

Supplemental Materials for

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

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Supplemental Methods

All studies included in this paper and the supplement were approved by the Harvard University Committee on the Use of Human Subjects (IRB17-1891).

Standard MTurk Participant Qualifications

All studies reported in the main paper and supplement utilized the same minimum qualifications for recruiting MTurk participants. In order to participate, a MTurk worker must:

1. Be located in the United States;
2. Have an approval rating of at least 95%;
3. Have not participated in prior surveys as part of this study;
4. Consent to participate;
5. And pass an initial attention check.

Only MTurk workers who met all five criteria were eligible to participate in any study reported in this paper. For studies that employed additional exclusion criteria, this is detailed in the study description (see, e.g., Study 5 in the main paper).

Supplemental Results

Study 4: PPC Durability Over Time

Study 4 examined the durability of the PPC effect over the course of 17 days. Tables S1 and S2 report results on two outcomes for each day: (1) preference for McKinley; (2) perceptions of McKinley's honesty. Each outcome is measured on a five-point scale and standardized.

Table S1. Study 4: preference for rival over time

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Day 1	Day 3	Day 6	Day 9	Day 16	Day 6-16 avg
Traditional Response	-0.105 (0.136)	0.746*** (0.119)	0.640*** (0.127)	0.565*** (0.127)	0.735*** (0.126)	0.711*** (0.125)
Control	0.033 (0.136)	1.179*** (0.119)	0.790*** (0.127)	0.758*** (0.127)	0.876*** (0.126)	0.889*** (0.125)
Republican	0.112 (0.156)	0.291* (0.136)	0.334* (0.145)	0.321* (0.146)	0.130 (0.145)	0.287* (0.143)
Independent	-0.013 (0.130)	-0.096 (0.114)	-0.188 (0.121)	-0.159 (0.122)	-0.146 (0.121)	-0.181 (0.119)
Other party	-0.233 (0.258)	0.181 (0.226)	-0.049 (0.240)	-0.027 (0.241)	0.061 (0.239)	-0.005 (0.236)
Female	0.314* (0.121)	0.005 (0.106)	0.021 (0.113)	0.196 (0.114)	0.131 (0.113)	0.128 (0.111)
Age	-0.001 (0.005)	-0.006 (0.004)	-0.006 (0.004)	-0.002 (0.004)	-0.004 (0.004)	-0.004 (0.004)
College educated	0.037 (0.116)	-0.142 (0.101)	-0.213* (0.108)	-0.176 (0.108)	-0.177 (0.107)	-0.207 (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 is a standardized continuous scales, measured on a 1-5 scale where 5 indicates "extremely likely to vote." 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

Supplemental Materials for Poison Parasite Counter

Table S2. Study 4: perceived honesty of rival over time

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized outcomes					
	Day 1	Day 3	Day 6	Day 9	Day 16	Day 6-16 avg
Traditional Response	-0.015 (0.136)	0.751*** (0.121)	0.573*** (0.129)	0.519*** (0.130)	0.431** (0.132)	0.566*** (0.128)
Control	-0.033 (0.137)	1.126*** (0.121)	0.757*** (0.129)	0.699*** (0.130)	0.645*** (0.132)	0.781*** (0.129)
Republican	0.068 (0.156)	0.145 (0.139)	-0.017 (0.148)	0.209 (0.149)	0.157 (0.151)	0.133 (0.147)
Independent	-0.094 (0.131)	-0.175 (0.116)	-0.207 (0.124)	-0.194 (0.124)	-0.167 (0.126)	-0.211 (0.123)
Other party	-0.317 (0.259)	0.009 (0.230)	0.025 (0.245)	-0.137 (0.246)	0.073 (0.249)	-0.016 (0.244)
Female	0.264* (0.122)	-0.024 (0.108)	-0.033 (0.115)	0.086 (0.116)	0.144 (0.117)	0.075 (0.115)
Age	-0.001 (0.005)	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.005 (0.004)
College educated	0.034 (0.116)	-0.058 (0.103)	-0.253* (0.110)	-0.209 (0.110)	-0.107 (0.112)	-0.210 (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 across days 6, 9, and 16. Honesty is a standardized continuous scale, measured on a 1-5 scale where 5 indicates “extremely honest.” 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

Study 5: The PPC Effect on Real-World Political Donations

Table S3 shows results from Study 5 of the effect of condition assignment on preference for the rival candidate (Whitmer) and perceptions of her honesty. Preference for Whitmer and perceptions of her honesty among participants who saw the Traditional Response ad did not differ significantly from participants who saw the Control ad.

Table S3. Study 5: preference for and perceived honesty of rival in real-world setting

VARIABLES	(1)	(2)	(3)	(4)
	Full treatment indicator		Pooled treatment indicator	
	Std. Voting	Std. Honesty	Std. Voting	Std. Honesty
Tailored PPC	0.201 (0.160)	0.241 (0.161)		
Traditional Response	0.596*** (0.158)	0.622*** (0.159)	0.498*** (0.137)	0.505*** (0.138)
Control	0.705*** (0.157)	0.670*** (0.158)	0.607*** (0.137)	0.553*** (0.138)
Independent	-0.151 (0.115)	-0.114 (0.116)	-0.156 (0.115)	-0.122 (0.116)
Female	0.142 (0.115)	0.032 (0.116)	0.139 (0.115)	0.028 (0.116)
Age	0.001 (0.005)	0.005 (0.005)	0.001 (0.005)	0.005 (0.005)
College educated	-0.038 (0.112)	-0.047 (0.112)	-0.042 (0.112)	-0.052 (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 assignment to the Full PPC condition (columns 1-2); Democrat; male; and non-college educated. Standard errors in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Study 6: Implementing the PPC using Video Ads***Effects on primary outcomes***

The main paper reports the effect of the PPC in Study 6 on a standardized aggregate index of TurboTax (TT) favorability. Table S4 reports effects of each condition on each of the favorability index outcomes individually.

Table S4. Study 6: unstandardized perceptions of TurboTax and likelihood of use

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	How positively do you view TT?			How likely would you be to use TT?		
	Day 1	Day 3	Day 9	Day 1	Day 3	Day 9
Poison Only	0.420*** (0.079)	0.365*** (0.077)	0.368*** (0.081)	0.328*** (0.088)	0.391*** (0.092)	0.383*** (0.096)
Pure Counterargument	0.383*** (0.079)	0.257*** (0.077)	0.297*** (0.081)	0.313*** (0.088)	0.250** (0.093)	0.304** (0.096)
Prior TT use – no	0.490*** (0.069)	0.500*** (0.067)	0.472*** (0.071)	1.052*** (0.077)	1.071*** (0.081)	1.049*** (0.084)
Prior TT use – unsure	0.385 (0.252)	0.084 (0.246)	0.207 (0.260)	0.761** (0.282)	0.316 (0.296)	0.349 (0.307)
Age	0.006* (0.003)	0.007** (0.003)	0.011*** (0.003)	0.002 (0.003)	0.001 (0.003)	0.002 (0.003)
Republican	0.398*** (0.081)	0.462*** (0.079)	0.342*** (0.083)	0.262** (0.090)	0.299** (0.095)	0.257** (0.098)
Independent	-0.087 (0.079)	-0.097 (0.077)	-0.213** (0.081)	-0.199* (0.088)	-0.161 (0.093)	-0.246* (0.096)
Other Party	-0.109 (0.253)	0.118 (0.246)	0.111 (0.261)	-0.010 (0.283)	0.015 (0.297)	0.043 (0.307)
College educated	-0.037 (0.071)	-0.014 (0.070)	-0.020 (0.074)	0.011 (0.080)	-0.082 (0.084)	-0.060 (0.087)
Female	0.368*** (0.066)	0.209** (0.064)	0.290*** (0.068)	0.288*** (0.074)	0.288*** (0.077)	0.266*** (0.080)
Observations	1,172	1,172	1,172	1,172	1,172	1,172
R-squared	0.150	0.142	0.143	0.198	0.193	0.178
PPC mean	2.849	2.917	2.999	3.031	2.985	2.993

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

Effects on secondary outcomes

Study 6 also included two additional outcome measures to assess participants' likelihood of using and recommending TurboTax (see main paper). Effects of condition assignment on each secondary outcome are reported in Table S5.

Table S5. Study 6: unstandardized willingness to use and recommend TurboTax

VARIABLES	Would you use TT or competitor?			Would you recommend TT to a friend?		
	(1)	(2)	(3)	(4)	(5)	(6)
	Day 1	Day 3	Day 9	Day 1	Day 3	Day 9
Poison Only	0.717*** (0.155)	0.567*** (0.155)	0.671*** (0.155)	0.539*** (0.153)	0.568*** (0.154)	0.617*** (0.153)
Pure Counterargument	0.383* (0.153)	0.289 (0.154)	0.330* (0.154)	0.364* (0.153)	0.306* (0.154)	0.302* (0.153)
Prior TT use – no	1.188*** (0.135)	1.241*** (0.135)	1.260*** (0.136)	1.134*** (0.136)	1.245*** (0.137)	1.157*** (0.136)
Prior TT use – unsure	0.038 (0.480)	0.100 (0.480)	0.293 (0.474)	-0.030 (0.491)	-0.158 (0.510)	0.181 (0.480)
Age	0.002 (0.005)	0.001 (0.005)	0.001 (0.005)	0.008 (0.005)	0.006 (0.005)	0.009 (0.005)
Republican	0.338* (0.161)	0.417** (0.161)	0.361* (0.161)	0.320* (0.158)	0.267 (0.158)	0.255 (0.158)
Independent	-0.274 (0.153)	-0.198 (0.153)	-0.302* (0.153)	-0.205 (0.153)	-0.283 (0.154)	-0.263 (0.153)
Other Party	-0.013 (0.483)	-0.176 (0.493)	-0.542 (0.506)	-0.306 (0.504)	-0.539 (0.524)	-0.647 (0.520)
College educated	0.047 (0.140)	-0.000 (0.140)	-0.088 (0.140)	-0.209 (0.140)	-0.142 (0.140)	-0.165 (0.139)
Female	0.402** (0.129)	0.350** (0.129)	0.236 (0.129)	0.400** (0.127)	0.309* (0.128)	0.314* (0.127)
Observations	1,172	1,172	1,172	1,172	1,172	1,172
PPC mean	0.453	0.474	0.467	0.424	0.424	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. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Recall

During the second wave, after answering the outcome measure questions, all respondents were shown the rival TurboTax Super Bowl ad and asked (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 across condition assignment. 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 of the study.

Next, if the PPC procedure induces cue-based recall as hypothesized, recall of specific counterarguments after re-exposure to the rival ad should be highest among participants in the PPC condition. As shown in Table S6, 71% of participants in the PPC condition correctly identified the counterclaims against TurboTax, versus only 48% in the Poison Only condition and 72% in the Pure Counterargument condition ($\chi^2(2) = 59.95, p < .001$).

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.

Table S6. Study 6: recall of counterclaims

	N	Correct recall	p-value
PPC	385	71.1%	< .001
Poison Only	398	48.5%	
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. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Study 7: A Test of Cue-Based Recall

Table S7 reports full results of the effect of condition on both outcomes (preference for rival and perceived honesty) from Study 7. Results parallel those found in Studies 1-3.

Table S7. Study 7: preference for and perceived honesty of rival

VARIABLES	(1)	(2)	(3)	(4)
	Raw units (1-5 scale)		Standardized units	
	Voting	Honesty	Std. Voting	Std. Honesty
Traditional Response	0.414** (0.135)	0.321** (0.106)	0.437** (0.143)	0.435** (0.144)
Control	0.667*** (0.133)	0.455*** (0.105)	0.704*** (0.140)	0.617*** (0.142)
Republican	0.123 (0.137)	0.292** (0.108)	0.130 (0.144)	0.395** (0.146)
Independent	-0.179 (0.135)	-0.026 (0.107)	-0.189 (0.143)	-0.035 (0.144)
Other party	-0.798** (0.266)	-0.363 (0.209)	-0.843** (0.280)	-0.492 (0.283)
Female	0.247* (0.110)	0.045 (0.086)	0.261* (0.116)	0.062 (0.117)
Age	-0.003 (0.005)	-0.002 (0.004)	-0.003 (0.005)	-0.003 (0.005)
College educated	0.092 (0.115)	0.155 (0.091)	0.097 (0.121)	0.210 (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. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Supplemental Studies

Supplemental Study I

This study tests the efficacy of the PPC procedure in the presence of large information asymmetries during an extended single-day study.

Participants. Participants were 425 Amazon MTurk workers (mean age = 36 years, $SD = 11.0$; 52% female). Participants received \$3.00 for completing the survey. Standard participant qualifications were applied.

Procedure. This study was designed to take 25 to 30 minutes to complete, and used the same materials as Study 3, with Walter McKinley serving as the rival candidate. All workers who consented to participate and passed the attention check were randomly assigned to one of two conditions: Traditional Response or PPC. Participants were not aware of their condition assignment.

In the first section of the survey, all participants were shown the rival McKinley ad and either the PPC or Traditional Response ad, interspersed with a series of fictional political ads, news article excerpts, and filler questions to produce memory interference. Page timers were used to ensure that participants spent a minimum amount of time on each article and ad. Then, after being re-exposed to the rival McKinley ad for a second time, participants were asked the standard 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?

The second section of the study replicated the first with one exception: participants were not shown the PPC or Traditional Response ad again. Instead, they were shown all fictional ads for a second time, and new filler questions and material. The rival McKinley ad was re-shown twice, interspersed among the other material in the second section of the survey. After each exposure, participants 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, the PPC or Traditional Response ad once, and answered the dependent variable questions three times.

Analysis and Results

In an extended single-day study, the PPC repeatedly undermined a rival's communication compared to presenting the same counterarguments in a traditional form. Each outcome measure was collected approximately five minutes apart, and effect sizes were similar across all three points in time. The PPC ad reduced participants' likelihood of voting for McKinley compared to the Traditional Response ad at the first point in time by 0.63 SD, $t(424) = 6.87$, $p < .001$, 95% CI = [0.45, 0.81], at the second point in time by 0.66 SD, $t(424) = 7.25$, $p < .001$, 95% CI = [0.48, 0.84], and at the third point in time by 0.65 SD, $t(424) = 7.07$, $p < .001$, 95% CI = [0.47, 0.83].

Similarly, the PPC reduced participants' perceptions of McKinley's honesty relative to the Traditional Response ad at the first point in time by 0.58 SD, $t(424) = 6.25$, $p < .001$, 95% CI = [0.40, 0.76], at the second point in time by 0.65 SD, $t(424) = 7.08$, $p < .001$, 95% CI = [0.47, 0.84], and at the third point in time by 0.65 SD, $t(424) = 7.04$, $p < .001$, 95% CI = [0.47, 0.83].

Supplemental Study II

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

Participants. Participants were 447 MTurk workers (mean age = 40 years, $SD = 13.3$; 59% female) who were recruited to complete a three-wave study over the course of three days. Standard participant qualifications were applied. Of the 447 workers who took completed the first wave, 355 participants (mean age = 42 years, $SD = 13.4$; 59% female) completed all three waves. Attrition was balanced evenly across condition ($\chi^2(1) = 0.13$, $p = .72$). A joint significance test shows that attrition was not balanced across all covariates ($\chi^2(6) = 34.66$, $p < .001$), with older participants and those whose party affiliation is Independent being less likely to attrit. All analyses control for all available covariates.

Participants received \$1.80 for completing the first survey, \$0.50 for the second, and \$0.20 for the third.

Procedure. Supplemental Study II again used the materials from Supplemental Studies I, and was run over a period of three days, with one survey conducted each day. In wave 1 (day 1), all participants were randomly assigned to either the PPC or Traditional Response condition.

The study procedures during wave 1 followed those of Supplemental Study I with one exception: all participants saw the rival ad for Walter McKinley four times, and either the PPC or Traditional Response ad (depending on experimental condition) three times. These ads were interspersed with excerpts from news articles, filler questions, and other fictional ads for political candidates. Participants were shown each fictional ad at least twice so as to draw attention away from McKinley as the focal candidate. At the end of the survey, the participants were told that they would be shown an ad for an arbitrarily chosen candidate. All participants were shown the rival McKinley ad, and were asked the two standard outcome questions.

In the second and third waves (days 2 and 3), all returning participants were shown ads for two fictional candidates, as well as the rival McKinley ad, and asked the standard outcome questions about every candidate's ad in order to obscure the focus of the study.

Analysis and Results

The analytic universe is defined as the 355 participants who completed all three survey waves over the three-day study. In wave 1, the PPC reduced participants' likelihood of voting for McKinley by 0.55 SD, $t(354) = 5.34$, $p < .001$, 95% CI = [0.35, 0.75]. The PPC continued to undercut the rival communication relative to the Traditional Response ad in wave 2 (0.44 SD,

$t(354) = 4.28, p < .001, 95\% \text{ CI} = [0.24, 0.64]$) and wave 3 (0.37 SD, $t(354) = 3.61, p < .001, 95\% \text{ CI} = [0.17, 0.57]$).

Similarly, the PPC reduced participants' perceptions of McKinley's honesty relative to the Traditional Response ad in the first wave by 0.43 SD, $t(354) = 4.12, p < .001, 95\% \text{ CI} = [0.22, 0.63]$, in the second wave by 0.47 SD, $t(354) = 4.64, p < .001, 95\% \text{ CI} = [0.27, 0.66]$, and in the third wave by 0.45 SD, $t(354) = 4.33, p < .001, 95\% \text{ CI} = [0.24, 0.65]$.

Supplemental Study III

Supplemental Study III aimed to extend the results of Study 3 by testing the durability of the PPC procedure over a one-week period.

Method

Participants. An initial sample of 499 participants (mean age = 36 years, $SD = 10.8$; 57% female) was recruited via Amazon's MTurk to complete three surveys over an eight-day period. Standard participant qualifications were applied. 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. Attrition was balanced across condition assignment ($\chi^2(2) = 0.13, p = .94$). Older participants were significantly less likely to attrit ($\chi^2(1) = 12.44, p < .001$); all analyses control for age, as well as other covariates.

Participants received \$1.20 for completing the first survey, \$0.50 for the second, and \$0.30 for the third.

Procedure. This study used the same materials and followed the same procedures as Study 3, with Walter McKinley again serving as the rival candidate. The study was run over a period of 8 days, with survey waves conducted on days 1, 3, and 7. All workers who consented to participate and passed the attention check were randomly assigned to one of three conditions during the first wave (day 1): Control, Traditional Response, or PPC. Participants were not aware of their condition assignment.

Participants were told in wave 1 (day 1) that the study entailed three separate surveys that would be conducted over a span of one week, and were asked to signal their intention to complete all five parts before proceeding to the survey. Each of the two follow-up waves 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.

Each wave followed the same procedures: all participants were shown the rival McKinley ad, interspersed with a series of fictional political ads, news article excerpts, and filler questions to produce memory interference. Page timers were used to ensure that participants spent a minimum amount of time on each article and ad. In addition, all participants saw the response ad corresponding with their condition assignment during wave 1 (day 1) only so that by the end of all three waves, participants had seen the rival ad six times and the response ad only once.

At the end of each survey, 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 standard outcome questions.

Analyses and Results

The analytic sample is comprised of 346 participants who completed all three surveys. In wave 1 (day 1), participants who saw the PPC ad were significantly less likely to vote for McKinley than participants who had seen the Control ad (0.86 SD, $t(345) = 6.85$, $p < .001$, 95% CI = [0.61, 1.10]) or the Traditional Response ad (0.55 SD, $t(345) = 4.41$, $p < .001$, 95% CI = [0.30, 0.79]). Similarly, participants in the PPC condition rated McKinley as significantly less honest than participants in both the Control condition (0.75 SD, $t(345) = 5.75$, $p < .001$, 95% CI = [0.49, 1.00]), and the Traditional Response condition (0.60 SD, $t(345) = 4.67$, $p < .001$, 95% CI = [0.35, 0.86]).

The effect of the PPC endured across waves 2 and 3 (day 3 and day 7). Relative to participants who had seen the Traditional Response ad, participants who saw the PPC ad in wave 1 were less likely to vote for McKinley in both wave 2 (0.48 SD, $t(345) = 3.71$, $p < .001$, 95% CI = [0.22, 0.73]), and wave 3 (0.42 SD, $t(345) = 3.34$, $p = .001$, 95% CI = [0.17, 0.67]). Compared to the Control condition, participants who saw the PPC ad in wave 1 were also significantly less likely to vote for McKinley in wave 2 (0.70 SD, $t(345) = 5.42$, $p < .001$, 95% CI = [0.45, 0.95]), and wave 3 (0.72 SD, $t(345) = 5.66$, $p < .001$, 95% CI = [0.47, 0.98]).

Similar trends across can be seen for the effect of the PPC on perceptions of McKinley's honesty across time. Participants who saw the PPC ad in wave 1 viewed McKinley as significantly less honest than participants who saw the Traditional Response ad in both wave 2 (0.46 SD, $t(345) = 3.51$, $p = .001$, 95% CI = [0.20, 0.71]), and wave 3 (0.46 SD, $t(345) = 3.57$, $p < .001$, 95% CI = [0.21, 0.71]). Exposure to the PPC ad also significantly reduced perceptions of McKinley's honesty relative to the Control condition in both wave 2 (0.59 SD, $t(345) = 4.53$, $p < .001$, 95% CI = [0.33, 0.85]), and wave 3 (0.58 SD, $t(345) = 4.49$, $p < .001$, 95% CI = [0.33, 0.83]).