Supplemental Materials for

Poison Parasite Counter: Turning Frequently-Encountered Duplicitous Communications into Self-Negating Memory Retrieval Cues

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Materials and Methods

Main Studies

Study 1

Overview. Study 1 sought to test whether inserting strong counter-messages into a rival political ad subsequently undermines the rival communication relative to presenting the same counter-messages in a traditional, visually independent fashion. This, and all studies included in this paper, were approved by the Harvard University Committee on the Use of Human Subjects (IRB17-1891).

Sample. Participants were 297 Amazon Mechanical Turk workers (mean age = 38 years, *SD* = 11.9; 50% female) who received $1.00 compensation for completing the survey. In order to participate, workers had to (a) have a HIT (*27*) approval rating greater than or equal to 95%; (b) have at least 1,000 HITs approved; and (c) be located in the United States. We excluded all workers who had participated in a previous pilot survey, as well 29 workers who accepted the HIT but failed the attention check at the beginning of the survey.

Procedures. All workers who consented to participate and passed the attention check were randomly assigned to one of two conditions: Traditional Response or Poison Parasite Counter (PPC). Participants were not aware of their condition assignment. At the beginning of the survey, all participants were told that they would see a series of news article excerpts and ads for fictional political candidates, and were asked to read each carefully in order to answer questions that would follow.

In the approximately 15-minute long survey, participants saw a total of 10 political ads for five fictional candidates—one pro and one counter ad for each candidate. Each ad was shown on a separate page, and participants had to wait at least five seconds to advance from one page to the next. All ads were interspersed with four excerpts from current, non-partisan news articles. Filler questions were asked after every excerpt and ad, designed to distract participants from the focus of the study and interfere with memory processes.

The rival candidate was Walter McKinley, a Congressional candidate running on a platform of job creation. Against a backdrop of the American flag, McKinley's ad claimed that he had 10 years of experience as a city councilor, helped create more than 5,000 jobs, and partnered with the local school district to expand vocational training and job-readiness programs. Participants who were randomly assigned to the PPC condition were shown a response ad that directly challenged the truthfulness of McKinley's claims on an exact replica of the rival ad (see Figure S1). In the Traditional Response condition, participants viewed a response ad that did not look like or link itself to the rival McKinley ad, but included the exact same counter-messages as the PPC ad. In the PPC ad, the counter-messages were shown against a backdrop of the rival ad and inserted in-line with the statements they were intended to challenge, while in the Traditional Response condition, the counter-messages were presented as stand-alone statements on a different background.

All participants saw the rival Walter McKinley ad on the second screen, and the PPC or Traditional Response ad on the eighth. After six more ads and article excerpts (~10 min),

participants were told that they would be shown one of the candidate ads from the first section, chosen arbitrarily. All participants were shown the rival McKinley ad and were subsequently asked:

1. If Walter McKinley was running in your state, how likely is it that you would vote for him?
2. How honest do you think Walter McKinley is?

Analysis and Results. We hypothesized that by directly challenging the claims in the rival ad and creating mnemonic links between the response ad and the rival ad, the PPC procedure would result in recurring, cue-based recall of the counter-messages whenever the rival's ad was encountered, making the counterargument resistant to normal memory degrading processes. This would, in turn, lead participants to view McKinley as more dishonest and reduce their willingness to vote for him compared to a traditionally presented response ad.

Our primary outcomes of interest were participants' perceptions of Walter McKinley's honesty and their reported likelihood of voting for him. Both outcomes were ranked on a five-point scale, from extremely dishonest to extremely honest and extremely unlikely to extremely likely, respectively. To facilitate comparability across studies and outcomes, we also standardize each measure. Using a standard OLS model, we regressed each outcome on an indicator for treatment assignment, as well as participants' gender, age, party affiliation (Democrat, Republican, Independent, or Other), and an indicator for whether they were college-educated.

As predicted, exposure to the PPC ad subsequently reduced participants' reported likelihood of voting for McKinley by 0.61 SD ($SE = 0.11$, $p < .001$; Table S1) relative to participants who had seen the Traditional Response ad. This is equivalent to a 0.62 point reduction in likelihood of voting on a 5-point scale (Table S1). In a similar pattern, participants who saw the PPC ad rated McKinley as 0.70 SD ($SE = 0.11$, $p < .001$) or 0.59 points ($SE = 0.09$, $p < .001$) less honest than participants in the Traditional Response condition (Table S1).

Table S2 shows results from a bootstrapped mediation analysis. The indirect effect of assignment to the PPC condition that passes through honesty is -0.5 points ($SE = 0.08$, $p < .001$). In other words, perception of McKinley's honesty mediates approximately 46% percent of the total effect of assignment to the PPC condition on voting preference ($z = 33.25$, $p < .001$). This supports our hypothesis that highlighting the rival's dishonesty and duplicitous nature via the PPC procedure produces a special kind of "poison" that further undermines the rival's communication.

Study 2

Overview. Study 2, pre-registered on OSF, tested whether the effect of the PPC procedure found in Study 1 was driven by associative memory processes, as hypothesized, or was instead driven by underlying superiority of the ad itself.

Sample. A total of 713 Amazon Mechanical Turk workers (mean age = 36 years, $SD = 10.8$; 52% female) who received $1.20 compensation for completing the survey. In order to participate, workers had to (a) have a HIT (*25*) approval rating greater than or equal to 95%; (b) have at least 500 HITs approved; and (c) be located in the United States. We excluded all

workers who had participated in a previous pilot survey, as well 72 workers who accepted the HIT but failed the attention check at the beginning of the survey.

Procedures. The materials and content for this study were identical to those used in Study 1 (Figure S1), with Walter McKinley being the focal candidate. In a factorial design, all workers who consented to participate and passed the attention check were randomly assigned to one of four conditions:

		Outcome time	
		Immediate	*End*
Response ad type	*Traditional Response*	Condition 1	Condition 3
	PPC	Condition 2	Condition 4

In the Immediate Outcome conditions, participants answered the two dependent variable questions immediately after seeing the PPC or Traditional Response ad. In the End Outcome conditions, participants answered the two dependent variable questions at the end of the 15-minute long survey, after being re-exposed to the rival McKinley ad. Participants were not aware of their condition assignment.

As in Study 1, all participants were told that they would see a series of ads for fictional political candidates and were asked to read each carefully in order to answer questions that would follow. In a 15-minute long survey, participants saw a total of 10 political ads for five fictional candidates—one pro and one counter ad for each candidate. Each ad was shown on a separate page, and participants had to wait at least five seconds to advance from one page to the next. All ads were interspersed with four excerpts from current, non-partisan news articles. Filler questions were asked after every excerpt and ad, designed to distract participants from the focus of the study and interfere with memory processes.

Immediately after viewing the PPC or Traditional Response ad, which was the eighth screen, participants were either asked two outcome questions (Conditions 1 and 2), or one recall question and a filler question (Conditions 3 and 4).

Again, we asked two outcome questions:

1. If Walter McKinley was running in your state, how likely is it that you would vote for him?
2. How honest do you think Walter McKinley is?

For Conditions 3 and 4, we asked the following recall and filler questions immediately after viewing the PPC or Traditional Response ad:

1. [Recall] Which of the following was NOT mentioned on the previous ad?
    a. School district
    b. Corruption
    c. Raised taxes
    d. Out-of-state jobs

2. [Filler] Please rank the following policy areas in order of importance to you, with 1 being the most important and 5 being the least important.
    a. Immigration
    b. National security
    c. Military spending
    d. National debt
    e. International diplomacy

At the end of the survey, participants in the End Outcome conditions (Conditions 3 and 4) were again shown the rival McKinley ad and asked the same two outcome questions.

Analysis and Results. In a pre-registered analysis, (see osf.io/aps8h; *28*), we hypothesized that (1) there would be no difference across conditions in reported likelihood of voting for McKinley or in perceptions of his honesty when the two outcome questions were asked immediately after viewing the Traditional Response or PPC ad; and (2) relative to the Traditional Response ad, the PPC procedure would significantly reduce both likelihood of voting for McKinley and perceptions of his honesty when the outcome questions were asked at the end of the survey, after a second exposure to the rival McKinley ad. If the PPC and Traditional Response ads are of similar quality, immediate reactions to McKinley should be the same across conditions. Yet, when participants are instead asked the outcome questions at the end of the survey—about 10 minutes after viewing the PPC or Traditional Response ad—interference and time should lead to memory decay of the counter-messages. The PPC procedure leverages associative memory by parasitically attaching counter-messages to a rival's communication. We hypothesized that re-exposure to the rival communication would thus induce recall of the countervailing messages, thereby making them resistant to normal memory degrading processes. This would serve to neutralize the persuasive effects of the rival communication upon each subsequent re-exposure.

Both outcomes—likelihood of voting for McKinley and perceived honesty—were again ranked on a five-point scale. We also examine standardized measures of each. Using a standard OLS model, we regressed each outcome on an indicator for treatment assignment, as well as participants' gender, age, party affiliation (Democrat, Republican, Independent, or Other), and an indicator for whether they were college-educated.

As predicted, when asked immediately after viewing the PPC or Traditional Response ad, there was no difference across conditions in reported likelihood of voting for McKinley ($F(1,348) = 0.00$, $p = 0.95$) or in perceptions of his honesty ($F(1,348) = 1.28$, $p = 0.26$). Additionally, immediate recall was also equivalent across conditions: when asked immediately after viewing the PPC or Traditional Response ad to identify the counterclaims they had just seen, 72% of participants in the PPC condition and 72% of participants in the Traditional Response condition were able to correctly do so ($\chi^2(1) = 0.02$, $p = 0.89$; Table S3).

Meanwhile, when asked about likelihood of voting for McKinley and perceptions of his honesty the at the end of the survey, after being re-exposed to the rival McKinley ad, participants who had seen the PPC ad were 0.63 SD ($SE = 0.10$, $p < .001$) or 0.66 points ($SE = 0.10$, $p < .001$) points less likely to vote for McKinley, and rated him as 0.41 SD ($SE = 0.10$, $p < .001$) or 0.36 points ($SE = 0.09$, $p < .001$) less honest relative to participants who had seen the Traditional Response ad (Table S4).

Study 3

Overview. Study 3 aimed to test the PPC procedure against a more externally valid Traditional Response ad, as well as a control group.

Sample. Participants were 602 Amazon Mechanical Turk workers (mean age = 40 years, *SD* = 12.4; 58% female) who received $0.60 compensation for completing the survey. In order to participate, workers had to (a) have a HIT (*25*) approval rating greater than or equal to 95%; (b) have at least 1,000 HITs approved; and (c) be located in the United States. We excluded all workers who had participated in a previous pilot survey, as well 80 workers who accepted the HIT but failed the attention check at the beginning of the survey.

Procedures. All workers who consented to participate and passed the attention check were randomly assigned to one of three conditions: control, Traditional Response, or PPC. Participants were not aware of their condition assignment. At the beginning of the survey, all participants were told that they would see a series of ads for fictional political candidates and were asked to read each carefully in order to answer questions that would follow.

The materials for this study were similar to those used in Studies 1 and 2, with Walter McKinley serving as the focal candidate. However, the content of the Traditional Response ad utilized in Studies 1 and 2 was identical to the PPC ad (see Fig. S1); only the visual aesthetic differed between the two ads. In reality, response ads traditionally encompass cohesive narratives, rather than individual and fragmented counterclaims. As such, Study 3 tested the effect of the PPC procedure against a more externally valid Traditional Response ad, which offered the same counterarguments as the PPC ad, but presented in a more realistic narrative form (see Fig. S2). Study 3 also added a control group, in which participants saw an ad for an entirely different fictional candidate, in order to compare the effects of the PPC and Traditional Response ads.

In the first section of the survey, participants were shown a series of 10 political ads for five fictional candidates—one pro and one counter ad for each candidate. Each ad was shown on a separate page, and participants had to wait at least five seconds to advance from one page to the next. Among the 10 ads shown in the first section of the survey, all participants saw the Walter McKinley ad second, and the PPC, Traditional Response, or Control ad fourth. The other eight ads were presented in random order.

After viewing the 10 political ads, participants were asked a set of five filler questions designed to distract them from the focus of the study and interfere with memory processes. Then, in the third and final section of the survey, participants were told that they would be shown one of the candidate ads from the first section, chosen arbitrarily. All participants were shown the rival McKinley ad and were subsequently asked:

3. If Walter McKinley was running in your state, how likely is it that you would vote for him?
4. How honest do you think Walter McKinley is?

Analysis and Results. Prior to launching the study, we pre-registered an analysis plan (see osf.io/aps8h; *28*). Our primary outcomes of interest were again participants' perceptions of Walter McKinley's honesty and their reported likelihood of voting for him. Both outcomes were

ranked on a five-point scale, from extremely dishonest to extremely honest and extremely unlikely to extremely likely, respectively, and we again also assess standardized measures of both. Using a standard OLS model, we regressed each outcome on an indicator for treatment assignment, as well as participants' gender, age, party affiliation, and an indicator for whether they were college-educated.

First, we tested the effect of the PPC ad against the Traditional Response ad and Control ad on the likelihood of voting for Walter McKinley. As predicted and as shown in Table S5, relative to the Control ad, exposure to the PPC ad significantly reduced participants' likelihood of voting for McKinley by 0.85 SD ($SE = 0.10$, $p < .001$; 0.93 points, $SE = 0.10$, $p < .001$). Relative to the Traditional Response ad, the PPC ad reduced participants' likelihood of voting for McKinley by 0.38 SD ($SE = 0.09$, $p < .001$; 0.42 points, $SE = 0.10$, $p < .001$).

Next, we compared participants' perceptions of McKinley's honesty across the three conditions. Participants who saw the PPC ad rated McKinley as 0.68 SD ($SE = 0.10$, $p < .001$; 0.48 points, $SE = 0.07$, $p < .001$) less honest than participants in the Control condition, and 0.30 SD ($SE = 0.10$, $p = .002$; 0.21 points, $SE = 0.07$, $p = .002$) less honest than participants in the Traditional Response condition (Table S5).

Table S6 shows results from a bootstrapped mediation analysis. The indirect effect of assignment to the PPC condition that passes through honesty is -0.4 points ($SE = 0.06$, $p < .001$), demonstrating that honesty mediates approximately 46% percent of the total effect of condition assignment on voting preference ($z = 28.77$, $p < .001$).

Study 4

Overview. Study 4 aimed to extend Study 3 by testing whether the increased resistance generated by the PPC procedure persists over an extended period of time and in the presence of more significant memory interference.

Sample. We recruited an initial sample of 557 participants (mean age = 37 years, $SD = 11.7$; 67% female) via Amazon's MTurk. The sample was again restricted to participants who were located in the United States, had a HIT approval rating of at least 95%, and had at least 1,000 HITs approved. All participants who had taken previous surveys as part of this study were excluded, as were 108 participants who did not pass the initial attention check. Participants were compensated $1.10 for the each of the first and second surveys; $0.70 each for the third and fourth surveys; and $1.00 for the fifth survey. Additionally, all participants who completed the first four surveys received a $0.75 bonus as an incentive to return for the fifth and final wave.

Participants were told in wave 1 (day 1) that the study entailed five separate surveys that would be conducted over a span of two weeks, and were asked to signal their intention to complete all five parts before proceeding to the survey. Each of the four follow-up surveys was open for 24 hours to all participants who had completed the preceding survey. Reminder emails were sent to all eligible workers when each follow-up survey opened, as well as at the 12-hour mark during each survey window. Of the 557 participants who completed the first day of the study, 330 completed all five days (mean age = 39 years, $SD = 12.6$; 69% female). As shown in Table S7, attrition was balanced evenly across conditions ($\chi^2(2) = 0.80$, $p = 0.67$). Younger participants,

participants whose party affiliation was Independent, and non-college educated participants were all more likely to attrit. A joint significance test shows that we cannot reject the null hypothesis that attrition was balanced across conditions and all covariates ($\chi^2(8) = 23.05$, $p = 0.003$). We thus control for party affiliation, college education, and age in all specifications.

Procedures. This study used the same materials as Study 3, with Walter McKinley again serving as the rival candidate. The study was run over a period of 17 days, with waves conducted on days 1, 3, 6, 9, and 16.

As in Studies 1 and 2, the political ads were interspersed with news articles in order to more closely mimic the way in which people traditionally interact with political ads. Additionally, to ensure that we did not unintentionally provide associative links between the rival McKinley ad and the PPC or Traditional Response ad, participants viewed the rival ad in wave 1 (day 1), and the PPC, Traditional Response, or Control ad in the second wave, which was administered on day 3.

In wave 1 (day 1), all participants saw one ad for each of the five fictional candidates, including the rival ad for Walter McKinley. All ads were interspersed with three 1 to 2 paragraph excerpts from news articles on unrelated topics. Participants were asked filler questions on each news article, as well as on three of the five decoy ads. At the end of the survey, participants were told that they would be shown an arbitrarily chosen ad from the previous section, and were subsequently asked the following two questions:

1. If [candidate name] was running in your state, how likely is it that you would vote for him?
2. How honest do you think [candidate name] is?

All participants were shown the rival ad and asked these questions about Walter McKinley first, and then were asked the same questions about a decoy fictional candidate in order to draw their attention away from McKinley.

In the second wave, launched on day 3, all returning participants were randomly assigned to one of three conditions: control, Traditional Response, or PPC. As in Studies 1 through 3, participants in the Traditional Response condition were shown a traditionally presented response ad for Walter McKinley that offered strong counter-messages, but no associative links to the rival ad. Participants in the PPC condition were shown the PPC ad that presented the counter-messages on an exact replica of the rival ad, and participants in the Control condition were shown an unrelated ad for a different candidate in a different electoral race. The PPC, Traditional Response, or Control ad was the third item shown to participants in wave 2, and was interspersed with a total of three news articles and related questions, four decoy ads, and three filler questions about the decoy ads. At the end of the survey, participants were again shown the rival McKinley ad and asked to rate his honesty and their likelihood of voting for him.

In waves 3, 4, and 5 (on days 6, 9, and 16) all returning participants saw the rival McKinley ad twice, interspersed with decoy ads, news articles, and filler questions. The news articles and questions differed each day; the ads were repeated so that by the end of wave 5 (day 16), every participant had seen the rival ad nine times, and each decoy ad three times. Additionally, in each survey, participants were asked the dependent variable questions about two "arbitrarily" selected

candidates—one of whom was always Walter McKinley, while the second subject differed each day.

As in all earlier studies, page timers were used to ensure that participants spent a minimum amount of time on each article and ad. For each ad, participants could not advance to the next page for at least five seconds. For each filler article, the amount of time required varied from 15 to 45 seconds depending on the length of the article excerpt. Overall, the first and second waves were about 15 minutes, while the third, fourth, and fifth waves took about 10 minutes each.

Analyses and Results. All analyses are pre-registered (see osf.io/aps8h; *28*). Our analytic sample is limited to the 330 participants who completed all five waves. We hypothesized that the resistance to McKinley produced by the PPC procedure would persist across time due to the associative links present in the PPC ad. Meanwhile, because the Traditional Response ad did not include any memory-based retrieval cues, we expected that its effect would diminish over time.

The outcomes of interest are the same as in studies 1 through 3, and we again used a standard OLS regression model to assess the effect of the PPC procedure relative to both the Traditional Response and Control ads, controlling for party affiliation, gender, age, and college educated. Results are shown in Tables S8 and S9. In wave 1 (day 1), we find no meaningful difference in participants' likelihood of voting for McKinley (sample mean = 3.6, SD = 0.73) or in perceived honesty (sample mean = 3.3, SD = 0.55) across the three conditions. This is to be expected given that all participants only saw the rival McKinley ad in wave 1.

PPC versus control and Traditional Response

After viewing the PPC, Traditional Response, or Control ad in wave 2 (day 3), we find that participants in the PPC condition were 1.2 SD (SE = 0.12, $p < .001$; 1.2 points, SE = 0.12, $p < .001$) less likely to vote for McKinley than participants in the Control condition, and 0.75 SD less likely relative to those in the Traditional Response condition (SE = 0.12, $p < .001$; 0.75 points, SE = 0.12, $p < .001$; Table S8). In a similar trend, the PPC procedure also reduced perceived honesty ratings by 1.13 SD (SE = 0.12, $p < .001$; 0.96 points, SE = 0.10, $p < .001$) compared to the Control ad, and by 0.75 SD (SE = 0.12, $p < .001$; 0.64 points, SE = 0.10, $p < .001$; Table S9) compared to the Traditional Response ad. These effects are slightly stronger than those seen in Study 3.

The effect of the PPC procedure persists throughout the three follow-up waves administered on days 6, 9, and 16 (Tables S8, S9). Averaging across days 6, 9, and 16, participants who saw the PPC ad were 0.71 SD (SE = 0.13, $p < .001$; 0.58 points, SE = 0.10, $p < .001$) less likely to vote for McKinley compared to those who saw the Traditional Response ad, and 0.89 SD (SE = 0.13, $p < .001$; 0.72 points, SE = 0.10, $p < .001$) less likely relative to those in the Control condition. For perceived honesty, across waves 3-5 (days 6 to 16), participants in the PPC condition rated McKinley as 0.57 SD (SE = 0.13, $p < .001$; 0.38 points, SE = 0.09, $p < .001$) less honest than participants in the Traditional Response condition, and 0.78 SD (SE = 0.13, $p < .001$; 0.52 points, SE = 0.09, $p < .001$) less honest than those in the Control condition.

Traditional Response versus control

Relative to the Control condition, the Traditional Response ad also affected participants' likelihood of voting for McKinley and perceptions of his honesty on day 3, but to a lesser extent than the PPC ad. Compared to the Control condition, participants in the Traditional Response condition were 0.43 SD less likely to vote for McKinley (SE = .12, p < .001; 0.43 points, SE = .12, p < .001), and rated him as 0.37 SD less honest (SE = 0.12, p = .002; 0.32 points, SE = .12, p < .001).

From days 6 to 16, the effectiveness of the Traditional Response ad waned relative to the Control condition. In each of waves 3-5 (days 6, 9, and 16), participants in the Traditional Response condition were 0.14 to 0.19 SD less likely to vote for McKinley than those in the Control condition, but these differences were not statistically significant by conventional standards with p-values ranging from 0.13 to 0.26. The difference in perceived honesty between participants in the Traditional Response and Control conditions exhibited a similar trend. In waves 3, 4, and 5 (days 6, 9, and 16), participants who saw the Traditional Response ad rated McKinley as 0.18 to 0.21 SD less honest than those who saw the Control ad, with all p-values greater than 0.10 (Tables S8, S9).

As in Study 3, participants' perceived honesty of McKinley significantly mediated the effect of assignment to the PPC condition on participants' likelihood of voting for McKinley on each day (all z < -4.4, p < .001; Table S10).

Study 5

Overview. In Study 5 we evaluated the applicability of the PPC procedure in a real-world setting by replacing the fictional ads with actual campaign ads from a 2018 political election. We also added a third outcome measure to explore how the resistance produced by the PPC procedure affects a real and tangible behavior—political donations.

Sample. Participants were 299 Amazon Mechanical Turk workers (mean age = 36 years, SD = 10.7; 55% female) who received $1.30 compensation for completing the survey. The required qualifications were the same as in the previous two studies.

Because this study used actual campaign ads from the Michigan Democratic primary election, we excluded all workers in the state of Michigan per IRB rules so as not to influence any potential voters' opinions prior to the election. Additionally, since our primary outcome measure asked about voting in a Democratic primary election, we also excluded all self-identified Republicans.

Procedures. This study used campaign ads from Gretchen Whitmer, the leading gubernatorial candidate in the Michigan Democratic primary election, which was held on August 7, 2018. Whitmer, a former Michigan state senator, ran against two opponents for the Democratic gubernatorial nomination in a highly contested and expensive race (*29*). The study was run prior to the election on August 6, 2018. The rival ad for this study was political mailer circulated by Whitmer's campaign that focused on her commitment to and track record of expanding access to affordable health care coverage (Fig. S3). The Traditional Response ad was a mailer released by Whitmer's opponent, Shri Thanedar, that attacked Whitmer's record on health insurance.

Specifically, it claimed that her campaign was being funded by Blue Cross Blue Shield, a major health insurance company, which was also responsible for increasing health insurance premiums (Fig. S3). Thanedar's ad provided strong and explicit counter-messages, but no associative links to the rival Whitmer ad.

We designed two response ads that employed the PPC procedure in slightly different ways, as shown in Figure S3. In the first, the "full" application, we placed the rival Whitmer ad and the Traditional Response ad side-by-side with a line down the middle and the respective headers: "Typical Gretchen Whitmer ad" and "Here's what we say in our ad." In the second, the "tailored" application, we took the exact counter-messages from Thanedar's response ad and embedded them in the rival Whitmer ad. Both ads were created purely for research purposes; neither was actually used in the campaign or circulated to prospective voters. We had no a priori hypothesis as to which manifestation of the PPC would be more effective, and thus tested each relative to the actual (traditional) response ad.

The procedures for this study were similar to Study 4, but took place on a single day. All participants were told that they would see a series of ads for real political candidates currently running for office, as well as excerpts from actual news articles. They were told to read each ad and article carefully in order to answer the questions that followed. All decoy ads were also real campaign ads from 2018 Democratic primary elections across the country.

All participants first saw the rival Whitmer ad and then either one of the PPC ads, the Traditional Response ad, or a Control ad for a different candidate in a different election. The ads were interspersed with eight decoy ads, three of which included associated filler questions, and four news article excerpts with related filler questions. The rival Whitmer ad appeared third, and the Full PPC, Tailored PPC, Traditional Response, or Control ad appeared fifth. At the end of the roughly 15-minute survey, all participants were asked:

1. If you lived in Michigan, how likely would you be to vote for Gretchen Whitmer in the upcoming Democratic primary election?
2. How honest do you think Gretchen Whitmer is?
3. You have a chance to allocate real resources. We are donating $0.10 on behalf of every worker who takes our survey. We can either donate this $0.10 to Gretchen Whitmer's campaign or to the campaign of Shri Thanedar, her opponent. Who would you like us to donate this $0.10 to?

In response to question 3, a total of $21.20 was donated to Whitmer's campaign, and $8.70 to Thanedar's campaign. All donations were made by the authors prior to the primary election.

Analyses and Results. Using a standard OLS model, we regressed our first two outcomes of interest on an indicator for treatment assignment, party affiliation, and gender. Both versions of the PPC ad proved significantly more effective than the Traditional Response ad at increasing resistance to Whitmer. The Tailored PPC ad reduced participants' likelihood of voting for Whitmer by 0.40 SD ($SE = 0.16$, $p = .01$) and 0.50 SD ($SE = 0.16$, $p = .002$) relative to the Traditional Response and Control ads, respectively. Similarly, as shown in Table S11, the Full PPC ad reduced participants' likelihood of voting by 0.60 SD ($SE = 0.16$, $p < .001$) and 0.71 SD ($SE = 0.16$, $p < .001$), respectively. Participants in the Tailored PPC condition rated Whitmer as

0.38 SD (SE = 0.16, p = .02) less honest than participants in the Traditional Response condition, and 0.43 points (SE = 0.16, p = .008) less honest than those in the Control conditions (Table S11). Meanwhile, participants in the Full PPC condition rated Whitmer as 0.62 SD (SE = 0.16, p < .001) less honest than participants in the Traditional Response condition, and 0.67 points (SE = 0.16, p < .001) less honest than those in the Control conditions (Table S11). There was no significant difference in effect between the two PPC conditions on either outcome measure.

Participants in the Traditional Response condition were just as likely to vote for Whitmer as participants in the Control condition who saw an ad for an unrelated candidate (3.49 v. 3.60, p = 0.5). Similarly, participants' perceptions of Whitmer's honesty were the same in the Traditional Response and Control conditions (3.44 v. 3.48, p = 0.77).

When asked to allocate a $0.10 donation to one of the two candidates, participants in the two PPC conditions were significantly less likely to request that the donation be made to Whitmer's campaign compared to participants in the control and Traditional Response conditions. As shown in Table S12, 60% of participants in the Tailored PPC condition and 58% of participants in the Full PPC condition directed the donation to Whitmer's campaign, compared to 75% in the Traditional Response condition (Tailored: $\chi^2(1) = 3.69$, p = .05; Full: $\chi^2(1) = 5.01$, p = .03) and 89% in the Control condition (Tailored: $\chi^2(1) = 15.10$, p < .001; Full: $\chi^2(1) = 17.43$, p < .001). Combined, participants who saw one of the PPC ads were 16 percentage points less likely to direct their donation to Whitmer compared to participants who saw the Traditional Response ad, and 31 percentage points less likely than those who saw the Control ad.

As in the previous two studies, honesty was a significant mediator. With an indirect effect of -0.26 points (SE = 0.10, p = .008) for the Tailored PPC ad, and -0.40 (SE = 0.10, p < .001) for the Full PPC ad, honesty mediated approximately 44% of the total effect of assignment to the PPC condition on voting preference (z = 23.88, p < .001; Table S13).

Study 6

Overview. Study 6 sought to extend the applicability of the PPC procedure to a new modality (video ads) in a real-world context. Given that video ads comprise a growing share of all digital advertising, showing that the PPC procedure can also be effectively implemented via video would significantly extend its applicability.

Sample. On the Friday before the 2020 Super Bowl, we recruited a sample of 2,429 participants (mean age = 41 years, SD = 12.8; 50% female) via Amazon's MTurk. The sample was again restricted to participants who were located in the United States, had a HIT approval rating of at least 95%, and had at least 500 HITs approved. We excluded 296 participants who did not pass the initial attention check. Participants were compensated $1.60 for the first survey; $0.70 each for the second survey; and $1.00 for the third survey.

Participants were told in wave 1 (day 1) that the study would two parts, and were asked to signal their intention to complete both parts before proceeding to the survey. The second wave opened on the Monday after the Super Bowl (day 3) and was open for 24 hours. All participants who had completed the first survey were eligible to participate. Of the 2,429 participants who completed the first wave of the study (day 1), 2,152 (89%) completed the second wave (day 3), balanced evenly across conditions ($\chi^2(1) = 1.71$, p = .43). Then, anyone who completed the second wave

and reported having watched the Super Bowl was invited to complete a third wave exactly one week later (day 9). Of the 2,152 participants who completed the second wave of the study, 1,463 reported watching the Super Bowl between wave 1 and wave 2, and 1,172 (80%) of these participants completed the third wave. As such our final analytic sample is comprised of 1,172 participants who watched the 2020 Super Bowl and completed all three surveys over the nine-day period (mean age = 41 years; *SD* = 12.6; 44% female).

As shown in Table S14, self-reported Super Bowl viewing was balanced evenly across conditions ($\chi^2(2) = 1.31$, $p = 0.52$). Across demographics, women were less likely to report having watched the game, while those with higher incomes were more likely to have watched the game. Overall attrition across all three surveys was also balanced evenly across conditions ($\chi^2(2) = 0.41$, $p = 0.82$). Women, and participants who had not previously used TurboTax were both more likely to attrit. We thus control for both, among other covariates, in all analyses.

Procedures. The previous studies relied on static ads because they readily lent themselves to experimental control. Study 6 builds upon previous studies by implementing the PPC procedure using video ads in a real-world setting. During the 2020 Super Bowl, Turbo Tax ad ran a 45-second ad highlighting the simplicity and benefits of their tax preparation software. They released the ad five days before the game, which afforded a unique opportunity to test the PPC procedure knowing that participants who watched the game would be subsequently re-exposed to the rival's communication. Prior to the game, we developed three response ads. The PPC ad overlaid a counter message on the exact TurboTax ad that was to run during the Super Bowl. This message stated: "TurboTax says they work to make filing taxes easy for us. Yet, they've spent $10 million lobbying lawmakers to prevent free automatic filing. This makes filing harder and more expensive for us, so they can make money." In the PPC ad, this text scrolled across the screen during the 45-second video twice, and then ended with a static screen that displayed this message for an additional three seconds. In the Poison Only ad, the exact same scrolling text was overlaid on a different TurboTax commercial, which was of an equivalent length. And in the Pure Counterargument condition, the same scrolling text was presented with a solid black screen as the background. All ads are available at https://bit.ly/poisonparasite.

In wave 1 (day 1), which ran for 24 hours prior to the Super Bowl on February 2, 2020, all participants were randomly assigned to one of three conditions corresponding with the treatment ad: PPC, Poison Only, or Pure Counterargument. Participants were not aware of their condition assignment. They completed a 20-minute long survey during which they viewed 11 different video commercials for a variety of companies including AT&T, Amazon, Verizon, Hyundai, and Neutrogena. The second ad shown was the TurboTax ad that was going to run during the Super Bowl. The fifth ad shown was either the PPC, Poison Only, or Pure Counterargument ad described above. In addition, we created four other Poison Only-style ads for other companies' ads in order to draw attention away from our treatment ads. These were interspersed throughout the survey. Participants were asked one or two questions after every ad. At the end of the survey, participants were told that they would be shown two arbitrarily chosen ads from the previous section to answer questions about. The first ad shown was the TurboTax Super Bowl ad, after which all participants were subsequently asked the following four questions:

1. How positively or negatively do you view TurboTax? *[1-5 scale]*

2. If you were to use an online tax filing service, how likely would you be to use TurboTax? *[1-5 scale]*
3. There are many competing tax preparation companies. Imagine they all offer tax filing for the same price. Would you choose to file your taxes through TurboTax or one of its comparable competitors? *[Binary response: TurboTax or a comparable competitor]*
4. If a friend asked you for a recommendation on online tax filing services, which company would you be most likely to recommend? *[Choice of five tax preparation companies, including TurboTax]*

In the second wave (day 3), launched on the Monday after the Super Bowl, participants were asked a series of questions about products that they had previously seen ads for in the first survey. However, they were not initially re-shown any ads. The TurboTax ad was aired during the second quarter of the Super Bowl on Sunday evening. This constituted the second exposure to the rival ad for all participants who watched the game. We hypothesized that, as in prior controlled experiments with static ads, the PPC procedure would mitigate memory decay of the counterclaims all participants saw in wave 1 (day 1), thereby neutralizing the persuasive effects of being re-exposed to the rival TurboTax ad during the Super Bowl. Thus, in wave 2 (day 3), all participants were initially asked the same four outcome questions as they were asked during the first survey. At the end of the second wave, they were re-exposed to the rival TurboTax Super Bowl to measure recall of the ad itself, as well as of the counterclaims they had seen in the first survey three days prior. Specifically, participants were asked:

1. Did you see this ad [the TurboTax Super Bowl ad] during the Super Bowl yesterday?
2. Which of the following claims against this ad do you recall seeing in the first part of this study? [Choice of five options, with one correct answer]

The third and final wave ran one week after the second wave (on day 9). Participation in the third wave was limited to only those participants who had completed the second wave and reported watching the Super Bowl. In this wave, we again showed participants a series of video ads, and asked questions after each one. The second ad shown was the rival TurboTax Super Bowl ad, after which the same four outcome questions were asked.

As in all prior studies, page timers were used to ensure that participants spent a minimum amount of time on each ad. All ads were also programmed to play automatically and could not be controlled by viewers, to help ensure that participants did in fact watch all ads in their entirety.

Analyses and results. We limit our analysis to only those participants who watched the Super Bowl (N = 1,172) and thus had the opportunity to be re-exposed organically to the rival TurboTax ad during the game. We hypothesized that the PPC procedure would neutralize the persuasive effects of the rival TurboTax ad upon each subsequent re-exposure—first during the Super Bowl, and then during the third wave.

We create an index by summing and standardizing our first two outcome measures, each of which were measured on a 1 to 5 scale: (1) How positively or negatively do you view TurboTax? and (2) If you were to use an online tax filing service, how likely would you be to use TurboTax (Table S15). We also examine each individual outcome measure separately (Table S16, S17).

To analyze the effect of treatment assignment on TurboTax favorability, we use a standard OLS model, controlling for ethnicity, age, party affiliation, gender, household income, and separate indicators for: prior TurboTax use; college education; and watching more than the sample median number of hours of media (TV, YouTube, etc.) watched per week. We find that the PPC ad effectively reduced TurboTax favorability at each wave, with the largest effects seen during the first wave. This aligns with the results of Study 4, which also showed the strongest effects of the PPC procedure at the time at which participants were initially exposed to the counter messages. As shown in Table S15, at the first wave (day 1), TurboTax favorability among participants who had seen the PPC ad was 0.32 standard deviations (SD; $SE = 0.07$, $p < .001$) lower than favorability among participants who had seen the Poison Only ad, and 0.30 SD ($SE = 0.07$, $p < .001$) lower than favorability in the Pure Counterargument condition. At the second wave—after being re-exposed to the rival TurboTax ad during the Super Bowl—participants in the PPC condition rated TurboTax 0.31 SD ($SE = 0.07$, $p < .001$) less favorably than participants in the Poison Only condition, and 0.21 SD ($SE = 0.07$, $p = .002$) less favorably than participants in the Pure Counterargument condition. Effect sizes were slightly smaller by the third wave (day 9), but still highly significant: participants who had seen the PPC ad in wave 1 still rated TurboTax 0.30 SD ($SE = 0.07$, $p < .001$) and 0.24 SD ($SE = 0.07$, $p < .001$) less favorably than participants who had seen the Poison Only or Pure Counterargument ad, respectively. We see similar patterns when examining each of the four outcome measures separately, as shown in Tables S16 and S17.

During the second wave, after answering the outcome measure questions, we showed all respondents the rival TurboTax Super Bowl ad and asked them (1) if they had seen the ad during the Super Bowl; and (2) to identify which counterclaims they had seen against TurboTax in the first study. The first recall question serves as a manipulation check to determine whether participants who had watched the Super Bowl were actually re-exposed to the rival TurboTax ad as we intended. Overall, 67% of participants reported seeing the ad during the game. This was not balanced across conditions, with 72% of participants in the Pure Counterargument condition recalling seeing the ad versus 64% in the PPC condition ($\chi^2(2) = 6.92$, $p = .03$). Although self-reported measures are noisy, any error in this measure should be unbiased. Thus, we can conclude that roughly two-thirds of our sample was likely re-exposed to the rival TurboTax ad prior to completing the second wave.

Next, if the PPC procedure induces cue-based recall as hypothesized, we would expect recall of the counterclaims after subsequent re-exposure to the rival ad to be highest among participants in the PPC condition. As shown in Table S18, 71% of participants in the PPC condition correctly identified the counterclaims against TurboTax, versus only 49% in the Poison Only condition and 72% in the Pure Counterargument condition. The Pure Counterargument ad presented the same counterarguments as the PPC and Poison Only ad, but without the distraction and interference caused by the underlying ad. This may explain the better recall among participants in the Pure Counterargument condition relative to the Poison Only condition. Although not our main focus in this paper, future studies could examine the effect of presenting counterarguments with limited or no distraction to interfere with memory formation or recall.

Study 7

Overview. Study 7 replicated the results of Studies 1 and 3, and added two outcome measures to evaluate participants' recall of specific counter-messages against the rival candidate (McKinley).

We hypothesized that the PPC procedure would be effective against a more frequently seen rival ad because the parasitic component of the procedure spurs recall of its counterarguments each time the rival ad is subsequently viewed, thereby blocking memory decay. In Study 7, we tested this mechanism directly.

Sample. We recruited 266 participants via Amazon's MTurk (mean age = 35 years, *SD* = 11.5; 51% female). Participants received $1.80 for completing the survey. As in the previous studies, we excluded workers who had participated in an earlier survey, as well as workers who did not meet the minimum standard qualifications.

Procedures. Study 7 followed the same design as Study 1, and the ads were the same as those used in Study 3 (Figure S2). The rival ad was the second ad seen, and the PPC, Traditional Response, or Control ad came after three more decoy ads and three additional reading passages with associated filler questions. After viewing the PPC, Traditional Response, or Control ad, participants were shown four decoy ads, three more news article excerpts, and were asked five filler questions. At the end of the survey, participants were told that they would be asked questions on an arbitrarily chosen ad from the preceding section. All participants were shown the rival McKinley ad and were asked:

1. If Walter McKinley was running in your state, how likely is it that you would vote for him?
2. When you see the claims in McKinley's ad, how clearly do you recall the specifics of any arguments you may have viewed against those claims?
3. How honest do you think Walter McKinley is?
4. Which of the following anti-McKinley claims do you recall seeing, if any?

For the fourth question, participants were asked to choose from a list of eight options. Three of the choices were the exact counter-messages included in both the Traditional Response ad and the PPC ad.

Analyses and Results. Following the same analysis procedures as in the previous studies, we regressed our outcomes of interest on an indicator for treatment assignment, party affiliation, and gender. As we saw in earlier studies, the PPC ad was significantly more effective than the Traditional Response ad at producing resistance to the rival ad, as measured by participants' perceived honesty of and preference for McKinley (Table S19). Participants who saw the PPC ad were 0.70 SD (*SE* = 0.14, $p < .001$) less likely than those assigned to the Control condition to vote for McKinley, and 0.44 SD (*SE* = 0.14, $p = .002$) less likely relative to those in the Traditional Response condition. Similarly, participants in the PPC condition rated McKinley as 0.62 SD (*SE* = 0.14, $p < .001$) less honest than Control condition participants, and 0.44 SD (*SE* = 0.14, $p = .003$) less honest than those in the Traditional Response condition.

On the first recall measure, 27.2% of participants in the PPC condition reported that they recalled seeing specific arguments against McKinley's claims "extremely clearly," versus just 15.2% of participants in the Traditional Response condition ($\chi^2(1) = 3.71$, $p = .05$) and 4.8% of participants in the Control condition ($\chi^2(1) = 13.25$, $p < .001$; Table S20). When asked to identify which anti-McKinley claims they saw, 24.4% of participants in the PPC condition correctly identified all counter-messages, compared to only 14.7% of participants in the

Traditional Response condition ($\chi^2(1) = 2.57$, $p = .11$) and 0% of participants in the Control condition (Table S21).

Table S22 shows that the effect of assignment to the PPC condition on perceived honesty was mediated by participants' recall of the specific counter-messages against McKinley ($z = -4.55$, $p < .001$). In turn, honesty mediated the effect of assignment to the PPC condition on participants' likelihood of voting for McKinley ($z = -4.14$, $p < .001$).

Supplemental Studies

Supplemental Study I

Overview. Supplemental Study I aimed to extend the results of Study 1 by testing the durability of the PPC procedure over a one-week period.

Sample. We recruited an initial sample of 499 participants (mean age = 36 years, $SD = 10.8$; 57% female) via Amazon's MTurk. Sixty-nine percent of initial participants ($N = 346$; mean age = 37 years, $SD = 11.1$; 55% female) completed all three surveys that were conducted as part of this study. As shown in Table S7, attrition was balanced across condition assignment and covariates ($\chi^2(6) = 5.49$, $p = .48$).

Participants received $1.20 for completing the first survey, $0.50 for the second, and $0.30 for the third. We excluded workers who had participated in any previous study, as well as workers who did not meet the minimum standard qualifications.

Procedures. This study used the same materials as Study 1, with Walter McKinley again serving as the rival candidate. The study was run over a period of 8 days, with surveys conducted on days 1, 3, and 7.

In wave 1 (day 1), all participants saw the pro and counter ads for each of the four fictional decoy candidates. In addition, every participant saw the rival ad for Walter McKinley and either the PPC, control, or Traditional Response ad, depending on random treatment assignment. These ads were interspersed with three 1 to 2 paragraph excerpts from news articles on unrelated topics. Participants were asked filler questions on each news article, as well as on three of the eight decoy ads. At the end of the survey, the participants were told that they would be shown an arbitrarily chosen ad from the previous section. All were shown the rival McKinley ad and were then asked the following two questions:

1. If Walter McKinley was running in your state, how likely is it that you would vote for him?
2. How honest do you think Walter McKinley is?

In the second wave, launched on day 3, all returning participants were shown two 1 to 2 paragraph excerpts from news articles and associated filler questions. In the middle, they were shown an ad for a decoy fictional candidate and asked the standard dependent variable questions. Then, at the end, they were again shown the rival McKinley ad and asked about their likelihood

of voting for and perceived honesty of Walter McKinley. In both cases, participants were told that they would be asked questions on an arbitrarily chosen candidate.

In wave 3 (day 7), all returning participants were given one filler news article and related question, and then were shown the rival McKinley ad and asked the standard dependent variable questions.

As in Study 1, page timers were used to ensure that participants spent a minimum amount of time on each article and ad.

Analyses and Results. Our analysis is limited to the 346 participants who completed all three surveys. On all three days, the PPC ad was significantly more effective than the Traditional Response ad at producing resistance to the rival McKinley message (see Table S23). In wave 1 (day 1), participants who saw the PPC ad were 0.86 SD (SE = 0.13, $p < .001$; 0.81 points, SE = 0.12, $p < .001$) less likely than those assigned to the Control condition to vote for McKinley, and 0.55 SD (SE = 0.12, $p < .001$; 0.52 points, SE = 0.12, $p < .001$) less likely relative to the Traditional Response condition. Similarly, participants in the PPC condition rated McKinley as 0.75 SD (SE = 0.13, $p < .001$; 0.57 points, SE = 0.10, $p < .001$) less honest than Control condition participants, and 0.60 SD (SE = 0.13, $p < .001$; 0.46 points, SE = 0.10, $p < .001$) less honest than those in the Traditional Response condition.

In waves 2 and 3 (day 3 and day 7), the PPC procedure remained effective by both outcome measures. Participants who saw the PPC ad in wave 1 were 0.48 SD (SE = 0.13, $p < .001$; 0.44 points, SE = 0.12, $p < .001$) less likely to vote for McKinley in wave 2 (day 3), and 0.42 SD (SE = 0.13, $p < .001$; 0.41 points, SE = 0.12, $p < .001$) less likely to vote for him in wave 3 (day 7), relative to the Traditional Response condition. Compared to the Control condition, participants who saw the PPC ad in wave 1 were 0.70 SD (SE = 0.13, $p < .001$; 0.65 points, SE = 0.12, $p < .001$) less likely to vote for McKinley in wave 2 (day 3) and 0.72 SD less likely in wave 3 (SE = 0.13, $p < .001$; 0.70 points, SE = 0.12, $p < .001$). As shown in Table S23, we see a similar trend for perceived honesty ratings.

Supplemental Study II

Overview. In Supplemental Study II, we tested the efficacy of the PPC procedure in the presence of large information asymmetries during an extended single-day study.

Sample. We recruited a sample of 425 participants (mean age = 36 years, SD = 11.0; 52% female) via Amazon's MTurk. Participants received $3.00 for completing the survey. We excluded workers who had participated in any previous study, as well as workers who did not meet the minimum standard qualifications.

Procedures. This study was designed to take 25 to 30 minutes to complete, and used the same materials for Walter McKinley and the fictional decoy candidates as Study 3. Upon beginning the survey, all participants were randomly assigned to either the PPC or Traditional Response condition; this study did not include a pure Control condition.

All participants saw 15 excerpts from news articles and associated filler questions, and were shown each of the eight decoy ads twice. The third screen for all participants was the rival

McKinley ad, and the tenth screen was either the PPC or Traditional Response ad. Thereafter, participants all saw the rival ad three additional times. After each subsequent viewing, they were asked the standard outcome questions regarding likelihood of voting for McKinley and perceived honesty. By the end of the survey, each participant had seen the rival ad four times and the PPC or Traditional Response ad once.

As in previous studies, page timers were used to ensure that participants spent a minimum amount of time on each article and ad.

Analyses and Results. All participants were asked to rate McKinley's honesty and their likelihood of voting for him three times throughout the course of the survey. Results are presented in Table S24. At all three points in time, participants who were assigned to the PPC condition rated McKinley's honesty as 0.60-0.70 SD lower (SE = 0.9, all p-values<.001) than those assigned to the Traditional Response condition. The PPC procedure also reduced participants' likelihood of voting for McKinley by 0.60-0.70 SD (SE = 0.09, all p-values<.001) relative to the Traditional Response ad at all three points in time.

Supplemental Study III

Overview. Supplemental Study III tested the durability of the PPC procedure over a three-day period with intense initial exposure to both the rival and counter messaging.

Sample. Participants were 447 MTurk workers (mean age = 40 years, SD = 13.3; 59% female). Of these, 355 participants (mean age = 42 years, SD = 13.4; 59% female) completed all three surveys. Attrition was balanced evenly across conditions and covariates ($\chi^2(5) = 6.41$, $p = .27$), although a slightly higher percentage of participants who identified as Independents completed the survey (Table S7). We control for party affiliation in all models.

Participants received $1.80 for completing the first survey, $0.50 for the second, and $0.20 for the third. As in the other studies, we excluded workers who had participated in a previous study, as well as workers who did not meet the minimum standard qualifications.

Procedures. Supplemental Study III again used the Walter McKinley materials from Study 3, and was run over a period of three days, with one survey conducted each day. As in Supplemental Study II, this study did not include a pure Control condition. In wave 1 (day 1), all participants were randomly assigned to either the PPC or Traditional Response condition.

In the first wave, which took approximately 20 minutes to complete, all participants saw the pro and counter ads for each of the four fictional decoy candidates twice. In addition, every participant saw the rival ad for Walter McKinley four times, and either the PPC or Traditional Response ad three times. All ads were interspersed with three 1 to 2 paragraph excerpts from news articles on unrelated topics and associated filler questions. At the end of the survey, the participants were told that they would be shown an ad for an arbitrarily chosen candidate. All were shown the rival McKinley ad, and asked the following two questions:

1. If Walter McKinley was running in your state, how likely is it that you would vote for him?
2. How honest do you think Walter McKinley is?

In the second wave (day 2), all returning participants were shown an ad for a decoy candidate, two news article excerpts, and the rival McKinley ad. After both the decoy ad and the rival McKinley ad, participants were asked the standard dependent variable questions.

In the third and final wave (day 3), participants were shown a single excerpt from a news article and the rival McKinley ad, and were subsequently asked the same standard questions about likelihood of voting and perceived honesty.

Analyses and Results. Results are shown in Table S25 and are limited to the 355 participants who completed all three surveys. In wave 1 (day 1), participants who were assigned to the PPC condition were 0.55 SD ($SE = 0.10$, $p < .001$; 0.56 points, $SE = 0.11$, $p < .001$) less likely than those assigned to the Traditional Response condition to vote for McKinley, and rated him as 0.43 SD ($SE = 0.10$, $p < .001$; 0.33 points, $SE = 0.08$, $p < .001$) less honest. In the second and third waves (on days 2 and 3), the effect of the PPC procedure weakened slightly, but remained highly significant. Participants who saw the PPC ad in wave 1 were 0.44 SD ($SE = 0.10$, $p < .001$; 0.47 points, $SE = 0.11$, $p < .001$) less likely to vote for McKinley in wave 2 (day 2), and 0.37 SD ($SE = 0.10$, $p < .001$; 0.40 points, $SE = 0.11$, $p < .001$) less likely in wave 3 (day 3), relative to those who saw the Traditional Response ad on the first day. Similarly, participants assigned to the PPC condition rated McKinley as 0.47 SD ($SE = 0.10$, $p < .001$; 0.40 points, $SE = 0.09$, $p < .001$) and 0.45 SD ($SE = 0.10$, $p < .001$; 0.37 points, $SE = 0.09$, $p < .001$) less honest in waves 2 and 3 (on days 2 and 3), respectively.

Supplementary Tables

Table S1. Study 1: preference for and perceived honesty of rival

	(1)	(2)	(3)	(4)
	Raw units (1-5 scale)		Standardized units	
VARIABLES	Voting	Honesty	Std. Voting	Std. Honesty
Traditional Response	0.622***	0.588***	0.613***	0.702***
	(0.113)	(0.092)	(0.111)	(0.110)
Republican	0.073	0.079	0.072	0.094
	(0.147)	(0.120)	(0.145)	(0.143)
Independent	-0.132	-0.031	-0.130	-0.038
	(0.133)	(0.109)	(0.132)	(0.130)
Other party	-0.826*	-0.135	-0.814*	-0.162
	(0.381)	(0.310)	(0.375)	(0.371)
Female	0.127	0.044	0.125	0.052
	(0.114)	(0.093)	(0.113)	(0.111)
Age	-0.007	-0.005	-0.007	-0.006
	(0.005)	(0.004)	(0.005)	(0.005)
College educated	0.096	0.184	0.095	0.219
	(0.115)	(0.094)	(0.113)	(0.112)
Observations	297	297	297	297
R-squared	0.129	0.150	0.129	0.150
PPC mean	2.815	2.653	-0.305	-0.350

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate (McKinley) and perceived honesty of rival candidate. Voting and honesty are both continuous, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Columns 3 and 4 use standardized outcome measures. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are assignment to the PPC condition; Democrat; male; and non-college educated. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$

Table S2. Study 1: mediation analysis

Honesty on voting preference	Coef.	Z	95% CI
Direct effect	-0.588***	-6.67	-0.762, -0.413
	(0.089)		
Indirect effect: PPC	-0.501***	-6.41	-0.657, -0.345
	(0.079)		
Indirect effect: Total	-0.501***	-6.41	-0.657, -0.345
	(0.079)		
Proportion of total effect mediated	0.460***	33.25	0.433, 0.488
	(0.014)		
N	297		

Notes: Bootstrapped estimates of the effect of condition assignment on voting preference via honesty. Bootstrapped standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S3. Study 2: immediate recall

	N	% correct recall	p-value
PPC	178	71.6%	0.89
Traditional Response	178	72.3%	

Notes: Raw means of the percent of participants in each condition who correctly identified the counterclaims presented in the PPC or Traditional Response ad immediately after viewing the ad; *p*-value from Chi-squared test.

Table S4. Study 2: preference for and perceived honesty of rival

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Raw units (1-5 scale)				Standardized units			
	Immediate DV		End DV		Immediate DV		End DV	
VARIABLES	Voting	Honesty	Voting	Honesty	Std. Voting	Std. Hones.	Std. Voting	Std. Hones.
Traditional Response	0.006	-0.098	0.657***	0.358***	0.007	-0.116	0.634***	0.414***
	(0.101)	(0.087)	(0.099)	(0.085)	(0.103)	(0.102)	(0.095)	(0.098)
Republican	0.295*	0.264*	0.342**	0.279**	0.299*	0.311*	0.329**	0.322**
	(0.120)	(0.104)	(0.122)	(0.105)	(0.122)	(0.122)	(0.118)	(0.121)
Independent	0.226	0.300**	-0.065	-0.091	0.230	0.353**	-0.062	-0.105
	(0.133)	(0.115)	(0.122)	(0.104)	(0.136)	(0.135)	(0.118)	(0.121)
Other party	0.237	0.377	-0.392	-0.108	0.241	0.444	-0.378	-0.125
	(0.272)	(0.235)	(0.293)	(0.251)	(0.277)	(0.276)	(0.283)	(0.290)
Female	-0.160	-0.104	0.091	0.137	-0.162	-0.123	0.087	0.159
	(0.102)	(0.088)	(0.100)	(0.085)	(0.104)	(0.104)	(0.096)	(0.099)
Age	-0.013**	-0.010*	0.000	0.001	-0.013**	-0.012*	0.000	0.001
	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
College educated	0.504***	0.440***	0.075	0.117	0.512***	0.517***	0.073	0.135
	(0.108)	(0.093)	(0.104)	(0.089)	(0.110)	(0.110)	(0.100)	(0.103)
Observations	356	356	356	356	356	356	356	356
R-squared	0.092	0.094	0.142	0.089	0.092	0.094	0.142	0.089
PPC mean	2.019	2.205	2.741	2.692	-0.00333	0.0588	-0.297	-0.267

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate (McKinley) and perceived honesty of rival candidate. In columns (1) and (2), the outcome measures were collected immediately after viewing the PPC or Traditional Response ad. In columns (3) and (4), the outcome measures were collected at the end of the survey, approximately 10 minutes after viewing the PPC or Traditional Response ad. Voting and honesty are both continuous, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Columns 5-8 report standardized outcomes. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are assignment to the PPC condition; Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S5. Study 3: preference for and perceived honesty of rival

	(1)	(2)	(3)	(4)
	Raw units (1-5 scale)		Standardized units	
VARIABLES	Voting	Honesty	Std. Voting	Std. Honesty
Traditional Response	0.417***	0.208**	0.382***	0.296**
	(0.102)	(0.067)	(0.093)	(0.095)
Control	0.926***	0.477***	0.848***	0.679***
	(0.103)	(0.068)	(0.095)	(0.097)
Republican	0.335**	0.099	0.307**	0.141
	(0.110)	(0.072)	(0.101)	(0.103)
Independent	-0.129	-0.162*	-0.118	-0.231*
	(0.099)	(0.065)	(0.091)	(0.093)
Other party	-0.443*	-0.322*	-0.406*	-0.459*
	(0.202)	(0.133)	(0.185)	(0.189)
Female	0.123	-0.016	0.113	-0.023
	(0.086)	(0.056)	(0.078)	(0.080)
Age	-0.005	-0.004	-0.004	-0.006
	(0.003)	(0.002)	(0.003)	(0.003)
College educated	-0.019	0.055	-0.018	0.079
	(0.085)	(0.056)	(0.077)	(0.079)
Observations	602	602	602	602
R-squared	0.139	0.102	0.139	0.102
PPC mean	2.548	2.721	-0.405	-0.321

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate (McKinley) and perceived honesty of rival candidate. Voting and honesty are both continuous, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Columns 3-4 report standardized outcomes. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are assignment to the PPC condition; Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S6. Study 3: mediation analysis

Honesty on voting preference	Coef.	Z	95% CI
Direct effect	-0.746***	-6.66	-0.965, -0.527
	(0.112)		
Indirect effect: Traditional Response	-0.228***	-4.26	-0.333, -0.123
	(0.054)		
Indirect effect: PPC	-0.405***	-6.44	-0.528, -0.282
	(0.063)		
Indirect effect: Total	-0.633***	-6.19	-0.833, -0.433
	(0.102)		
Proportion of total effect mediated	0.459***	28.77	0.428, 0.490
	(0.016)		
N	602		

Notes: Bootstrapped estimates of the effect of condition assignment on voting preference via honesty. Bootstrapped standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S7. Attrition in multi-day studies

VARIABLES	(1) Study 4	(2) Supplemental Study I	(3) Supplemental Study III
Traditional Response	-0.090	0.085	0.090
	(0.254)	(0.243)	(0.247)
Control	-0.155	0.030	
	(0.256)	(0.244)	
Republican	0.361	0.369	0.016
	(0.300)	(0.279)	(0.319)
Independent	0.519**	0.064	-0.596**
	(0.238)	(0.233)	(0.302)
Other party	-0.073	0.380	0.485
	(0.515)	(0.452)	(0.613)
Female	-0.205	0.399*	0.112
	(0.222)	(0.206)	(0.258)
Age	-0.034***	-0.036***	-0.062***
	(0.010)	(0.010)	(0.012)
College educated	-0.397*	-0.026	-0.304
	(0.214)	(0.201)	(0.252)
Observations	468	499	447
PPC mean	0.311	0.299	0.199

Notes: Logistic estimates of attrition in each multi-day study where the dependent variable is a binary indicator for whether a participant left the study after randomization and before the final day. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are assignment to the PPC condition; Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S8. Study 4: preference for rival over time

	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized outcomes					
VARIABLES	Day 1	Day 3	Day 6	Day 9	Day 16	Day 6-16 avg
Traditional Response	-0.105	0.746***	0.640***	0.565***	0.735***	0.711***
	(0.136)	(0.119)	(0.127)	(0.127)	(0.126)	(0.125)
Control	0.033	1.179***	0.790***	0.758***	0.876***	0.889***
	(0.136)	(0.119)	(0.127)	(0.127)	(0.126)	(0.125)
Republican	0.112	0.291*	0.334*	0.321*	0.130	0.287*
	(0.156)	(0.136)	(0.145)	(0.146)	(0.145)	(0.143)
Independent	-0.013	-0.096	-0.188	-0.159	-0.146	-0.181
	(0.130)	(0.114)	(0.121)	(0.122)	(0.121)	(0.119)
Other party	-0.233	0.181	-0.049	-0.027	0.061	-0.005
	(0.258)	(0.226)	(0.240)	(0.241)	(0.239)	(0.236)
Female	0.314*	0.005	0.021	0.196	0.131	0.128
	(0.121)	(0.106)	(0.113)	(0.114)	(0.113)	(0.111)
Age	-0.001	-0.006	-0.006	-0.002	-0.004	-0.004
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
College educated	0.037	-0.142	-0.213*	-0.176	-0.177	-0.207
	(0.116)	(0.101)	(0.108)	(0.108)	(0.107)	(0.106)
Observations	330	330	330	330	330	330
R-squared	0.030	0.258	0.158	0.150	0.167	0.186
PPC mean	0.0241	-0.654	-0.486	-0.450	-0.547	-0.544

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate in each wave in Study 4. Column 5 shows the average for days 6, 9, and 16. Voting and honesty are standardized continuous scales, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are assignment to the PPC condition; Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S9. Study 4: perceived honesty of rival over time

	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized outcomes					
VARIABLES	Day 1	Day 3	Day 6	Day 9	Day 16	Day 6-16 avg
Traditional Response	-0.015	0.751***	0.573***	0.519***	0.431**	0.566***
	(0.136)	(0.121)	(0.129)	(0.130)	(0.132)	(0.128)
Control	-0.033	1.126***	0.757***	0.699***	0.645***	0.781***
	(0.137)	(0.121)	(0.129)	(0.130)	(0.132)	(0.129)
Republican	0.068	0.145	-0.017	0.209	0.157	0.133
	(0.156)	(0.139)	(0.148)	(0.149)	(0.151)	(0.147)
Independent	-0.094	-0.175	-0.207	-0.194	-0.167	-0.211
	(0.131)	(0.116)	(0.124)	(0.124)	(0.126)	(0.123)
Other party	-0.317	0.009	0.025	-0.137	0.073	-0.016
	(0.259)	(0.230)	(0.245)	(0.246)	(0.249)	(0.244)
Female	0.264*	-0.024	-0.033	0.086	0.144	0.075
	(0.122)	(0.108)	(0.115)	(0.116)	(0.117)	(0.115)
Age	-0.001	-0.004	-0.004	-0.004	-0.004	-0.005
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
College educated	0.034	-0.058	-0.253*	-0.209	-0.107	-0.210
	(0.116)	(0.103)	(0.110)	(0.110)	(0.112)	(0.109)
Observations	330	330	330	330	330	330
R-squared	0.024	0.232	0.125	0.120	0.093	0.135
PPC mean	0.0162	-0.638	-0.452	-0.414	-0.366	-0.458

Notes: OLS estimates of the effect of condition assignment on perceived honesty of rival candidate in each wave in Study 4. Column 5 shows the average for days 6, 9, and 16. Voting and honesty are standardized continuous scales, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are assignment to the PPC condition; Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S10. Study 4: mediation analysis

	Day 3			Day 16		
Honesty on voting preference	Coef.	Z	95% CI	Coef.	Z	95% CI
Direct effect	-1.273***	-8.00	-1.585,	-0.646***	-3.98	-0.964,
	(0.159)		-0.961	(-.162)		-0.328
Indirect effect: Traditional	-0.269**	-3.26	-0.430,	-0.136	-1.87	-0.278,
Response	(0.082)		-0.107	(0.072)		0.006
Indirect effect: PPC	-0.807***	-9.13	-0.980,	-0.409***	-4.43	-0.590,
	(0.088)		-0.634	(0.092)		-0.228
Indirect effect: Total	-1.076***	-7.63	-1.353,	-0.545***	-3.91	-0.818,
	(0.141)		-0.799	(0.139)		-0.271
Proportion of total effect mediated	0.458***	36.75	0.433,	0.457***	43.50	0.437,
	(0.012)		0.482	(0.011)		0.478
N	330			330		

Notes: Bootstrapped estimates of the effect of condition assignment on voting preference via honesty on day 3 and day 16 of Study 4. Bootstrapped standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S11. Study 5: preference for and perceived honesty of rival in real-world setting

	(1)	(2)	(3)	(4)
	Full treatment indicator		Pooled treatment indicator	
VARIABLES	Std. Voting	Std. Honesty	Std. Voting	Std. Honesty
Tailored PPC	0.201	0.241		
	(0.160)	(0.161)		
Traditional Response	0.596***	0.622***	0.498***	0.505***
	(0.158)	(0.159)	(0.137)	(0.138)
Control	0.705***	0.670***	0.607***	0.553***
	(0.157)	(0.158)	(0.137)	(0.138)
Independent	-0.151	-0.114	-0.156	-0.122
	(0.115)	(0.116)	(0.115)	(0.116)
Female	0.142	0.032	0.139	0.028
	(0.115)	(0.116)	(0.115)	(0.116)
Age	0.001	0.005	0.001	0.005
	(0.005)	(0.005)	(0.005)	(0.005)
College educated	-0.038	-0.047	-0.042	-0.052
	(0.112)	(0.112)	(0.112)	(0.113)
Observations	299	299	299	299
R-squared	0.095	0.084	0.090	0.077
PPC mean	-0.179	-0.147	-0.283	-0.271

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate and perceived honesty of rival candidate. Columns 3-4 regress outcome on pooled treatment indicator in which the full PPC and tailored PPC conditions are combined and treated as the reference group. Voting and honesty are standardized continuous scales, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S12. Study 5: donation allocation to rival candidate

	N	Donation	p-value
Tailored PPC	71	60.2%	
Full PPC	75	57.7%	< .001
Traditional Response	77	75.1%	
Control	76	89.6%	

Notes: Regression-adjusted percentage of participants by condition who allocated a $0.10 donation to the rival gubernatorial candidate, Gretchen Whitmer, instead of to her opponent.

Table S13. Study 5: mediation analysis

Honesty on voting preference	Coef.	Z	95% CI
Direct effect	-0.889**	-2.89	-1.490, -0.287
	(0.307)		
Indirect effect: Traditional Response	-0.028	-0.29	-0.219, 0.162
	(0.097)		
Indirect effect: Tailored PPC	-0.257**	-2.58	-0.453, -0.062
	(0.100)		
Indirect effect: Full PPC	-0.402***	-4.09	-0.594, -0.209
	(0.098)		
Indirect effect: Total	-0.687***	-2.87	-1.156, -0.219
	(0.239)		
Proportion of total effect mediated	0.436***	23.88	0.400, 0.472
	(0.018)		
N	299		

Notes: Bootstrapped estimates of the effect of condition assignment on voting preference via honesty. Bootstrapped standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S14. Study 6 sample and attrition

VARIABLES	(1) SB Watch	(2) Attrition
Poison Only	0.080	-0.038
	(0.118)	(0.102)
Pure Counterargument	-0.053	0.027
	(0.116)	(0.102)
Prior TT use – no	-0.207*	0.195*
	(0.100)	(0.088)
Prior TT use – unsure	-0.268	0.377
	(0.322)	(0.299)
Black	0.177	-0.223
	(0.164)	(0.142)
Latino	0.111	0.102
	(0.233)	(0.198)
Asian	0.281	-0.519**
	(0.201)	(0.171)
Other race	-0.176	-0.290
	(0.358)	(0.335)
Age	0.001	-0.008*
	(0.004)	(0.003)
Republican	-0.041	0.134
	(0.124)	(0.106)
Independent	-0.264*	0.337***
	(0.114)	(0.101)
Other party	-0.615*	0.663*
	(0.294)	(0.290)
College educated	0.060	-0.045
	(0.103)	(0.091)
Female	-0.583***	0.491***
	(0.097)	(0.085)
Income $20-$40k	0.321*	-0.311*
	(0.137)	(0.129)
Income $40-$60k	0.641***	-0.538***
	(0.148)	(0.135)
Income $60-80k	0.861***	-0.630***
	(0.175)	(0.153)
Income $80-$100k	0.632**	-0.392*
	(0.206)	(0.180)
Income > $100k	0.933***	-0.714***
	(0.220)	(0.185)
Gender missing	0.462	0.276
	(0.866)	(0.762)
Observations	2,152	2,429
PPC mean	0.678	0.518

Notes: Logistic estimates of self-reports of watching the 2020 Super Bowl (Column 1) and attrition in the three-day study (Column 2). Attrition defined as those who completed wave 1, but did not watch the Super Bowl and/or did not complete all three surveys. Self-reported Super Bowl viewership measured in wave #2. Reference groups are assignment to the PPC condition; prior TurboTax use; Democrat; male; non-college educated; White; and income less than $20,000 per year. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S15. Study 6: Standardized TurboTax favorability index

	(1)	(2)	(3)
	Standardized TurboTax favorability index		
VARIABLES	Day 1	Day 3	Day 9
Poison Only	0.319***	0.313***	0.298***
	(0.065)	(0.066)	(0.066)
Pure Counterargument	0.296***	0.209**	0.237***
	(0.066)	(0.066)	(0.067)
Prior TT use – no	-0.658***	-0.655***	-0.606***
	(0.057)	(0.058)	(0.058)
Prior TT use – unsure	-0.169	-0.490*	-0.385
	(0.207)	(0.208)	(0.210)
Age	0.003	0.003	0.005*
	(0.002)	(0.002)	(0.002)
Republican	0.281***	0.316***	0.238***
	(0.067)	(0.068)	(0.068)
Independent	-0.124	-0.110	-0.186**
	(0.066)	(0.066)	(0.067)
Other Party	-0.053	0.054	0.060
	(0.210)	(0.211)	(0.213)
College educated	-0.010	-0.039	-0.030
	(0.059)	(0.060)	(0.060)
Female	0.283***	0.211***	0.226***
	(0.055)	(0.055)	(0.055)
Observations	1,172	1,172	1,172
R-squared	0.192	0.181	0.170
PPC mean	-0.206	-0.176	-0.180

Notes: OLS estimates of the effect of condition assignment on a standardized composite index of first two outcome measures in Study 6: (1) How positively or negatively do you view TurboTax? (2) If you were looking for an online tax filing program, how likely would you be to use TurboTax? Both measures treated as continuous on a 1-5 scale, where 5 indicates more positive or more likely to use, respectively. The index reflects the standardized sum of both measures. Covariates include self-reported party affiliation, gender, age, an indicator for college-educated, an indicator for prior use of TurboTax, income level, race/ethnicity, and an indicator for watching above the sample median number of hours of media watched. Reference groups are assignment to the PPC condition; prior TurboTax use; Democrat; male; non-college educated; White; income less than $20,000 per year; and below median number of hours watched. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S16. Study 6: unstandardized perceptions of TurboTax and likelihood of use

	(1)	(2)	(3)	(4)	(5)	(6)
	How positively do you view TT?			How likely would you be to use TT?		
VARIABLES	Day 1	Day 3	Day 9	Day 1	Day 3	Day 9
Poison Only	0.419***	0.361***	0.364***	0.324***	0.387***	0.379***
	(0.079)	(0.077)	(0.081)	(0.088)	(0.092)	(0.096)
Pure Counterargument	0.382***	0.253**	0.293***	0.309***	0.246**	0.300**
	(0.079)	(0.077)	(0.081)	(0.088)	(0.093)	(0.096)
Prior TT use – no	-0.488***	-0.496***	-0.468***	-1.048***	-1.067***	-1.044***
	(0.069)	(0.067)	(0.071)	(0.077)	(0.081)	(0.084)
Prior TT use – unsure	-0.104	-0.415	-0.264	-0.289	-0.754*	-0.698*
	(0.249)	(0.242)	(0.257)	(0.278)	(0.292)	(0.302)
Age	0.006*	0.007**	0.011***	0.002	0.001	0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Republican	0.397***	0.459***	0.339***	0.259**	0.296**	0.254**
	(0.081)	(0.079)	(0.083)	(0.090)	(0.095)	(0.098)
Independent	-0.087	-0.099	-0.215**	-0.201*	-0.164	-0.249**
	(0.079)	(0.077)	(0.081)	(0.088)	(0.093)	(0.096)
Other Party	-0.110	0.116	0.109	-0.013	0.013	0.040
	(0.253)	(0.246)	(0.261)	(0.283)	(0.297)	(0.307)
College educated	-0.036	-0.012	-0.018	0.012	-0.080	-0.058
	(0.071)	(0.070)	(0.074)	(0.080)	(0.084)	(0.087)
Female	0.369***	0.212***	0.294***	0.292***	0.292***	0.270***
	(0.066)	(0.064)	(0.068)	(0.074)	(0.077)	(0.080)
Observations	1,172	1,172	1,172	1,172	1,172	1,172
R-squared	0.149	0.140	0.142	0.197	0.192	0.177
PPC mean	2.850	2.920	3.002	3.034	2.987	2.996

Notes: OLS estimates of the effect of condition assignment on the first two outcome measures in Study 6: (1) How positively or negatively do you view TurboTax? (2) If you were looking for an online tax filing program, how likely would you be to use TurboTax? Outcome measures are continuous on a 1-5 scale, where 5 indicates "extremely positively" or "extremely likely to use," respectively. Covariates include self-reported party affiliation, gender, age, an indicator for college-educated, an indicator for prior use of TurboTax, income level, race/ethnicity, and an indicator for watching above the sample median number of hours of media watched. Reference groups are assignment to the PPC condition; prior TurboTax use; Democrat; male; non-college educated; White; income less than $20,000 per year; and below median number of hours watched. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S17. Study 6: unstandardized willingness to use and recommend TurboTax

	Would you use TT or competitor?			Would you recommend TT to a friend?		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Day 1	Day 3	Day 9	Day 1	Day 3	Day 9
Poison Only	0.721***	0.580***	0.685***	0.541***	0.579***	0.629***
	(0.155)	(0.155)	(0.155)	(0.154)	(0.154)	(0.154)
Pure Counterargument	0.384*	0.289	0.329*	0.364*	0.306*	0.301*
	(0.153)	(0.154)	(0.154)	(0.153)	(0.154)	(0.153)
Prior TT use – no	-1.189***	-1.245***	-1.266***	-1.134***	-1.249***	-1.162***
	(0.135)	(0.135)	(0.136)	(0.136)	(0.138)	(0.136)
Prior TT use – unsure	-1.156*	-1.153*	-0.980*	-1.165*	-1.413**	-0.989*
	(0.474)	(0.473)	(0.467)	(0.484)	(0.503)	(0.472)
Age	0.002	0.001	0.001	0.008	0.005	0.009
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Republican	0.336*	0.411*	0.355*	0.319*	0.262	0.249
	(0.161)	(0.161)	(0.162)	(0.158)	(0.158)	(0.158)
Independent	-0.279	-0.210	-0.315*	-0.206	-0.293	-0.274
	(0.153)	(0.153)	(0.154)	(0.153)	(0.154)	(0.153)
Other Party	0.006	-0.160	-0.534	-0.303	-0.532	-0.637
	(0.486)	(0.498)	(0.510)	(0.505)	(0.527)	(0.524)
College educated	0.048	0.001	-0.087	-0.209	-0.142	-0.165
	(0.140)	(0.140)	(0.141)	(0.140)	(0.140)	(0.140)
Female	0.399**	0.341**	0.226	0.399**	0.300*	0.305*
	(0.129)	(0.129)	(0.129)	(0.128)	(0.128)	(0.127)
Observations	1,172	1,169	1,169	1,172	1,169	1,169
PPC mean	0.452	0.474	0.467	0.423	0.425	0.435

Notes: Logistic estimates of the effect of condition assignment on the second two outcome measures in Study 6: (1) Would you choose to file your taxes through TurboTax or one of its comparable competitors? (2) If a friend asked you for a recommendation on online tax filing services, which company would you be most likely to recommend? Outcome measures are binary, with 1 indicating willingness to use or willingness to recommend, respectively. Covariates include self-reported party affiliation, gender, age, an indicator for college-educated, an indicator for prior use of TurboTax, income level, race/ethnicity, and an indicator for watching above the sample median number of hours of media watched. Reference groups are assignment to the PPC condition; prior TurboTax use; Democrat; male; non-college educated; White; income less than $20,000 per year; and below median number of hours watched. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S18. Study 6: recall of counterclaims

	N	Correct recall	p-value
PPC	385	71.1%	
Poison Only	398	48.5%	< .001
Pure Counterargument	389	72.0%	

Notes: Regression-adjusted means from logistic estimates of the effect of condition assignment on correct recall of the TurboTax counterclaims, as measured in wave 2 of study 6. Outcome measure is binary, with 1 indicating correct identification of the TurboTax counterclaims that were shown in wave 1. p-value from post-estimation Chi-squared test of joint significance. Covariates include self-reported party affiliation, gender, age, an indicator for college-educated, an indicator for prior use of TurboTax, income level, race/ethnicity, and an indicator for watching above the sample median number of hours of media watched. Reference groups are assignment to the PPC condition; prior TurboTax use; Democrat; male; non-college educated; White; income less than $20,000 per year; and below median number of hours watched. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S19. Study 7: preference for and perceived honesty of rival

	(1)	(2)	(3)	(4)
	Raw units (1-5 scale)		Standardized units	
VARIABLES	Voting	Honesty	Std. Voting	Std. Honesty
Traditional Response	0.414**	0.321**	0.437**	0.435**
	(0.135)	(0.106)	(0.143)	(0.144)
Control	0.667***	0.455***	0.704***	0.617***
	(0.133)	(0.105)	(0.140)	(0.142)
Republican	0.123	0.292**	0.130	0.395**
	(0.137)	(0.108)	(0.144)	(0.146)
Independent	-0.179	-0.026	-0.189	-0.035
	(0.135)	(0.107)	(0.143)	(0.144)
Other party	-0.798**	-0.363	-0.843**	-0.492
	(0.266)	(0.209)	(0.280)	(0.283)
Female	0.247*	0.045	0.261*	0.062
	(0.110)	(0.086)	(0.116)	(0.117)
Age	-0.003	-0.002	-0.003	-0.003
	(0.005)	(0.004)	(0.005)	(0.005)
College educated	0.092	0.155	0.097	0.210
	(0.115)	(0.091)	(0.121)	(0.123)
Observations	266	266	266	266
R-squared	0.155	0.136	0.155	0.136
PPC mean	2.828	2.696	-0.376	-0.346

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate and perceived honesty of rival candidate. Voting and honesty are both continuous, measured on a 1-5 scale where 5 indicates “extremely likely to vote” or “extremely honest,” respectively. Columns 3 and 4 report standardized outcome measures. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S20. Study 7: recall of counterclaims

	N	Extremely	Somewhat	Not very	Not at all	p-value
PPC	91	27.2%	42.8%	24.3%	5.7%	
Traditional Response	87	15.2%	31.5%	40.4%	12.8%	< .001
Control	88	4.8%	35.7%	30.0%	29.5%	

Notes: Regression-adjusted percentage of participants in each condition answering the question “How clearly do you recall the specifics of any arguments you may have viewed against [McKinley’s] claims?” in study 7.

Table S21. Study 7: identification of counterclaims

	N	Correct	p-value PPC v. Traditional
PPC	91	24.4%	.11
Traditional Response	87	14.7%	
Control	88	0.0%	

Notes: Regression-adjusted percentage of participants in each condition who correctly identified the counter-messages from the traditional response and PPC ads when asked at the end of the survey, after a second re-exposure to the rival ad.

Table S22. Study 7: mediation analysis

	Recall on honesty			Honesty on voting preference		
	Coef.	Z	95% CI	Coef.	Z	95% CI
Direct effect	2.540***	13.56	2.173,	-0.589***	-3.51	-0.918,
	(0.187)		2.907	(0.168)		-0.260
Indirect effect: Traditional Response	-0.283***	-4.24	-0.413,	-0.108	-1.36	-0.263,
	(0.067)		-0.152	(0.079)		0.047
Indirect effect: PPC	-0.375***	-4.55	-0.536,	-0.366***	-4.14	-0.539,
	(0.082)		-0.213	(0.088)		-0.193
Indirect effect: Total	-0.657***	-4.57	-0.939,	-0.474***	-3.38	-0.749,
	(0.144)		-0.376	(0.140)		-0.200
Proportion of total effect mediated	-0.349***	-3.78	-0.530,	0.446***	25.00	0.411,
	(0.092)		-0.168	(0.018)		0.481
N	266			266		

Notes: Bootstrapped mediation estimates. Column 1 shows estimates of recall as a mediator of the effect of condition assignment on perceived honesty, where recall is measured as the total number of correctly identified counter-messages in Study 7. Column 2 shows estimates of honesty as a mediator for the effect of condition assignment on voting preference. Bootstrapped standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table S23. Supplemental Study I: voting preference for rival and perceived honesty of rival

	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized voting preference			Standardized perceived honesty		
VARIABLES	Day 1	Day 3	Day 7	Day 1	Day 3	Day 7
Traditional Response	0.548***	0.475***	0.424***	0.604***	0.456***	0.458***
	(0.124)	(0.128)	(0.127)	(0.129)	(0.130)	(0.128)
Control	0.857***	0.699***	0.724***	0.748***	0.592***	0.580***
	(0.125)	(0.129)	(0.128)	(0.130)	(0.131)	(0.129)
Republican	0.231	0.308*	0.209	0.178	0.192	0.294
	(0.147)	(0.151)	(0.150)	(0.152)	(0.153)	(0.152)
Independent	0.133	0.048	0.165	0.014	-0.070	0.024
	(0.118)	(0.121)	(0.120)	(0.122)	(0.123)	(0.122)
Other	0.070	-0.196	-0.165	0.209	-0.196	-0.066
	(0.243)	(0.250)	(0.248)	(0.252)	(0.254)	(0.251)
Female	0.225*	-0.147	0.007	-0.045	-0.139	-0.086
	(0.104)	(0.107)	(0.106)	(0.108)	(0.108)	(0.107)
Age	-0.001	-0.002	-0.004	0.005	-0.002	-0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
College educated	0.006	-0.128	0.080	0.113	-0.062	0.114
	(0.103)	(0.107)	(0.106)	(0.108)	(0.108)	(0.107)
Observations	346	346	346	346	346	346
R-squared	0.142	0.105	0.105	0.117	0.079	0.085
PPC mean	-0.493	-0.395	-0.380	-0.486	-0.330	-0.343

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate and perceived honesty of rival candidate. Covariates include self-reported party affiliation and gender. Voting and honesty are standardized continuous scales, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S24. Supplemental Study II: voting preference for rival and perceived honesty of rival

	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized voting preference			Standardized perceived honesty		
VARIABLES	DV 1	DV 2	DV 3	DV 1	DV 2	DV 3
Traditional Response	0.630***	0.660***	0.647***	0.579***	0.655***	0.651***
	(0.092)	(0.091)	(0.092)	(0.093)	(0.093)	(0.092)
Republican	0.477***	0.544***	0.507***	0.440***	0.334**	0.367**
	(0.125)	(0.124)	(0.124)	(0.126)	(0.126)	(0.126)
Independent	-0.063	0.022	-0.060	-0.070	-0.025	-0.067
	(0.103)	(0.103)	(0.103)	(0.105)	(0.104)	(0.104)
Other	-0.401	-0.102	-0.062	-0.094	0.157	-0.016
	(0.295)	(0.293)	(0.295)	(0.299)	(0.298)	(0.298)
Female	0.064	0.153	0.061	0.021	0.081	0.044
	(0.092)	(0.092)	(0.092)	(0.093)	(0.093)	(0.093)
Age	-0.008*	-0.009*	-0.009*	-0.005	-0.006	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
College educated	0.073	0.048	-0.014	0.157	0.062	0.057
	(0.092)	(0.091)	(0.092)	(0.093)	(0.093)	(0.093)
Observations	425	425	425	425	425	425
R-squared	0.145	0.157	0.148	0.126	0.128	0.130
PPC mean	-0.319	-0.334	-0.327	-0.293	-0.331	-0.329

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate and perceived honesty of rival candidate. Voting and honesty are standardized continuous scales, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are Democrat; male; and non-college educated. Standard errors in parentheses. *** p < 0.001, ** p < 0.01, * p < 0.05

Table S25. Supplemental Study III: voting preference for rival and perceived honesty

	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized voting preference			Standardized perceived honesty		
VARIABLES	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3
Traditional Response	0.549***	0.440***	0.369***	0.425***	0.467***	0.447***
	(0.103)	(0.103)	(0.102)	(0.103)	(0.101)	(0.103)
Republican	0.167	0.312*	0.445**	0.125	0.295*	0.205
	(0.139)	(0.139)	(0.138)	(0.139)	(0.136)	(0.139)
Independent	-0.105	-0.144	-0.112	-0.244*	-0.365**	-0.183
	(0.119)	(0.119)	(0.118)	(0.119)	(0.116)	(0.119)
Other	0.060	-0.392	-0.286	-0.170	-0.293	-0.379
	(0.334)	(0.334)	(0.331)	(0.335)	(0.327)	(0.335)
Female	0.167	0.166	0.173	0.210	0.076	0.168
	(0.108)	(0.108)	(0.107)	(0.108)	(0.105)	(0.108)
Age	-0.004	-0.011**	-0.012**	0.000	-0.005	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
College educated	0.032	-0.025	0.026	0.006	-0.039	-0.121
	(0.106)	(0.106)	(0.105)	(0.106)	(0.104)	(0.106)
Observations	355	355	355	355	355	355
R-squared	0.093	0.104	0.109	0.082	0.129	0.090
PPC mean	-0.334	-0.236	-0.183	-0.246	-0.252	-0.221

Notes: OLS estimates of the effect of condition assignment on preference for rival candidate and perceived honesty of rival candidate. Voting and honesty are both continuous, measured on a 1-5 scale where 5 indicates "extremely likely to vote" or "extremely honest," respectively. Covariates include self-reported party affiliation, gender, age, and an indicator for college-educated. Reference groups are Democrat; male; and non-college educated. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Supplementary Figures

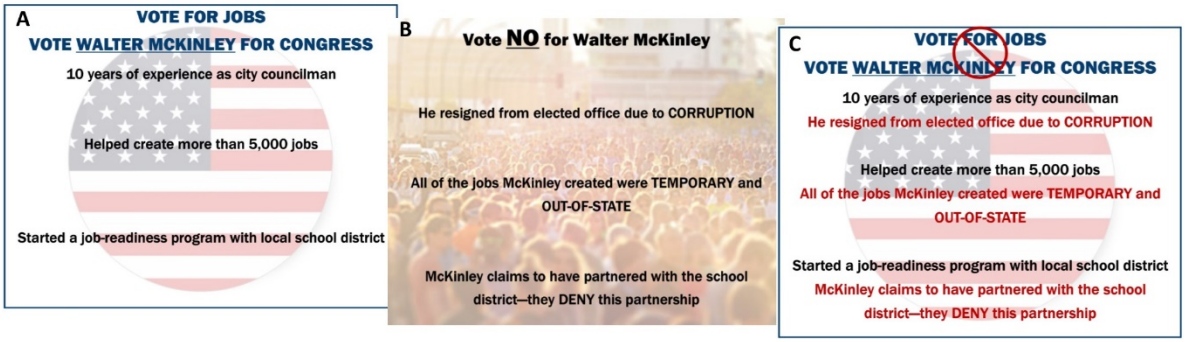

Fig. S1. Walter McKinley ads with identical content. (A) Rival ad; (B) Traditional Response ad; (C) PPC ad. Used in Studies 1 and 2.

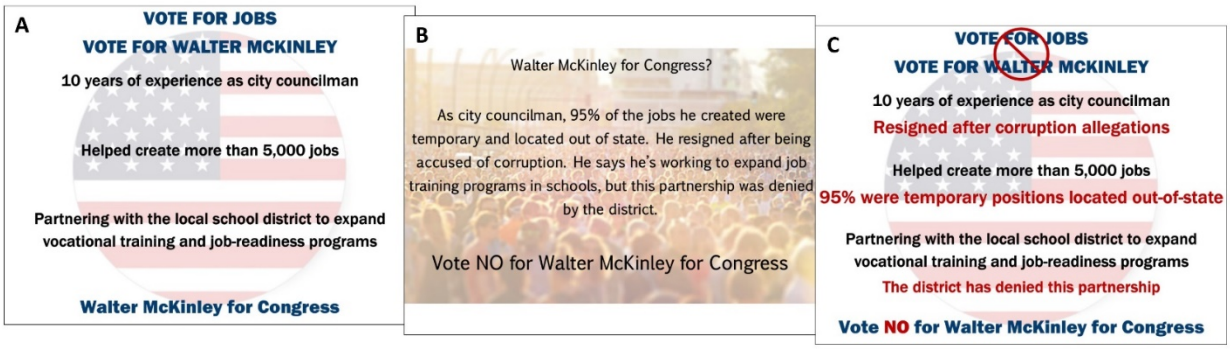

Fig. S2. Walter McKinley ads with more externally valid Traditional Response ad. (A) Rival ad; (B) Traditional Response ad; (C) PPC ad. Used in Studies 3, 4, and 7, as well as Supplemental Studies I, II, and III.

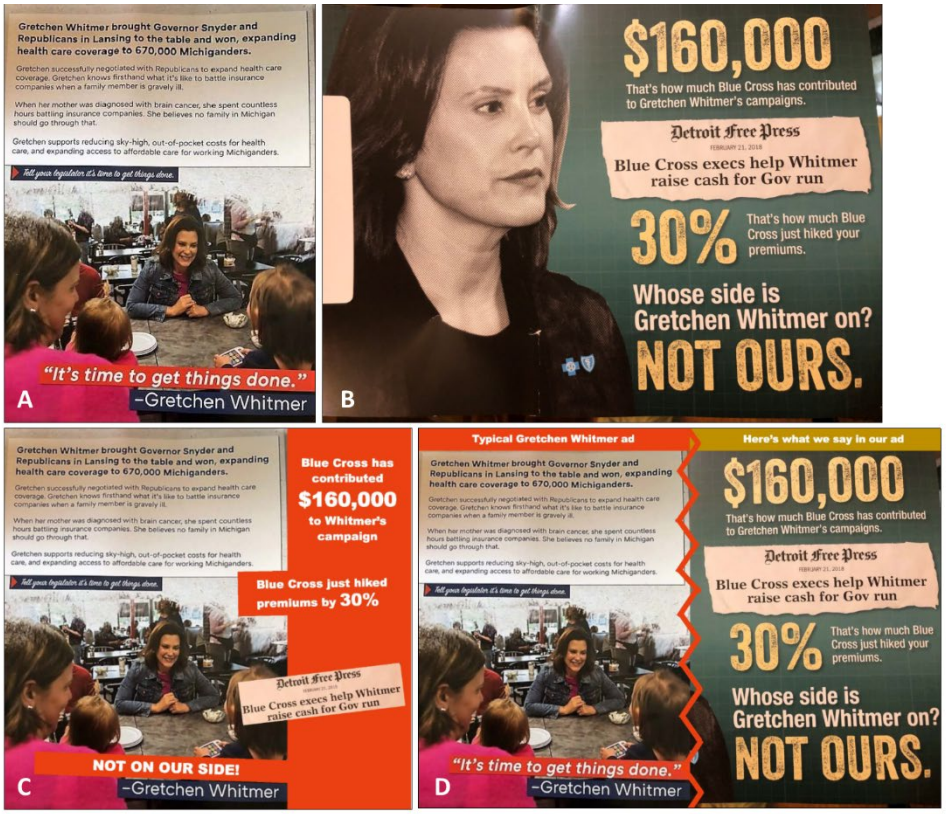

Fig. S3. Gretchen Whitmer ads. (A) Rival ad; (B) Traditional Response ad; (C) Tailored PPC ad; (D) Full PPC ad. Used in Study 5.

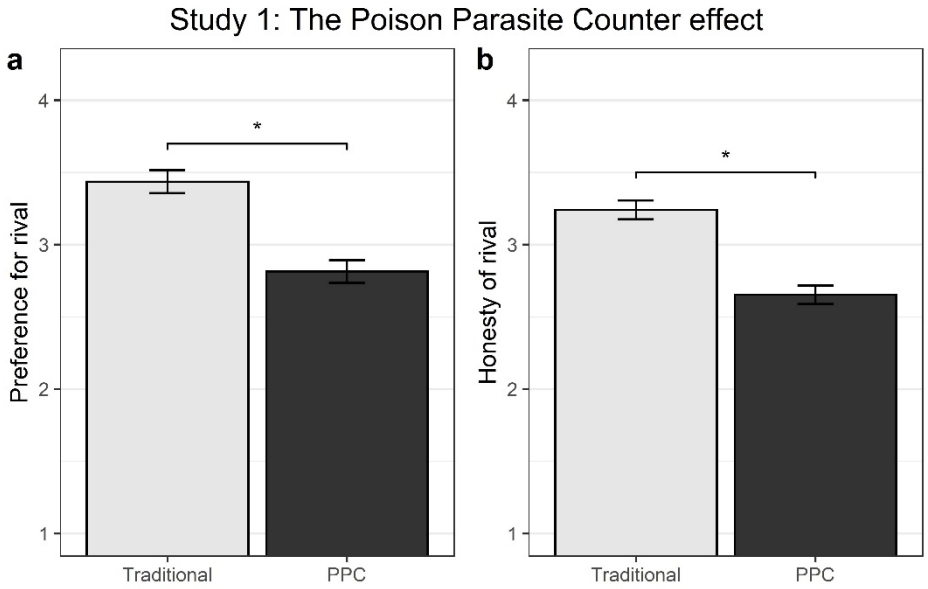

Fig. S4. Preference for rival (a) and perceived honesty of rival (b) after viewing either the Traditional Response or PPC response ad in Study 1. Outcomes reflect regression-adjusted unstandardized means, measured on 1-5 scale where 5 represents "extremely likely to vote" or "extremely honest," respectively. Error bars reflect ±1 standard error. * reflects differences significant at $p < .01$.

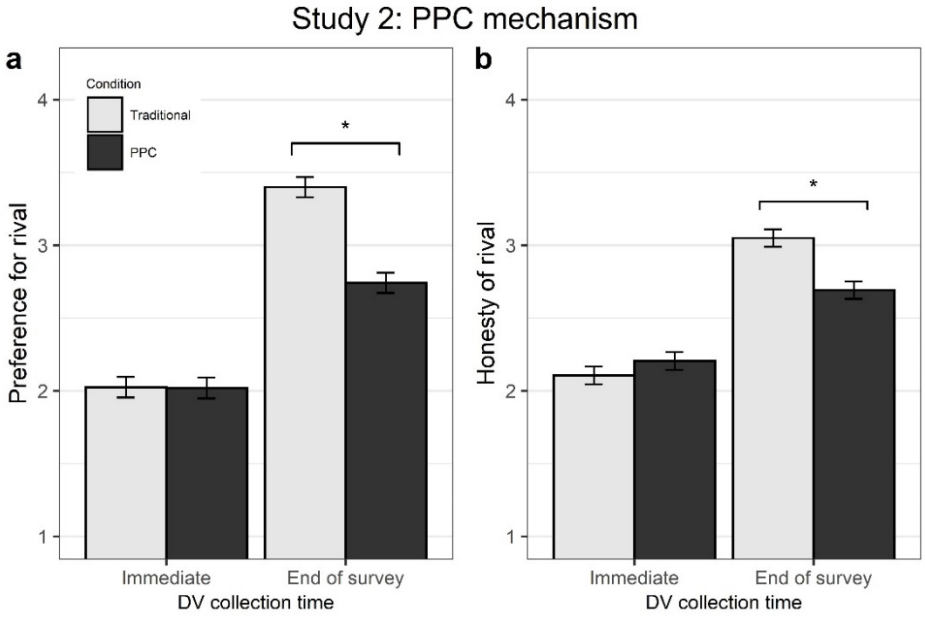

Fig. S5. Preference for rival (a) and perceived honesty of rival (b) after viewing either the Traditional Response or PPC response ad in Study 2. Dependent variable questions were answered either immediately after viewing the PPC or Traditional Response ad, or at the end of the survey after a second re-exposure to the rival ad. Outcomes reflect regression-adjusted unstandardized means, measured on 1-5 scale where 5 represents "extremely likely to vote" or "extremely honest," respectively. Error bars reflect ±1 standard error. * reflects differences significant at $p < .01$.

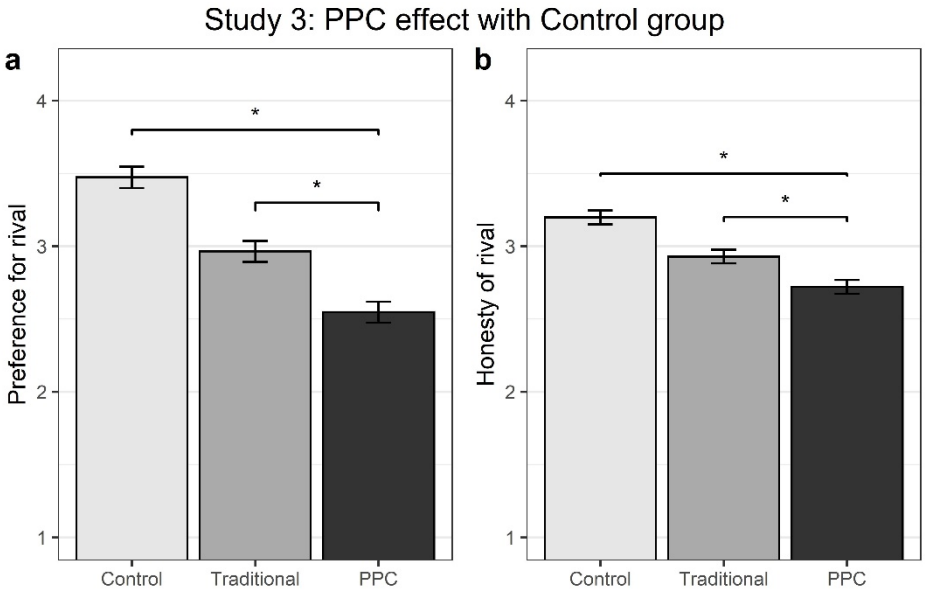

Fig. S6. Preference for rival (a) and perceived honesty of rival (b) after viewing either the Control, Traditional Response, or PPC response ad in Study 3. Outcomes reflect regression-adjusted unstandardized means, measured on 1-5 scale where 5 represents "extremely likely to vote" or "extremely honest," respectively. Error bars reflect ±1 standard error. * reflects differences significant at $p < .01$.

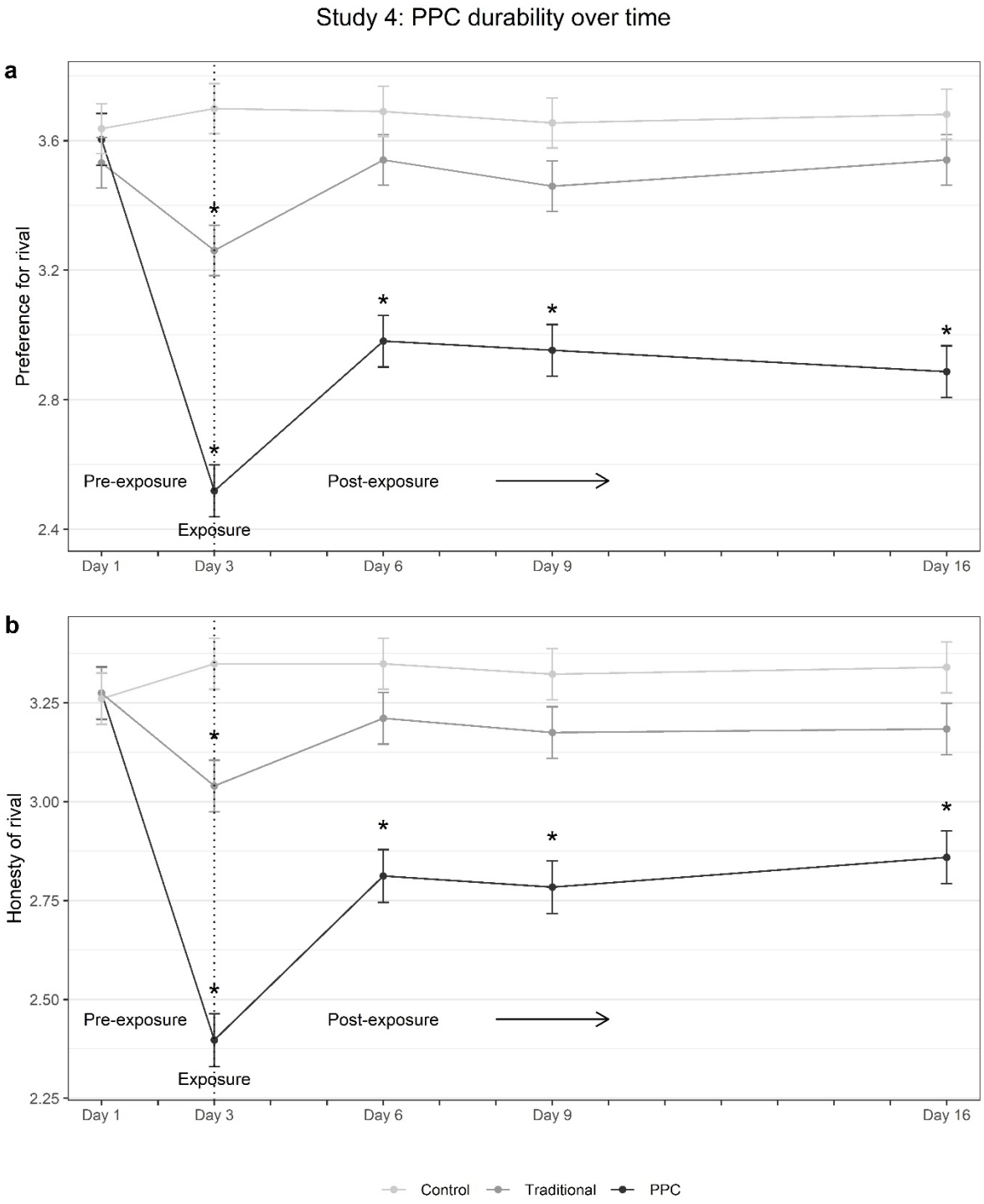

Fig. S7. Preference for rival (a) and perceived honesty of rival (b) on each day in study 4. All participants saw control, Traditional Response, or PPC ad a single time on day 3. In all other waves (on days 6, 9, and 16), participants saw the rival ad interspersed with decoy ads and filler material. Outcomes reflect regression-adjusted unstandardized means, measured on 1-5 scale where 5 represents "extremely likely to vote" or "extremely honest," respectively. Error bars reflect ±1 standard error. *$p < .01$ relative to Control condition.

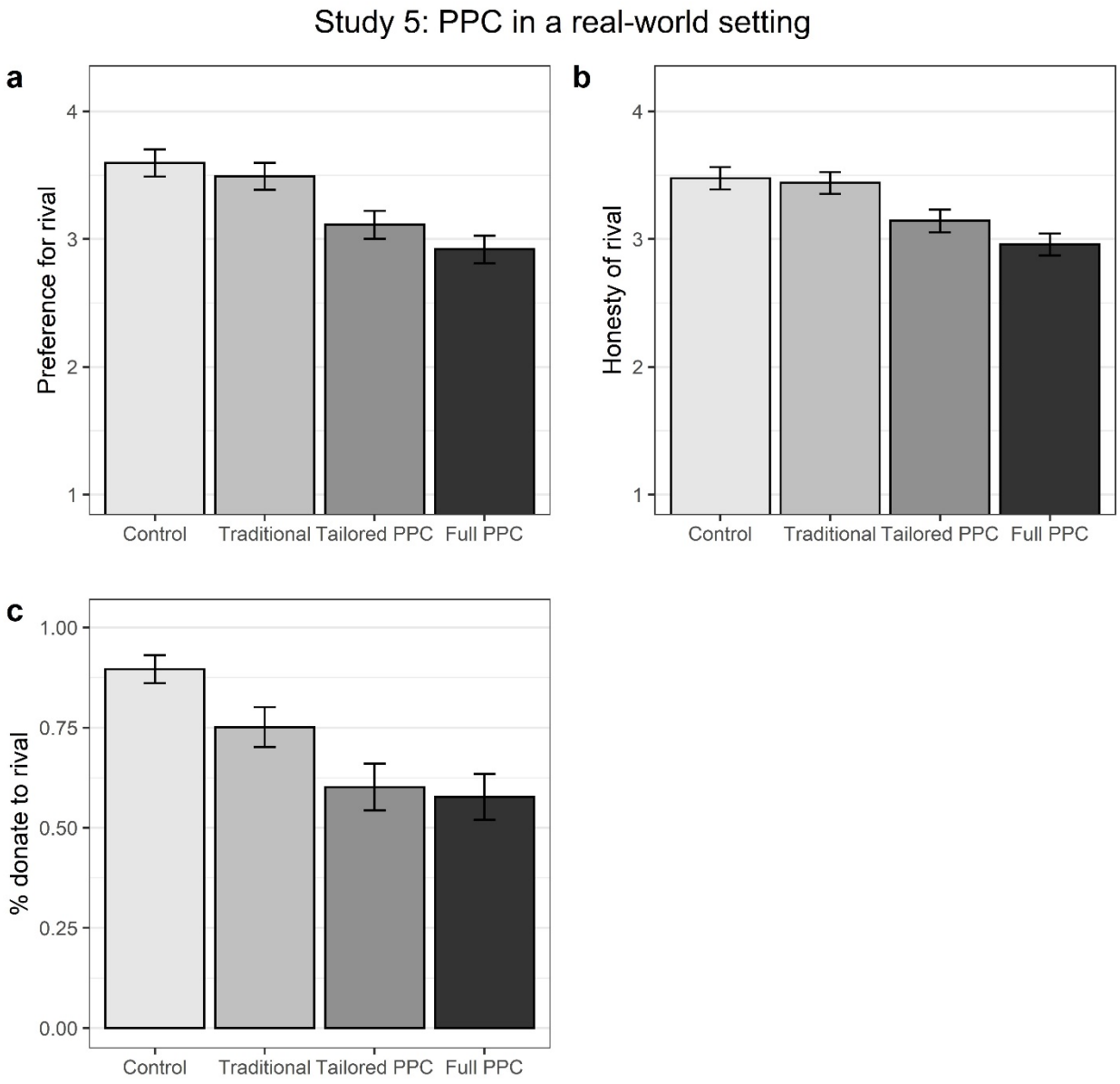

Fig. S8. Preference for rival (a), perceived honesty of rival (b), and donations to rival (c) in study 5. Rival and Traditional Response ads came from the 2018 Democratic gubernatorial race in Michigan. See Fig. S3 for ads. Outcomes for (a) and (b) reflect regression-adjusted unstandardized means, measured on 1-5 scale where 5 represents "extremely likely to vote" or "extremely honest," respectively. Error bars reflect ±1 standard error. Tailored PPC and Full PPC are both statistically different from the Control and Traditional conditions in (a) and (b) ($p < .05$). Both PPC conditions are statistically different from the Control condition in (c) ($p < .001$). Relative to the Traditional Response condition in (c) the percent of participants who directed donations to the rival candidate in is nearly significantly different in the Tailored PPC condition ($p = .06$), and significant in the Full PPC condition ($p = .03$).