same in content, this time they appeared to be published in *Ynet* (a branch of *Yedioth Ahronot*—Israel's second leading daily newspaper), rather than in the *BBC*. These and all other materials were forward-back translated into Hebrew by bilinguals.

Along with the filler distraction tasks, we assessed support for concrete political compromises that Israel might make to achieve peace with the Palestinians (i.e., Support for Political Compromise scale), support for Israel's political exclusion of its Palestinian citizens (i.e., Political Exclusion scale), support for Israel's harm of Palestinians to achieve its military goals (i.e., Collective Punishment scale), hope about the Israeli–Palestinian conflict (i.e., Hope scale), and other emotions that are generally associated with either having a destructive or constructive effect on the resolution of conflict (i.e., Positive and Negative Emotional Outgroup Sentiments scale).[7]

Measures

Positive and negative emotional outgroup sentiments. On a 6-point scale (1 = *not at all*, 6 = *to a very large extent*), we measured the extent to which participants felt seven emotions toward Palestinians. These emotions have been found to have distinct effects on conflict attitudes (Halperin, Sharvit, & Gross, 2011). However, since factor analyses indicated a clear two-factor solution, we computed a scale for emotions that generally have a destructive effect on conflict (i.e., hatred, fear, irritation, hostility; α = .80) and a second scale for those that generally have a more constructive effect (i.e., optimism, shame, guilt; α = .77; Halperin et al., 2011).

Hope about the conflict. Hope about the Israeli–Palestinian conflict was measured with 14-items adapted from Cohen-Chen et al. (2014) such as "I am hopeful regarding the solution of the Israeli–Palestinian conflict" (α = .86). Responses were rated on a 6-point scale (1 = *not at all*, 6 = *to a very large extent*).

Support for political compromises. In contrast to the more general Support for Peacemaking measure from Study 3, we assessed support for *concrete* political compromises that Israel might make to achieve peace with the Palestinians (i.e., a two-state solution; stopping settlement building; making concession about the status of Jerusalem; establishing economic relations between Israel and the Palestinian territories) using Halperin et al.'s (2011) four-item measure (α = .80). Responses were rated on a 6-point scale (1 = *strongly oppose*, 6 = *strongly support*).

Political exclusion. The degree to which participants supported the political exclusion of Palestinian citizens of Israel was assessed with a five-items measure (e.g., "The right of Palestinian citizens of Israel to vote in Israeli elections should be revoked"; α = .93) adapted from Halperin, Canetti-Nisim, and Hirsch-Hoefler (2009) which was rated on a 6-point scale (1 = *strongly oppose*, 6 = *strongly support*).

Collective punishment. Willingness to harm Palestinians to achieve Israel's military goals (e.g., "If thousands of Palestinians were to start marching toward Jerusalem, the Israel Defense Forces should use firearms to stop them, even at the cost of tens of fatalities and hundreds of wounded") was assessed using an adapted three-item measure (Reifen Tagar, Morgan, Halperin, & Skitka, 2014; α = .66). Responses were rated on a 6-point scale (1 = *strongly oppose*, 6 = *strongly support*).

Results

As in the previous studies, the manipulation check differed significantly between the conditions, $F(2, 87) = 4.02$, $p = .021$, $\eta_p^2 = .08$. Participants in the genetic strangers condition ($M = 3.55$, $SE = .27$) perceived a significantly lower degree of overlap than participants in the control ($M = 4.85$, $SE = .37$; simple contrast: $p = .011$, $\Delta M = 1.30$, 95% CI [.31, 2.30]) and genetic siblings condition ($M = 4.67$, $SE = .27$; simple contrast: $p = .016$, $\Delta M = -1.12$, 95% CI [−2.03, −.22]). The

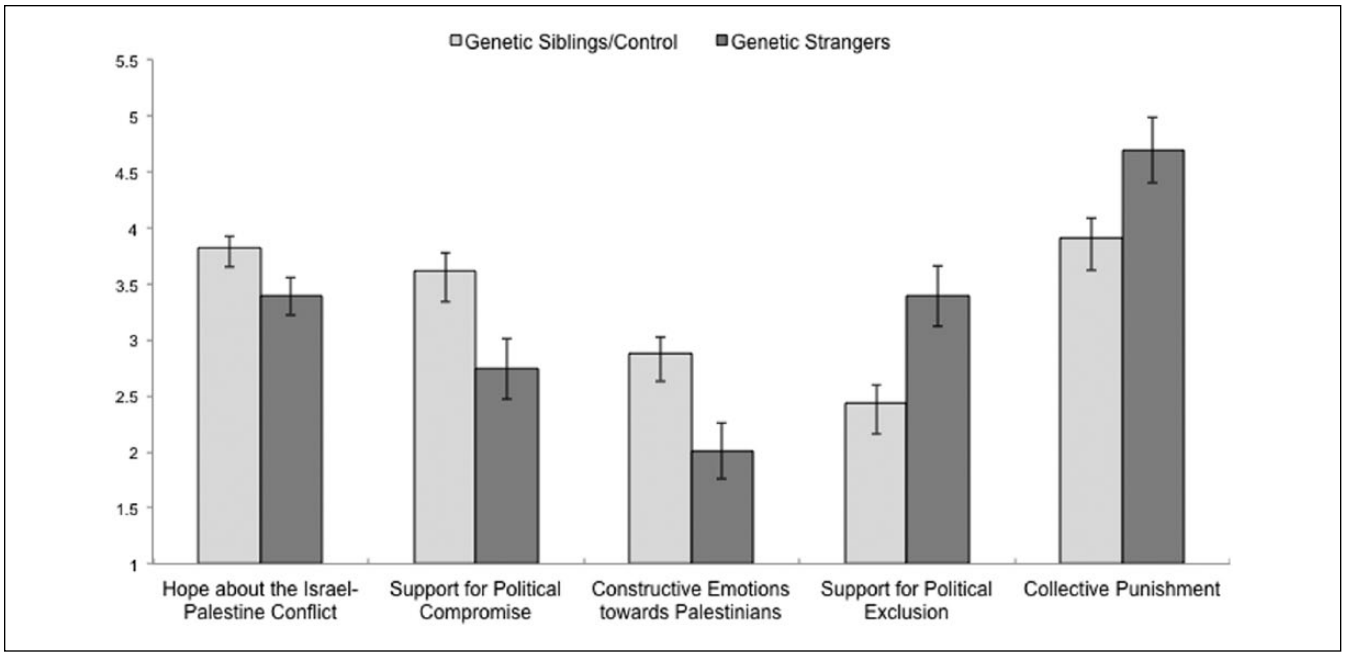

Figure 4. In Study 4, Jewish Israelis in the genetic strangers condition show less positive attitudes about the conflict (i.e., less support for political compromise; more support for the political exclusion of Palestinian citizens of Israel; more support for collective punishment) and less constructive emotions related to the conflict (i.e., hope and positive emotions toward Arabs/Palestinians).

genetic siblings and control condition did not differ from each other (simple contrast: $p = .678$), possibly indicating that the similarity condition can be seen as the social default for participants in this context. Consistent with similar studies (Kunst et al., 2015), the control and sibling condition were, therefore, pooled and compared against the genetic strangers condition in further analyses.

In a multivariate analysis of variance (MANOVA) with all dependent variables, the experimental dummy variable (0 = control and genetic siblings, 1 = genetic strangers) showed a significant multivariate effect, $F(5, 85) = 2.88$, $p = .013$, $\eta_p^2 = .17$. Between-subject effects showed that the experimental condition had a significant effect on support for political compromises ($\Delta M = .88$, 95% CI [.26, 1.50]), $F(1, 90) = 8.01$, $p = .006$, $\eta_p^2 = .08$; support for political exclusion ($\Delta M = -.96$, 95% CI [−1.59, −.34]), $F(1, 90) = 9.54$, $p = .003$, $\eta_p^2 = .10$; support for collective punishment ($\Delta M = -.81$, 95% CI [−1.48, −.14]), $F(1, 90) = 5.69$, $p = .019$, $\eta_p^2 = .06$; hope about the conflict ($\Delta M = .43$, 95% CI [.06, .81]), $F(1, 90) = 5.22$, $p = .025$, $\eta_p^2 = .06$; and on emotions that generally have constructive effect on conflict resolution ($\Delta M = .88$, 95% CI [.30, 1.45]), $F(1, 90) = 9.26$, $p = .003$, $\eta_p^2 = .09$. Emotions that tend to have a destructive effect were unaffected ($p = .335$). Specifically, participants in the genetic stranger conditions showed less support for political compromise and lower hope and other emotions that have constructive effects on conflict, while showing more support for collective punishment toward Palestinians and more support for the political exclusion of Palestinian citizens of Israel (see Figure 4).

To replicate and further explore the mediation finding from the previous study, we next tested whether a reduction in hope about the conflict and in other emotions that generally have constructive effects on conflict resolution would mediate the effect of the experimental condition on support for political exclusion, political compromise, and collective punishment. Consistent with the MANOVA results, regression models showed that emphasizing genetic differences (vs. similarities and control) led to less support of a political compromise ($\beta = -.30$, p = .003), $F(1, 91) = 9.07$, $p = .003$; more support for political exclusion ($\beta = .31$, $p = .003$), $F(1, 91) = 9.54$, $p = .003$; and more support for collective punishment ($\beta = .24$, $p = .019$), $F(1, 90) = 5.69$, $p = .019$. Moreover, it led to lower scores on the mediators constructive emotions toward Palestinians ($\beta = -.30$, $p = .003$), $F(1, 91) = 9.07$, $p = .003$, and hope about the conflict ($\beta = -.23$, $p = .025$), $F(1, 91) = 5.18$, $p = .025$. In the final models, support for political compromise, $F(3, 89) = 24.67$, $p < .001$; support of political exclusion, $F(3, 88) = 20.54$, $p < .001$; support for collective punishment, $F(3, 88) = 9.85$, $p < .001$, that included both predictors and mediators as independent variables, constructive emotions fully mediated the experimental effects on support for compromise and support of collective punishment, while both constructive emotions and hope fully mediated the effects on support of political exclusion (see Figure 5). Bootstrapping showed that the indirect effect on support of political compromise was significant and negative ($B = -.54$, 95% CI [−.95, −.22]), whereas the effect on collective punishment was significant and positive ($B = .38$, 95%

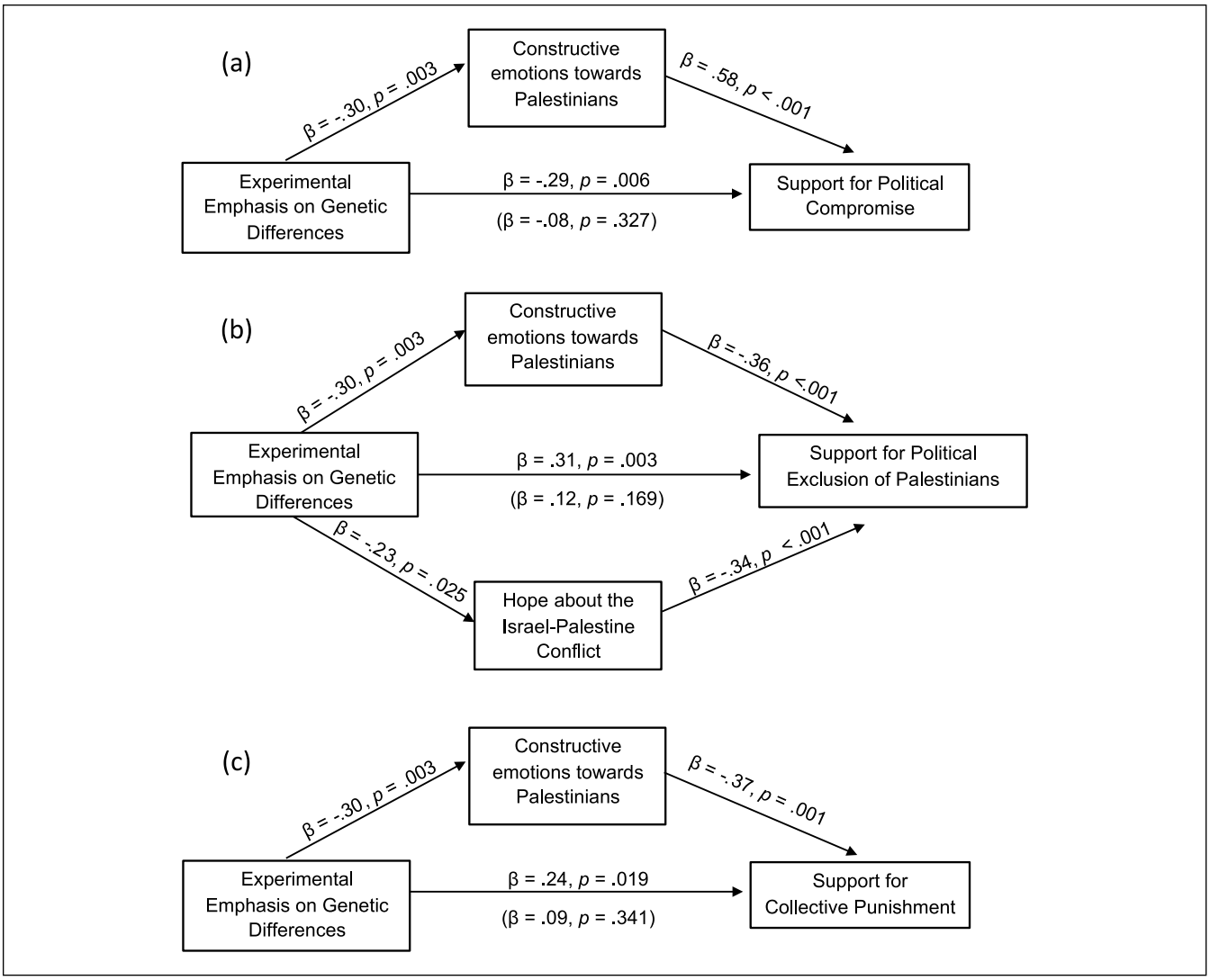

Figure 5. (a) The effect of the genetic strangers condition on support for political compromise was fully mediated by a decrease in constructive emotions, while (b) the effect on support for political exclusion of Palestinian citizens of Israel was fully mediated by a decrease in constructive emotions and hope about the Israeli–Palestinian conflict, and (c) The effect of the genetic strangers condition on support for collective punishment was fully mediated by a decrease in constructive emotions.
Note. Values in parenthesis represent estimates after the mediator(s) was added to the model.

CI [.10, .83]). In the model with support of political exclusion as dependent variable, both the indirect effect going through constructive emotions (B = .34, 95% CI [.12, .67]) and the effect going through hope were positive and significant (B = .25, 95% CI [.03, .57]).

Preliminary Discussion

Results from this experimental field study in Israel indicated that emphasizing genetic differences may exacerbate hostility in a context of unrelenting violent conflict. Relative to both the genetic siblings and plain control conditions, genetic differences led Jewish Israeli's to increase their opposition to concrete compromises and policies that are critical to the resolution of conflict, with a decrease in hope and other constructive emotions underlying theses effects. Given the context of protracted war, Jewish Israelis may be particularly less ready than Jewish Americans to learn about interethnic similarities or, alternatively, genetic similarities between Jews and Arabs may be the default assumption in this context.

General Discussion

Only recently has an understanding of the predictive power of a human's genetic make-up entered the public consciousness (Nelkin, 2001). Within this time, several genocides have already used rhetoric about genetic differences to instigate

violence (e.g., Rwandan Genocide, Bosnian Genocide). Moreover, people are increasingly seeking personal DNA testing services to determine their unique ethnic lineages (Wolinsky, 2006), and the media frequently reports on the degree of genetic overlap between various ethnic groups with a history of conflict.

Using Arabs and Jews from diverse samples and contexts, we demonstrated that those who learn that their ethnic group is genetically related to an enemy group showed more constructive intergroup attitudes, interindividual behaviors, and support for peaceful policies than those who learn about the genetic differences. Specifically, in our three studies conducted in the United States, we found that heightening perceptions of interethnic genetic similarities versus differences altered Jews' and Arabs' negative attitudes, and even the real physical aggression of Jews toward an alleged Arab individual. In fact, it led to more support for conciliatory policies among Jews—in this case related to the Israeli–Palestinian conflict—and, compared with a plain control condition, provided some evidence that emphasizing genetic similarities may be one way to help attenuate intergroup conflict. While previous research has largely focused on how genetic information can be used to divide us, this is one of the first studies to suggest that genetic information can be used to bring us together (Dar-Nimrod & Heine, 2011). Importantly too, emphasizing genetic similarities may be fostering a "deep" unity that still allows for the expression of differences in perceptible domains (e.g., cultural). Thus, this approach may also be circumventing the limitations of commonality-based approaches which increase bias by creating a degree of overlap that threatens groups' desire to maintain their distinctiveness (Crisp et al., 2006; Gaertner et al., 1989; Hewstone & Brown, 1986; Hornsey & Hogg, 2000; Wenzel et al., 2007).

However, our field study conducted in Israel painted a more pessimistic picture. Here, emphasizing genetic differences *exacerbated* Jews' conflict-sustaining attitudes and emotions, suggesting that learning about how you are genetically different from an enemy group may have a particularly menacing effect in contexts of war. Despite these cultural differences, the process underlying the effects on political attitudes seemed to be similar. Both in the United States and in Israel, a change in direct forms of bias (i.e., attitudinal and emotional) appears to explain why learning about genetic differences or similarities altered more abstract political attitudes. Yet, a question that remains is: what is the *fundamental* process underlying this relationship? We suspect that altering perceived intergroup genetic overlap may be particularly powerful in both exacerbating and mitigating ethnic conflict because it shifts "essentialist views" of these groups or beliefs in their fixed, core nature (Gelman, 2003). Future research should explore this by including a measure of essentialism (see Keller, 2005) and by looking at how altering overlap on genes may be distinct from recent successful alterations of intergroup commonalities on non-genetic factors such as religion (Kunst & Thomsen, 2015), nationality (Banfield & Dovidio, 2013), shared victimhood (Shnabel, Halabi, & Noor, 2013), or emotions (McDonald et al., 2015).

The present research can be seen as providing the first systematic investigation of the consequences of emphasizing genetic differences and similarities between groups as well as of its impact within a context of conflict. Importantly, this research also gives insight into how intergroup conflict is affected by both genetic information, more broadly, as well as by essence placeholders. Across four studies, we obtained support for the general pattern of our results. Moreover, using cross-cultural and cross-national samples, diverse methods, and a variety of measures of intergroup aggression (e.g., Noise Blast Task, collective punishment), we provided evidence for the broad validity and robustness of our effects.

Yet, one limitation of our work is that we included a plain control condition in only half of our studies, leaving some uncertainty about the relative impact of emphasizing genetic differences versus similarities. Indeed, while our study conducted in the United States suggested that information about genetic similarities may reduce intergroup tensions (Study 3), it was the genetic difference condition that led to more bias in Israel (Study 4). Hence, it is possible that increasing awareness about intergroup genetic similarities may reduce tensions only in less severe conflict scenarios, while highlighting genetic differences may be especially detrimental in high-conflict contexts, such as the Middle East. Given that rhetoric emphasizing genetic differences between groups does occur in conflict-discourse, this finding is particularly alarming.

An important topic of future research is to investigate whether and under which conditions status and power interact with the effects we observed. While we did not observe different effects between Jewish and Arab participants in the U.S. context, we included an Arab sample in one of our studies only. By more consistently including participants from both high- and low-status groups, future research should explore the potential and limitations of prejudice reduction effects within such asymmetries (Banfield & Dovidio, 2013; Levin, Federico, Sidanius, & Rabinowitz, 2002; Saguy, Tausch, Dovidio, & Pratto, 2009; Ufkes, Calcagno, Glasford, & Dovidio, 2016). We believe that our paradigm can be applied to a range of other ethnic groups in conflict. Beyond Arabs and Jews, numerous recent violent clashes have occurred between groups that share striking genetic similarities, including Kurds, Armenians, and Turks (Arnaiz-Villena, Gomez-Casado, & Martinez-Laso, 2002); Indians and Pakistanis in Kashmir (Reich, Thangaraj, Patterson, Price, & Singh, 2009); Tamils and Sinhalese in Sri Lanka (Ranaweera et al., 2014); Russians and Ukrainians (Balanovsky et al., 2008); and the English and Irish (Oppenheimer, 2007). Yet, given peoples' limited understanding of genes (Lanie et al., 2004) and that historical accounts, cultural myths, and conflicting genetic analyses also suggest distinct lineages, these groups are likely to be unaware of their actual degree of genetically overlap. Thus, altering awareness of genetic

differences and similarities may impact peace and conflict in these contexts as well. At the same time, we also believe that our paradigm can be applied to ethnic groups without a recent history of conflict (e.g., Asians and Blacks). Indeed, future research could directly compare the impact of genetic information on intergroup bias within contexts of varying degree of intergroup hostility and threat. Such an approach could give more direct information about contextual moderators that may underlie our effects.

Societal Implications

Based on our findings, we suggest that conflict-monitoring organizations (e.g., *International Crisis Group, Genocide Watch*) go on heightened alert when conflict-rhetoric begins emphasizing genetic differences. In addition, we encourage further exploration of the potential benefits of interventions that educate about high degrees of genetic overlap between groups in conflict. Because it is often assumed that genes are a meaningful way to think about racial and ethnic group membership (Yzerbyt, Corneille, & Estrada, 2001), we also encourage interventions that create greater awareness of the considerable amount of genetic overlap that exists between all of the world's ethnic and racial groups (see Plaks et al., 2012).

Lastly, our findings have implications for research and reporting on the genetic underpinning of ethnic and racial categories. As such research continues to produce new and controversial findings, awareness of how this information can impact lay perceptions is critically important. Indeed, in an effort to vie for media attention, researchers often contribute to the media's oversimplified and deterministic explanations of genes (Bubela & Caulfield, 2004). As most people's understanding of genetics comes from these media accounts (Conrad, 1999), researchers should be particularly cautious when formulating press releases about the degree of interethnic genetic overlap—their findings and interpretations may have far-reaching consequences.

Acknowledgments

The author(s) would like to thank the reviewers and the editor for their feedback and suggestions that helped us improving this article.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. For instance, in 1994, leading up to the Bosnian genocide, Biljana Plavsic, the former President of Republika Srpska, said, "We are upset by a rising number of mixed marriages between Serbs and Muslims, for they allow genes to be exchanged between ethnic groups, and lead subsequently to the degeneration of Serb nationality" (Oslobođenje, May 1994, cited in Subotić 2012).
2. "Tutsi Probably Differ Genetically From the Hutu," accessed January 18, 2015. http://blogs.discovermagazine.com/gnxp/2011/08/tutsi-differ-genetically-from-the-hutu/#.VLvs1GTF9TM
3. "Genes of Most Ashkenazi Jews Trace Back to Indigenous Europe, Not Middle East," accessed January 18, 2015. http://www.medicaldaily.com/genes-most-ashkenazi-jews-trace-back-indigenous-europe-not-middle-east-259321
4. "European Roma Descended From Indian 'untouchables,' genetic study shows," accessed January 18, 2015. http://www.telegraph.co.uk/news/worldnews/europe/9719058/European-Roma-descended-from-Indian-untouchables-genetic-study-shows.html
5. "Consumer Genomics Market Should Pass 'Tipping Point' of 3 Million Samples Tested in 2015," accessed December 8, 2015. https://www.genomeweb.com/microarrays-multiplexing/consumer-genomics-market-should-pass-tipping-point-3-million-samples-tested
6. Only 1% expressed suspicion that we might have been examining the influence of the article on their subsequent attitudes. Our subsequent studies showed similar rates.
7. The survey also consisted of unpublished exploratory measures which are not presented here.

References

Abraham Fund History and Vision. (n.d.). Retrieved March 23, 2015, from www.abrahamfund.org/5856

Anderson, C. A., & Carnagey, N. L. (2009). Causal effects of violent sports video games on aggression: Is it competitiveness or violent content?. *Journal of Experimental Social Psychology*, *45*(4), 731-739.

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, *78*, 772-790.

Arnaiz-Villena, A., Gomez-Casado, E., & Martinez-Laso, J. (2002). Population genetic relationships between Mediterranean populations determined by HLA allele distribution and a historic perspective. *Tissue Antigens*, *60*, 111-121. doi:10.1034/j.1399-0039.2002.600201.x

Balanovsky, O., Rootsi, S., Pshenichnov, A., Kivisild, T., Churnosov, M., Evseeva, I., & Balanovska, E. (2008). Two sources of the Russian patrilineal heritage in their Eurasian context. *The American Journal of Human Genetics*, *82*, 236-250.

Banfield, J. C., & Dovidio, J. F. (2013). Whites' perceptions of discrimination against Blacks: The influence of common identity. *Journal of Experimental Social Psychology*, *49*, 833-841. doi:10.1016/j.jesp.2013.04.008

Bar-Tal, D., & Labin, D. (2001). The effect of a major event on stereotyping: Terrorist attacks in Israel and Israeli adolescents' perceptions of Palestinians, Jordanians and Arabs. *European Journal of Social Psychology*, *31*, 265-280.

Berinsky, A. J., Huber, G. A., & Lenz, G. S. (2012). Evaluating online labor markets for experimental research: Amazon.com's Mechanical Turk. *Political Analysis*, *20*, 351-368.

Bremner, R. H., Koole, S. L., & Bushman, B. J. (2011). "Pray for those who mistreat you": Effects of prayer on anger and aggression. *Personality and Social Psychology Bulletin*, *37*, 830-837. doi:10.1177/0146167211402215

Bubela, T. M., & Caulfield, T. A. (2004). Do the print media "hype" genetic research? A comparison of newspaper stories and peer-reviewed research papers. *CMAJ: Canadian Medical Association Journal = Journal De L'Association Medicale Canadienne*, *170*, 1399-1407.

Castano, E., Yzerbyt, V., Paladino, M., & Sacchi, S. (2002). I belong, therefore, I exist: Ingroup identification, ingroup entitativity, and ingroup bias. *Personality and Social Psychology Bulletin*, *28*, 135-143.

Cheung, B. Y., & Heine, S. J. (2015). The double-edged sword of genetic accounts of criminality: Causal attributions from genetic ascriptions affect legal decision making. *Personality and Social Psychology Bulletin*, *41*, 1723-1738. doi:10.1177/0146167215610520

Cohen-Chen, S., Halperin, E., Porat, R., & Bar-Tal, D. (2014). The differential effects of hope and fear on information processing in intractable conflict. *Journal of Social and Political Psychology*, *2*, 11-30.

Colman, A. M., Browning, L., & Pulford, B. D. (2012). Spontaneous similarity discrimination in the evolution of cooperation. *Journal of Theoretical Biology*, *299*, 162-171.

Conrad, P. (1999). A mirage of genes. *Sociology of Health & Illness*, *21*, 228-241.

Costa, M. D., Pereira, J. B., Pala, M., Fernandes, V., Olivieri, A., Achilli, A., . . . Hatina, J. (2013). A substantial prehistoric European ancestry amongst Ashkenazi maternal lineages. *Nature Communications*, *4*, 2543.

Crandall, C. S., & Eshleman, A. (2003). A justification-suppression model of the expression and experience of prejudice. *Psychological Bulletin*, *129*, 414-446.

Crisp, R. J., Walsh, J., & Hewstone, M. (2006). Crossed categorization in common ingroup contexts. *Personality and Social Psychology Bulletin*, *32*, 1204-1218.

Dar-Nimrod, I., & Heine, S. J. (2006). Exposure to scientific theories affects women's math performance. *Science*, *314*, 435.

Dar-Nimrod, I., & Heine, S. J. (2011). Genetic essentialism: On the deceptive determinism of DNA. *Psychological Bulletin*, *137*, 800-818.

Eltringham, N. (2006). 'Invaders who have stolen the country': The Hamitic Hypothesis, Race and the Rwandan Genocide. *Social Identities*, *12*(4), 425-446

Gaertner, S. L., Mann, J. A., Dovidio, J. F., Murrell, A. J., & Pomare, M. (1990). How does cooperation reduce intergroup bias. *Journal of Personality and Social Psychology*, *59*, 692-704.

Gaertner, S. L., Mann, J. A., Murrell, A., & Dovidio, J. F. (1989). Reducing intergroup bias: The benefits of recategorization. *Journal of Personality and Social Psychology*, *57*, 239-249.

Gelman, S. A. (2003). *The essential child: Origins of essentialism in everyday thought*. New York, NY: Oxford University Press.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm *Journal of Personality and Social Psychology*, *85*, 197-216.

Halperin, E., Canetti-Nisim, D., & Hirsch-Hoefler, S. (2009). The central role of Group-based hatred as an emotional antecedent of political intolerance: Evidence from Israel. *Political Psychology*, *30*, 93-123.

Halperin, E., Russell, A. G., Trzesniewski, K. H., Gross, J. J., & Dweck, C. S. (2011). Promoting the Middle East peace process by changing beliefs about group malleability. *Science*, *333*, 1767-1769. doi:10.1126/science.1202925

Halperin, E., Sharvit, K., & Gross, J. (2011). Emotion and emotion regulation in intergroup conflict: An appraisal-based framework. In D. Bar-Tal (Ed.), *Intergroup conflicts and their resolution: A social psychological perspective* (pp. 83-103). New York, NY: Psychology Press.

Hammer, M. F., Redd, A. J., Wood, E. T., Bonner, M. R., Jarjanazi, H., Karafet, T., & Bonne-Tamir, B. (2000). Jewish and Middle Eastern non-Jewish populations share a common pool of Y-chromosome biallelic haplotypes. *Proceedings of the National Academy of Sciences of the United States of America*, *97*, 6769-6774. doi:10.1073/pnas.100115997

Haslam, N. (2011). Genetic essentialism, neuroessentialism, and stigma: Commentary on Dar-Nimrod and Heine (2011). *Psychological Bulletin*, *137*, 819-824. doi:10.1037/a0022386

Hewstone, M. E., & Brown, R. E. (1986). *Contact and conflict in intergroup encounters*. Oxford, UK: Basil Blackwell.

Hornsey, M. J., & Hogg, M. A. (2000). Subgroup relations: A comparison of mutual intergroup differentiation and common ingroup identity models of prejudice reduction. *Personality and Social Psychology Bulletin*, *26*, 242-256.

Huesmann, L. R., Dubow, E. F., Boxer, P., Souweidane, V., & Ginges, J. (2012). Foreign wars and domestic prejudice: How media exposure to the Israeli-Palestinian conflict predicts ethnic stereotyping by Jewish and Arab American adolescents. *Journal of Research on Adolescence*, *22*, 556-570.

Keller, J. (2005). In genes we trust: The biological component of psychological essentialism and its relationship to mechanisms of motivated social cognition. *Journal of Personality and Social Psychology*, *88*, 686-702.

Kunst, J. R., & Thomsen, L. (2015). Prodigal sons: Dual Abrahamic categorization mediates the detrimental effects of religious fundamentalism on Christian-Muslim relations. *The International Journal for the Psychology of Religion*, *25*, 293-306.

Kunst, J. R., Thomsen, L., Sam, D. L., & Berry, J. W. (2015). "We are in this together:" Common group identity predicts majority members' active acculturation efforts to integrate immigrants. *Personality and Social Psychology Bulletin*, *41*(10), 1438.

Lanie, A. D., Jayaratne, T. E., Sheldon, J. P., Kardia, S. L., Anderson, E. S., Feldbaum, M., & Petty, E. M. (2004). Exploring the public understanding of basic genetic concepts. *Journal of Genetic Counseling*, *13*, 305-320.

Levin, S., Federico, C. M., Sidanius, J., & Rabinowitz, J. L. (2002). Social dominance orientation and intergroup bias: The legitimation of favoritism for high-status groups. *Personality and Social Psychology Bulletin*, *28*, 144-157.

Maniaci, M. R., & Rogge, R. D. (2014). Caring about carelessness: Participant inattention and its effects on research. *Journal of Research in Personality*, *48*, 61-83.

McDonald, M., Porat, R., Yarkoney, A., Tagar, M. R., Kimel, S., Saguy, T., & Halperin, E. (2015). Intergroup emotional similarity reduces dehumanization and promotes conciliatory attitudes

in prolonged conflict. *Group Processes & Intergroup Relations*. Advance online publication. doi: 10.1177/1368430215595107

Nelkin, D. (2001). Molecular metaphors: The gene in popular discourse. *Nature Reviews Genetics*, *2*, 555-559.

No, S., Hong, Y., Liao, H., Lee, K., Wood, D., & Chao, M. M. (2008). Lay theory of race affects and moderates Asian Americans' responses toward American culture. *Journal of Personality and Social Psychology*, *95*, 991-1004.

Oppenheimer, S. (2007). *The origins of the British: The new prehistory of Britain and Ireland from ice-age hunter gatherers to the Vikings as revealed by DNA analysis* (New ed.). London, England: Constable.

Oswald, F. L., Mitchell, G., Blanton, H., Jaccard, J., & Tetlock, P. E. (2013). Predicting ethnic and racial discrimination: A meta-analysis of IAT criterion studies. *Journal of Personality and Social Psychology*, *105*, 171-192.

Plaks, J. E., Malahy, L. W., Sedlins, M., & Shoda, Y. (2012). Folk beliefs about human genetic variation predict discrete versus continuous racial categorization and evaluative bias. *Social Psychological and Personality Science*, *3*, 31-39.

Ranaweera, L., Kaewsutthi, S., Tun, A. W., Boonyarit, H., Poolsuwan, S., & Lertrit, P. (2014). Mitochondrial DNA history of Sri Lankan ethnic people: Their relations within the island and with the Indian subcontinental populations. *Journal of Human Genetics*, *59*, 28-36.

Reich, D., Thangaraj, K., Patterson, N., Price, A. L., & Singh, L. (2009). Reconstructing Indian population history. *Nature*, *461*, 489-494.

Reifen Tagar, M., Morgan, G. S., Halperin, E., & Skitka, L. J. (2014). When ideology matters: Moral conviction and the association between ideology and policy preferences in the Israeli-Palestinian conflict. *European Journal of Social Psychology*, *44*, 117-125.

Saguy, T., Tausch, N., Dovidio, J. F., & Pratto, F. (2009). The irony of harmony: Intergroup contact can produce false expectations for equality. *Psychological Science*, *20*, 114-121. doi:10.1111/j.1467-9280.2008.02261

Shiloh, S., Rashuk-Rosenthal, D., & Benyamini, Y. (2002). Illness causal attributions: An exploratory study of their structure and associations with other illness cognitions and perceptions of control. *Journal of Behavioral Medicine*, *25*, 373-394.

Shnabel, N., Halabi, S., & Noor, M. (2013). Overcoming competitive victimhood and facilitating forgiveness through re-categorization into a common victim or perpetrator identity. *Journal of Experimental Social Psychology*, *49*, 867-877.

Subotić, J. (2012). The cruelty of false remorse: Biljana Plavšić at The Hague. *Southeastern Europe*, *36*(1), 39-59.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (p. 33-47). Monterey, CA: Brooks-Cole.

Thomas, K. A., & Clifford, S. (2016). *Validity and mechanical turk: An assessment of exclusion methods and interactive experiments*. Manuscript submitted for publication.

Ufkes, E. G., Calcagno, J., Glasford, D. E., & Dovidio, J. F. (2016). Understanding how common ingroup identity undermines collective action among disadvantaged-group members. *Journal of Experimental Social Psychology*, *63*, 26-35. doi:10.1016/j.jesp.2015.11.006

Vail, K. E., & Motyl, M. (2010). Support for diplomacy: Peacemaking and militarism as a unidimensional correlate of social, environmental, and political attitudes. *Peace and Conflict*, *16*, 29-57.

Wenzel, M., Mummendey, A., & Waldzus, S. (2007). Superordinate identities and intergroup conflict: The ingroup projection model. *European Review of Social Psychology*, *18*, 331-372. doi:10.1080/10463280701728302

Williams, M. J., & Eberhardt, J. L. (2008). Biological conceptions of race and the motivation to cross racial boundaries. *Journal of Personality and Social Psychology*, *94*, 1033-1047.

Wolinsky, H. (2006). Genetic genealogy goes global. Although useful in investigating ancestry, the application of genetics to traditional genealogy could be abused. *EMBO Reports*, *7*, 1072-1074.

Yzerbyt, V., Corneille, O., & Estrada, C. (2001). The interplay of subjective essentialism and entitativity in the formation of stereotypes. *Personality and Social Psychology Review*, *5*, 141-155.

Yzerbyt, V., Judd, C. M., & Corneille, O. (2004). *The psychology of group perception: Perceived variability, entitativity and essentialism*. New York, NY: Psychology Press.