



Changes in Americans' prejudices during the presidency of Donald Trump

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The presidency of Donald Trump represented a relatively unique event in modern American history, whereby a sitting US president made numerous controversial remarks about minoritized groups yet nonetheless maintained substantial public support. Trump's comments constituted a departure from the egalitarian norms that had long characterized American political discourse. Here, we examine the potential effects of Trump's rhetoric on Americans' attitudes, predicting that these high-profile norm violations may have reshaped the personal prejudices of the American people. In 13 studies including over 10,000 participants, we tested how Americans' prejudice changed following the political ascension of Donald Trump. We found that explicit racial and religious prejudice significantly increased amongst Trump's supporters, whereas individuals opposed to Trump exhibited decreases in prejudice. Further, changing social norms appear to explain these changes in prejudice. These results suggest that Trump's presidency coincided with a substantial change in the topography of prejudice in the United States.

Over the past several decades, people in the United States have exhibited substantial declines in their self-reported prejudice against racial and religious minoritized groups^{1–5}. This decline in prejudice is reflected in both survey data^{1,2,5} and broader cultural norms^{2–4} and has been interpreted as a pivotal cultural shift with myriad implications for people's daily life experiences, public policy and beyond^{1,2}. However, recent events have raised the question of whether this trend towards decreasing reported prejudice continues or whether it may have recently abated or even reversed course. Social scientific analyses of the 2016 US presidential election suggest that racial and religious prejudice played a key role in Donald Trump's victory^{6–8}, raising the possibility that prejudice may again be exerting an increasingly powerful influence in American politics. Furthermore, following the election, reports of hate crimes increased^{9,10}, supporters of White supremacist movements became more vocal^{10,11} and racial and religious minorities reported experiencing greater discrimination^{12,13}. These trends led some commentators to suggest that Trump's presidency may have amplified or emboldened racial and religious prejudice amongst the American people^{11,14–16}.

Other commentators, however, have questioned the source of the apparent increases in hate crime and other forms of discrimination, suggesting that they may simply be the result of increased national attention to issues of prejudice^{17–20}. That is, they argue that, as Americans have become increasingly conscious of racial and religious prejudice, there has been greater reporting of acts of discrimination against members of minoritized groups and officials have become more likely to officially categorize crimes as hate crimes, which together have artificially created the appearance of increasing prejudice and discrimination. Similarly, other commentators—from both the political right and left—have argued that, even if instances of discrimination have increased, this only represents the acts of an emboldened extremist fringe rather than changes in prejudice amongst broad swaths of Americans^{21–23}.

Consistent with the argument that prejudice has not increased since Trump's election, there is little empirical evidence to support the claim of general societal increases in prejudice—and, in fact, several lines of research that have examined this question

empirically found evidence suggesting that prejudice amongst Americans may have decreased following the election, at least on some measures^{15,24,25} (but also see ref. ²⁶ for some evidence to the contrary). However, methodological limitations of much of this work (for example, a limited range of target groups or few and/or indirect measures of prejudice) may limit its generalizability, and the question therefore remains open.

Thus, although these questions received considerable attention in the media and in public discourse, this ongoing debate remains unresolved^{16,17,27,28}. In the current research, we examine these questions. Building on social psychological research on social norms^{29–32}, we derived a set of predictions regarding whether, how and why Donald Trump's presidency would have affected the intergroup attitudes of the American people.

During his campaign and presidency, Donald Trump made many remarks that were widely interpreted as derogatory towards minoritized groups^{33,34}. Regardless of his motivations for making these comments (for example, whether they reflect his personal attitudes or a political strategy), these remarks nonetheless constitute a highly salient violation of the social norms (that is, standards) of tolerance and egalitarianism that had come to characterize American public and political discourse in recent decades³⁵. Because social norms have powerful effects on human behaviour³⁶, including the expression of prejudicial attitudes³⁷, these changes in norms may have had implications for Americans' personal expressions of prejudice.

Importantly, however, research has also shown that social norms do not exert a uniform effect on people's attitudes. Rather, adherence to social norms occurs largely along group boundaries: People primarily assimilate to norms that are held by 'social reference groups', that is, individuals and groups that they personally respect and admire^{31,32}. In the highly polarized political landscape of the United States, this translates into the prediction that Trump's counter-normative behaviour should not have uniformly affected the attitudes of all Americans. Rather, it should have increased expressions of prejudice primarily amongst those who view him positively, that is, his supporters.

However, although there are theoretical reasons to predict that Trump's political ascent may have increased prejudice amongst

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his followers, the findings on which these theories are based come almost exclusively from small laboratory-based studies that examined attitudes over very short spans of time, usually during a single study session³⁷. Research suggests that real-world intergroup attitudes are complex and shaped by many different factors⁴, raising the question of whether an event such as Trump's political rise would have affected Americans' intergroup attitudes. Other past research casts further doubt on this prediction. For example, research has shown that, even when a real-world sociopolitical event (a Supreme Court decision legalizing same-sex marriage) successfully changed perceived social norms, people's personal prejudices did not immediately follow suit³⁰ (but also ref. ³⁸ for evidence of longer-term changes). Moreover, other research has shown that even some watershed events in race relations, such as the election of the first Black president in the United States, did not appear to change societal prejudices^{39,40}. This work casts doubt on the prediction that Trump's presidency could have led to widespread changes in Americans' prejudices.

The election and presidency of Donald Trump therefore provide a unique opportunity for examining whether a single counter-normative public figure, and his widespread acceptance by a large portion of the American people, can lead to large-scale changes in social norms and societal prejudices. In a series of 13 studies with a combined sample of over 10,000 Americans, we tested the following predictions: (1) that expressions of racial and religious prejudice significantly increased amongst supporters of Donald Trump, but not amongst other Americans and (2) that these increases in prejudice are a consequence of changing social norms regarding the perceived acceptability of expressing prejudice.

First, we assessed our central prediction that supporters of Donald Trump have increased their expressions of prejudice since Trump's political ascent. To do so, we conducted eight in-depth, multi-year longitudinal studies involving over 1,000 participants, examining the breadth and depth of changes in prejudice across various target groups and measure types. We then confirmed and extended these findings using an open dataset with a longitudinal, nationally representative sample of over 7,500 Americans (study 9).

It is important to note that these longitudinal studies did not allow us to experimentally isolate the role of Trump support as causing these changes in prejudice, given that Trump's political rise was a naturally occurring event without a comparable 'control group'. However, these studies allowed us to track changes in prejudice from before to after the political rise of Donald Trump, whilst statistically adjusting for a wide range of (>80) other possible predictors. To complement these studies, we conducted four additional studies to indirectly provide support for a causal explanation: In studies 10–13 (total $N=1,402$), we used both correlational and experimental methodologies to test our proposed psychological mechanism that Trump's political rise changed social norms, such that his supporters felt that the expression of prejudice became more acceptable. Together, these 13 studies provide a comprehensive picture of how (and possibly why) prejudice in the United States changed during the presidency of Donald Trump. All materials, data, syntax and pre-registration documentation are available at <https://osf.io/9syz8/>. Extensive further analyses, including analyses of additional datasets, are also available in the Supplemental Information for interested readers (see sections 'Additional statistical information' and 'Supplemental analyses,' Supplementary Fig. 1 and Supplementary Tables 1–10).

Results

In our first eight studies, we tested whether Trump's political ascent was accompanied by large-scale increases in racial and religious prejudice amongst his supporters. We first examined changes in prejudice against Muslims (studies 1–3). To do so, we re-contacted participants who had participated in studies that we conducted

several years ago (between December 2014 and February 2015), before the political ascent of Donald Trump. In these initial studies, we assessed participants' explicit prejudice against Muslims using an established measure⁴¹ that includes items such as 'Compared to other religious and philosophical approaches, Islam is quite primitive.' Approximately two years later, between February and June of 2017, we followed up with a subset of these same participants ($N=384$; $M_{\text{age}}=40.09$ years, s.d. 12.53 years; 124 women) and re-assessed their explicit prejudice. We also collected detailed information about political views, voting habits, geographic location and demographics and assessed their support for Donald Trump with four items measuring support, opposition, positivity and negativity towards Trump on seven-point scales ($\alpha=0.96$; $M=2.90$, s.d. 2.10).

We first tested for overall changes in prejudice amongst our sample to determine whether participants as a whole may have increased or decreased in their prejudice during this time period. However, there was no evidence of aggregate-level changes in prejudice from time 1 to time 2 ($t(385) = -0.14$, $P=0.89$, 95% CI -0.11 to 0.09 , $d=-0.007$). We next examined our central prediction that supporters of Donald Trump specifically would have increased in their prejudice during this time period. As predicted, we found that support for Trump significantly predicted changes in prejudice over this time period ($\beta=0.32$, $t(382) = 6.74$, $P<0.001$, 95% CI 0.23 to 0.42).

Closer inspection of this association revealed that individuals who were opposed to Trump (those below the mid-point of the scale) showed significant decreases in negativity towards Muslims over this time period ($t(253) = 4.29$, $P<0.001$, $M_{\text{diff}}=-0.23$, 95% CI -0.33 to -0.12 , $d=-0.27$). Conversely, as predicted, Trump supporters (those above the mid-point of the scale) exhibited a clear reversal of this pattern, not only deviating from the historical trend towards decreasing prejudice but also showing a significant increase in prejudice over this time period ($t(112) = 4.58$, $P<0.001$, $M_{\text{diff}}=0.50$, 95% CI 0.28 to 0.72 , $d=0.43$; Fig. 1).

However, it is important to note that, because our time 1 studies were (necessarily) conducted before Trump's emergence in the political arena, we were only able to assess Trump support in our time 2 survey (a limitation we address in later studies). This leaves open the possibility that the causal pathway is in fact the opposite, namely that participants' degree of prejudice led to changes in their support for Trump, rather than their support for Trump leading to changes in their (expressions of) prejudice.

To assess this possibility, we used our time 1 measures of political orientation (that is, degree of liberalism versus conservatism) and political partisanship (that is, strength of identification as a Democrat versus Republican) as proxies for Trump support, as both measures are highly correlated with Trump support both in our studies and in past work^{6–8}. Critically, both of these measures also prospectively predicted how participants' prejudice changed over the subsequent time period (political orientation: $\beta=0.10$, $t(382) = 2.04$, $P=0.04$, 95% CI 0.003 to 0.19; partisanship: $\beta=0.10$, $t(382) = 2.05$, $P=0.04$, 95% CI 0.004 to 0.19). Further, and also consistent with our proposed causal direction, the inverse direction was not significant: Prejudice at time 1 did not significantly predict changes in either political orientation ($\beta=0.04$, $t(380) = 0.79$, $P=0.43$, 95% CI -0.06 to 0.14) or party identification ($\beta=0.08$, $t(380) = 1.69$, $P=0.09$, 95% CI -0.01 to 0.18). Taken together, these effects provide additional evidence for our prediction that support for Trump predicted changes in prejudice over time.

Importantly, however, the most powerful predictor of these changes in prejudice seems specifically to be support for Donald Trump, rather than political conservatism or Republican partisanship: When both Trump support and conservatism (and/or partisanship), both measured at time 2, were included as predictors in the regression model, Trump support remained a significant predictor of increases in prejudice ($\beta=0.35$, $t(381) = 4.96$, $P<0.001$,

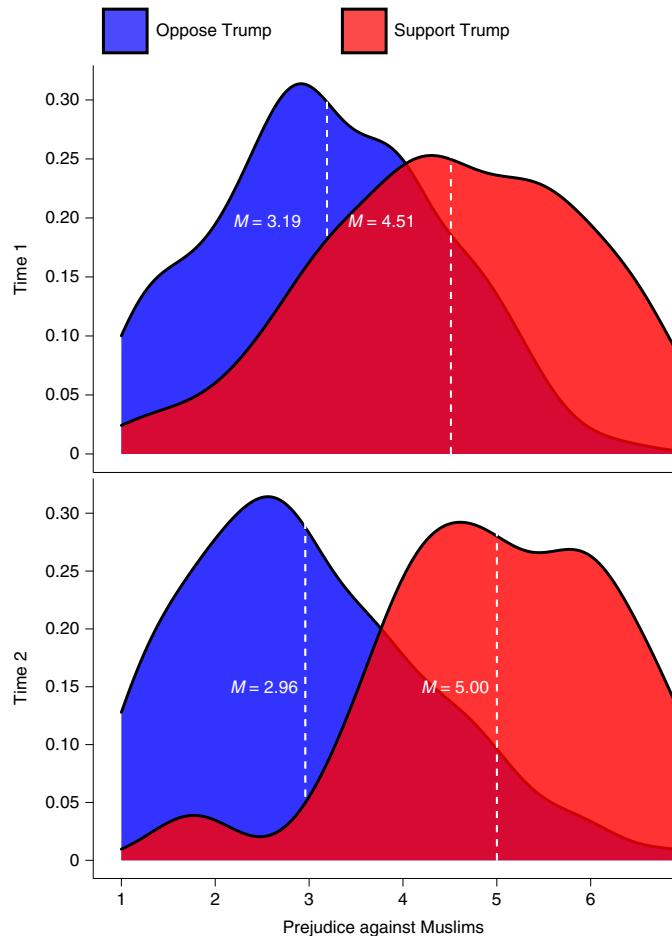


Fig. 1 | Density plots illustrating changes in prejudice against Muslims amongst those who support versus oppose Donald Trump. Vertical lines indicate the mean of each distribution. Trump supporters, $n=115$; non-Trump supporters, $n=254$.

95% CI 0.21 to 0.49), whilst conservatism did not ($\beta=-0.04$, $t(381)=0.54$, $P=0.59$, 95% CI -0.18 to 0.10). Furthermore, we found that the pattern of changes in prejudice amongst conservatives who opposed Trump diverged substantially from those who supported him ($F(1,126)=12.34$, $P=0.001$, $\eta^2=0.017$): Whilst conservatives who supported Trump ($n=92$) exhibited significant increases in prejudice ($t(91)=3.84$, $P<0.001$, $M_{\text{diff}}=0.47$, 95% CI 0.23 to 0.71, $d=0.40$), conservatives who opposed Trump (although a relatively small group, $n=36$) did not significantly increase in prejudice ($t(35)=-1.95$, $P=0.059$, $M_{\text{diff}}=-0.29$, 95% CI -0.59 to 0.01, $d=0.33$), and the sign of the effect was actually in the opposite direction. Importantly, the pattern of change amongst conservatives who opposed Trump did not differ significantly from that observed amongst liberals who opposed Trump ($F(1,217)=0.22$, $P=0.64$, $\eta^2=0.0001$).

The above results reveal the importance of Trump support in particular, rather than political ideology or partisanship, for understanding the observed changes in prejudice. They also provide a possible explanation for why these increases in prejudice have not previously been documented: Past research has tended to examine changes in attitudes as a function of political ideology and/or party identification (for example, refs. ^{15,24,25}) rather than examining support for Trump. Given the polar opposite patterns of change amongst pro- and anti-Trump conservatives, collapsing across these two groups might obscure these changes in attitudes. Indeed, in our

own dataset, using ideology as a proxy for Trump support yields a substantially attenuated effect size ($d=0.24$) that is only about half of the magnitude of the effect of support for Trump ($d=0.43$).

Together, these results demonstrate the unique predictive power of Trump support for changes in expression of prejudice. However, because these are correlational data, we further examined whether the relationship between Trump support and increases in prejudice was explained by other factors, focusing on factors that have been identified as predictors of support for Trump such as economic hardship⁷. We examined 39 different factors in total (Supplementary Table 11), including demographic factors (for example, income, education, age and gender), geographic factors (for example, county-level measures of income inequality, median income and unemployment rate) and ideological factors (for example, political party identification and pride/identification as an American), but none of these variables explained the observed relationship: Regardless of what we controlled for, Trump support remained a robust predictor of increases in prejudice.

We next tested whether this increase in prejudice also manifested in Trump supporters' feelings towards an individual Muslim person (study 3). In February 2015, participants read a short story describing a Muslim man who is arrested by US forces whilst on vacation with his family, harshly interrogated and held in a military prison for five years without being charged with a crime, before being released without compensation or apology⁴². Participants rated the degree of shame, anger, guilt and compassion that they felt on behalf of the man. More than two years later, in June 2017, a subset of these same participants ($N=137$; time 1 $M_{\text{age}}=35.95$ years, s.d. 10.90 years; 66 women) again provided their feelings about this same scenario. As predicted, we found that Trump support ($M=2.50$, s.d. 1.94) predicted a significant decrease in reported concern for the wrongly punished Muslim man ($\beta=-0.22$, $t(134)=-2.63$, $P=0.009$, 95% CI -0.38 to -0.05). Once again, we found that the significant association with Trump support held when controlling for political conservatism ($\beta=-0.34$, $t(133)=-2.95$, $P=0.004$, 95% CI -0.56 to -0.11), further demonstrating that these increases in prejudice were uniquely associated with support for Trump. To test the boundary conditions of this effect, we also included a scale assessing blatant dehumanization of Muslims⁴². However, we did not find significant associations using this scale ($\beta=0.07$, $t(134)=0.79$, $P=0.43$, 95% CI -0.10 to 0.24).

In our next study (study 4), we examined whether these changes in prejudice were limited to attitudes towards Muslims, a group that was explicitly targeted in controversial remarks by Trump^{33,34}, or whether they would also extend to other minoritized groups. To test this question, we examined prejudice against African Americans. We first used a measure of prejudice designed to be more subtle¹³, in which negative attitudes towards Black people are expressed in the terms of principled conservatism (for example, 'It's really a matter of some people not trying hard enough; if Blacks would only try harder they could be just as well off as Whites.'). We first assessed participants' attitudes in September 2015, then followed up with these same participants ($N=89$; time 1 $M_{\text{age}}=36.18$ years, s.d. 11.34 years; 50 women) over a year and a half later, in June 2017. We found that Trump support ($M=2.71$, s.d. 2.05) predicted changes in prejudice towards African Americans over the observed time period ($\beta=0.37$, $t(87)=3.59$, $P<0.001$, 95% CI 0.17 to 0.58; controlling for conservatism: $\beta=0.66$, $t(86)=5.04$, $P<0.001$, 95% CI 0.40 to 0.92).

We next examined whether Trump support also predicted changes in more blatant forms of prejudice (studies 4–8; $N=482$; time 1 $M_{\text{age}}=39.41$ years, s.d. 13.25 years; 249 women, 1 not reported). To do so, we used a measure assessing explicit racial animus towards Black people⁴⁴ (for example, 'Generally, Blacks are not as smart as Whites are.'). Notably, we found that Trump support ($M=2.70$, s.d. 2.04) predicted changes even in this more blatant form of racism ($\beta=0.23$, $t(480)=5.19$, $P<0.001$, 95% CI 0.14–0.32;

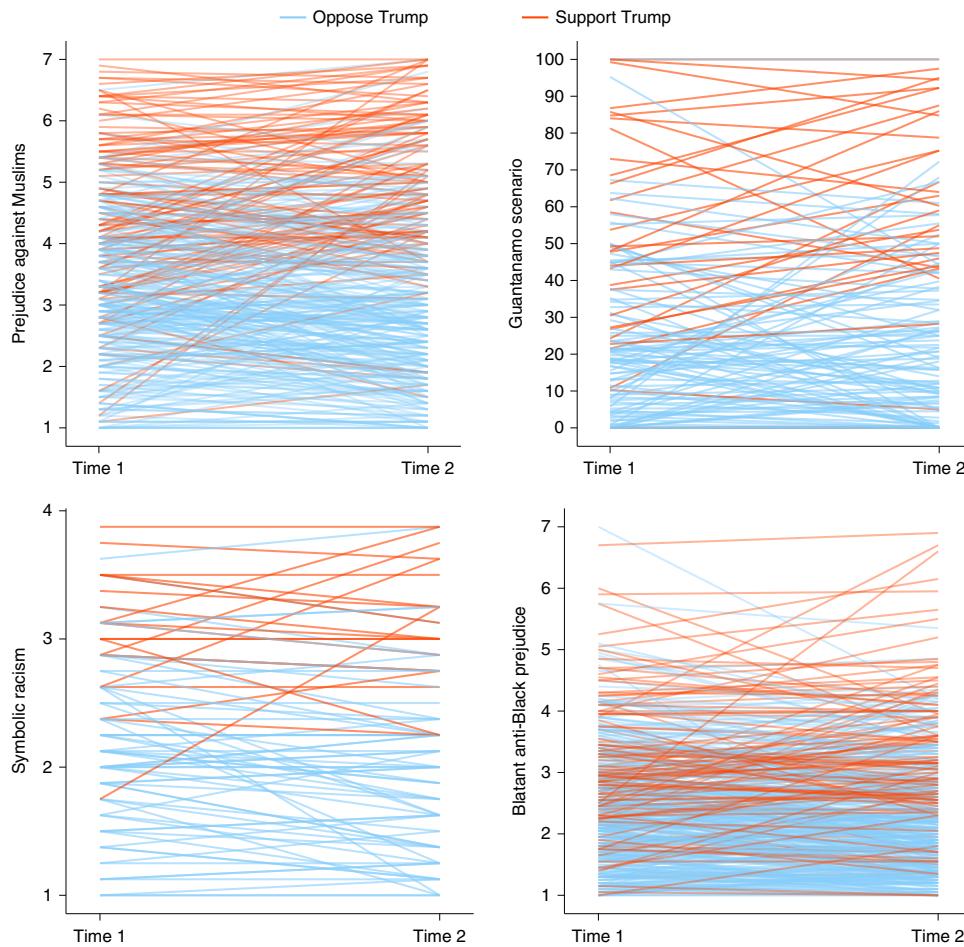


Fig. 2 | Spaghetti plots illustrating heterogeneity in changes in prejudice between participants and between studies (studies 1–8). Each line represents one participant. Higher scores indicate greater prejudice. Prejudice against Muslims, $n=384$; Guantanamo scenario, $n=138$; symbolic racism, $n=89$; prejudice against African Americans, $n=482$.

controlling for conservatism: $\beta=0.20$, $t(479)=3.16$, $P=0.002$, 95% CI 0.08–0.33; Fig. 2).

In study 9, we examined an open dataset from the Views Of The Electorate Research (VOTER) survey, a longitudinal, nationally representative sample of 7,734 Americans, to replicate our previous findings and ensure that this pattern of results generalized beyond the samples examined in studies 1–8. These data were collected at two time points, one in 2011 and one following Trump's election in 2016. The study contained measures of prejudice towards several minoritized groups and assessed a wide range of other political, non-political and demographic factors. (See Supplementary Information for additional information on survey measures and our rationale for selecting this dataset and analytic approach.)

On the VOTER survey measures of prejudice against Muslims and African Americans, we again found that Trump support (measured at time 2 by a four-point scale assessing general positivity towards Trump) significantly predicted changes in prejudice over the time span (β values 0.15–0.29, P values <0.001 ; Fig. 3 and Supplementary Tables 12 and 13). Importantly, as in our previous studies, these same associations emerged if we used time 1 political liberalism–conservatism as a proxy for time 1 Trump support: Greater conservatism at time 1 prospectively predicted changes in prejudice over time (for example, towards Black people: $\beta=0.20$, $t(7,071)=17.14$, $P<0.001$, 95% CI 0.17 to 0.22; towards Muslim people: $\beta=0.13$, $t(5,985)=10.19$, $P<0.001$, 95% CI 0.10 to 0.15). Further, as before, we examined a wide range of factors (82 in total)

to determine whether the association between Trump support and changes in prejudice could be accounted for by other variables. In all cases, however, Trump support remained a significant predictor of changes in prejudice when these control variables were added to the model (Supplementary Table 14). Finally, we also found that the size of the associations between Trump support and changes in prejudice did not differ significantly from those obtained in our previous studies ($QM(2)=1.22$, $\beta=-0.08$, $z=-1.1$, $P=0.27$, 95% CI -0.23 to 0.07 ; see meta-analysis in Methods). Taken together, these findings demonstrate that the pattern of results we had observed in our earlier studies generalized to a nationally representative sample of Americans.

To further examine the generality of these effects, we also examined attitudes towards other minoritized groups. We found that Trump support also predicted changes in prejudice towards Latino/Hispanic people, Jewish people, gay people, Asian people and immigrants (β values 0.15–0.41, P values <0.001 ; Fig. 3 and Supplementary Table 12). For several of these measures, the changes were driven largely by substantial decreases in prejudice amongst non-Trump supporters, and importantly, Trump supporters did not significantly increase on all measures of prejudice. There were some measures on which they simply exhibited a 'levelling out' of the long-term societal trend towards decreasing prejudice. (See Supplementary Information for in-depth analyses and discussion.) Nevertheless, we documented increases in prejudice amongst Trump supporters across several measures in these data as well, and

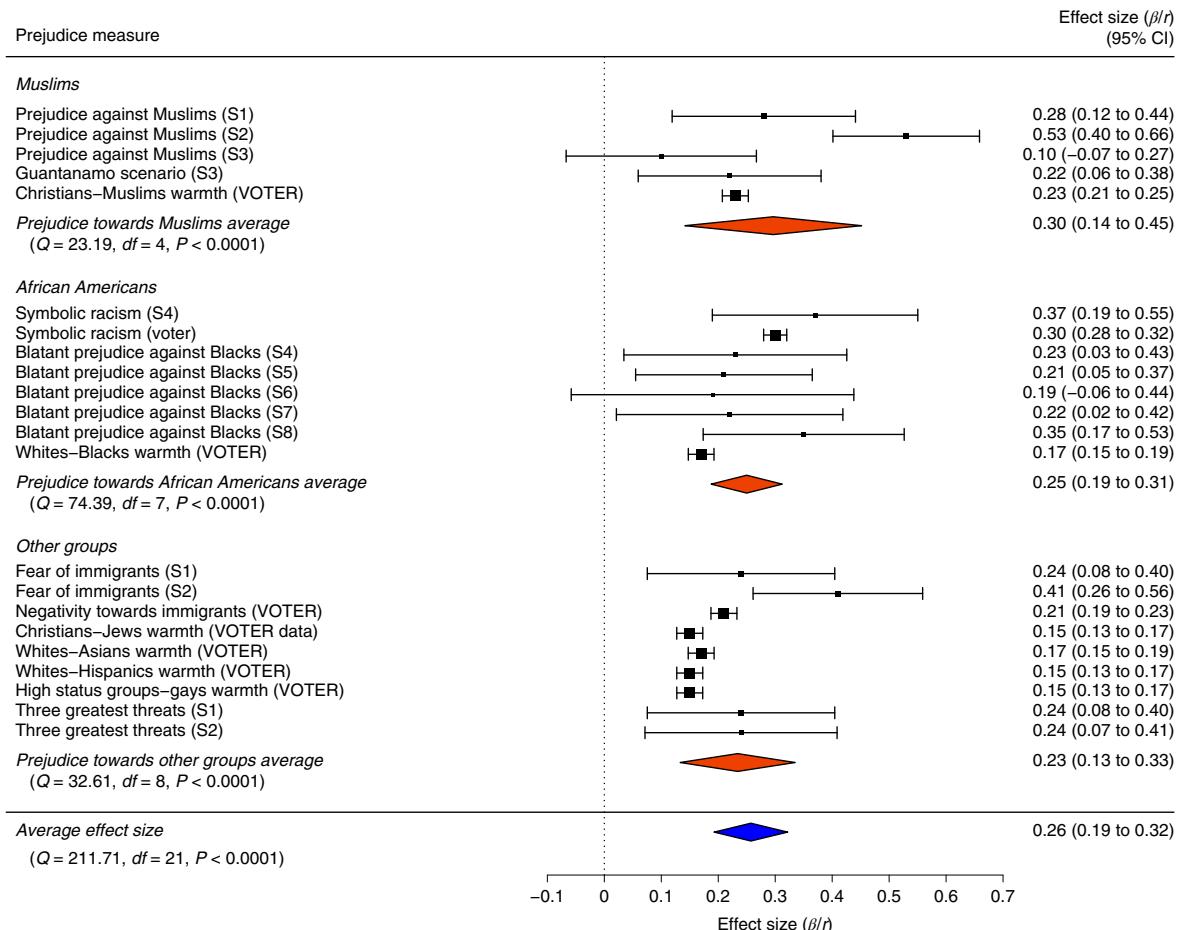


Fig. 3 | Forest plot of effect sizes for longitudinal study prejudice measures. Standardized beta weight (β) indicates the strength of the relationship between Trump support and changes in prejudice. Error bars indicate 95% confidence intervals for each individual effect size. The blue diamond indicates the 95% confidence interval of the overall average effect size, based on a meta-analysis with nested effects for group, observation and sample (Methods). The red symbols indicate the 95% confidence interval of the average effect size for each subgroup of measures, with nested effects for observation and sample. Total participant sample, $N=8,784$.

for virtually all measures the prejudice gap between Trump supporters and non-Trump supporters widened substantially. Taken together, these results demonstrate that the previously observed changes in prejudice towards Muslims and Black people extend to a range of minoritized groups.

The previous nine studies demonstrate that prejudice in the United States changed during the presidency of Donald Trump. Critically, however, the direction of this change differed dramatically as a function of support for Donald Trump. We find that Trump supporters not only deviated from the widely documented societal trend towards decreasing expressions of prejudice^{1–5} but also showed significant increases in prejudice towards a range of minoritized groups. Those who were opposed to Trump, conversely, showed significant decreases in expressed prejudice over this same time period.

We next turned to examining the mechanism behind these effects. Our interpretation of the correlational changes in prejudice that we observed is that Trump's political ascent may have changed the social norms (that is, standards) for expressing prejudice, leading his supporters to feel that prejudice against minoritized groups had become more acceptable. Although our previous studies included no time 1 measures of perceived norms (preventing longitudinal analysis), we conducted four additional studies (total $N=1,402$; three pre-registered) to test whether changing social norms might help to explain the rising prejudice amongst Trump supporters.

One previous study suggested that Donald Trump's election created at least a temporary change in perceived norms, with people reporting that expressing prejudice towards certain minoritized groups was more acceptable in the week following (versus the week before) the election¹⁵. In our next study (study 10), conducted over a year into Trump's presidency, we tested whether Trump's election created a lasting perception that expressing prejudice had become more normative.

Although our previous studies specifically identified Trump support as the most important predictor of changes in prejudice, for this initial test of our proposed mechanism we nonetheless avoided any mention of Trump or the election. Instead, we simply asked people how they felt things had changed 'in recent months and years'. This allowed us to collect a more naturalistic assessment of whether a change in social norms had occurred, whilst preventing people's responses from being influenced by their beliefs about what Trump's election may have represented for American intergroup relations (cf. ref. ⁴⁵).

In this study ($N=300$ from Mechanical Turk; demographic information not collected), we again examined attitudes towards Muslims. First, we tested whether people perceived that there had been a change in Americans' attitudes towards Muslims, such that expressing negativity towards Muslims had become more 'descriptively normative' (that is, more common) amongst the US population. To assess this question, we asked participants to rate the degree

to which they felt that other Americans had recently changed in their negativity towards Islam/Muslims (on a nine-point scale ranging from ‘Have become much less critical’ to ‘Have become much more critical’, with the mid-point labelled ‘Are the same as the past’).

As predicted, we found that participants believed that Americans had recently become more critical of Muslims/Islam (scores were significantly higher than the mid-point of the scale; $M_{\text{diff}} = 1.19$, $t(299) = 10.80$, $P < 0.001$, 95% CI 0.98–1.41, $d = 0.62$), a belief that was held by both Trump supporters and non-Trump supporters alike, with no significant difference between the two groups ($t(277) = 0.62$, $P = 0.53$, $M_{\text{diff}} = 0.17$, 95% CI –0.36 to 0.69, $d = 0.09$). Thus, even over a year into Trump’s presidency, people believed that there had been a durable shift in Americans’ negativity towards Muslims.

We next examined people’s perceptions of how the norms of expressing prejudice had changed specifically amongst their ‘social reference groups’, that is, other people they personally respect and admire. As predicted, participants who more strongly supported Donald Trump were more likely to report that the norms amongst their social reference groups had changed ($\beta = 0.20$, $t(298) = 3.54$, $P < 0.001$, 95% CI 0.09 to 0.31). Specifically, whereas Trump supporters reported that people they respect and admire had recently become more critical of Muslims ($M_{\text{diff}} = 0.78$, $t(72) = 4.24$, $P < 0.001$, 95% CI 0.41 to 1.15, $d = 0.50$), this same belief was not held by people who did not support Trump ($M_{\text{diff}} = 0.06$, $t(205) = 0.56$, $P = 0.57$, 95% CI –0.16 to 0.28, $d = 0.04$).

In sum, in study 10 we found that both Trump supporters and non-supporters believed that Americans in general had recently become more negative towards Muslims, suggesting that the election of Trump may indeed have shifted perceived social norms. Importantly, however, only Trump supporters felt that the people they personally admire and respect had become more negative towards Muslims. Given that people primarily assimilate to norms held by valued others^{31,32}, these results suggest a possible social reference mechanism for why Trump supporters (and only Trump supporters) have increased in prejudice.

In study 11 ($N = 299$ from Mechanical Turk; demographic information not collected), we assessed whether people felt that norms had changed specifically amongst Trump supporters. As predicted, we found that participants perceived that prejudice had become more normative (that is, more common and more accepted) amongst Trump supporters ($M_{\text{diff}} = 1.32$, $t(298) = 12.3$, $P < 0.001$, 95% CI 1.11 to 1.53, $d = 0.71$), a belief that was held by both Trump supporters ($N = 120$, $M_{\text{diff}} = 0.45$, $t(119) = 4.19$, $P < 0.001$, 95% CI 0.24 to 0.67, $d = 0.38$) and non-Trump supporters alike ($N = 165$, $M_{\text{diff}} = 1.99$, $t(164) = 12.94$, $P < 0.001$, 95% CI 1.68 to 2.29, $d = 1.01$). These findings suggest that people (regardless of their personal support for Trump) did indeed perceive the increase in prejudice amongst Trump supporters that we documented in our first nine studies.

We also provided an initial test of the effects of these beliefs about changing norms for people’s own personal prejudice, using the same scale of prejudice against Muslims from studies 1–3 (ref. ⁴¹). As predicted, we found that Trump supporters who perceived that prejudice had become more normative amongst their fellow Trump supporters (a social reference group) expressed greater personal prejudice ($\beta = 0.24$, $t(118) = 2.72$, $P = 0.007$, 95% CI 0.07 to 0.42). However, as predicted, this association did not emerge amongst non-Trump supporters. In fact, this belief predicted lower expressions of personal prejudice for non-Trump supporters ($\beta = -0.24$, $t(163) = 3.20$, $P = 0.002$, 95% CI –0.39 to –0.09), suggesting that they may have actively contrasted away from the new norms amongst their political outgroup.

Thus, the results of study 11 revealed that both Trump supporters and non-Trump supporters believe that prejudice has become more normative amongst supporters of Donald Trump. However, these perceived changes in norms only predicted greater personal

prejudice amongst individuals who themselves supported Trump. In line with social psychological theory on social norms^{31,32}, these results are consistent with our prediction that people only assimilate to norms held by admired and respected others.

Conversely, we found evidence suggesting that the new norms amongst Trump supporters may have led to reduced expressions of prejudice amongst non-Trump supporters, who may have reacted against the perceived norms of this salient political outgroup. Taken together, these effects may account for both the increases in expressed prejudice that we documented amongst Trump supporters and the decreases that we observed amongst non-Trump supporters.

Although studies 10 and 11 were consistent with our proposed social norms account, these correlational data cannot speak to causal mechanism. In studies 12 and 13, we therefore used an experimental methodology, manipulating perceived social norms to test their causal influence in shaping Trump supporters’ personal expressions of prejudice.

We took two approaches to manipulating perceived norms, one more direct and one more subtle. In study 12 ($N = 503$, Mechanical Turk; demographic information not collected), we used a straightforward manipulation in which participants in the experimental condition were simply provided with information that ‘polls suggest that in recent months, most Trump supporters have become increasingly negative towards immigrants.’ whilst participants in the control condition did not receive this information.

In study 13, we used a more subtle and naturalistic paradigm. Participants ($N = 300$, Mechanical Turk; demographic information not collected) completed a task (ostensibly) assessing their comprehension of everyday news headlines. They rated their understanding of a series of five headlines. Four of these five headlines were apolitical (for example, relating to technology, weather or pop culture). However, the penultimate headline differed between participants by random assignment. Participants in the control condition read an additional apolitical headline about the weather. Conversely, participants in the experimental condition viewed a headline, ostensibly from Fox News, which read ‘New Poll: Trump Supporters Increasingly Approving of Trump’s Anti-Immigrant Message’.

Following the manipulation, participants in both studies completed a measure of prejudice. To further reduce suspicion (and provide a more stringent test of our hypothesis) we did not directly assess participants’ attitudes towards immigrants. Rather, we assessed their attitudes towards another minoritized group, Muslims, using a shortened version of the scale from study 11.

Unlike the previous correlational studies, then, these studies provided a more direct test of our proposed social norms mechanism: If, as we predict, perceived social reference group norms are the mechanism, then being led to believe that Trump’s supporters approve of his controversial rhetoric should increase Trump supporters’ own personal willingness to express prejudice.

To increase statistical power, we collapsed across the two studies to examine the pattern of effects (although the results are nearly identical if the two studies are examined separately). As anticipated, the manipulation had no significant main effect on participants’ attitudes (combined data: $N = 803$, $M_{\text{diff}} = 0.14$, $t(770.37) = 1.28$, $P = 0.20$, 95% CI –0.08 to 0.36, $d = 0.09$, unequal variances). That is, when collapsing across Trump supporters and non-supporters, there was no significant effect of the manipulation on participants’ expressions of prejudice. However, as predicted, we found that condition significantly interacted with Trump support to predict expressions of prejudice ($\beta = 0.23$, $t(773) = 3.66$, $P < 0.001$, 95% CI 0.11 to 0.36). The pattern of this interaction supported our predictions: Whereas the manipulation increased expressions of prejudice amongst Trump supporters (control condition, $n = 112$; experimental condition, $n = 125$; $M_{\text{diff}} = 0.46$, $t(235) = 2.48$, $P = 0.014$, 95% CI 0.10 to 0.84, $d = 0.32$), it did not have a statistically significant effect

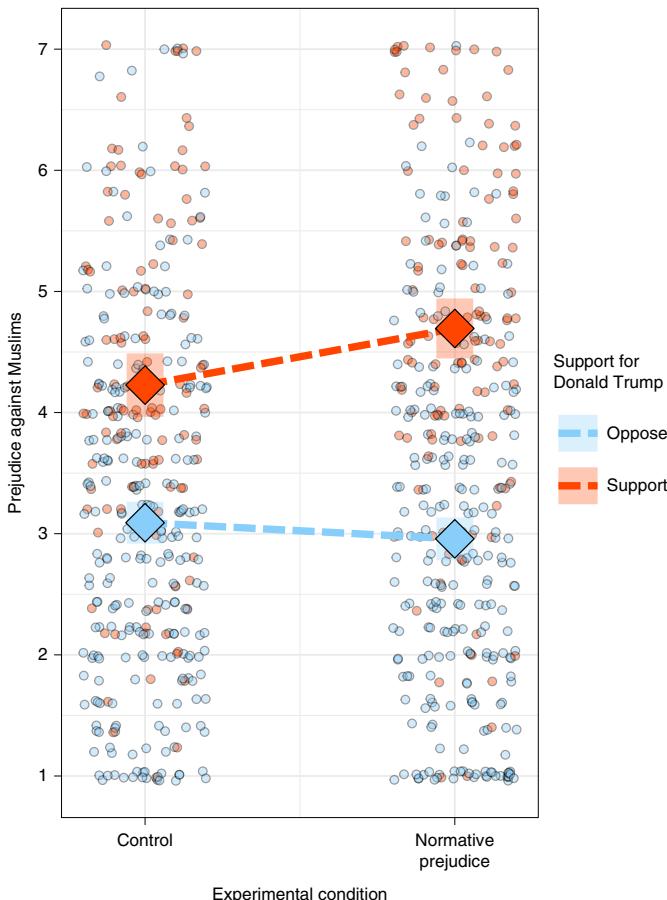


Fig. 4 | Effects of experimental manipulation in studies 12 and 13 (combined data) as a function of support for Trump. Circular points represent individual participants. Diamond-shaped points show estimated marginal means. Shaded bars represent 95% confidence intervals. Interaction between experimental condition and support for Donald Trump ($\beta=0.23, t(773)=3.66, P<0.001, 95\% \text{ CI } 0.11 \text{ to } 0.36$; total, $N=739$; control condition Trump supporters, $n=112$; experimental condition Trump supporters, $n=125$; control condition non-Trump supporters, $n=256$; experimental condition non-Trump supporters, $n=246$).

on non-Trump supporters (control condition, $n=256$; experimental condition, $n=246$; $M_{\text{diff}}=-0.13, t(500)=-1.07, P=0.28, 95\% \text{ CI } -0.38 \text{ to } 0.11, d=0.10$; Fig. 4). (Given that non-Trump supporters were quite low in prejudice in the control condition, however, the lack of a decrease in prejudice in the experimental condition may have stemmed from a floor effect.)

Discussion

In a series of 13 studies, using a variety of methods and with a combined sample of over 10,000 Americans, we found that prejudice in the United States changed during Donald Trump's presidency and that an individual's personal support for Donald Trump was a powerful predictor of the direction of that change. Indeed, amongst Trump's supporters, we documented not just a tempering of the decline in prejudice that has been widely observed in historical trends but a significant increase in prejudice towards a range of social, racial and religious minoritized groups (studies 1–9). Conversely, we found that individuals who were generally opposed to Trump (both liberals and conservatives alike) tended to show decreases in prejudice over this same time period.

Although these correlational studies cannot speak to causality, our final four studies provided indirect support for our proposed

causal mechanism of shifting social norms: Trump supporters perceive that it has become more acceptable to express prejudice since Trump's election (study 10), and the perception that prejudice is more acceptable predicts greater personal prejudice amongst Trump supporters (study 11). Providing more decisive causal evidence for this proposed norms mechanism, we found (studies 12 and 13) that experimentally leading participants to feel that Trump supporters approved of his controversial rhetoric significantly increased Trump supporters' personal expressions of prejudice. The results of these final four studies therefore provided strong support for our predictions, showing that, during Trump's administration, the perceived social norms of expressing prejudice shifted amongst his supporters. These shifting norms, in turn, predicted Trump supporters' own personal expressions of prejudice against minoritized groups. Taken together, these studies suggest that changes in social norms may help explain the increases in prejudice that we documented in studies 1–9. Together, this research suggests that the presidency of Donald Trump may have substantially reshaped the topography of prejudice in the United States.

Methods

All studies were approved by the Cornell University institutional review board (protocol no. 1309004124), we complied with all relevant ethical regulations, and all subjects provided informed consent. All other data are publicly available (VOTER survey data: <https://www.voterstudygroup.org/publications/2016-elections/data>). We pre-registered our primary predictions for all of our studies, save for three (studies 2, 5 and 13). Documentation can be viewed at <https://osf.io/9syz8/>. Data were analysed with R version 4.0.4 and SPSS version 22.0. Given the large number of studies and analyses, we provide only a brief overview of our methods below. Extensive additional information regarding procedure and analyses, as well as a full list of the materials and measures for all studies, can be found in the Supplementary Information.

Longitudinal studies (studies 1–9). Procedure. General procedure for studies 1–8. Participants were recruited through Amazon's Mechanical Turk, an online platform where workers complete short tasks in exchange for payment⁴⁰. At time 1, participants completed one or more measures of prejudice and answered questions regarding their views on social and political issues. At time 2, they completed many of the same measures and rated their support for Donald Trump. Time 1 and time 2 surveys were nearly identical in format and content, to help ensure that no extraneous factors could influence results. In addition to the measures described in Main, we also collected eight other dependent measures. Although the results on these measures were consistent with those described above (see meta-analyses below), we nonetheless omit these measures from Main for brevity (for a full description of all additional measures and results, see Supplementary Information).

Though our predictions were relatively straightforward, we also explored a range of potential mediators and moderators to determine whether the relationship between Trump support and changes in prejudice is explained by other factors. We therefore included an extensive array of other measures, such as political ideology, political party identification, perceptions of the US economy, perceived threat and political knowledge/sophistication, as well as demographic characteristics such as age, gender, race, education and income. We also examined a number of 'environmental factors' such as indices of income inequality, racial diversity and voter turnout in participants' home counties. To do so, we first extracted information about participants' zip codes using Qualtrics' built-in 'GeoIP' functions. We then transformed these zip codes into US counties and cross-referenced various online databases (for example, from the US Census Bureau) to obtain the relevant indices. Below is a brief description of the procedure for each study.

Studies 1 and 2. The time 1 data for studies 1 and 2 were taken from a single study with a large sample ($N=600$). We divided this sample into two separate subsamples, with which we conducted an initial exploratory test of our hypothesis and a subsequent pre-registered direct replication. At time 1, participants first completed the Islamophobia scale⁴¹. They then answered several questions about their social and political attitudes. They then completed a political knowledge questionnaire, answered questions about their news-following habits and provided demographic information (for example, age, gender, income and education).

At time 2, participants first completed the same Islamophobia scale and answered many of the same questions about their social and political attitudes. They then indicated their support for Donald Trump and provided demographic information. In study 2, participants also completed some exploratory questions about Donald Trump's election and whether they felt that their own attitudes towards Muslims had changed.

Study 3. At time 1, participants completed three prejudice measures, which were presented in random order: the Islamophobia scale⁴¹, the Guantanamo scenario⁴² and the measure of blatant dehumanization of Muslims⁴². Afterwards, they answered questions about their political attitudes and completed an implicit association test to assess their associations between the concepts of 'America' (versus 'Foreign') and 'Safety' (versus 'Danger'). They then provided demographic information.

At time 2, participants completed the same three prejudice measures, which were presented in the same order as at time 1. Afterwards, participants provided demographic information and indicated their support for Trump.

Study 4. At time 1, participants completed a task measuring racial bias in punishment, in which they read a short vignette about a (Black or White) criminal suspect and made a sentencing recommendation. They then answered two questions about the police and were randomly assigned to complete one of three prejudice measures: the less blatant measure of anti-Black prejudice (the Symbolic Racism scale⁴³), the more blatant anti-Black prejudice measure (the Attitudes Towards Blacks scale⁴⁴) or the Internal/External Motivation to Respond Without Prejudice scale⁴⁵. They then answered demographic questions.

At time 2, participants read the same vignette, completed the same punishment task and completed the same prejudice measure. They then provided demographic information and indicated their support for Donald Trump.

Studies 5 and 6. At time 1, participants completed the Attitudes Towards Blacks scale⁴⁴, answered questions about their political views and provided demographic information. Participants in study 6 also rated three applicants to Cornell University (this task was not included at time 2).

At time 2, participants completed the same prejudice measure, answered political and demographic questions, and rated their level of Trump support. In study 6, participants also completed the Black/White implicit association test⁴⁸ at both time points.

Studies 7 and 8. At time 1, participants were asked to view photographs of six buildings and to guess the time of day. They then completed the Attitudes Towards Blacks scale⁴⁴ and answered political questions. Afterwards, they completed the American=White implicit association test⁴⁹.

At time 2, participants completed the same photo task, measure of prejudice and implicit association test. They then answered political and demographic questions and indicated their support for Trump.

Further procedures for studies 1–8. The time 1 survey for studies 3 and 5–8 also contained a manipulation not of interest for the present project: half of participants were randomly assigned to a condition in which two small American flags were placed in the banner at the top of the survey (in studies 7 and 8, some participants viewed photos of buildings containing US flags). There were no significant differences in prejudice scores between individuals in these two conditions, so we collapsed across condition for all analyses (controlling for flag condition does not change our results). At time 2, no flags were presented.

Response rates in studies 1–8. Many individuals on Mechanical Turk work only temporarily, or cycle on and off of the site^{50,51}. Accordingly, some of our longitudinal studies had high attrition rates (Supplementary Table 3). However, because attrition rates in the nationally representative VOTER data were considerably lower, replicating our results with that dataset helped verify our findings and ensure that attrition did not bias our data. Additionally, we took several measures to ensure that there were no systematic differences between participants who returned (versus did not return) for session 2 of our studies, to ensure generalizability: (1) In the study advertisement (or 'hit'), we provided no information about the content of the survey, so participants could not decide whether to participate based on survey content, (2) we offered very high pay rates (~10 times higher than standard rates on Mechanical Turk) to incentivize completion and (3) we examined the data for incomplete responses (that is, drop-out) and verified that drop-out rates could not have biased our conclusions (for a discussion, see ref. ⁵²). We found that drop-out rates were very low, with only 9 participants out of 1,065 (0.8%) dropping out after beginning the survey.

Further, we also analysed the data to understand the causes of the observed attrition rates and to ensure that they were in keeping with those typically observed on Mechanical Turk. Our longitudinal Mechanical Turk studies varied substantially in their inter-session intervals (that is, the length of time between the time 1 and time 2 surveys), ranging from 1.77 to 3.42 years (Supplementary Table 3). The length of this inter-session interval was a strong negative predictor of the response rate for each study ($\beta = -0.84$, $t(12) = -5.41$, $P < 0.001$, 95% CI -0.96 to -0.41) such that, the longer the time that elapsed between session 1 and session 2, the fewer participants responded to the second survey. This association suggests that general attrition rates in the use of Mechanical Turk^{50,51} explain the response rates that we observed, rather than features of our particular studies. Additionally (and most importantly) the effect size observed in each study was not significantly associated with the response rate for that study ($\beta = -0.03$, $t(12) = -0.11$, $P = 0.92$, 95% CI -0.94 to 0.85). These results further suggest that attrition did not systematically bias our findings.

In addition to these analyses, we also carefully examined the data to ensure that there were no meaningful differences between individuals who did and did not return for session 2. In general, responders and non-Responders looked very similar: in none of our eight studies were there time 1 differences between these two groups in key demographic variables such as gender, education, income, proportion born in the United States, per cent who identified as White, political identification or political party identification. Out of the 13 unique observations of scale measures of prejudice discussed in Main, only 2 showed significant differences between individuals who did and did not return for session 2. Excluding these studies does not change the pattern of results. (The full results of these analyses can be found in Supplementary Tables 4 and 5.)

VOTER survey (study 9). The VOTER survey is a longitudinal survey of 8,000 Americans conducted by the Democracy Fund Voter Study Group and YouGov. Participants in the 2016 survey (conducted between 29 November and 29 December 2016) were selected from a stratified sample of 45,000 people who completed another survey in December 2011. Extensive information was collected about participants' voting history, political attitudes, daily lives, social group memberships, health history and demographics. The dataset and additional information about the methodology can be found at <https://www.voterstudygroup.org/publications/2016-elections/data>.

The sample was weighted by both demographic and non-demographic factors to approximate the US population, following YouGov's proprietary algorithm. The reported margin of error is $\pm 2.2\%$. All analyses were conducted using the weighted data. However, results using the unweighted data are not substantially different. Supplementary Table 6 contains information about key demographic variables for this sample.

Statistical information. Sample. To conduct a more conservative test of our hypotheses, we did not exclude any participants from analyses. However, nine participants did not respond to our Trump support scale (our independent variable) and therefore could not be included in analyses. Additionally, in study 3, three participants who did not provide complete responses to our time 1 dependent measures were inadvertently invited to participate in the time 2 survey. Because of these incomplete data, we did not include these participants in analyses.

Hypothesis testing. Several of our longitudinal studies contained identical measures of prejudice. A meta-analysis (detailed below) showed no systematic differences between these studies that could explain our effects. Therefore, for brevity, and to present a more accurate estimate of effect sizes⁵³, in Main we present the data by measure, collapsing across individual studies/samples (however, the effect sizes for each individual study can be found in Fig. 3). We used an α level of 0.05 and two-tailed tests for all statistical tests.

Our primary hypothesis was that Trump support would be associated with changes in prejudice over time. We tested this hypothesis using linear regression. In each analysis, Trump support was entered as the independent variable and participants' prejudice difference score (time 2 minus time 1) was entered as the dependent variable. We considered our hypothesis to be supported if the relationship between Trump support and change in prejudice was positive (such that greater Trump support was associated with greater increases in prejudice) and significant at $P < 0.05$.

We also conducted alternative sets of analyses in which we (where possible): (1) excluded participants who belonged to the target racial or religious group under investigation (for example, excluding Muslim participants from studies on anti-Muslim prejudice or excluding Black participants from studies on anti-Black prejudice) and (2) excluded all non-White participants. In neither case are the findings substantively altered.

Meta-analyses. Following recent methodological recommendations (see, for example, ref. ⁵⁴), we conducted an internal meta-analysis to determine the mean effect size of our longitudinal studies (studies 1–9) and to identify potential moderators. We used a random-effects model to better extrapolate these effects to the general population⁵⁵. For our primary analyses, we had 22 unique observations with 13 different prejudice measures across 9 studies (Supplementary Tables 12 and 13). Because we had a nested structure, with some individual studies having multiple distinct groups of participants (study 4) and some studies collecting multiple observations (that is, multiple prejudice measures) from a single group of participants (studies 1–4 and VOTER data), we fit a multi-level meta-analysis model, specifying nested random effects for study, participant group and observation⁵⁶. The average effect size was $\beta = 0.26$ (s.e. 0.033, $z = 7.80$, $P < 0.0001$), and the 95% confidence interval for the true effect size was $\beta = 0.19$ – 0.32 . We also conducted a separate meta-analysis including the three pre-registered scale measures of prejudice not discussed in Main. This analysis yielded a nearly identical effect size ($\beta = 0.25$, s.e. 0.032, $z = 7.78$, $P < 0.0001$, 95% CI 0.18 to 0.31).

Cochran's Q test suggested that there was substantial heterogeneity in our effect sizes ($Q(21) = 211.71$, $P < 0.0001$; Fig. 3 and Supplementary Fig. 2), so we examined potential moderators. We first tested whether target group type moderated these effects. We divided our effects into three categories: prejudice against (1) Muslims, (2) African Americans and (3) other minoritized groups

(there were not enough observations to subdivide the latter group further). We then fit a second model with group type as a moderator. The effect was not significant ($QM(2) = 5.71, P = 0.058$), suggesting that the effect size did not differ depending on target group.

We also examined whether sample type (Mechanical Turk versus VOTER sample) moderated effects, but these differences were not significant ($QM(2) = 1.22, \beta = -0.08, z = -1.1, P = 0.27, 95\% CI -0.23$ to 0.07). Importantly, we also found that response rates did not moderate effect sizes ($QM(1) = 1.01, \beta = -0.002, z = -1.01, P = 0.31, 95\% CI -0.005$ to 0.002), further verifying that results were not shaped by attrition rates. Given the relatively small number of studies, we lacked the statistical power for more fine-grained analyses, such as examining other potential moderators (for example, individual prejudice measures).

Mechanism studies (studies 10–13). *Procedure.* Participants were recruited through Mechanical Turk. The advertisement (or ‘hit’) did not provide any detailed information about the study content. Because there tend to be fewer political conservatives (and thus fewer Trump supporters) on Mechanical Turk, for studies 12 and 13 we used Turkprime.com⁵⁷ to recruit a larger sample of conservatives.

Study 10. Participants first answered two questions assessing their perceptions of changing norms, presented in random order: (1) general American norms: ‘To what degree have Americans become less or more critical of Islam/Muslims in recent months and years?’ and (2) social reference group-specific norms: ‘To what degree have people that you respect and admire become less or more critical of Islam/Muslims in recent months and years?’. They then rated their support for Donald Trump on a single item (item 1 from studies 1–8) assessing positivity towards Trump.

Study 11. Participants first completed the full 20-item Differentiating Islamophobia scale⁴¹ (as pre-registered, our predictions concerned only the explicit prejudice, or ‘Islamoprejudice’, subscale). Afterwards, participants answered two questions about how norms had changed amongst supporters of Donald Trump: (1) descriptive norms: ‘Since Trump’s election, have Trump supporters become more or less negative in their feelings towards Muslims/Islam?’ and (2) prescriptive norms: ‘Since Trump’s election, have Trump supporters seen it as more or less acceptable to express negativity towards Muslims/Islam?’. Participants then answered some exploratory questions relating to how they believed their friends and family felt about Muslims, rated their degree of liberalism/conservatism and rated their support for Donald Trump on the four-item scale from studies 1–8.

Studies 12 and 13. Participants indicated their support for Trump on two items assessing (1) positivity and (2) negativity towards Trump. In study 12, they additionally completed two exploratory items assessing additional aspects of support for Trump and his actions. As specified in our pre-registration documentation, however, these were not analysed as part of our primary analyses.

Statistical information. For all analyses, two-tailed statistical tests were used. In all studies, individuals who scored above the mid-point on our Trump support measure (indicating generally favourable views of Donald Trump) are categorized as Trump supporters, and individuals who scored below the mid-point (indicating generally unfavourable views) are categorized as non-Trump supporters. Our hypotheses relating to changing norms in studies 10 and 11 were tested using one-sample *t* tests, to determine whether mean scores were significantly above the ‘no change’ mid-point of the scale. In study 11, we used linear regression to test for an interaction between Trump support and perceived norms. Both predictor variables were entered into a linear regression model along with their interaction term. As pre-registered, we considered our hypothesis to have been supported if the interaction term was significant at $P = 0.05$ or below, and if the pattern of results was in the predicted direction. In studies 12 and 13, we conducted linear regression analyses to examine the interaction between Trump support and experimental condition on expressions of prejudice.

Reporting summary. Further information on research design is available in the Nature Research Reporting Summary linked to this article.

Data availability

All data, materials and pre-registration documentation are available on the Open Science Framework at <https://osf.io/9syz8/>. Source data are provided with this paper.

Code availability

All analysis code is available on the Open Science Framework at <https://osf.io/9syz8/>.

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References

1. Bobo, L. D. & Charles, C. Z. Race in the American mind: from the Moynihan report to the Obama candidacy. *Ann. Am. Acad. Polit. Soc. Sci.* **621**, 243–259 (2009).
2. Bobo, L. D., Charles, C. Z., Krysan, M., Simmons, A. D. & Fredrickson, G. M. in *Social Trends in American Life: Findings from the General Social Survey since 1972* (ed. Marsden, P.) 38–83 (Princeton Univ. Press, 2012).
3. Dovidio, J. F. & Gaertner, S. L. Aversive racism. *Adv. Exp. Soc. Psychol.* **36**, 4–56 (2004).
4. Dovidio, J. F. & Gaertner, S. L. in *Handbook of Social Psychology* (eds Fiske, S. T. et al.) 1084–1121 (Wiley, 2010).
5. Schuman, H., Steeh, C., Bobo, L. D. & Kysan, M. Racial Attitudes in America: Trends and Interpretations (Harvard Univ. Press, 1997).
6. Mutz, D. C. Status threat, not economic hardship, explains the 2016 presidential vote. *Proc. Natl Acad. Sci. USA* **201718155** (2018).
7. Tesler, M. Economic anxiety isn’t driving racial resentment. Racial resentment is driving economic anxiety. *The Washington Post* (22 August 2016).
8. Schaffner, B. F., MacWilliams, M. & Nteta, T. Understanding white polarization in the 2016 vote for president: the sobering role of racism and sexism. *Polit. Sci. Q.* **133**, 9–34 (2018).
9. Hate Crime Statistics 2016. *Federal Bureau of Investigation* <https://ucr.fbi.gov/hate-crime/2016/topic-pages/incidentsandoffenses> (2017).
10. O’Reilly, A. Hate crimes in US on the rise. *Fox News* (15 August 2017).
11. Thrush, G. & Haberman, M. Trump gives White supremacists an unequivocal boost. *The New York Times* (15 August 2017).
12. U.S. Muslims concerned about their place in society, but continue to believe in the American dream. *Pew Research Center* <https://www.pewforum.org/2017/07/26/findings-from-pew-research-centers-2017-survey-of-us-muslims/> (2017).
13. Ritter, Z. & Tsabatashvili, D. Hispanics’ emotional well-being during the Trump era. *Gallup* (10 August 2017).
14. BBC. ‘Trump effect’ led to hate crime surge, report finds. *BBC* (29 November 2017).
15. Crandall, C. S., Miller, J. M. & White, M. H. Changing norms following the 2016 US presidential election: the Trump effect on prejudice. *Soc. Psychol. Personal. Sci.* **9**, 186–192 (2018).
16. Williamson, V. & Gelfand, I. Trump and racism: what do the data say? *Brookings* <https://www.brookings.edu/blog/fixgov/2019/08/14/trump-and-racism-what-do-the-data-say/> (2019).
17. Abernathy, G. Trump is not a racist. His voters aren’t either. *The Washington Post* (7 August 2019).
18. Green, E. How much discrimination do Muslims face in America? *The Atlantic* (26 July 2017).
19. Nash, C. CAIR releases app for reporting ‘hate crimes,’ ‘bias incidents.’ *Breitbart* (26 June 2017).
20. Wendling, M. US election 2016: are hate crimes spiking after Trump’s victory? *BBC* (11 November 2016).
21. Chait, J. Donald Trump, White supremacy, and the discourse of panic. *New York Magazine* (24 September 2017).
22. Hunt, A. R. No, Republicans, not everyone incites violence. *Bloomberg News* (29 October 2018).
23. Kuttner, R. Steve Bannon, unrepentant. *The American Prospect* (16 August 2017).
24. Hopkins, D. J. & Washington, S. The rise of Trump, the fall of prejudice? Tracking white Americans’ racial attitudes via a panel survey, 2008–2018. *Public Opin. Q.* **84**, 119–140 (2020).
25. Sides, J., Tesler, M. & Vavreck, L. *Identity Crisis* (Princeton Univ. Press, 2018).
26. Schaffner, B. F. *The Acceptance and Expression of Prejudice during the Trump Era* (Cambridge Univ. Press, 2020).
27. Hopkins, D. White Americans say they’re less prejudiced. *FiveThirtyEight* (23 July 2019).
28. López, I. H. Why do Trump’s supporters deny the racism that seems so evident to Democrats? *Los Angeles Times* (13 August 2019).
29. Tankard, M. E. & Paluck, E. L. Norm perception as a vehicle for social change. *Soc. Issues Policy Rev.* **10**, 181 (2016).
30. Tankard, M. E. & Paluck, E. L. The effect of a Supreme Court decision regarding gay marriage on social norms and personal attitudes. *Psychol. Sci.* **28**, 1334–1344 (2017).
31. Terry, D. J. & Hogg, M. A. Group norms and the attitude–behavior relationship: role for group identification. *Pers. Soc. Psychol. Bull.* **22**, 776–793 (1996).
32. Sherif, M. & Sherif, C. W. *Reference Groups* (Harper & Row, 1964).
33. Desjardins, L. Every moment in Trump’s charged relationship with race. *PBS News Hour* (22 August 2017).
34. Leonhardt, D. & Philbrick, I. P. Donald Trump’s racism: the definitive list. *The New York Times* (15 January 2018).
35. Mendelberg, T. *The Race Card: Campaign Strategy, Implicit Messages, and the Norm of Equality* (Princeton Univ. Press, 2001).
36. Cialdini, R. B. & Goldstein, N. J. Social influence: compliance and conformity. *Annu. Rev. Psychol.* **55**, 591–621 (2004).

37. Sechrist, G. B. & Stangor, C. in *Social Psychology of Prejudice: Historical and Contemporary Issues* (eds Crandall, C. S. & Schaller, M.) (Lewinian, 2005).
38. Ofosu, E. K., Chambers, M. K., Chen, J. M. & Hehman, E. Same-sex marriage legalization associated with reduced implicit and explicit antigay bias. *Proc. Natl Acad. Sci. USA* **116**, 8846–8851 (2019).
39. Schmidt, K. & Axt, J. R. Implicit and explicit attitudes toward African Americans and Barack Obama did not substantively change during Obama's presidency. *Soc. Cog.* **34**, 559–588 (2016).
40. Schmidt, K. & Nosek, B. A. Implicit (and explicit) racial attitudes barely changed during Barack Obama's presidential campaign and early presidency. *J. Exper. Soc. Psychol.* **46**, 308–314 (2010).
41. Imhoff, R. & Recker, J. Differentiating Islamophobia: introducing a new scale to measure Islamoprejudice and secular Islam critique. *Polit. Psychol.* **33**, 811–824 (2012).
42. Kteily, N., Bruneau, E., Waytz, A. & Cotterill, S. The ascent of man: theoretical and empirical evidence for blatant dehumanization. *J. Pers. Soc. Psychol.* **109**, 901–931 (2015).
43. Henry, P. J. & Sears, D. O. The symbolic racism 2000 scale. *Polit. Psychol.* **23**, 253–283 (2002).
44. Brigham, J. C. College students' racial attitudes. *J. Appl. Soc. Psychol.* **23**, 1933–1967 (1993).
45. Pew Research Center. Most Americans say Trump's election has led to worse race relations in the U.S. <https://www.pewresearch.org/politics/2017/12/19/most-americans-say-trumps-election-has-led-to-worse-race-relations-in-the-u-s/> (2017).
46. Buhrmester, M., Kwang, T. & Gosling, S. D. Amazon's Mechanical Turk: a new source of inexpensive, yet high-quality, data? *Persp. Psychol. Sci.* **6**, 3 (2011).
47. Plant, E. A. & Devine, P. G. Internal and external motivation to respond without prejudice. *J. Pers. Soc. Psychol.* **75**, 811 (1998).
48. Greenwald, A. G., McGhee, D. E. & Schwartz, J. L. Measuring individual differences in implicit cognition: the implicit association test. *J. Pers. Soc. Psychol.* **74**, 1464–1480 (1998).
49. Devos, T. & Banaji, M. R. American = white? *J. Pers. Soc. Psychol.* **88**, 447 (2005).
50. Paolacci, G. & Chandler, J. Inside the Turk: understanding Mechanical Turk as a participant pool. *Curr. Dir. Psychol. Sci.* **23**, 184 (2014).
51. Stewart, N. et al. The average laboratory samples a population of 7,300 Amazon Mechanical Turk workers. *Judg. Dec. Making* **10**, 479 (2015).
52. Zhou, H. & Fishbach, A. The pitfall of experimenting on the web: how unattended selective attrition leads to surprising (yet false) research conclusions. *J. Pers. Soc. Psychol.* **111**, 493 (2016).
53. Braver, S. L., Thoemmes, F. J. & Rosenthal, R. Continuously cumulating meta-analysis and replicability. *Persp. Psychol. Sci.* **9**, 333 (2014).
54. McShane, B. B. & Böckenholz, U. Single-paper meta-analysis: benefits for study summary, theory testing, and replicability. *J. Consum. Res.* **43**, 1048–1063 (2017).
55. Hedges, L. V. & Vevea, J. L. Fixed-and random-effects models in meta-analysis. *Psychol. Meth.* **3**, 486–504 (1998).
56. Konstantopoulos, S. Fixed effects and variance components estimation in three-level meta-analysis. *Res. Synth. Meth.* **2**, 61–76 (2011).
57. Litman, L., Robinson, J. & Abberbock, T. TurkPrime.com: a versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behav. Res. Meth.* **49**, 433 (2017).

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Author contributions

B.C.R. and M.J.F. conceived of the idea and planned the experiments. B.C.R. designed and programmed the experiments and analysed the data. B.C.R. and M.J.F. wrote the manuscript.

Competing interests

The authors declare no competing interests.

Additional information

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Reporting Summary

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Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a Confirmed

- The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement
- A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
- The statistical test(s) used AND whether they are one- or two-sided
 - Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
- A description of all covariates tested
- A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
- A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
- For null hypothesis testing, the test statistic (e.g. F , t , r) with confidence intervals, effect sizes, degrees of freedom and P value noted
 - Give P values as exact values whenever suitable.*
- For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
- For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
- Estimates of effect sizes (e.g. Cohen's d , Pearson's r), indicating how they were calculated

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection Data for Studies 1-8 and 10-13 were collected using Qualtrics online survey software (www.qualtrics.com).

Data analysis Data were analyzed with R 4.0.4 and SPSS 22.0.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio [guidelines for submitting code & software](#) for further information.

Data

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All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
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All data, syntax, materials, and preregistration documentation are available on the Open Science Framework at <https://osf.io/9syz8/>.

Field-specific reporting

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- Life sciences Behavioural & social sciences Ecological, evolutionary & environmental sciences

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Behavioural & social sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	We use quantitative methods throughout. Studies 1 through 9 are longitudinal correlational studies, Studies 10 and 11 are cross-sectional correlational studies, and Studies 12 and 13 are experimental studies.
Research sample	Participants for all studies except Study 9 were recruited from Mechanical Turk. We selected this sample to ensure an adequate degree of geographic, demographic, and ideological diversity (compared with, e.g., the undergraduate student samples used in much psychological research.) In Study 9, we replicated our effects using an openly available nationally representative sample from the Views of the Electorate Research (VOTER) Study Group. Information on age and gender for each study are provided in the main text (where available).
Sampling strategy	Because of the nature of our initial correlational studies, in which we looked at the effect of an unanticipated real-world event (the presidency of Donald Trump), Studies 1 through 8 necessarily employed convenience samples, taking advantage of previously collected data by following up with participants who had completed previous studies on intergroup attitudes. Study 9 employed stratified sampling. The sample sizes for Studies 10 through 13 were based on power analyses and all sample sizes were preregistered save for Study 13.
Data collection	All data were collected online with participants taking part via their home computers or other devices. Data for all studies except Study 9 (which was conducted independently by the VOTER Study Group) were collected with Qualtrics online survey software (www.qualtrics.com). Researchers had no knowledge of or access to participants' experimental condition information (or any other kind of information) during data collection.
Timing	Data collection spanned from 2014 to 2021. Our Time 1 surveys for Studies 1 through 8 were administered between 2014 and 2015. Our Time 2 surveys for these studies were administered between February and June of 2017. The Time 1 Study 9 (VOTER survey) was administered in December 2011 and the Time 2 survey was administered between November and December of 2016. Studies 10 and 11 were conducted in April of 2018. Study 12 was conducted in March of 2021. Study 13 was conducted in November of 2020.
Data exclusions	To conduct a more conservative test of our hypotheses, we did not exclude any participants from our analyses. All participants who provided data were included in analyses. This plan was preregistered for most studies.
Non-participation	The drop-out rate across our first eight longitudinal studies was 0.8%, and the response rate was 42%. The response rate in longitudinal Study 9 (VOTER survey) was 77%. The dropout rate for our latter four cross-sectional studies was 4.6% (68 out of 1,470)
Randomization	Participants in Studies 12 and 13 were randomly assigned to experimental conditions.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems		Methods	
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Human research participants

Policy information about [studies involving human research participants](#)

Population characteristics

See above.

Recruitment

As noted above, participants for all studies except Study 9 were recruited from Amazon Mechanical Turk. We selected this sample because it provides substantially greater geographic, demographic, and ideological diversity than the student samples used in most psychological research. However, it is possible that Mechanical Turk participants differ from the general population in unidentified ways that might be relevant to the current research (e.g., they may spend more time online and may have particularly polarized attitudes). However, as discussed in the main text, all of our key effects replicated in the nationally representative VOTER survey, and effect sizes between the two samples (Mechanical Turk vs. nationally representative VOTER sample) did not significantly differ from one another. The robustness of these effects in the nationally representative sample provides evidence that these effects generalized beyond Mechanical Turk

Ethics oversight

Cornell University Institutional Review Board

Note that full information on the approval of the study protocol must also be provided in the manuscript.