

# Moral elevation reduces prejudice against gay men

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Disgust is linked to social evaluation. People with higher disgust sensitivity exhibit more sexual prejudice, and inducing disgust increases sexual prejudice. We tested whether inducing moral elevation, the theoretical opposite of disgust, would reduce sexual prejudice. In four studies ( $N = 3622$ ), we induced elevation with inspiring videos and then measured sexual prejudice with implicit and explicit measures. Compared to control videos that elicited no particular affective state, we found that elevation reduced implicit and explicit sexual prejudice, albeit very slightly. No effect was observed when the target of social evaluation was changed to race (Black–White). Inducing amusement, another positive emotion, did not significantly affect sexual prejudice. We conclude that elevation weakly but reliably reduces prejudice towards gay men.

*Keywords:* Attitudes; Prejudice; Sexual orientation; Elevation; Implicit Association Test.

Emotions alter evaluations of outgroups. Disgust, in particular, is associated with physical and social repulsion from people with physical deformities or disease (Rozin, Haidt, & McCauley, 2008). Disgust is best understood as an emotion that evolved to protect human beings from pathogens ingested via the mouth. However, in all cultures studied, the elicitors of disgust have expanded to include social elicitors, such as certain classes of people or behaviours (Rozin et al., 2008). Most generally, disgust leads to repulsion from people who engage in behaviours perceived to be morally degrading or

inhuman (Schaller & Park, 2011). One class of people commonly treated as disgusting is gay men. Sensitivity to disgust is related to greater sexual prejudice (i.e., negative attitudes towards gay people; Herek, 2009; Inbar, Pizarro, Knobe, & Bloom, 2009). Experimentally induced disgust from unrelated sources leads to increased sexual prejudice (Dasgupta, DeSteno, Williams, & Hunsinger, 2009). Conversely, priming thoughts of gay men leads to greater disgust towards unrelated stimuli (Tapias, Glaser, Keltner, Vasquez, & Wickens, 2007). If inducing disgust can increase

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sexual prejudice, then inducing the opposite of disgust could decrease sexual prejudice.

What is the opposite of disgust? Haidt (2003a, 2006) suggested that it is moral elevation, an emotion that is elicited by witnessing acts of moral beauty such as charity, gratitude, generosity or loyalty (Algoe & Haidt, 2009; Haidt, 2003a, 2003b; Keltner & Haidt, 2003). Disgust, including moral disgust, leads people to feel degraded and leads them to close themselves off to others (Rozin et al., 2008). Experiences of elevation, in contrast, lead people to report feeling uplifted, inspired, more open to others and more motivated to engage in prosocial behaviour themselves (Algoe & Haidt, 2009; Schnall, Roper, & Fessler, 2010).

While emotion inductions have been used to increase social biases (Dasgupta et al., 2009; DeSteno, Dasgupta, Bartlett, & Cajdric, 2004), there is little evidence for an emotion induction that can reduce them (Lai, Hoffman, & Nosek, 2013). There are theoretical reasons for supposing that positive emotions in general could reduce prejudice. Positive affect broadens the repertoire of potential thoughts (Fredrickson, 2004), improving flexibility in the integration of novel information and decision-making (Isen, 2004). In turn, positive emotions build social and psychological resources by reducing the distinctiveness of different groups: positive affect promotes perceived similarity between groups (Isen, Niedenthal, & Cantor, 1992), greater use of inclusive social categories (Dovidio, Gaertner, Isen, & Lowrance, 1995), better memory for other-race faces (Johnson & Fredrickson, 2005) and even increases the probability that people will employ a common in-group identity when thinking about outgroup members (Dovidio, Isen, Guerra, Gaertner, & Rust, 1998). But despite these theoretical considerations, we are not aware of published evidence demonstrating that positive emotions can directly reduce prejudice.

If moral elevation is the functional opposite of social disgust, then it may be effective at reducing sexual prejudice in a way that goes beyond simply being a positive emotion. Racial prejudice has been shown to be related more closely to fear than to disgust (Dasgupta et al., 2009), but if sexual

prejudice involves more disgust than fear, then perhaps elevation will be particularly effective against this form of prejudice. We tested this prediction by investigating the effects of elevation and another positive emotion (amusement) on implicit and explicit sexual prejudice.

## PRESENT RESEARCH

In four experiments, we investigated whether inducing elevation reduces sexual prejudice—i.e., more negative evaluations of gay men. We used videos previously developed and validated for inducing particular emotions (Algoe & Haidt, 2009; Smith & Haidt, 2010), and multiple inductions of the same emotion to reduce the likelihood that idiosyncratic features of any video would account for the results.

In Experiment 1, participants watched an elevation-inducing video or one pretested to elicit no particular affect. In Experiment 2, we tested the possibility that prejudice reduction was not particular to elevation but due to any positive affect by adding two amusement-inducing video conditions. Also, in Experiment 2, we tested whether the effect of elevation was specific to sexual prejudice or also extended to racial prejudice. We did not expect an extension because racial attitudes are not strongly associated with disgust (Dasgupta et al., 2009). Finally, in Experiments 3 and 4, participants watched one of three elevation-inducing videos or a control video pretested to elicit no affect. All studies include implicit and explicit sexual prejudice and possible moderator measures: disgust sensitivity (all studies) and moral identity (Studies 2–4). As the experiments were highly similar in sample, methods and procedure, we present results of individual experiments and their estimates as the aggregate results.

## METHOD

### Participants

Participants were volunteers that registered at the Project Implicit research website (<https://implicit>).

harvard.edu) who were randomly assigned to complete this experiment from a pool of studies (see Nosek, 2005 for more information). Only participants that had never completed a study in the research pool were eligible to be assigned to this study. We report all data exclusions, conditions and measures, and how we determined our sample size for all experiments. Across studies, 65.7% of participants resided in the USA, 6.4% resided in the UK, 6.3% resided in Canada, 19.9% resided in other countries and 1.7% of participants did not report a country of residence. See Table 1 for other sample characteristics and demographics.

There were 377 participants in Study 1, 779 participants in Study 2, 423 participants in Study 3 and 2023 participants in Study 4.<sup>1</sup> Participants who reported technical issues with the video inductions were excluded from all other analyses (23 in Study 1, 41 in Study 2, 25 in Study 3 and 82 in Study 4). Participants who made too many errors or who did not complete the Implicit Association Test (IAT) were excluded from all IAT analyses (19 in Study 1, 33 in Study 2, 17 in Study 3 and 76 in Study 4). Exclusions due to IAT misbehaviour or technical issues did not differ significantly by condition in any study,  $ps > .05$ . As a result, the final sample sizes were 334 in Study 1, 716 in Study 2, 385 in Study 3 and 1876 in Study 4.<sup>2</sup> These samples were fairly well powered, as experimental conditions had (on average) 80% power to detect effects of Cohen's  $d = .31$  in Study 1,  $d = .47$  in Study 2,  $d = .41$  in Study 3 and  $d = .18$  in Study 4 at  $\alpha = .05$  relative to control.

## Emotion inductions

Emotions were manipulated with videos that were between 4 and 5 minutes long in all four studies. Experiments are available for self-administration at <http://openscienceframework.org/project/fG5xB/>. The control condition was a clip from the show *How It's Made* about how flutes are made. Elevation-inducing videos were a clip from *The Oprah Winfrey Show* in which a musician talks appreciatively about his former music teacher and mentor, who saved him from a life of gang activity (henceforth known as the Mentor manipulation; Experiments 1–4); a clip about a high school girls' softball game in which a softball team showed extraordinary sportsmanship by carrying an opponent around the bases after she had injured herself while hitting a potentially game-winning homerun (Sportsmanship; Experiments 2–4); a news clip of a man who saved someone who had a seizure and fell onto the subway tracks (Hero; Experiments 3 and 4). Amusement-inducing videos were a clip of a flash mob dancing to *The Sound of Music* in a subway station (Flash Mob; Experiment 2), and a stand-up comedy clip of Jerry Seinfeld (stand-up; Experiment 2).

## Sexual prejudice

### *Implicit measure*

We used a sexual orientation IAT (Greenwald, McGhee, & Schwartz, 1998) to measure implicit sexual prejudice ([https://openscienceframework.org/project/fG5xB/node/kxzym/wiki/home\\_for\\_stimuli](https://openscienceframework.org/project/fG5xB/node/kxzym/wiki/home_for_stimuli)). The IAT assessed the relative strength of

<sup>1</sup> We planned to collect 300 participants (150/condition) in Study 1, 800 participants (100/condition) in Study 2, 448 participants in Study 3 (112/condition) and 1868 participants (467/condition) in Study 4. The planned sample size in Study 3 was for 80% power to detect an effect of the same size as Study 1 ( $d = .36$ ), and the planned sample size in Study 4 was for 95% power to detect effects of  $d = .24$ . We stopped the automated data collection when we observed that our planned sample size was exceeded. In Study 3, data collection ended early due to a miscalculation.

<sup>2</sup> See <http://openscienceframework.org/project/fG5xB/> for the results of all analyses we conducted on attrition. We found evidence for differential attrition by condition in Experiments 3 and 4 ( $ps = .03, .02$ ). In those two experiments, the control condition elicited greater attrition than the elevation conditions. However, there was no evidence for experimental condition leading to differential attrition by demographics (i.e., age, religiosity, gender, ideology), suggesting that the results were not attributable to differences in sample.

Table 1. Summary of sample characteristics

Study	N			Demographics of completed studies		
	Began the study	Completed the study	Mean N/condition	% Female	% Heterosexual	Age M
Study 1	414	377	188.5	61.7	85.1	30.1
Study 2	1063	799	132.88	67.2	83.4	29.5
Study 3	611	423	105.75	69.3	85.1	27.4
Study 4	2730	2023	505.75	60.2	83.6	30.8

Note: Non-heterosexuals included gay (3.2% overall), lesbian (2.4% overall), bisexual (6.7% overall), questioning/uncertain (2.9% overall) and asexual (0.9% overall) individuals.

associations between two social categories (i.e., gay people, straight people) and two evaluative attributes (i.e., good, bad; see Nosek, Greenwald, & Banaji, 2007 for a review of the IAT and Nosek, Smyth et al., 2007 for validation evidence of the sexuality IAT). The IAT procedure followed the recommendations established by Nosek, Greenwald, and Banaji (2005). The *D* algorithm recommended by Greenwald, Nosek, and Banaji (2003) was used to score the IAT. A positive *D* score indicated faster responding on average when words/images representing straight people were paired with good words and word/images representing gay male were paired with bad words compared to the reverse. This is interpreted as greater implicit preference for straight people over gay people. *D* was calculated after removing response latencies under 400 ms or over 10,000 ms, and latencies for error trials were retained following Greenwald et al., 2003. Participants were excluded from the analyses if more than 10% of their critical response trials were faster than 300 ms, if their error rate on any block of trials was higher than 40%, or if their overall error rate across all combined response blocks was over 30% (Nosek et al., 2007).

#### Explicit measure

Explicit sexual prejudice was measured with the Attitudes towards Gay Men subscale (ATG-S) of the Attitudes towards Lesbian and Gay Men—Short Scale (ATLG-S; Herek, 1994, 1998), which consisted of five items ( $\alpha = .92$ ) scored on a five-point scale ranging from ‘Strongly disagree’ to ‘Strongly agree’. The questions were ‘Sex between

two men is just plain wrong’, ‘I think male homosexuals are disgusting’, ‘Male homosexuality is a natural expression of sexuality in men’, ‘Male homosexuality is a perversion’ and ‘Male homosexuality goes against human nature’.

#### Racial prejudice

##### Implicit measure

The Race IAT used the same procedure as the Sexuality IAT, except with different stimuli and categories (see Nosek et al., 2007 and Nosek, 2007, for validation evidence about this race IAT; for stimuli, see <https://openscienceframework.org/project/fG5xB/node/kxzym/wiki/home>). Instead of categorising pictures of gay couples and straight couples, participants categorised pictures of Black faces and White faces into the categories ‘Black people’ and ‘White people’. Positive *D* score reflected faster responding on average when images of White faces were paired with good words and images of Black people were paired with bad words relative to the reverse.

##### Explicit measure

To assess explicit racial attitudes, participants completed three self-report items (Nosek et al., 2007). They first reported their relative preference for White people over Black people on a seven-point scale ranging from  $-3$  ‘I strongly prefer Black people to White people’ to  $3$  ‘I strongly prefer White people to Black people’. Then they completed feeling thermometers for White people and Black people separately using a seven-point

scale ranging from  $-3$  'Very cold' to  $3$  'Very warm', with 'Neutral' representing the midpoint. For analyses, a difference score was computed between the two feeling thermometer items and averaged with the racial preference measure after standardising each ( $SD = 1$ ) while retaining a rational zero point of no preference between White people and Black people. More positive scores indicated a greater explicit preference for White people over Black people.

### Disgust sensitivity

Because prior research suggested a link between disgust sensitivity and sexual prejudice (Inbar et al., 2009), we tested whether disgust sensitivity would moderate the effect of elevation on sexual prejudice. Disgust sensitivity was measured in all four experiments with an adaptation of the Disgust Scale—Revised (Haidt, McCauley, & Rozin, 1994, modified by Olatunji et al., 2007) that consisted of 12 items ( $\alpha = .80$ ). Six items asked participants to rate how disgusted they would be by certain experiences (e.g., 'You see maggots on a piece of meat in an outdoor garbage pail'.) on a five-point scale from 'Not disgusting at all' to 'Extremely disgusting'. The other six items asked participants to rate their agreement with several statements related to disgust (e.g., 'I would probably would not go to my favourite restaurant if I found out that the cook had a cold'. on a five-point scale from 'Not at all true about me' to 'Extremely true about me'.

### Moral identity

Prior research suggests that people who strongly identify as moral are more affected by elevation inducements than people who weakly identify as moral, particularly when that identification is internalised (Aquino, McFerran, & Laven, 2011). We tested whether moral identity would moderate the effect of elevation on sexual prejudice. Moral identity was assessed in Experiments 2, 3 and 4 with the Self-Importance of Moral Identity Scale (Aquino & Reed, 2002) that is 10 items ( $\alpha = .80$ ) scored on a five-point scale ranging

from 'Strongly disagree' to 'Strongly agree'. In this scale, participants visualise a person who is 'caring, compassionate, fair, friendly, generous, helpful, hardworking, honest and kind' while completing the items that form two subscales, *internalisation* ( $\alpha = .74$ ) and *symbolisation* ( $\alpha = .80$ ). Internalisation of moral identity refers to the extent to which being moral is central to ones' self-concept, whereas symbolisation of moral identity refers to the extent to which being moral is expressed in public contexts. A sample item from the internalisation subscale is 'It would make me feel good to be a person who has these characteristics', and a sample item from the symbolisation subscale is 'The fact that I have these characteristics is communicated to others by my membership in certain organizations'.

### Manipulation check

After each video, its impact was checked with two questions, 'How much did this video affect you emotionally?' and 'To what extent do you feel morally uplifted while watching this video?' (scored on a five-point scale ranging from 'Not at all' to 'Extremely'). Participants were also asked if they had any technical issues during the video (i.e., being able to see and hear the video correctly).

### Procedure

Volunteers at Project Implicit's research site were randomly assigned to the study after completing a demographics registration form. Once assigned to the study, participants were never again assigned to this experiment on subsequent visits (Nosek, 2005). Following informed consent, participants viewed one video from the elevation, amusement (in Experiment 2) or control conditions. After a manipulation check, participants completed explicit and implicit measures of sexuality or racial attitudes presented in a randomised order. After that, participants completed measures of disgust sensitivity and moral identity (in Experiments 2–4). At the end, participants were debriefed with an

**Table 2.** *Manipulation check descriptive statistics*

Condition	<i>Study 1</i>		<i>Study 2</i>		<i>Study 3</i>		<i>Study 4</i>	
	EA <i>M</i>	MU <i>M</i>	EA <i>M</i>	MU <i>M</i>	EA <i>M</i>	MU <i>M</i>	EA <i>M</i>	MU <i>M</i>
Control	1.47	1.36	1.52	1.33	1.50	1.47	1.52	1.46
Elevation (mentor)	3.51	3.62	3.24	3.53	3.39	3.59	3.34	3.55
Elevation (sportsmanship)			3.47	3.69	3.28	3.45	3.31	3.49
Elevation (hero)					3.46	3.78	3.54	3.75
Amusement (flash mob)			3.00	3.13				
Amusement (stand-up)			2.49	2.13				

*Note:* EA *M* indicates the extent to which participants were emotionally affected the induction and MU *M* indicates the extent to which participants were morally uplifted by the induction. Scores ranged from 1 ‘Not at all’ to 5 ‘Extremely’.

explanation of the research goals and a summary of their IAT performance.

## RESULTS

### Manipulation check

In all four studies, the elevation condition led participants to report feeling more emotionally affected (aggregate  $d = 1.95$ ) and uplifted (aggregate  $d = 2.20$ ) than the control and amusement conditions (aggregate  $d$ s = .59, .84; see Table 2). Across studies, being emotionally affected was strongly related to being morally uplifted  $r(3756) = .82, p < 1 \times 10^{-36}$ , weakly related with lower implicit sexual prejudice  $r(2922) = -.06, p = .00051$  and unrelated to explicit sexual prejudice  $r(3173) = -.03, p = .17$ . Being morally uplifted

was barely related to lower implicit sexual prejudice  $r(2922) = -.04, p = .053$ , and unrelated to explicit sexual prejudice  $r(3175) = -.004, p = .81$ , and these effects did not substantially vary by condition.

### Implicit sexual prejudice

See Tables 3 and 4 for descriptive and inferential statistics for implicit sexual prejudice. We conducted an aggregate contrast analysis of the four experiments, as they shared near-identical designs and sampling strategies (Figure 1; Rosenthal & Rosnow, 1985). For the generalised linear model, we coded the control condition as  $-3$  and each of the three elevation conditions as  $-1$ . The contrast between the aggregated control condition ( $M = .44, SD = .43$ ) and the three elevation conditions ( $M =$

**Table 3.** *Implicit sexuality attitudes (descriptive statistics)*

Condition	<i>Study 1</i>			<i>Study 2</i>			<i>Study 3</i>			<i>Study 4</i>		
	<i>N</i>	<i>M</i>	SD	<i>N</i>	<i>M</i>	SD	<i>N</i>	<i>M</i>	SD	<i>N</i>	<i>M</i>	SD
Control	176	.51	.41	76	.43	.44	90	.49	.41	488	.41	.44
Elevation (mentor)	158	.35***	.45	66	.44	.48	95	.39	.48	480	.39	.44
Elevation (sportsmanship)				49	.32	.45	101	.34**	.46	442	.41	.43
Elevation (hero)							99	.38*	.43	466	.39	.47
Amusement (flash mob)				76	.40	.42						
Amusement (stand-up)				64	.41	.44						

*Note:* *N* = number of participants. *M* = mean IAT score, expressed as *D* scores (Greenwald et al., 2003); positive values indicate greater preference for straight people compared to gay people.

\* $p < .10$  \*\* $p < .05$ . \*\*\* $p < .01$ .

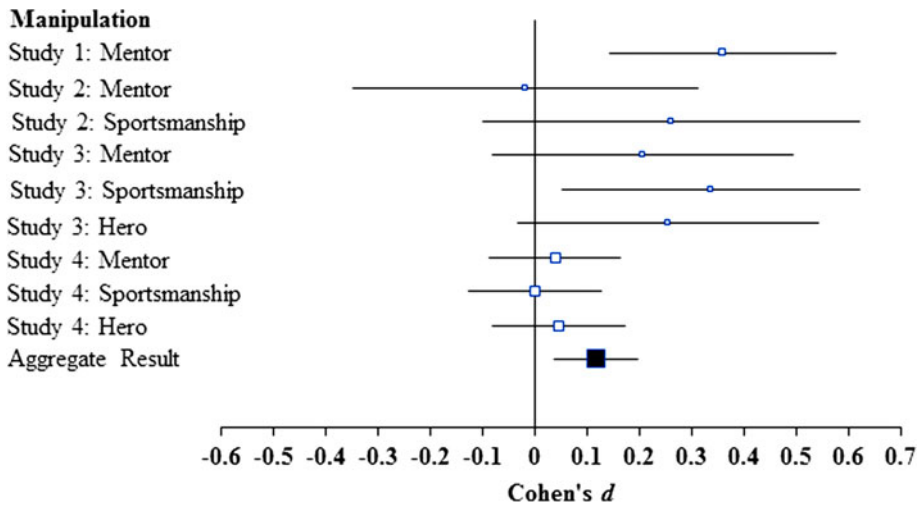


Figure 1. Aggregate implicit sexual prejudice results across four studies.

Note: Squares = Cohen's *d* effect size from the contrast between the elevation condition and neutral control condition. More positive effect sizes reflect greater reductions in prejudice relative to control. Size of squares = sample size of the contrast. Lines = 95% CIs around Cohen's *d*.

.39, SD = .45) was significant,  $F(1, 2782) = 8.21$ ,  $p = .0042$ ,  $\eta^2 = .003$ . Follow-up *t*-tests were conducted between the aggregate scores of each elevation condition and the control condition. The Mentor elevation condition reduced implicit prejudice relative to control,  $t(1627) = 2.39$ ,  $p = .017$ ,  $d = .12$ , 95% confidence interval, CI [.02, .21], as did the Sportsmanship elevation condition,  $t(1420) = 2.21$ ,  $p = .028$ ,  $d = .12$ , 95% CI [.01, .22], and the Hero elevation condition,  $t(1393) = 2.27$ ,  $p = .024$ ,  $d = .12$ , 95% CI [.02, .23]. The evidence for elevation reducing implicit sexual prejudice was

mixed when looking at individual studies, however. Just two of the nine tests shown in Table 4 yielded a significant result ( $p < .05$ ) even though seven of the nine were in the expected direction. Overall, these results suggest that elevation reliably reduced implicit prejudice, but the effect but too small to be detectable in individual experiments.

### Explicit sexual prejudice

See Tables 5 and 6 for descriptive and inferential statistics for explicit sexual prejudice. As with

Table 4. Implicit sexuality attitudes (inferential statistics)

Condition	Study 1			Study 2			Study 3			Study 4		
	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>
Elevation (mentor)	3.29	.0011	.36	-.10	.92	-.02	1.40	.16	.21	.62	.54	.04
Elevation (sportsmanship)				1.42	.16	.26	2.32	.02	.34	.02	.99	.00
Elevation (hero)							1.75	.08	.26	.73	.47	.05
Amusement (flash mob)				.55	.59	.09						
Amusement (stand-up)				.28	.78	.05						

Note: *t* = *t* value from an independent samples *t*-test contrasting the manipulation condition and the control condition. *p* = *p* value from an independent samples *t*-test contrasting the manipulation condition and the control condition. *d* = Cohen's *d* effect size calculated from the mean difference between the manipulation condition and the control condition.

**Table 5.** *Explicit sexuality attitudes (descriptive statistics)*

Condition	Study 1			Study 2			Study 3			Study 4		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Control	201	2.42	1.24	81	1.98	1.13	100	2.09	1.22	541	2.12	1.23
Elevation (mentor)	169	2.14*	1.23	68	2.17	1.24	101	2.06	1.11	507	2.04	1.14
Elevation (sportsmanship)				53	2.08	1.16	108	2.20	1.25	481	1.98	1.16
Elevation (hero)							108	1.98	1.10	514	2.05	1.12
Amusement (flash mob)				80	1.97	1.13						
Amusement (stand-up)				68	2.00	1.08						

Note: *N* = number of participants who completed the ATG-S of the ATLG-S (Herek, 1994, 1998). The scale range is 1–5 with higher positive val/xreues indicating greater prejudice towards gay men.

\* $p < .05$ .

implicit prejudice, we conducted an aggregated contrast analysis of the four studies (Figure 2). The contrast between the aggregated control condition ( $M = 2.17$ ,  $SD = 1.23$ ) and the three elevation conditions ( $M = 2.05$ ,  $SD = 1.15$ ) was significant,  $F(1, 3028) = 7.55$ ,  $p = .0060$ ,  $\eta^2 = .002$ . Follow-up  $t$ -tests were conducted between each elevation condition and the control condition. Relative to control, the Sportsmanship elevation condition,  $t_{\text{satterthwaite}}(1417.15) = 2.35$ ,  $p = .019$ ,  $d = .12$ , 95% CI [.02, .22], and Hero elevation condition significantly reduced explicit prejudice,  $t_{\text{satterthwaite}}(1414.89) = 2.38$ ,  $p = .017$ ,  $d = .12$ , 95% CI [.02, .23], and the Mentor elevation condition was in the expected direction but did not significantly reduce explicit prejudice,  $t_{\text{satterthwaite}}(1764.28) = 1.69$ ,  $p = .092$ ,  $d = .08$ , 95% CI [−.01, .17]. The evidence for explicit sexual

prejudice reduction using elevation was mixed when effects were examined individually for each condition in each study, implying there was a small effect that was not detectable in single experiments. Only one of nine tests for explicit sexual prejudice reduction shown in Table 6 was significant ( $p < .05$ ), even though six of the nine tests were in the expected direction. As with implicit prejudice, these results suggest that elevation weakly but reliably reduced explicit prejudice.

### Racial attitudes

In Study 2, we examined the influence of elevation and amusement on racial attitudes. Consistent with predictions, there were no main effects of condition on implicit attitudes towards black people,  $F(4, 380) = .28$ ,  $p = .89$ ,  $\eta^2 = .00$ , or explicit attitudes

**Table 6.** *Explicit sexuality attitudes (inferential statistics)*

Condition	Study 1			Study 2			Study 3			Study 4		
	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>	<i>t</i>	<i>p</i>	<i>d</i>
Elevation (mentor)	2.14	.03	.23	−1.35	.18	−.22	.17	.89	.02	1.07	.29	.07
Elevation (sportsmanship)				−.66	.51	−.08	−.66	.51	−.09	1.17	.24	.12
Elevation (hero)							.64	.53	.09	1.87	.06	.06
Amusement (flash mob)				.09	.93	.01						
Amusement (stand-up)				−.02	.99	−.04						

Note:  $t = t$  value from an independent samples  $t$ -test contrasting the manipulation condition and the control condition.  $p = p$  value from an independent samples  $t$ -test contrasting the manipulation condition and the control condition.  $d =$  Cohen's  $d$  effect size calculated from the mean difference between the manipulation condition and the control condition.



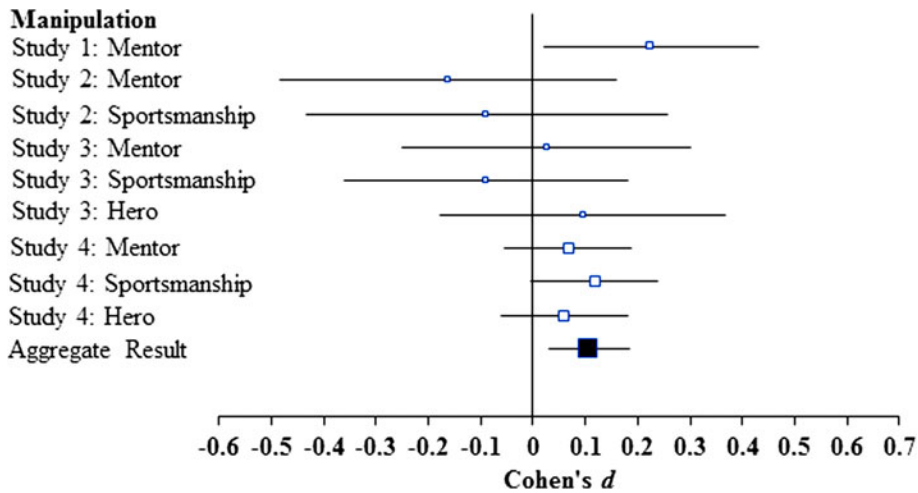


Figure 2. Aggregate explicit sexual prejudice results across four studies.

Note: Squares = Cohen's *d* effect size from the contrast between the elevation condition and neutral control condition. More positive effect sizes reflect greater reductions in prejudice relative to control. Size of squares = sample size of the contrast. Lines = 95% CIs around Cohen's *d*.

towards black people,  $F(4, 403) = .60, p = .66, \eta^2 = .01$ . Descriptive statistics and inferential tests of contrasts are available in Table 7.

### Amusement

In Study 2, we investigated the influence of amusement on sexuality and racial attitudes. Neither of the amusement conditions was different

from control or either of the two elevation conditions (See Tables 3–6 for descriptive and inferential statistics).

### Disgust sensitivity

Prior research suggests that individual differences in disgust sensitivity are associated with sexual prejudice (Inbar et al., 2009). We replicated this

Table 7. Implicit and explicit racial attitudes

Condition	Implicit attitudes						Explicit attitudes					
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Control	74	.33	.37				79	.55	.93			
Elevation (mentor)	61	.39	.34	-1.02	.31	-.15	68	.46	.93	.58	.57	.10
Elevation (sportsmanship)	75	.38	.40	-.79	.43	-.13	76	.59	.92	-.30	.77	-.04
Amusement (flash mob)	93	.34	.43	-.25	.80	-.03	102	.46	.84	.65	.51	.10
Amusement (stand-up)	82	.35	.46	-.29	.77	-.05	83	.63	.81	-.57	.57	-.09

Note: *N* = number of participants who completed the measure. IAT score descriptive statistics are expressed as *D* scores (Greenwald et al., 2003). Explicit attitudes are a difference score that was computed between the two feeling thermometer items and averaged with the racial preference measure after standardising each (*SD* = 1) while retaining a rational zero point of no preference between White people and Black people. For both measures, more positive values indicate greater preferences for Whites compared to Blacks. *t* = *t*-value from an independent samples *t*-test contrasting the manipulation condition and the control condition. *p* = *p* value from an independent samples *t*-test contrasting the manipulation condition and the control condition. *d* = Cohen's *d* effect size calculated from the mean difference between the manipulation condition and the control condition.

effect across studies: disgust sensitivity was positively correlated with implicit,  $r(2896) = .12$ ,  $p = 4.24 \times 10^{-10}$  and explicit,  $r(3028) = .18$ ,  $p = 1.60 \times 10^{-24}$ , sexual prejudice. However, disgust sensitivity did not moderate the effect of condition on implicit,  $F(1, 2751) = .11$ ,  $p = .74$ ,  $\eta^2 = .00$ , or explicit,  $F(1, 2879) = 1.63$ ,  $p = .20$ ,  $\eta^2 = .00$ , sexual prejudice.

### Moral identity

Replicating Aquino et al. (2011), we found that a stronger sense of moral identity was associated with greater sensitivity towards experiencing elevation. For participants in any elevation condition, moral identity was positively correlated with ratings of emotional effectiveness,  $r(1996) = .28$ ,  $p < 1 \times 10^{-36}$ , and feeling uplifted,  $r(1995) = .33$ ,  $p < 1 \times 10^{-36}$ , but this relationship was not observed in the control ( $r_s = -.03, .05$ ) or amusement video conditions ( $r_s = .05, .08$ ). Contrary to expectations, moral identity did not moderate the effects of condition for implicit,  $F(1, 2422) = 1.18$ ,  $p = .28$ ,  $\eta^2 = .00$  or explicit,  $F(1, 2531) = 1.51$ ,  $p = .22$ ,  $\eta^2 = .00$ , sexual prejudice.

The internalisation subscale is more strongly related to elevation and to moral regard towards outgroups than the symbolisation subscale of moral identity (Aquino et al., 2011; Reed & Aquino, 2003), suggesting that internalised moral identity may specifically moderate the effects of condition. Repeating the analysis with just the internalised subscale resulted in a significant interaction between internalised moral identity and condition for explicit sexual prejudice,  $F(1, 2531) = 5.70$ ,  $p = .017$ ,  $\eta^2 = .002$ , but not implicit sexual prejudice,  $F(1, 2422) = .01$ ,  $p = .93$ ,  $\eta^2 = .00$ . Oddly, internalised moral identity was negatively related with explicit sexual prejudice in the control condition,  $r(678) = -.11$ ,  $p = .0029$ , but not related to explicit sexual prejudice in the elevation conditions,  $r(1857) = -.01$ ,  $p = .58$ . We also repeated the analysis with the symbolisation subscale, but did not find a significant interaction between the subscale and condition for explicit sexual prejudice,  $F(1, 2535) = .10$ ,  $p = .76$ ,  $\eta^2 = .00$  or implicit sexual prejudice,  $F(1, 2426) = 2.49$ ,  $p = .12$ ,  $\eta^2 = .00$ .

### Exploratory analyses

We had not planned analyses testing whether available demographic and ideological variables would moderate the effect of the elevation induction on sexual prejudice. We tested five demographic variables as potential moderators using aggregated data from all four studies: age, gender, ideology (seven-point response from strongly conservative to strongly liberal), sexual orientation (straight, gay, bisexual, questioning, asexual) and religiosity (four-point response from not at all to strongly religious).

Inferential tests of all exploratory variables are available on an online supplement (<http://openscienceframework.org/project/fG5xB/>). Sexual orientation showed significant evidence as a moderator for the effect of elevation on implicit sexual prejudice,  $F(5, 2761) = 2.43$ ,  $p = .033$ ,  $\eta^2 = .004$ . Follow-up  $t$ -tests suggested that elevation reduced implicit sexual prejudice for heterosexuals,  $t(2321) = 2.31$ ,  $p = .021$ ,  $d = .11$ , and questioning/uncertain individuals,  $t_{\text{satterthwaite}}(58.98) = 4.56$ ,  $p = .000025$ ,  $d = .95$ , but not for gay, lesbian, bisexual or asexual individuals ( $p_s = .065, .93, .33, .94$ ). No other moderator analyses yielded significant interaction effects. Because these analyses were planned and conducted after we observed the data they are at risk of alpha inflation, reducing the  $p$  value's diagnostic value (Wagenmakers, Wetzels, Borsboom, van der Maas, & Kievit, 2012). As such, these effects should be treated as a basis for hypothesising for future investigations.

### GENERAL DISCUSSION

Across four experiments and three different manipulations of elevation, the accumulated evidence suggests that elevation reduces implicit and explicit sexual prejudice. The effect appears to be weak enough— $d = .14$  for implicit and  $d = .09$  for explicit—that few of our individual experiments had sufficient power to detect it. In the aggregate, however, the 95% CIs for both are narrow and do not include zero—95% CIs [.04, .20]; [.03, .18].

### A small effect or an underestimated one?

Compared to published results showing that inducing disgust increases sexual prejudice ( $d = .43$ ; Dasgupta et al., 2009), the effect of elevation for reducing sexual prejudice is notably weaker. This suggests that sexual prejudice is more difficult to reduce than increase, that elevation is less impactful on prejudice than disgust or that our paradigm was not as effective at inducing shifts in prejudice as other paradigms. Elevation could have a weaker effect on sexual prejudice than disgust due to negativity bias—the tendency for individuals to respond more to negative events than positive events (Rozin & Royzman, 2001). Negative emotions tend to be more impactful, with greater influence over cognitions than equivalently intense positive emotions. This could be because negative emotions may generalise more to accessible cognitions, and may be more resistant to decay once aroused. Like an old Russian adage, disgust may be like sewage and moral elevation may be like wine: A bit of sewage ruins a bottle of wine, but a drop of wine does nothing to a bottle of sewage. In this context, disgust could induce larger effects because appraisal of outgroups may be more likely to take into account negative affect-as-information than positive affect-as-information.

It is also possible that aspects of the procedure may have dampened effect sizes estimates. For example, we included a manipulation check in all four experiments right after viewing the video. Attribution of the incidentally aroused emotion to the video may have dampened elevation's effect on attitudes towards gay men (Gasper & Clore, 2000; Schwarz & Clore, 2003). It is possible that removing the manipulation check after the video will magnify these effects. Furthermore, it is possible that the impact of the elevation induction was weakened by the lack of control over the setting of data collection. Laboratory investigations that reduce external stimulation may elicit stronger effects. In addition, 81% of our sample came from English-speaking Western countries and self-reported sexual prejudice was weak, possibly creating a floor effect for changing attitudes. However, this latter explanation does not apply to

implicit prejudice because the main effect was quite strong. In summary, our cautious interpretation is that the effect of elevation on sexual prejudice is weak but reliable.

### Are the effects unique to elevation as the emotion induction and sexual prejudice as the outcome?

We induced amusement in Experiment 2 to test whether the effect was attributable to elevation in particular, or positive emotions more generally. Inducements of amusement were not different from either inducements of elevation or the control condition in that experiment. Thus, we cannot conclude that the effects of elevation are distinct from those of other positive emotions. However, it is plausible that Experiment 2 simply lacked the statistical power to detect differential effects of amusement and elevation on sexual prejudice. More evidence is needed to improve precision in the estimated effect sizes.

We also administered measures of racial prejudice in Experiment 2 to test whether the effects were specific to sexual prejudice, which is thought to be disgust-based, or whether they generalise to racial prejudice, which is not associated with disgust (Dasgupta et al., 2009). We found no effects of either amusement or elevation on racial prejudice. It is also possible that Experiment 2 lacked the statistical power to detect the effects of elevation on prejudice. To address this, we conducted a meta-analysis combining the results of Experiment 2 with two other studies ( $N_s = 524$  and  $482$ ; total  $N = 1197$ ) that measured the effects of elevation on implicit and explicit racial prejudice (Lai, Marini, et al., 2013b). Both studies compared the effects of an elevation induction to a neutral control condition. One study used the Hero elevation manipulation and the other study used the Mentor elevation manipulation from the present studies. When aggregated, we found no meta-analytic effect for racial prejudice,  $d_s = 0.00$ ,  $-.05$ , 95% CIs  $[-.10, .10; -.15; .05]$ . These findings suggest that the experience of elevation does not affect racial prejudice.

## Moderating influences of elevation on sexual prejudice

Contrary to expectations, we did not find any interactive effects between elevation and disgust sensitivity or moral identity on sexual prejudice. This is surprising considering that prior research suggests an important role of each in the effects of emotion on prejudice. Exploratory analyses hinted that elevation was most effective at reducing prejudice for individuals that might be more likely to hold ‘ambivalent’ attitudes towards gay individuals. Implicit prejudice reductions were most impactful for heterosexuals and questioning/uncertain individuals, who tend to exhibit little explicit sexual prejudice but moderately large implicit prejudices. In sum, the exploratory analyses hint at the possibility that the effects of elevation on prejudice depend on other belief systems, but do not provide clear evidence on their own.

## Future directions

As these studies represent the first published evidence that emotions can directly reduce sexual prejudice, many implications—and unanswered questions—follow. For example, even though amusement had no effect, might there be other positive emotions that can reduce prejudice? The emotional response to cuteness has also been said to show a profile that is the opposite of disgust (Sherman & Haidt, 2011). As with elevation, cuteness induces desires for social engagement, and therefore similar prejudice reduction effects could occur after exposure to cute stimuli.

The present results also have implications for moral foundations theory (Graham et al., 2013), which posits that disgust is the principal emotion of the ‘sanctity/degradation’ foundation. This foundation has been shown to have pervasive effects on political disagreements over topics as diverse as flag-burning, abortion and same-sex marriage (Koleva, Graham, Iyer, Ditto, & Haidt, 2012). Whenever utilitarian judgements diverge from a feeling that something pure or sacred must be protected, the sanctity foundation may be at work. But if disgust makes people resist utilitarian

conclusions, then perhaps moral elevation would soften that resistance? Disgust has already been shown to make moral judgements harsher (Wheatley & Haidt, 2005), particularly on matters related to sexual morality (Inbar et al., 2009; Inbar, Pizarro, Iyer, & Haidt, 2012). In a similar manner, moral elevation may make moral judgements less harsh. Elevation could turn out to be an integral part of the sanctity foundation, just like disgust.

From an applied perspective, it will be productive to learn how emotions-based interventions can be used to reduce prejudice. Many media campaigns already seek to reduce sexual prejudice with emotional appeals. For example, in order to increase support for a 2012 ballot measure that would legalise gay marriage in Maine, the group Mainers-United.org aired commercials that featured straight people testifying about the importance of love, freedom and loyalty in elevating ways, and then applying those values to their gay friends, family members and co-workers. Another campaign, the It Gets Better Project, has sought inspire hope and optimism about being lesbian, gay, bisexual, transgender, or questioning. Research comparing the relative impact of different emotional appeals such as these for prejudice reduction may be particularly effective for bridging the gap between basic psychological research and application.

The present findings extend prior research demonstrating the effect of negative emotions on increasing prejudice by providing initial evidence that a positive emotion—moral elevation—can decrease prejudice.

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