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# They Might Be a Liar But They're My Liar: Source Evaluation and the Prevalence of Misinformation

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*Even if people acknowledge that misinformation is incorrect after a correction has been presented, their feelings towards the source of the misinformation can remain unchanged. The current study investigated whether participants reduce their support of Republican and Democratic politicians when the prevalence of misinformation disseminated by the politicians appears to be high in comparison to the prevalence of their factual statements. We presented U.S. participants either with (1) equal numbers of false and factual statements from political candidates or (2) disproportionately more false than factual statements. Participants received fact-checks as to whether items were true or false, then rerated both their belief in the statements as well as their feelings towards the candidate. Results indicated that when corrected misinformation was presented alongside equal presentations of affirmed factual statements, participants reduced their belief in the misinformation but did not reduce their feelings towards the politician. However, if there was considerably more misinformation retracted than factual statements affirmed, feelings towards both Republican and Democratic figures were reduced—although the observed effect size was extremely small.*

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**KEY WORDS:** The continued influence effect, misinformation, belief updating, source credibility, fact checking

In the wake of the 2016 presidential election, 88% of Americans reported that fabricated news had caused confusion about basic facts regarding current events (Barthel, Mitchell, & Holcomb, 2016). From the Cambridge Analytica scandal to reports of Russian troll factories (Chappell, 2018; Steward, Arif, & Starbird, 2018), it has been difficult to escape debate about how information can affect political discourse and the problematic nature of a media environment where veracity cannot be guaranteed. Misinformation in the public sphere can cause long-term damage to democratic discourse, not least because reasoning is often influenced by misinformation even after people have been presented with a valid correction (Johnson & Seifert, 1994; Lewandowsky, Ecker, Seifert,

Schwarz, & Cook, 2012; Thorson, 2016). Even if people do update their belief after a correction, they might not similarly update their attitudes about the issue or their opinion of the person who is spreading the misinformation. The present study assesses whether people's feelings towards political figures are affected when a large amount of invalid information is disseminated in comparison to the amount of valid information. In other words, if a politician tends to tell mostly lies, to what extent do their supporters lose faith in them?

Events that influence trust, such as political scandals, often affect people's voting preferences (Funk, 1996). However, political reputation is also surprisingly resilient; more than half of U.S. incumbents who are implicated in scandals are subsequently reelected (Basinger, 2013). Moreover, not all scandals are created equal. For example, a financial scandal such as tax evasion is more likely to permanently diminish feelings towards a political candidate as compared to a moral scandal (such as an extramarital affair; Doherty, Dowling, & Miller, 2014). The continued spreading of inaccurate information, however, differs from a one-time scandal as it is an ongoing violation of the pervasive but tacit assumption that people are generally truth tellers (Grice, 1975). Although people assume that speakers by and large are truthful, they are sensitive to violations of that maxim (Okanda, Asada, Moriguchi, & Itakura, 2015). Regardless of whether a politician is actually lying with intent to deceive or simply making repetitive unintentional errors, it is unclear how forgivable continued falsehoods are in the eyes of voters.

In previous research, Swire, Berinsky, Lewandowsky, and Ecker (2017) found that feelings towards a politician who disseminated misinformation remained unchanged even when participants acknowledged that their favored politician's statements were incorrect. Specifically, Swire et al. asked participants to rate their belief in eight statements that Donald Trump made on the campaign trail, four of which were accurate and four inaccurate. The statements were either attributed to Trump (e.g., "Donald Trump said that vaccines cause autism") or presented without attribution ("Vaccines cause autism"). After inaccurate items were corrected and true items affirmed, participants rerated their belief in those items either immediately or after a week-long delay. Results indicated that even if Trump supporters reduced their belief in misinformation attributed to Trump, they did not change their voting preferences nor feelings towards him.

This null effect, however, could potentially have resulted from participants being presented with true and false statements in equal quantities. While it is unclear a priori why factual statements should "balance out" misinformation, it is possible that a 50/50 split of true and false statements is insufficient to sway supporters' feelings, as it may not sufficiently violate people's expectations of truthfulness. This also could be in accordance with the *tallying heuristic* where people count the number of arguments (for example, pros and cons) and disregard the relative importance of each argument (Bonnefon, Dubois, Fargier, & Leblois, 2008; Gigerenzer, 2004). Perhaps the prevalence of misinformation must be more extreme—that is, the perceived amount or ratio of misinformation in comparison to factual information might have to be greater for falsehoods to influence opinion of the source. Additionally, it may be that participants update their beliefs about the specific items that are corrected, while opinion regarding the *general* amount of misinformation spread by a politician may be more stable. In other words, participants may accept that particular claims are false, but they maintain the perception that the candidate is accurate day to day, enabling them to have stable feelings towards the candidate.

Nyhan, Porter, Reifler, and Wood (2019) conducted a similar study to Swire et al. (2017) and also found that participants who reduced their belief in corrected misinformation did not change their feelings towards Donald Trump. However, unlike Swire et al., Nyhan and colleagues only presented one false (and no true) statement, suggesting that the preservation of support was not due to an equal number of factually accurate statements alongside it. There is additionally evidence to suggest that this phenomenon could extend beyond political figures. With Israeli participants, Nyhan and Zeitzoff (2017) found that corrections successfully reduced individual misperceptions regarding the Israeli-Palestine conflict, but this did not extend to participants' feelings towards the outgroup nor support for the peace process.

A separate question is whether (null) effects of misinformation on feelings and voting preferences are similar on both sides of the political spectrum, as both Swire et al. (2017) and Nyhan et al. (2019) exclusively used claims made by Donald Trump. Political symmetry is important to consider because there is still debate as to whether there are notable cognitive differences between people on opposing sides of the political spectrum. Some argue that these psychological differences are the reason that the rejection of well-established scientific propositions are mainly found on the political right (Jost, 2017; Lewandowsky & Oberauer, 2016). Experimental support for political asymmetry was provided by Ecker and Ang (2018), who investigated whether partisan political attitudes affected how people updated their beliefs after corrections were presented. Ecker and Ang found that retractions of attitude-dissonant misinformation were effective in participants on both sides of the political spectrum, whereas retractions of attitude-congruent misinformation were only effective in left-wing (but not right-wing) participants. In other words, left-wing participants were more willing to reject erroneous information that had supported their worldview than right-wing participants.

However, other researchers argue that identity-protective cognition occurs on both sides of the political spectrum (Kahan, 2013; Kahan, Peters, Dawson, & Slovic, 2017). For example, Washburn and Skitka (2017) tested the propensity of conservatives and liberals to misinterpret scientific claims that conflicted with preexisting beliefs. The authors found that both groups had motivated interpretations of scientific studies and were less likely to discover correct interpretations of the results when they conflicted with participants' attitudes. Additionally, Claassen and Ensley (2016) found no difference between Republicans and Democrats when it came to their concern about politicians using dirty-campaign tricks. There was little change in attitude towards a politician if the respondents were politically aligned with the politician, but participants were highly concerned if the politician came from the opposite side. It is therefore possible that cognitive processes guiding preferences towards politicians are similar regardless of partisanship. Whether correcting misinformation is more likely to reduce feelings towards Republican or Democratic political figures (or whether symmetry will be observed) is yet to be studied empirically.

### *The Current Study*

The current study investigated (1) whether feelings towards politicians are reduced when the prevalence of their misinformation appears to be high in comparison to their factual statements; (2) whether correcting misinformation changes participants' view of a politician's general veracity; and (3) whether left-wing and right-wing partisans update their beliefs and feelings in a similar manner if the statements are from favored (or disfavored) politicians. The current study aimed to explore these questions in the context of modern U.S. electoral politics; to this end, we used statements from Donald Trump and Bernie Sanders.

Our prime dependent variables were participants' belief in misinformation and factual statements, perception of general veracity, and feelings towards Trump and Sanders before and after corrective information was presented. This study thus used a  $2 \times 2 \times 2 \times 2$  between-within design with the within-subjects factor fact-check (pre vs. post presentation of corrections and affirmations), and the between-subjects factor source (Trump vs. Sanders), source support (supporters vs. nonsupporters), and misinformation-to-fact ratio of information (equal number of misinformation and factual statements vs. disproportionately more misinformation than factual statements; these conditions will henceforth be labeled as "equal" vs. "disproportionate").

Each participant viewed statements that were made by one of the politicians, either Sanders or Trump; no participant saw statements from both politicians. Participants rated their feelings towards the politicians and their belief in statements both before and after receiving fact-checks as to why the factual statements were true and misinformation items were false. Participants either viewed four facts (that were affirmed) and four misinformation items (that were corrected) in the equal condition

or one fact and four misinformation items in the disproportionate condition. In all conditions, we additionally measured the perception of Trump's and Sanders' general veracity.

## Method

### *Participants*

Participants were 1,501 U.S. residents recruited through Amazon.com's Mechanical Turk, paid \$1 each in June 2017 to participate in the online study administered using the Qualtrics platform. One participant was removed for not completing the study. The final sample included 719 males, 771 females, and 10 not identifying with either gender, between the ages of 18 and 78 ( $M = 37.55$ ,  $SD = 11.92$ ; eight participants preferred not to provide their age). Participants were considered to be supporters of a politician if they rated the candidate more than 50 on a 0–100 feelings thermometer and were considered nonsupporters if they rated less than 50. If participants responded with 50 exactly, they were considered neutral and excluded from the analyses. Of the 746 participants who were randomly allocated to the Trump condition, there were 205 Trump supporters, 512 nonsupporters, and 29 excluded neutral participants. Of the 754 who were allocated to the Sanders condition, 488 were Sanders supporters, 213 were nonsupporters, and 53 were excluded for being neutral. Sanders supporters were 78% Democrats, and Trump supporters were 77% Republicans. For a full breakdown of support by partisanship, see Table S1 in the online supporting information. See Appendix S1 for a report detailing robustness and generalizability of the supporter and nonsupporter labels.

### *Stimuli*

Four inaccurate and four factual statements that were made by Donald Trump and Bernie Sanders before June 2017 were collected from PolitiFact and independently verified. Corrections and affirmations of equal length were created, and all explicitly linked to a nonpartisan source (such as The Organization for Economic Cooperation and Development). In an identical fashion to Swire et al. (2017), fact-checks consisted of four segments: (1) The initial misinformation or factual claim was repeated; (2) a true/false label was presented; (3) corrections and affirmations two-to-three sentences in length were provided with details as to why the statement was true/false; and (4) the participant was reminded of their initial belief rating (see Table 1 for examples of the misinformation presented and Table S2 and S3 in the online supporting information for all stimuli). The items were presented in a different random order for each participant.

### *Procedure*

Participants first reviewed a consent form approved by the University of Western Australia and Massachusetts Institute of Technology. Participants subsequently rated their feelings towards Donald Trump and Bernie Sanders using a feelings thermometer. This is a common method employed by the American National Elections study. Participants rate the person between 51 and 100 if they feel warm towards the person, 0 and 49 if they do not, and 50 degrees if they were neither particularly warm nor cold towards the person. Participants then read the true/false statements made by either Trump or Sanders and rated each on a 0–10 belief scale. Immediately after each belief rating was made, participants were presented with fact-checks as to why the specific statement was true or false. After fact-checks were presented, participants rerated both their belief in the items and their feelings towards each candidate. Then they were asked “We are next going to ask about the truthfulness of politicians on a day-to-day basis. Out of 100 statements made by the following

**Table 1.** Examples of Trump and Sanders Misinformation and Corresponding Corrections

Condition	Misinformation	Correction
Trump	Donald Trump said that “inner-city crime has reached record levels.”  On a scale between 0 and 10, do you believe Trump’s statement to be true?	Donald Trump said that “inner-city crime has reached record levels.”  <b>This is false</b>  According to the FBI, crimes have been consistently falling in the United States since 1995. Violent crime incidents have roughly halved in cities over 250,000 people between 1995 and 2014. Even in cities like New York, murders have fallen from 2,300 in 1990 to just 350 in 2015.  You previously rated this statement $x$ out of 10 ( $0 = \textit{definitely false}$ , $10 = \textit{definitely true}$ ).
Sanders	Bernie Sanders said that the “2016 US Presidential election had the lowest voter turnout in over 20 years.”  On a scale between 0 and 10, do you believe Sanders’ statement to be true?	Bernie Sanders said that the “2016 US Presidential election had the lowest voter turnout in over 20 years.”  <b>This is false</b>  In 2016, 60.2% of eligible U.S. voters turned out for the presidential election, according to a report by the U.S. Election Project. This was higher than 2012, which had a voter turnout of 58.6%. In fact, 2016 was the third highest voter turnout in 44 years.  You previously rated this statement $x$ out of 10 ( $0 = \textit{definitely false}$ , $10 = \textit{definitely true}$ ).

politicians, how many do you believe to be inaccurate?” Regardless of condition, this question was asked about both Donald Trump and Bernie Sanders. To finish, participants completed demographic and political ideology questions.

## Results

We first present analyses of Trump and Sanders belief scores separately before comparing the belief scores of the two politicians in a combined analysis. As we used real misinformation and factual statements made by Trump and Sanders, the statements in the Trump and Sanders conditions differed. In other words, rather than only changing the names of “Trump” and “Sanders” and presenting the same set of misinformation and facts, the stimuli varied greatly by politician. These differences render it inappropriate to combine the two conditions for the focal analysis. We therefore consider the final analysis that compared the belief scores of the two politicians to be suggestive only.

### Demographics

Trump and Sanders supporter and nonsupporter groups were compared on demographic measures such as age, gender, and education. Regarding age, a one-way ANOVA indicated that Trump supporters were older than nonsupporters,  $F(1,704) = 6.89$ ;  $p = .009$ ;  $MSE = 135.9$ ;  $\eta_p^2 = .01$ , whereas Sanders supporters were significantly younger than nonsupporters,  $F(1,694) = 7.39$ ;  $p = .007$ ;  $MSE = 147.6$ ;  $\eta_p^2 = .01$ . According to a Pearson  $\chi^2$  test, supporters and nonsupporters had

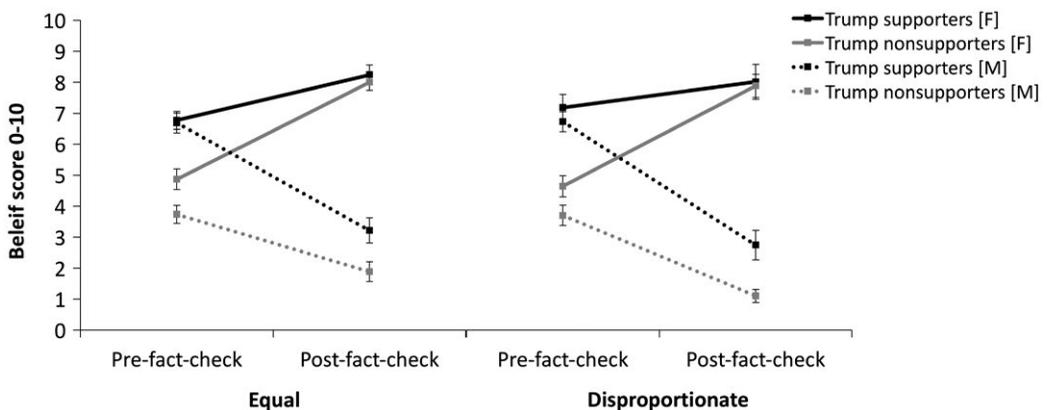
the same gender splits ( $p = .103$  for Trump and  $p = .290$  for Sanders). A one-way ANOVA indicated that Trump supporters were less educated than nonsupporters,  $F(1,1715) = 4.93$ ;  $p = .027$ ;  $MSE = 1.55$ ;  $\eta_p^2 = .007$  (4.05 and 4.28, respectively, on a 6-point scale). Sanders supporters and nonsupporters were equivalent for education,  $p = .381$ . Analyses reported below were conducted without controlling for education and age. However, all effects were replicated in ANCOVAs with age and education covariates as well as covariate interaction terms (unless indicated otherwise).

### Belief Scores

*Trump statements.* As can be seen from Figure 1, prior to the corrections and affirmations, Trump supporters showed substantially greater belief in both the misinformation and the factual statements made by Trump compared to nonsupporters. Additionally, ratings for the misinformation and facts pre-fact-check are closer together for supporters than nonsupporters, signifying that supporters overall differentiated less between fact and fiction. After corrections were presented, nonsupporters increased their belief in the facts to the same level as supporters. Although supporters reduced their belief *more* than nonsupporters (as their pre-fact-check scores were higher), supporters did not reduce their belief in the misinformation to the same level as nonsupporters. In other words, Trump supporters showed stronger belief in the corrected misinformation relative to nonsupporters. No substantial differences existed between the equal and disproportionate conditions.

We first performed a  $2 \times 2 \times 2$  between-within ANOVA on the factual belief scores, with the within-subjects factor fact-check (pre vs. post) and the between-subjects factor support (supporters vs. nonsupporters) and ratio (equal vs. disproportionate). The main effect of fact-check,  $F(1,713) = 254.02$ ;  $p < .001$ ;  $MSE = 5.37$ ;  $\eta_p^2 = .26$ , had a large effect size, indicating that affirmations were very effective at increasing belief. A main effect of support,  $F(1,713) = 63.89$ ;  $p < .001$ ;  $MSE = 6.63$ ;  $\eta_p^2 = .08$ , indicated that supporters believed factual items more than nonsupporters. However, this main effect was qualified by an interaction of fact-check  $\times$  support,  $F(1,713) = 55.93$ ;  $p < .001$ ;  $MSE = 5.37$ ;  $\eta_p^2 = .07$ , indicating that supporters' and nonsupporters' beliefs differed more pre-fact-check than post-fact-check. In fact, a post hoc test found that supporters' and nonsupporters' post-fact-check belief scores (collapsed over ratio conditions) did not differ,  $F < 1$ ;  $p = .361$ .

Next, we performed a  $2 \times 2 \times 2$  between-within ANOVA on the misinformation belief scores, with the within-subjects factor fact-check (pre vs. post) and the between-subjects factor support (supporters vs. nonsupporters) and ratio (equal vs. disproportionate). Similar to the facts, there was a main effect of fact-check (indicating that retractions successfully decreased belief in misinformation)



**Figure 1.** Pre- and post-fact-check belief in Trump's statements when the prevalence of misinformation is equal or disproportionate in comparison to factual statements presented. M = Misinformation F = Facts.

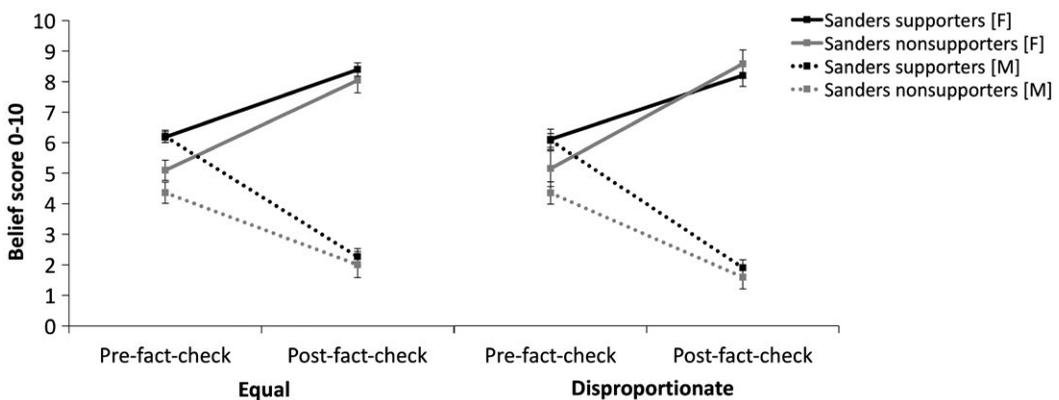
and support (indicating that supporters believed misinformation items more than nonsupporters);  $F(1,713) = 806.18; p < .001; MSE = 3.20; \eta_p^2 = .53$ , and  $F(1,713) = 209.11; p < .001; MSE = 6.96; \eta_p^2 = .23$ , respectively. There was additionally a main effect of ratio,  $F(1,713) = 4.37; p = .037; MSE = 6.96; \eta_p^2 = .006$ , indicating that participants who were presented with four items of misinformation and only one fact rated the misinformation items as being less believable. (Note that when controlling for age the main effect of ratio became nonsignificant,  $p = .070$ ).

There were also two interactions. The fact-check  $\times$  ratio interaction,  $F(1,713) = 8.69; p = .003; MSE = 3.20; \eta_p^2 = .01$ , indicated that the ratio manipulation influenced misinformation belief mainly post-fact-check. The fact-check  $\times$  support interaction,  $F(1,713) = 50.89; p < .001; MSE = 3.20; \eta_p^2 = .07$ , indicated that supporters and nonsupporters had more disparate belief pre-fact-check than after the corrections had been presented. (However, in contrast to the fact-belief analysis, supporters' and nonsupporters' level of belief in misinformation remained significantly different post-fact-check,  $F(1,713) = 75.50, p < .001$ ).

Finally, as is apparent from Figure 1, nonsupporters were better than supporters at discerning fact from fiction prior to fact-checks being presented. This was confirmed with a  $2 \times 2$  between-within ANOVA on the pre-fact-check belief scores, with the within-subjects factor type of item (misinformation vs. factual statements) and the between-subjects factor support (supporters vs. nonsupporters), which yielded a significant interaction,  $F(1,715) = 17.03; p < .001; MSE = 2.53; \eta_p^2 = .02$ .

*Sanders statements.* We next analyzed the data from those participants who were presented with Sanders statements. As can be seen in Figure 2, supporters initially believed in both misinformation and factual statements from Sanders substantially more than nonsupporters. Similar to the Trump condition, supporters of Sanders were also worse at discerning pre-fact-check fact from fiction than nonsupporters. However, post-fact-check belief for factual and misinformation items was equivalent for both Sanders supporters and nonsupporters. This differs from the Trump condition, where supporters and nonsupporters maintained disagreement regarding the veracity of misinformation items post-correction. Again, there was little difference between the equal and disproportionate ratio conditions.

The  $2 \times 2 \times 2$  between-within ANOVA on the fact-belief scores found main effects of fact-check,  $F(1,697) = 457.71; p < .001; MSE = 4.65; \eta_p^2 = .40$ , and support,  $F(1,697) = 11.29; p < .001; MSE = 6.73; \eta_p^2 = .02$ . These were qualified by an interaction of fact-check  $\times$  support,  $F(1,697) = 17.06; p < .001; MSE = 4.65; \eta_p^2 = .02$ , indicating that supporters and nonsupporters differed in fact belief pre-fact-check, but not post-fact-check. This finding was confirmed by a post hoc test contrasting supporters' and nonsupporters' fact belief post-fact-check (collapsed over ratio conditions),  $p = .96$ .



**Figure 2.** Pre- and post-fact-check belief in Sanders' statements when the prevalence of misinformation is equal or disproportionate in comparison to factual statements presented. M = Misinformation F = Facts.

The  $2 \times 2 \times 2$  between-within ANOVA on the misinformation-belief scores yielded main effects of fact-check,  $F(1,697) = 1147.67$ ;  $p < .001$ ;  $MSE = 2.83$ ;  $\eta_p^2 = .62$ , support,  $F(1,697) = 61.02$ ;  $p < .001$ ;  $MSE = 5.21$ ;  $\eta_p^2 = .08$ , and again an interaction of fact-check  $\times$  support,  $F(1,697) = 59.32$ ;  $p < .001$ ;  $MSE = 2.83$ ;  $\eta_p^2 = .08$ . The interaction reflected that supporters and nonsupporters held more disparate misinformation beliefs prior to the corrections than after.

Finally, we confirmed the trend that can be seen from Figure 2, namely that nonsupporters were better than supporters at discerning fact from fiction prior to fact-checks being presented. A  $2 \times 2$  between-within ANOVA on the pre-fact-check belief scores, with the within-subjects factor type of item and the between-subjects factor support, found a significant interaction,  $F(1,699) = 13.59$ ;  $p < .001$ ;  $MSE = 3.18$ ;  $\eta_p^2 = .02$ .

*Comparing Trump and Sanders conditions.* We compared the belief scores across the two source conditions (i.e., across Trump and Sanders groups). We first ran a  $2 \times 2 \times 2 \times 2$  between-within ANOVA on the fact-belief scores, with the within-subjects factor fact-check (pre vs. post), and the between-subjects factor support (supporters vs. nonsupporters), ratio (equal vs. disproportionate), and source (Trump vs. Sanders). While there was no main effect of source, there was a three-way interaction of fact-check  $\times$  support  $\times$  source,  $F(1,1410) = 7.25$ ;  $p = .007$ ;  $MSE = 5.0$ ;  $\eta_p^2 = .005$ . This interaction indicated that Trump supporters perceived Trump's true statements to be less believable than Sanders' supporters found Sanders' true statements pre-fact-check, although supporters and nonsupporters of both politicians held similar beliefs post-fact-check.

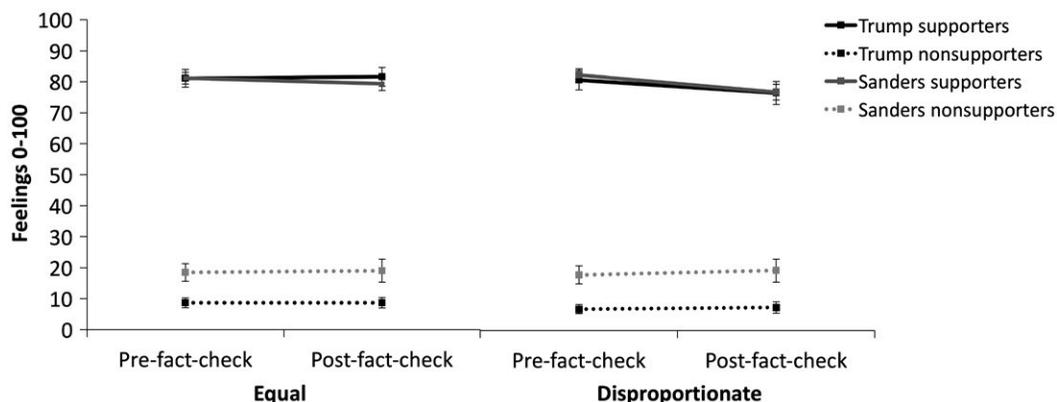
Next, a  $2 \times 2 \times 2 \times 2$  between-within ANOVA was performed on the misinformation-belief scores, with the within-subjects factor fact-check (pre vs. post), and the between-subjects factor support (supporters vs. nonsupporters), ratio (equal vs. disproportionate), and source (Trump vs. Sanders). Again, there was no main effect of source, but there was an interaction of support  $\times$  source,  $F(1,1410) = 34.55$ ;  $p < .001$ ;  $MSE = 6.10$ ;  $\eta_p^2 = .02$ . This interaction indicated that Trump supporters consistently rated Trump misinformation more believable than Sanders supporters rated Sanders misinformation, but Trump nonsupporters found Trump misinformation less believable than Sanders nonsupporters found Sanders misinformation. In other words, there was stronger polarization regarding misinformation beliefs between supporters and nonsupporters in the case of Trump compared to Sanders.

Finally, in order to confirm the trend that Trump supporters and nonsupporters maintained more disagreement regarding the veracity of misinformation items postcorrection than Sanders supporters and nonsupporters, we ran a  $2 \times 2$  factorial ANOVA with the between-subjects factor support (supporters vs. nonsupporters) and source (Trump vs. Sanders). This analysis yielded a significant interaction of support  $\times$  source,  $F(1,1414) = 24.04$ ;  $p < .001$ ;  $MSE = 4.5$ ;  $\eta_p^2 = .02$ .

### Feelings Scores

As can be seen in Figure 3, supporters of both Trump and Sanders reduced their feelings towards both candidates slightly (but significantly) more in the disproportionate condition than in the equal condition, where there was no change in feelings from pre- to post-fact-check ratings. Nonsupporters appear to be at floor and did not reduce their feelings towards either politician further.

A  $2 \times 2 \times 2 \times 2$  between-within ANOVA was performed on the feelings scores, with the within-subjects factor fact-check (pre vs. post), and the between-subjects factor support (supporters vs. nonsupporters), ratio (equal vs. disproportionate), and source (Trump vs. Sanders). The main effects and interactions are presented in Table S4 in the online supporting information. The most interesting outcome was the three-way interaction between fact-check  $\times$  support  $\times$  ratio, indicating that support reduced after fact-checks were presented to participants, but only for supporters in the disproportionate condition. It should be noted that the reduction was modest, and the observed effect size ( $\eta_p^2 = .01$ ) was small. To illustrate, Trump supporters' precorrection scores were 80.39, and they



**Figure 3.** Pre- and post-fact-check feelings towards Trump and Sanders when the ratio of misinformation to facts was equal or disproportionate.

reduced to 76.63, and Sanders supporters' precorrection scores were 82.46, and they reduced to 76.89 postcorrection.

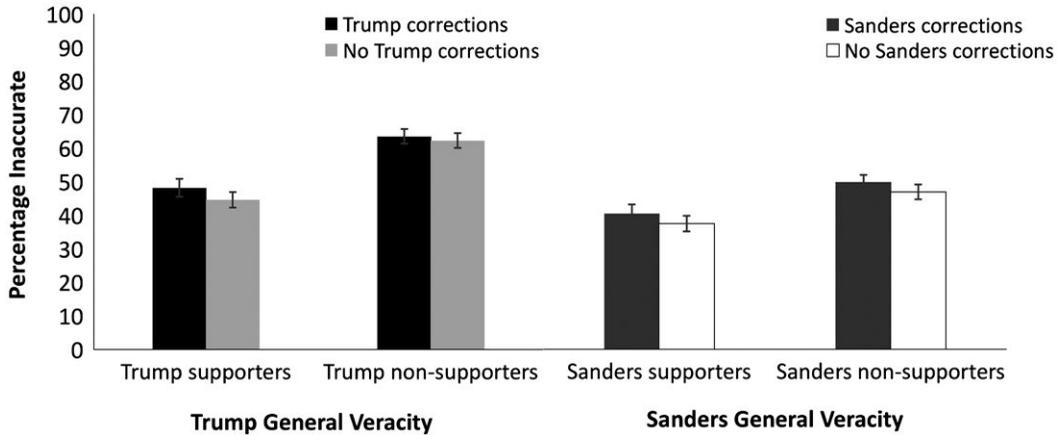
Finally, in a similar manner to Swire et al. (2017), we computed correlations between misinformation-belief change and feelings change. This allowed us to identify whether those decreasing their belief in the misinformation were the same individuals who were decreasing their feelings towards the politicians. There was no correlation between misinformation belief-change and feelings change in the equal condition, ( $r = .031, p = .390$ ), but a small correlation in the disproportionate condition ( $r = .09, p = .013$ ). Although significant, the correlation was negligible and explained less than 1% of the variance. Fact-belief change was also uncorrelated with feelings change (at  $p = .543$  for equal ratio and  $p = .170$  for disproportionate conditions).

### General Veracity

We next investigated whether our fact-checks changed participants' perception of politicians' general veracity, viz. the perceived percentage of inaccurate information that politicians spread. We thus analyzed responses to an item relating to the general veracity of the politicians: "Out of 100 statements made by the following politicians (Donald Trump/Bernie Sanders), how many do you believe to be inaccurate?" We asked all participants, regardless of condition, these general veracity questions and all participants to indicate their feelings towards both Donald Trump and Bernie Sanders. This allowed us to compare those who had viewed repetitive reminders that Trump/Sanders makes inaccurate statements with those who viewed no fact-checks for that politician. For example, we can compare Trump supporters and nonsupporters in the Trump condition (who saw Trump fact-checks), with those in the Sanders condition (who saw no Trump fact-checks).

Neither Trump nor Sanders supporters (or nonsupporters) significantly increased their estimates of inaccuracies if they were in conditions that highlighted fact-checks. We first analyzed estimates of Trump's general veracity, comparing participants in the Trump conditions (who saw Trump fact-checks) with those in the Sanders conditions (who saw no Trump fact-checks), as shown in Figure 4. For interpretability, we do not include the ratio factor in the current analysis, as there were no ratio main effects or interactions (see S5 in the online supporting information for the analysis including the ratio factor).

A  $2 \times 2$  factorial ANOVA on Trump percentage-inaccurate scores, with factors Trump support (supporters vs. nonsupporters) and source (Trump vs. Sanders), revealed a significant main effect of



**Figure 4.** Perceived inaccuracy of politicians by supporters and nonsupporters who viewed or did not view corrections to politicians' misinformation.

Trump support,  $F(1,1440) = 70.65$ ;  $p < .001$ ;  $MSE = 1096$ ;  $\eta_p^2 = .05$ . However, source remained non-significant,  $F(1,1440) = 1.50$ ,  $p = .22$ , indicating that estimates of Trump's general veracity remained equivalent, regardless of whether or not participants viewed corrections of Trump's misinformation.

We next analyzed estimates of Sanders' general veracity, comparing participants in the Sanders conditions (who saw Sanders fact-checks) with those in the Trump conditions (who saw no Sanders fact-checks). A  $2 \times 2$  factorial ANOVA on Sanders percentage-inaccurate scores, with factors Sanders support (supporters vs. nonsupporters) and source (Trump vs. Sanders). There was a main effect of Sanders support,  $F(1,1389) = 30.51$ ;  $p < .001$ ;  $MSE = 839$ ;  $\eta_p^2 = .02$ . The source main effect was nonsignificant,  $F(1,1389) = 3.22$ ,  $p = .073$ .

## Discussion

The current study had three primary aims. First, we aimed to investigate whether feelings towards favored political candidates were reduced when many inaccurate statements were corrected and only a single factual statement affirmed, as opposed to a "balanced" presentation of equal numbers of false and factual statements. In a clear replication of Swire et al. (2017), supporters of the politicians reduced their belief in misinformation once corrected, yet they did not reduce their feelings towards the political figure if misinformation was presented alongside an equal number of facts. There was, however, a slight reduction in feelings if more misinformation was corrected than factual statements affirmed. The underlying mechanisms for why people do not necessarily mind if politicians disseminate falsehoods are intriguing. Hahl, Kim, and Zuckerman Sivan (2018) posit that a "lying demagogue" can maintain authentic appeal, particularly if the lie is common knowledge (for example, the size of the crowd at Trump's inauguration) and if supporters see themselves as ignored by the political establishment. Hahl and colleagues argue that a politician's willingness to be regarded as a pariah by the establishment and flout the norms of honesty only increases perceived authenticity among supporters. Alternatively, people may perceive their preferred candidate's false statements as unintentional errors rather than a deliberate intent to deceive. It is possible that being perceived as inaccurate is less costly than being perceived to be dishonest.

Second, we aimed to explore whether findings were symmetrical across both sides of the political spectrum. The data generally point to symmetrical behavior across the political divide. Both the Trump and Sanders conditions yielded similar trends, with supporters reducing feelings towards the respective politician slightly in the disproportionate condition but not in the equal condition. This is particularly interesting given that fact-checking sites consistently acknowledge that Donald Trump makes more false statements than other politicians including Bernie Sanders (Politifact 2018a, 2018b). Another finding demonstrating political symmetry is that nonsupporters of both candidates were initially better able to discern fact from fiction than supporters. This may reflect that liking a politician has the unfortunate side effect of blinding us to their falsehoods. The principal difference between the Sanders and Trump conditions was that supporters and nonsupporters of Sanders reported equally low belief in misinformation after it had been corrected, whereas this was not the case for the Trump condition. Supporters of Trump believed significantly more in Trump misinformation in comparison to nonsupporters, even after corrections were presented. It may be that Trump supporters are saturated by corrections in the media and some have a protective habituation to updating their belief (Koch, 2017).

Our final aim was to examine whether correcting misinformation changed participants' view of a politician's general veracity. We found that participants did not shift their perceived general veracity in accordance with the number of corrections they received during the experiment. This perhaps gives us a clue as to why feelings towards politicians did not shift much, if at all, when corrections were encountered in the experiment. People may be poor at keeping a running tally of inaccuracies versus truthful statements, or alternatively, are poor at integrating new information (in this case the fact-checks) into their base rate. This could perhaps be addressed practically by live fact-checking of political debates, with clear and salient displays of the number of total inaccuracies to help voters integrate the information into their preferences. This approach would differ from the criticized technique of broadcasting subjective "voter satisfaction" ratings, as it would instead display fact-checking experts' appraisal of claims during a fixed time period (Davis, Bowers, & Memon, 2011).

We also found that the estimated general veracity was extremely low for all politicians, suggesting that people in the United States have an expectation that politicians lie. The "lying politician" has long been a cliché, and in the most recent U.S. Gallup Poll members of congress were among the lowest professions for trustworthiness, with only 11% of respondents rating them as high or very high in integrity (Gallup, 2017). Future research should investigate how inaccurate claims impact professionals that are considered more trustworthy. For example, if a medical professional or scientist (often ranked at the top of such trustworthiness polls) tells falsehoods, perhaps their likeability would indeed decrease more dramatically. In support of this, Tormala, Brinol, and Petty (2006) found that when high-credibility sources shared weak arguments, they fell significantly more in favorability than low-credibility sources.

It is interesting to note that a recent study of Australian voters did find a sizable reduction in feelings towards Australian politicians when participants were presented with disproportionately more misinformation than factual statements. Aird, Ecker, Swire, Berinsky, and Lewandowsky (2018) closely replicated the present study in an Australian population. Thus, instead of Trump and Sanders, the study used statements made by the Australian leaders of the left-wing Labor party (Bill Shorten) and right-wing Liberal party (Malcolm Turnbull). In the equal condition, there was no shift of feelings on either side of the political spectrum, again replicating Swire et al. (2017). However, there was a comparably large reduction in feelings in the disproportionate condition for participants on both the left and the right. The effect size of the reduction in feelings was ten times greater than found in the current article, and six times greater if focusing on the disproportionate condition alone.

This indicates that veracity sometimes matters to voters and that the cultural context may determine people's expectations of truthfulness among politicians and how they respond to lies.<sup>1</sup>

One limitation of the current study is that participants received a different number of statements in each ratio condition; those in the equal condition received eight statements and those in the disproportionate only received five statements.

In conclusion, participants on both sides of the political spectrum updated their beliefs when presented with evidence, which is encouraging for the role of factual information in political discourse. Perhaps one benefit to the growing uncertainty regarding the veracity of information is that fact-checking websites are fast becoming an integral part of a well-balanced news diet (Graves, Nyhan, & Reifler, 2015). Additionally, the fact that disproportionate presentations of misinformation did (slightly) impact feelings towards both candidates is positive, as reminders of reputational risk do help politicians to be more truthful (Nyhan & Reifler, 2015). However, the small effect size must make us question veracity's place in contemporary U.S. democracy. If people already perceived a politician to be likeable, the practical implications of fact-checking such as reduction of support appear to be limited, at least in the United States. The possibility that the link between misinformation correction and source evaluation is culturally dependent is intriguing and certainly an avenue for future research.

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### REFERENCES

- Aird, M. J., Ecker, U. K., Swire, B., Berinsky, A. J., & Lewandowsky, S. (2018). Does truth matter to voters? The effects of correcting political misinformation in an Australian sample. *Royal Society Open Science*, 5(12), 180593.
- Barthel, M., Mitchell, A., & Holcomb, J. (2016). Many Americans believe fake news is sowing confusion. *Pew Research Center*, 15, 12.
- Basinger, S. J. (2013). Scandals and congressional elections in the post-Watergate era. *Political Research Quarterly*, 66(2), 385–398.
- Bergan, D. E., Gerber, A. S., Green, D. P., & Panagopoulos, C. (2005). Grassroots mobilization and voter turnout in 2004. *Public Opinion Quarterly*, 69(5), 760–777.

<sup>1</sup>Although we cannot be certain of the reasons for the differences in outcome between the two studies, we suggest that feelings may only reduce if participants trust politicians to give accurate information to begin with. The OECD (2017) reported that confidence and trust in the national government was 45% in Australia but only 30% in the United States. If Australians trust government more, they may be more disappointed if politicians tell falsehoods. Second, preferential voting has pushed Australian politics towards the center in comparison to the polarized nature of current U.S. politics, where the two parties advocate for very different policies (Reilly, 2016). It is possible that U.S. citizens are more likely to still report liking their favored politician despite shortcomings, as the policy differences between them and other political figures are comparatively stark (and their dislike towards those on the opposite side of the political spectrum notably greater). Finally, one major difference between the political systems is that voting is compulsory in Australia, so perhaps Australian citizens are more accustomed to reducing feelings to show disdain, as simply not voting is not an option. Given that U.S. elections are currently decided over who can mobilize their members rather than persuading independents (Bergan, Gerber, Green, & Panagopoulos, 2005), motivation to go to the polls could be important to measure. It must be noted that there are many other contextual differences between the United States and Australian studies (for example, differences between the samples, stimuli, politicians' reputations, attitudes toward fact-checking, etc.), and teasing apart the reasons for why these findings were observed is an avenue for future research.

- Bonnefon, J. F., Dubois, D., Fargier, H., & Leblois, S. (2008). Qualitative heuristics for balancing the pros and cons. *Theory and Decision*, 65(1), 71–95.
- Chappell, B. (2018). How to check if your Facebook data was used by Cambridge Analytica. *NPR*. Retrieved from <https://www.npr.org/sections/thetwo-way/2018/04/10/601163176/>
- Claassen, R. L., & Ensley, M. J. (2016). Motivated reasoning and yard-sign-stealing partisans: Mine is a likable rogue, yours is a degenerate criminal. *Political Behavior*, 38(2), 317–335.
- Davis, C. J., Bowers, J. S., & Memon, A. (2011). Social influence in televised election debates: A potential distortion of democracy. *PLoS One*, 6(3), e18154.
- Doherty, D., Dowling, C. M., & Miller, M. G. (2014). Does time heal all wounds? Sex scandals, tax evasion, and the passage of time. *PS: Political Science & Politics*, 47(2), 357–366.
- Ecker, U. K., & Ang, L. C. (2018). Political attitudes and the processing of misinformation corrections. *Political Psychology*, 40(2), 241–60.
- Funk, C. L. (1996). The impact of scandal on candidate evaluations: An experimental test of the role of candidate traits. *Political Behavior*, 18(1), 1–24.
- Gallup. (2017). Honesty/ethics in professions. Retrieved from <https://news.gallup.com/poll/1654/honesty-ethics-professions.aspx>
- Gigerenzer, G. (2004). Fast and frugal heuristics: The tools of bounded rationality. *Blackwell Handbook of Judgment and Decision Making*, 62, 88.
- Graves, L., Nyhan, B., & Reifler, J. (2015). New studies on political fact-checking: Growing, influential; but less popular among GOP readers. American Press Institute. Retrieved from <https://www.americanpressinstitute.org/fact-checking-project/new-research-on-political-fact-checking-growing-and-influential-but-partisanship-is-a-factor/>
- Grice, H. P. (1975). Logic and conversation. In P. Cole, & J. L. Morgan (Eds.), *Syntax and semantics, speech acts* (Vol. 3, pp. 41–58). New York, NY: Academic Press.
- Hahl, O., Kim, M., & Zuckerman Sivan, E. W. (2018). The authentic appeal of the lying demagogue: Proclaiming the deeper truth about political illegitimacy. *American Sociological Review*, 83(1), 1–33. Retrieved from <http://www.asanet.org/sites/default/files/attach/journals/feb18asrfeature.pdf>
- Johnson, H. M., & Seifert, C. M. (1994). Sources of the continued influence effect: When misinformation in memory affects later inferences. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 20(6), 1420–1436.
- Jost, J. T. (2017). Ideological asymmetries and the essence of political psychology. *Political Psychology*, 38(2), 167–208.
- Kahan, D. M. (2013). Ideology, motivated reasoning, and cognitive reflection. *Judgment and Decision Making*, 1(1), 407–424.
- Kahan, D. M., Peters, E., Dawson, E. C., & Slovic, P. (2017). Motivated numeracy and enlightened self-government. *Behavioural Public Policy*, 8(1), 54–86.
- Koch, T. (2017). Again and again (and again): A repetition-frequency-model of persuasive communication. *SCM Studies in Communication and Media*, 6(3), 218–239.
- Lewandowsky, S., & Oberauer, K. (2016). Motivated rejection of science. *Current Directions in Psychological Science*, 25(4), 217–222.
- Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. *Psychological Science in the Public Interest*, 13(3), 106–131.
- Nyhan, B., Porter, E., Reifler, J., & Wood, T. J. (2019). Taking fact-checks literally but not seriously? The effects of journalistic fact-checking on factual beliefs and candidate favorability. *Political Behavior*. Retrieved from <https://www.springer-professional.de/en/taking-fact-checks-literally-but-not-seriously-the-effects-of-jo/16409994>
- Nyhan, B., & Reifler, J. (2015). The effect of fact-checking on elites: A field experiment on us state legislators. *American Journal of Political Science*, 59(3), 628–640.
- Nyhan, B., & Zeitzoff, T. (2017). Fighting the past: Perceptions of control, historical misperceptions, and corrective information in the Israeli-Palestinian conflict. *Political Psychology*, 39(3), 611–631.
- OECD. (2017). *Government at a glance 2017*. OECD. Retrieved from <http://www.oecd.org/gov/government-at-a-glance-22214399.htm>
- Okanda, M., Asada, K., Moriguchi, Y., & Itakura, S. (2015). Understanding violations of Gricean maxims in preschoolers and adults. *Frontiers in Psychology*, 6, 901. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2015.00901/full>
- Politifact. (2018a). Bernie Sander’s file. Retrieved from <http://www.politifact.com/personalities/bernie-s/>
- Politifact. (2018b). Donald Trump’s file. Retrieved from <http://www.politifact.com/personalities/donald-trump/>
- Reilly, B. (2016). Democratic design and democratic reform: The case of Australia. *Taiwan Journal of Democracy*, 12(2), 1–16.

- Steward, L. G., Arif, A., & Starbird, K. (2018). *Examining trolls and polarization with a retweet network*. *International Conference on Web Search and Data Mining: Workshop on Misinformation and Misbehavior Mining on the Web*. Marina Del Rey, CA.
- Swire, B., Berinsky, A. J., Lewandowsky, S., & Ecker, U. K. (2017). Processing political misinformation: Comprehending the Trump phenomenon. *Royal Society Open Science*, 4(3), 160802. <https://doi.org/10.1098/rsos.160802>
- Thorson, E. (2016). Belief echoes: The persistent effects of corrected misinformation. *Political Communication*, 33(3), 460–480.
- Tormala, Z. L., Brinol, P., & Petty, R. E. (2006). When credibility attacks: The reverse impact of source credibility on persuasion. *Journal of Experimental Social Psychology*, 42(5), 684–691.
- Washburn, A. N., & Skitka, L. J. (2017). Science denial across the political divide: Liberals and conservatives are similarly motivated to deny attitude-inconsistent science. *Social Psychological and Personality Science*, 9(8), 972–980.

### Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's web site:

**Appendix S1.** Robustness and Generalizability of Trump/Sanders Supporters and Nonsupporters

**Table S1.** Number of Trump/Sanders Supporters by Partisanship

**Table S2.** Trump Items and Their Corresponding Explanations

**Table S3.** Demographic Questions

**Table S4.**  $F$ ,  $p$ , and  $\eta_p^2$  Values of Between-Within ANOVA of Pre- and Post-Fact-Check Feelings Scores

**Figure S5.** Perceived Inaccuracy of Politicians by Supporters and Nonsupporters Who Viewed or Did Not View Corrections to Politicians' Misinformation by Ratio