



Social desirability bias and polling errors in the 2016 presidential election[☆]

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ARTICLE INFO

Keywords:

Polling
Social desirability
List experiment
Election
Economic policy
Predictions

JEL classification:

D72
D91

ABSTRACT

Social scientists have observed that socially desirable responding (SDR) often biases unincentivized surveys. Nonetheless, media, campaigns, and markets all employ unincentivized polls to make predictions about electoral outcomes. During the 2016 presidential campaign, we conducted three list experiments to test the effect SDR has on polls of agreement with presidential candidates. We elicit a subject's agreement with either Hillary Clinton or Donald Trump using explicit questioning or an implicit elicitation that allows subjects to conceal their individual responses. We find evidence that explicit polling overstates agreement with Clinton relative to Trump. Subgroup analysis by party identification shows that SDR significantly diminishes explicit statements of agreement with the opposing party's candidate driven largely by Democrats who are significantly less likely to explicitly state agreement with Trump. We measure economic policy preferences and find no evidence that ideological agreement drives SDR. We find suggestive evidence that local voting patterns predict SDR.

1. Introduction

Political polls generate sweeping economic and political consequences far in advance of election day. Polling numbers motivate changes in campaign spending, staff deployment, fundraising efforts, and even policy positions. Strong polling numbers, for example, motivated Hillary Clinton's 2016 campaign to forgo campaigning in certain states in the upper Midwest that her opponent, Donald Trump, subsequently won. Polls play a structural role in winnowing television debate participants (Fox News, 2016), help voters evaluate the viability of candidates, and influence electoral turnout (Bursztyn et al., 2017; Agranov et al., 2017). Polls also have direct economic consequences by influencing forecasts about the future business environment (Kantchev and Whittall, 2017). As a result, market prices fluctuate in response to polling (Wolfers and Zitzewitz, 2016) and election results that polls suggested were unlikely “shock” prices in predictable ways (Wagner et al., 2017). Proponents of prediction markets cite their decreased volatility as an advantage over traditional polling (Wolfers and Zitzewitz, 2004; Rothschild, 2009). Nonetheless, these markets respond to new polling information, exposing them to the risk of similar surprises.

Since an incentive-compatible method of collecting voting preferences would be infeasible—and illegal in most cases—methods that

rely on stated preference between candidates have been accepted as viable, second-best alternatives. Critics of polling typically point to its vulnerability to non-response bias and optimism bias (Pew Research Center, 2012; Armstrong, 2001). But social science research offers several other reasons that the assumption of truthful revelation in poll responses may be dubious. Since (Maccoby and Maccoby, 1954) and (Edwards, 1957), social scientists have known that these stated preference surveys are subject to “socially desirable responding” (SDR, hereafter)—that is, respondents tend to conceal preferences that are not perceived to be socially desirable. Researchers have identified SDR in many social, political, and economic contexts.¹ For example, feelings toward African-American politicians (Heerwig and McCabe, 2009; Redlawsk et al., 2010; Stephens-Davidowitz, 2014), female politicians (Streb et al., 2008), and Jewish politicians (Kane et al., 2004) are affected by SDR. Brown-Iannuzzi et al. (2018) found that respondents conceal discriminatory political preferences only when it is “socially inappropriate” to discriminate against the group in question. SDR also has been shown to influence the expression of sentiments surrounding immigration (Janus, 2010), same-sex marriage (Powell, 2013; Lax et al., 2016; Coffman et al., 2016), and race (Krysan, 1998).

In contrast to other research that analyzes secondary data, our paper analyzes data collected with the express purpose of identifying the effect of SDR on candidate polling. We cover both telephone and online

[☆] Special thanks to Janine Parry for feedback and allowing our study to be included in the Arkansas Poll. Additional thanks to Lucas Coffman, Alex Imas, Michael Kuhn, Peter McGee, Jamie Mullins, and Ragan Petrie for valuable feedback. The University of Arkansas Research Compliance office approved all procedures involving human subjects (IRB #15-11-387).

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¹ Paulhus (1984); Droicourt et al. (1991); Fisher (1993); Rudman and Kilianski (2000); Karlan and Zinman (2012)

IMPLICIT:	EXPLICIT:
<p>Consider the following list of statements. Below, we will ask how many of the statements you agree with.</p> <ul style="list-style-type: none"> • I think small businesses are important for the economy. • I agree with George H.W. Bush's foreign policy. • I think the threat of global warming is exaggerated. • I often find myself agreeing with Donald Trump. • I prefer presidential candidates who oppose the NRA. <p>How many of the previous statements do you agree with?</p> <div style="display: flex; justify-content: space-around; width: 100%;"> (0) (1) (2) (3) (4) (5) </div>	<p>Consider the following list of statements. Below, we will ask how many of the statements you agree with.</p> <ul style="list-style-type: none"> • I think small businesses are important for the economy. • I agree with George H.W. Bush's foreign policy. • I think the threat of global warming is exaggerated. • I prefer presidential candidates who oppose the NRA. <p>How many of the previous statements do you agree with?</p> <div style="display: flex; justify-content: space-around; width: 100%;"> (0) (1) (2) (3) (4) </div> <p>Do you often find yourself agreeing with Donald Trump?</p> <div style="display: flex; justify-content: space-around; width: 100%;"> YES NO </div>

Fig. 1. Examples of both Explicit and Implicit elicitations of support for Donald Trump.

environments using a methodology designed specifically to test for SDR in responses to questions about agreement with Clinton and Trump.² Other researchers have addressed the role of SDR in the 2016 election in different ways. Claassen and Ryan (2016) use two forms of indirect questioning asking about the perceptions of support for each candidate to measure the influence of SDR on the 2016 election, finding little or no influence of SDR. Coppock performs a list experiment similar to ours and finds no evidence of SDR affecting Trump support. Coppock has key differences from our study: it is exclusively online, does not compare the effect of SDR across both candidates, and repeats a question about voting intentions that was asked earlier in the survey.³ A Morning Consult study offers an in-depth analysis comparing responses to telephone and online polls to find a small but not statistically significant increase in support for Trump in online polls (Dropp, 2015). Other analyses have re-analyzed traditional polls to assert that SDR provided no significant threat to the validity of traditional polls.⁴

Our results contradict the conclusions of polling agencies and data journalists and show marginally significant evidence that SDR causes polling respondents to understate their agreement with Trump and overstate their agreement with Clinton. We decompose our sample by political party and find that SDR causes a large and significant drop in the willingness of voters to state agreement with the opposing party's candidate. Additionally, we find that, while the effect of SDR is closely related to party identification, it is unrelated to political ideology. That is, SDR is closely tied to the party a voter has chosen but is unrelated to policy preferences that may have driven him or her to that party.

With historically high candidate unfavorable ratings (Enten, 2016a), the 2016 presidential election provides optimal conditions under which SDR could threaten the validity of political polls. Moreover, the voting bases of each party also report historically high levels of partisanship (Andris et al., 2015; Pew Research Center, 2016). This allows us to understand how SDR interacts with a divided electorate.⁵

We use three list experiments (a method sometimes called the “item

count” or “unmatched count” technique) to estimate the effect of SDR on political polling. This method was developed by Miller (1984) to understand the ways in which respondents predictably misreported answers to unincentivized polling questions.⁶ In a list experiment, subjects are presented with a list of statements and asked to report the *total number* with which they agree. Half of the subjects are assigned to the *Implicit* treatment in which their list features five statements, including a “sensitive” statement of interest.⁷ The other half of the subjects are assigned to the *Explicit* treatment; this list consists of the same four non-sensitive statements in the same order and is followed by a direct “Yes” or “No” question about the sensitive statement.⁸ Thus, all respondents face the same five statements, but the treatment assignment randomly varies the observability of an individual's response to the sensitive statement. Blair and Imai (2012) and Corstange (2008) validate and formalize the analysis and methodology of list experiments. Critical to the validity of this methodology is the restriction that only socially undesirable responses be affected. Tsuchiya et al. (2007) and Coffman et al. (2016) use placebo tests to validate the methodology.

Fig. 1 displays our Implicit and Explicit elicitations. The first two experiments measure the SDR associated with statements of agreement with presidential candidates. The final experiment tests for a differential effect of economic policy preferences on the SDR associated with each candidate. In all three experiments, subjects are randomly assigned to the Implicit or Explicit treatment and then are presented with a sensitive statement that asks about *agreement with* a presidential candidate. Experiment 1—a live telephone poll of 800 Arkansas residents—elicits responses to the statement, “I often find myself agreeing with Donald Trump.” In Experiments 2 and 3—online surveys with approximately 1000 eligible voters each—we randomly assign subjects to respond to either 1) “I often find myself agreeing with Hillary Clinton” or 2) “I often find myself agreeing with Donald Trump.”

It is important to note that our sensitive statement does not ask which candidate respondents intend to vote for, but simply asks if subjects “often agree” with a randomly assigned candidate. This accomplishes two objectives: 1) It prevents us from repeating a question that was previously asked explicitly in the telephone poll and 2) It

² All analysis is run within a polling medium to control for medium-specific effects.

³ We elicited “agreement” with candidates because the telephone poll already included a question about voting intentions. We believe that the desire for consistency may bias our design away from finding SDR in this case. 85% of our sample in the Arkansas Poll indicated plans to vote for the candidate they “agreed with,” making this a strong instrument for voting behavior. We maintained this measure in our online replication.

⁴ For example, Enten (2016b); Connors et al. (2016); Shepard (2016)

⁵ In 1969, Richard Nixon referred to the “silent majority” of people who concealed their support for the Vietnam War. Similarly, the “Bradley effect” was a hypothesized reluctance among voters to reveal their votes against Tom Bradley were racially motivated. In Great Britain, a similar theory has been labeled the “Shy Tory Factor.”

⁶ A similar method was proposed in Raghavarao and Federer (1979).

⁷ We are choosing to use the terms “implicit” and “explicit” to indicate whether or not the respondent openly revealed preferences for candidates. These should not be confused with similar terms from psychological research. Indeed, our terms are more similar to “indirectly” and “directly” revealed preferences.

⁸ Miller and Krosnick (1998) find that the ordering of candidates can influence voter behavior. Thus, we chose to hold all ordering constant to provide a valid *comparison* between the two treatments.

allows us to explore the psychological motivations behind revealing candidate preferences that are not as transparent as candidate choice.

Comparing responses under the Implicit and Explicit treatments yields a clean comparison of otherwise identical environments where the only change is the psychological cost associated with reporting a socially undesirable response. For example, in the Implicit treatment, a response of “3,” does not reveal a position on the sensitive statement. Subjects in the Explicit treatment always reveal their position on the sensitive statement. If agreement with one candidate is more stigmatized than another, we expect to find that the polling numbers for the stigmatized candidate improve relative to the non-stigmatized candidate when elicited under the Implicit treatment. Our results indicate that a differential effect of SDR does exist between the two candidates. In particular, in our first Mechanical Turk study, we find that the Explicit treatment decreases statements of agreement with Trump by 0.10 and increases statements of agreement with Clinton by 0.09. Dividing respondents by party identification, SDR grows for the opposing party's candidate and shrinks for the own-party candidate.

To explore the origins of SDR associated with each candidate, we merge our dataset to county-level election results. This merged dataset allows us to address the possibility that these phenomena may derive from the political preferences of a subject's region. We do not find consistent evidence that county-level voting patterns predict whether support for a given candidate is affected by SDR, but our results provide suggestions for future research.

It is possible that the psychological motivation causing polling respondents to misreport their preferences persists into the voting booth. In this case, SDR would not present a threat to the predictive validity of polls. Voting mechanisms, however, provide incentives to truthfully reveal preferences that opinion polls do not, opening the door to the possibility of discrepancies between the polls and election results. In the discussion section, we suggest ways polling agencies could use results from our mechanism as a bias correction for their explicit polling responses.

Other studies have used other methods to test whether or not SDR presents a threat to the validity of political polling (Traugott and Price, 1992; Bishop and Fisher, 1995; Keeter and Samaranayake, 2007; Hopkins, 2009). Berinsky (1999) shows that poll respondents more often claim to be undecided when answering a poll potentially subject to SDR. Recent elections, in particular, have motivated additional research on the role of SDR in politics. Mas and Moretti (2009) and Stephens-Davidowitz (2014) explore the role of race in the 2008 election using indirect methods as a measure of racial animus. Huang and Low (2017) measure the impact of the 2016 election on dissolving social norms, which drive SDR. Our paper expands on this tradition by collecting primary data to estimate the effect of SDR on political polls.

Research in psychology has long shown a desire to strategically present one's self (LaPiere, 1934; Goffman, 1959). The list experiment methodology attempts to circumvent this psychological motivation by manipulating the observability of the respondent's answer much in the same way as the randomized response technique (Warner, 1965). Manipulating this observability allows respondents to reveal socially undesirable behavior without direct observation. The psychological motivation to strategically present one's self relates to results from economics suggesting that anonymity and the ability to excuse behavior affect choices in social interactions (Dana et al., 2007; Hoffman et al., 1996; Andreoni and Bernheim, 2009; Charness and Gneezy, 2008; Bénabou and Tirole, 2011; Exley, 2016). In exposing how political polling can be influenced by these psychological motivations, we hope to shed light on new methods that could present a clearer picture of voter preferences.

2. Experimental design

Our list experiment is designed to understand the effect of SDR on affirmations of agreement with a political candidate—either “I often

find myself agreeing with Hillary Clinton” or “I often find myself agreeing with Donald Trump”—by varying the observability of that affirmation. To experimentally vary response observability, subjects are assigned to either the Implicit or Explicit treatment, where their responses are veiled or directly observed, respectively.

In the Implicit treatment, the affirmation of agreement is included in a list with four neutral statements. Subjects are asked to respond with the total number—zero to five—of statements they affirm from the list. Call this a subject's “total affirmations.” These total affirmations do not reveal agreement with any one statement, thus a subject's response to the affirmation of agreement is concealed.

In the Explicit treatment, subjects see a list with only the four neutral statements and respond with the total number they agree with. They then respond to the affirmation of agreement directly with a “yes” or “no” answer. In this case, call the “total affirmations” the aggregate number of agreements from the list plus the directly elicited affirmation of agreement.

In Fig. 1, we presented examples of the Implicit and Explicit elicitations for subjects assigned to evaluate their agreement with Trump. Subjects assigned to evaluate their agreement with Clinton saw an identical list except that the candidate name was changed. The four neutral statements are identical in all three experiments. Like the affirmation of agreement, they are political statements. But, since they are presented identically in both the Implicit and Explicit treatments, any influence they have on responses will be constant across treatments. We chose neutral statements that negatively covary—support for gun-control and skepticism about climate-change—to limit the number of responses of zero or five, which would transparently reveal the opinions of a subject in the Implicit treatment.⁹

Our study is comprised of the following three list experiments, each successively narrowing in on relevant psychological phenomena. The Arkansas Poll attempts to measure SDR with respect to telephone surveys about Donald Trump. The first Mechanical Turk study replicates these findings in a different medium and includes measures of SDR on Hillary Clinton. The final Mechanical Turk study measures political preferences in an attempt to uncover the role played by ideological alignment. Detailed demographics and balance tables for all three experiments can be found in the appendix. It is worth noting that, while neither the Arkansas Poll nor the Mechanical Turk samples are themselves representative of the population at large, they combine to form a more representative sample that crosses polling mediums. With consistent results between them, we can be confident that the results will hold in a larger, representative sample regardless of the polling medium.

2.1. Experiment 1: Arkansas Poll

Our first experiment was included in the Arkansas Poll, a live-telephone survey of 800 Arkansas residents between October 18 and October 27, 2016. 60 percent of respondents answered using land-line telephones and 40 percent using cell phones. The cooperation rate was 29 percent and 25 percent for land-lines and cell phones, respectively. Poll workers continued calling residents until they achieved a sample of 800 valid responses. Respondents skewed toward Trump with 45 percent of the sample indicating plans to vote for him compared to 31 percent for Clinton. The sample was older than the national average with a median age of 63. None of the respondents indicated that they had already voted.

The Arkansas Poll consisted of approximately 50 questions with several possible follow-up questions. Question 9 asked respondents which presidential candidate they intended to vote for. Our experiment took the place of the 29th and 30th questions, depending on treatment assignment. Question 34 requested the party affiliation of the

⁹ We will repeat the analysis with these observable responses dropped from the Implicit treatment for robustness.

respondent (Republican, Independent, Democrat).

Due to space limitations, we only explored responses to one affirmation of agreement, “I often find myself agreeing with Donald Trump” and did not measure responses to affirmations of agreement with Clinton. Respondents were randomly assigned to the Implicit or Explicit treatment.

2.2. Experiment 2: M-Turk Poll 1

On November 1, 2016, we conducted a second list experiment online with 1006 eligible American voters using Amazon’s Mechanical Turk website. Respondents skewed toward Clinton. Of our sample, 56 percent indicated they intended to vote for Clinton compared to 23 percent for Trump. The sample was disproportionately young, with a median age of 31. We elicited the demographics and party affiliation of each respondent prior to asking about candidate support.¹⁰

We explored responses to affirmations of agreement with both candidates. Each subject was randomly assigned to the Implicit or Explicit treatment and then assigned to respond to either “I often find myself agreeing with Hillary Clinton” or “I often find myself agreeing with Donald Trump.” This gives us a “two by two” randomization design.

2.3. Experiment 3: M-Turk Poll 2

Our final experiment took place on November 7 and 8, 2016.¹¹ We recruited 985 eligible American voters again using Amazon’s Mechanical Turk website. Of our respondents, 57 percent indicated plans to vote for Clinton relative to 27 percent for Trump. The respondents’ median age was 32.

We again elicited demographic information, party affiliation, and which candidate the subject intended to vote for. We used the same randomization design as Experiment 2: assigning subjects to respond about agreement with Clinton or Trump and assigning them to either the Implicit or Explicit treatment.

In this experiment we added six questions about economic policy preferences. Three of the questions indicated economic policy preferences more aligned with Donald Trump and three indicated preferences more aligned with Hillary Clinton.¹² This elicitation will allow us to perform sub-group analysis in treatment responses by ideology.

3. Results

Our outcome variable of interest will be Total Affirmations. Recall that, for the Implicit treatment, this measure captures the total number of statements from the list with which a subject agrees. For the Explicit treatment, Total Affirmations equals the number of statements from the list with which a subject agrees plus one if the subject also agrees with the affirmation of agreement with the assigned candidate. If the observability of the response is irrelevant to the subject—that is, if SDR is not a motivation—then Total Affirmations should be equal across the two treatments.

Since the number of Total Affirmations depends on the responses to five different questions, it can be thought of as the sum of five random variables. Thus, our experiment requires large sample sizes to find statistical differences between treatments. When possible, we will control for demographic characteristics to improve our statistical power. In the appendix, we will include a robustness check where we drop all responses of zero or five in the Implicit elicitation since they fully reveal preferences. An additional concern is that subjects in the

¹⁰ Respondents were given the party affiliation options, “Democrat,” “Lean Democrat,” “Lean Republican,” “Republican.”

¹¹ November 8, 2016 was election day, so respondents could already have voted. Since our sensitive statement of interest asks about “agreement” with candidates, not voting preferences, we think this does not present a critical problem.

¹² The list of policy preference questions can be found in the appendix.

Table 1
Arkansas Poll: Total Affirmations.

	Explicit	Implicit	Difference
Explicit agreement	0.499 (0.03)		
List-response	1.941 (0.05)	2.469 (0.06)	0.529 (0.08)
Total Affirmations	2.439 (0.06)	2.469 (0.06)	0.030 (0.08)
Total Affirmations (with controls)	2.173 (0.42)	2.218 (0.42)	0.045 (0.08)
N	730	730	

Heteroskedasticity-robust standard errors. Controls: gender, age, income, and education.

Table 2
Arkansas Poll: Total Affirmations by party identification.

	Total Affirmations	
Democrat	2.207 (0.12)	2.571 (0.41)
Democrat × Explicit	−0.293** (0.14)	−0.307** (0.14)
Republican	2.974 (0.10)	3.309 (0.41)
Republican × Explicit	0.075 (0.14)	0.114 (0.14)
Independent	2.320 (0.09)	2.666 (0.39)
Independent × Explicit	0.042 (0.14)	−0.000 (0.14)
Dem × Exp - Rep × Exp	−0.368*	−0.421**
Controls	No	Yes
N	675	675

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors. Controls: gender, age, income, & education.

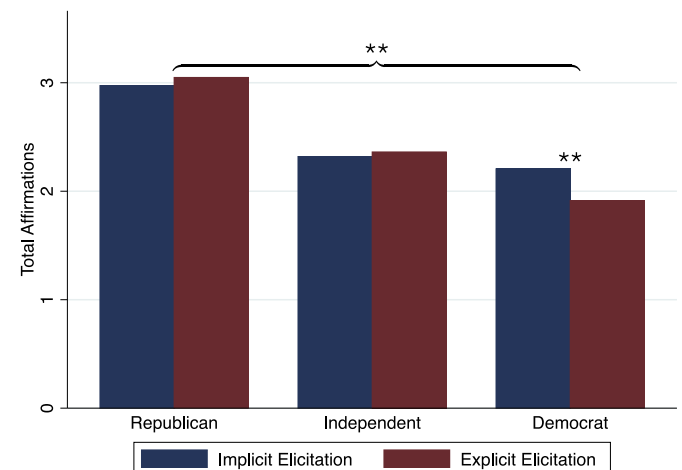


Fig. 2. Arkansas Poll: Mean of Total Affirmations split by treatment and party identification. Sensitive statement: “I often find myself agreeing with Donald Trump.”

Implicit elicitation may have *wanted* to state 0 or 5 but avoided it, knowing that this response would have revealed their agreement with the candidate. Figs. 6, 8, and 10 plot the histograms under the Explicit elicitations and show very few responses of 0 and 4.¹³ Thus, we would expect few subjects in the Implicit elicitation to face this concern after adding the question of candidate agreement.

The p-values reported in this section are drawn from the regression

¹³ In the Arkansas Poll, 6.8% of respondents state a 0 or 4 in the Implicit elicitation. In the first and second Mechanical Turk studies the percentages are 2.8% and 3.3%, respectively.

Table 3
Mechanical Turk Study 1: Total Affirmations.

	Clinton explicit	Clinton implicit	Difference	Trump explicit	Trump implicit	Difference
Explicit agreement	0.538 (0.03)			0.229 (0.03)		
List-response	1.733 (0.05)	2.175 (0.06)	0.442 (0.07)	1.684 (0.04)	2.000 (0.05)	0.316 (0.07)
Total Affirmations	2.271 (0.05)	2.175 (0.06)	0.096 (0.08)	1.913 (0.05)	2.000 (0.05)	−0.087 (0.07)
Total Affirmations (with controls)	2.125 (0.70)	2.036 (0.69)	0.090 (0.08)	1.754 (0.70)	1.857 (0.70)	−0.103 (0.07)
N	251	251		253	251	

Clinton difference - Trump difference: 0.193 ($p = 0.07$) Heteroskedasticity-robust standard errors. Controls for gender, age, & education.

Table 4
Mechanical Turk Study 1: Total Affirmations by assigned candidate and party identification.

	Total Affirmations	
Trump × Democrat	1.844 (0.05)	1.736 (0.77)
Trump × Democrat × Explicit	−0.166** (0.07)	−0.180*** (0.07)
Trump × Republican	2.346 (0.11)	2.233 (0.78)
Trump × Republican × Explicit	0.084 (0.16)	0.063 (0.16)
Clinton × Democrat	2.244 (0.07)	2.146 (0.77)
Clinton × Democrat × Explicit	0.108 (0.09)	0.102 (0.09)
Clinton × Republican	2.025 (0.09)	1.903 (0.78)
Clinton × Republican × Explicit	0.044 (0.14)	0.034 (0.14)
Own-Party × Exp - Out-Party × Exp	0.208**	0.212**
Controls	No	Yes
N	1006	1006

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors. Controls for gender, age, & education.

of Total Affirmations onto the treatment assignment (Explicit vs. Implicit) and demographic controls. These regressions have indicator variables for each combination of treatment and candidate and do not contain a constant term so that we can directly interpret coefficient values. P -values for our tests of differences in differences are drawn from tests of differences in coefficients in this regression.

3.1. Experiment 1: Arkansas Poll

Recall that in this experiment, we only elicited agreement with Trump. We present summary statistics and Total Affirmations across the two treatments in Table 1. Comparing responses across treatments tests for the effect of SDR on statements of agreement with Trump. We drop 70 subjects whose responses did not provide enough information to calculate their number of Total Affirmations.¹⁴ In our sub-group analysis, we drop 55 subjects whose sub-group could not be determined.

The uncontrolled difference reveals that subjects in the Explicit treatment are 3 percentage points less likely to express agreement with Trump ($p = 0.72$). This estimated difference rises to 4.5 percentage points ($p = 0.59$) with the inclusion of demographic controls. As an alternative measure of SDR, compare the difference between the list responses across treatments—which implies 52.9% agreement with Trump—to the explicit statements of agreement—49.9%.

Table 2 interacts each treatment with party identification in order to

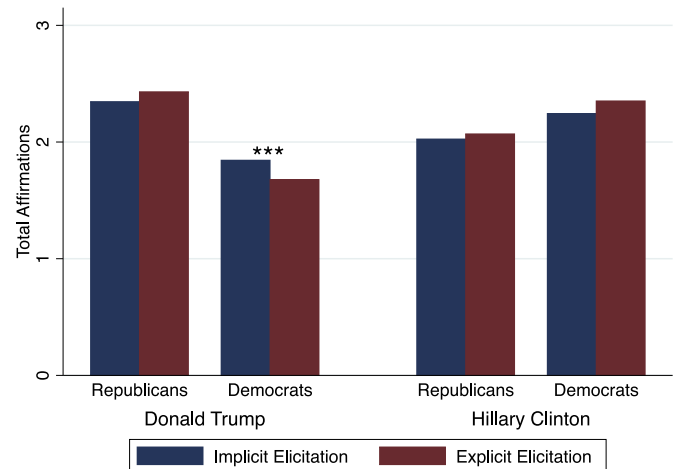


Fig. 3. Mechanical Turk Study 1: Subjects split by party identification and assigned candidate.

explore heterogeneity in the effect of SDR.¹⁵ Fig. 2 displays these results graphically, showing that Democrats express 0.74 fewer Total Affirmations than Republicans, on average. When asked explicitly, Democrats' Total Affirmations drop by an additional 0.31 ($p = 0.03$) while Republicans increase their Total Affirmations by 0.11 ($p = 0.42$). This yields a difference in differences estimate of 0.421 ($p = 0.038$).

3.2. Experiment 2: Mechanical Turk poll and party identification

In this experiment, we include affirmations of agreement with Clinton to compare the effect of SDR across candidates. In Table 3, we present the mean Total Affirmations for each combination of treatment and randomly assigned candidate. When questioned explicitly, subjects are relatively more likely to report agreement with Clinton and less likely to report agreement with Trump. Individually, there is not a statistically significant effect of SDR on statements of agreement with either candidate, but when comparing the effect of SDR across the two candidates we estimate a marginally significant difference in differences of 0.193. This relatively greater effect of SDR on expressions of agreement with Trump can also be seen in the fact that his implied agreement (31.6%) outstrips his explicit agreement (22.9%), while the opposite is true of Clinton's implied (44.2%) and explicit (53.8%) agreement.

We interact our treatment assignment with the subject's party identification to shed light on the origin of this differential effect of SDR. Table 4 shows the influence of SDR is greater on statements of agreement with the opposing party's candidate. Respondents in the

¹⁵ While the level of agreement with a candidate could drive party identification, we are exploring the differential likelihood of expressing agreement explicitly. We believe this measure is sufficiently exogenous for use as a sub-group selection criteria.

¹⁴ This could indicate attrition from the survey or refusal to answer relevant questions.

Table 5
Mechanical Turk Study 2: Total Affirmations by assigned candidate and economic ideology.

	Total Affirmations	
Trump × Liberal	1.800 (0.06)	1.506 (0.14)
Trump × Liberal × Explicit	0.070 (0.08)	0.078 (0.08)
Trump × Moderate	3.000 (0.34)	2.703 (0.36)
Trump × Moderate × Explicit	−0.385 (0.40)	−0.403 (0.39)
Trump × Conservative	2.509 (0.14)	2.207 (0.18)
Trump × Conservative × Explicit	0.205 (0.20)	0.180 (0.19)
Clinton × Liberal	2.335 (0.06)	2.025 (0.14)
Clinton × Liberal × Explicit	0.011 (0.09)	−0.002 (0.09)
Clinton × Moderate	2.077 (0.20)	1.759 (0.25)
Clinton × Moderate × Explicit	−0.077 (0.34)	−0.029 (0.34)
Clinton × Conservative	1.837 (0.12)	1.553 (0.17)
Clinton × Conservative × Explicit	0.295* (0.15)	0.242 (0.15)
Controls	No	Yes
N	985	985

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors. Controls: gender, age, and education.

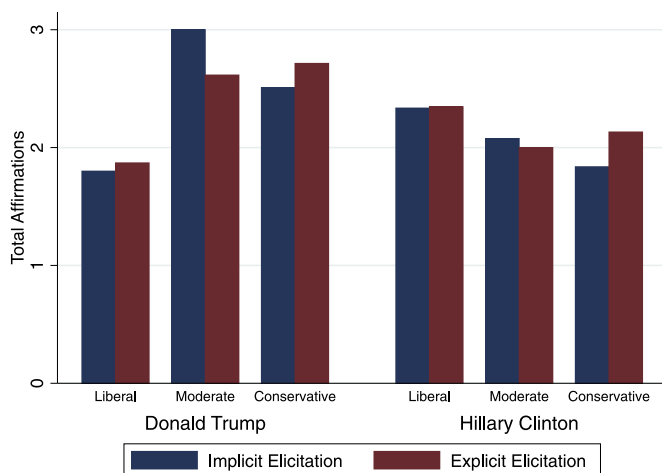


Fig. 4. Mechanical Turk Study 2: Respondents split by treatment, economic policy position, and randomly assigned candidate.

Explicit treatment understate cross-party agreement relative to the Implicit treatment. Democrats, in particular, show a significant effect of SDR on their statements of agreement with Trump. Total Affirmations from Democrat respondents are 0.180 lower in the Explicit treatment ($p < 0.01$). SDR has little effect on statements of agreement with Clinton among Republicans. A separate subgroup analysis comparing SDR across own-party and opposing-party candidates shows that SDR increases significantly for statements of agreement with opposing-party candidates. The differential effect of the Explicit treatment on Total Affirmations is 0.213 larger for subjects assigned to their party's candidate instead of the opposing party's candidate ($p = 0.039$). This relies on the difference-in-differences approach—even though Republicans show no effect of SDR on statements of agreement with Clinton, there is a larger positive effect on explicit statements of agreement with Trump. Of course, the majority of this effect is driven by the impact of SDR on

statements of agreement with Trump from Democrats.¹⁶ Fig. 3 repeats this analysis graphically.

3.3. Experiment 3: Mechanical Turk poll and voter ideology

In this study, we attempt to disentangle the effect of a subject's party identification from the ideology that might drive that identification. To do so, we use six questions about economic ideology adapted from Halpin and Agne (2009) to identify subgroups we will call “conservative” and “liberal.”¹⁷ Subjects are again assigned to evaluate their agreement with a randomly selected candidate.

Table 5 interacts assigned candidate with the economic ideology of the respondent and plots Total Affirmations across the Implicit and Explicit treatments.¹⁸ Ideological alignment does drive agreement with a given candidate; the more economically liberal (conservative) is a subject, the more Total Affirmations he or she reports when evaluating Clinton (Trump). However, there is no identifiable pattern to the differential effect of the explicit elicitation across ideologies or candidates. No individual comparisons are statistically significant at conventional levels. The lack of a systematic relationship is clear when looking at Fig. 4. Thus, even though Experiment 2 clearly showed an association between party identification and SDR, these results suggest that this pattern is not driven by the underlying ideology that drove subjects to join their respective parties.

4. Social-signaling and county-level voting data

One possible explanation for the origin of SDR is that local, in-person interactions create norms that evolve into socially desirable and undesirable behaviors. We use location data to explore the possibility that the influence of SDR on election polling may have geographic origins. Specifically, we will use a subject's geographic location as a proxy for his or her social setting. In our data, the county-level election winner was never determined by fewer than 77 votes, meaning that our subject's candidate preferences never influenced the outcome. Thus, we can use electoral outcome as an exogenous measure of a subject's social environment, yielding a clean estimate of the influence of environmental factors on SDR.

We use location data from each survey to merge our survey responses with county-level voting data.¹⁹ We then test if a subject is relatively more likely to *explicitly* state agreement with the candidate who subsequently won the popular vote in the subject's county.²⁰

Columns 1 and 2 of Table 6 interacts the treatment assignment with the candidate that won the respondent's county. In counties that Clinton won, the Explicit elicitation *increases* the likelihood of stating agreement with Trump, while in the counties that Trump won, the Explicit elicitation *decreases* that same likelihood.²¹ Neither of these effects approach statistical significance. This could be a result of a relatively small

¹⁶ In the appendix, we show that SDR is larger among the highly-educated. The difference-in-differences is 0.325 ($p = 0.010$).

¹⁷ Questions were tailored to each candidate's policy positions. Subjects responded to each question on a 4-point scale. We label a subject conservative (liberal) if the sum of agreement with conservative (liberal) ideological statements exceeds the sum of the agreement with the liberal (conservative) statements. Our sample leans liberal: 72% identify more with liberal economic policy, 21% with conservative, and 7% are “moderate.” Though, of course, much more than 7% of our respondents may consider themselves moderate. “Neutral” may be a more appropriate term.

¹⁸ Note that sample sizes are not balanced across the ideological bins.

¹⁹ The Arkansas Poll collected each subject's county of residence; and our Mechanical Turk surveys collected geographic coordinates for each subject's IP address. IP addresses may not perfectly reflect the subject's place of residence, but should correlate with these, on average.

²⁰ These datasets were not collected simultaneously, since our experiments occurred before any voting took place. Thus, intervening events could weaken the connection between the two datasets.

²¹ Clinton only won eight counties that appear in our data, making this a relatively low-powered test.

Table 6
Total Affirmations by county voting patterns.

	Arkansas Poll		M-Turk 1		M-Turk 2	
Trump × Clinton-County	2.300 (0.14)	1.919 (0.51)	2.014 (0.07)	1.032 (0.40)	1.953 (0.08)	1.652 (0.17)
Trump × Clinton-County × Exp	0.041 (0.16)	0.045 (0.18)	−0.217** (0.10)	−0.235** (0.10)	0.047 (0.10)	0.044 (0.10)
Trump × Trump-County	2.492 (0.07)	2.142 (0.48)	1.988 (0.09)	0.993 (0.40)	2.127 (0.12)	1.764 (0.19)
Trump × Trump-County × Exp	−0.046 (0.08)	−0.067 (0.07)	−0.042 (0.15)	−0.045 (0.15)	0.098 (0.15)	0.124 (0.15)
Clinton × Clinton-County			2.193 (0.07)	1.220 (0.39)	2.148 (0.08)	1.825 (0.18)
Clinton × Clinton-County × Exp			0.087 (0.09)	0.080 (0.09)	0.168 (0.12)	0.151 (0.11)
Clinton × Trump-County			2.080 (0.10)	1.109 (0.39)	2.213 (0.09)	1.869 (0.17)
Clinton × Trump-County × Exp			0.133 (0.13)	0.116 (0.13)	0.016 (0.12)	−0.003 (0.12)
Controls	No	Yes	No	Yes	No	Yes
N	721	721	893	893	840	840

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Standard errors clustered by county where possible, otherwise by city. Controls: age, gender, education. Income control added for Arkansas Poll.

sample—only 14 percent of our sample lives in Arkansas counties won by Clinton—but this pattern is the opposite of what would be expected if SDR were driven by county-level preferences. These results are graphically illustrated in Fig. 11 in the appendix.

Columns 3 and 4 of Table 6 display results from the first Mechanical Turk poll. These results conflict with the Arkansas Poll results and show that SDR toward Trump is manifest in the responses of subjects from counties that Clinton won. Subjects in these counties reveal 0.23 fewer Total Affirmations when asked about their agreement with Trump explicitly ($p = 0.017$). Comparing this effect to the same effect in counties that voted for Trump does not yield a significant difference in differences ($p = 0.277$). The results do not paint a clear picture, however, since explicit agreement with Clinton increases in counties that Trump won. Figs. 12 and 13 repeat the Mechanical Turk analysis graphically in the appendix.²²

Columns 5 and 6 of Table 6 repeat the analysis for the second Mechanical Turk poll. While no longer significant, these results are largely consistent with the results of the first Mechanical Turk poll. The Explicit treatment has an overall positive effect, but the effect is largest in both Clinton and Trump counties when they are explicitly stating agreement with their chosen candidate.

These interesting but conflicting results with respect to the geographic and social origins of SDR highlight a need for research designed specifically to address the role environment plays in developing social desirability. In particular, it will be useful for future studies to disentangle the local preferences for candidates from the local norms with regards to social desirability.

5. Discussion and conclusion

Our results reveal meaningful weaknesses in the current method of eliciting political preferences through explicit polling. In particular, we expose two mechanisms by which socially desirable responding can predictably cause electoral outcomes to deviate from predictions based on explicit poll numbers. Our paper largely agrees with Coppock in that the effect of SDR—if it exists—on the full population is limited. However, we find that SDR has a predictable *differential* impact on specific voters and specific candidates. In particular, it exaggerates differences in preferences between the two political parties. This exaggeration gives the false impression that Democrat and Republican voters have

negligible overlap in their agreement with political candidates, leading to an underestimation of the likelihood of large swings in the electorate.

To determine the influence SDR might have on candidates' policy positions, we explore the connection between ideological agreement and SDR. We uncover a misalignment between the influence of SDR and a subject's ideological alignment with a candidate. Specifically, our data reject the claim that the influence of SDR decreases as ideological alignment increases. This presents a potential problem for the electorate: explicit statements of support for a politician are the primary means by which voters discipline policy choices between elections. So, when voters' willingness to explicitly reveal support for a candidate fails to respond to changes in the candidate's policy positions, their influence over policy evaporates.

Since we clearly identify a pattern of SDR associated with party affiliation, it is puzzling that ideology plays no important role in SDR, leaving open the question of what aspect of party affiliation drives SDR. Further research is required, but we believe that understanding party identity in the framework of identity economics (Akerlof and Kranton, 2000) may prove fruitful. The importance of cultural identity is underscored by our finding that SDR has the strongest influence on highly-educated respondents.

Finally, we use county-level voting data to look at the role environmental factors play in determining the social desirability of candidates. We find suggestive evidence that SDR might be more powerful when subjects are revealing agreement with the candidate who lost the popular vote in their county, though our results are conflicting. The geographic origins of SDR remain a compelling topic for future research, though follow-up studies will need more granular data—at the neighborhood level, for example—to explore a more nuanced concept of a voter's geographic region.

While our results cast doubt on the unbiased nature of explicit polling, our alternative methodology, implicit elicitation, is more complicated to administer and produces noisier estimates that require larger sample sizes. As such, there are clear limitations to when the implicit elicitation method can substitute for explicit polling. For instance, explicit polling will always be preferred when time or money are of particular concern. Instead of a complete replacement of explicit polling, we propose an alternative approach that respects the speed and simplicity of explicit polling while improving its accuracy through calibration using implicit polling. Specifically, we suggest that polling organizations conduct occasional, large-sample, implicit elicitations to detect bias in their polls. They then can recalibrate their explicit polling results according to the detected bias.

In developing a better understanding of the role SDR plays in

²² Table 22 also repeats the analysis taking account of the margin of victory for each candidate. Under this specification, no coefficients reach conventional levels of statistical significance.

political polling, this paper hopes to improve polling methodology and the reliability of forecasts derived from current and future polling methods. Moreover, we hope to provide evidence on the origins of SDR

so that future social-science research can take into account respondent characteristics that make SDR an increasingly potent threat to the validity of poll results.

Appendix A

A.1. Arkansas Poll demographics

Table 1
Race.

Race	Number	Percent
White	653	82
Black	72	9
Hispanic	5	1
Asian	1	0
Native American	14	2
Multi-ethnic	21	3
Something else	10	1
Don't know	4	0
Refused	20	2
Total	800	100

Source:Arkansas Poll 2016.

Table 2
Political affiliation.

Affiliation	Number	Percent
Republican	232	29
Democrat	199	25
Independent	295	37
Other	20	2
Don't know	28	4
Refused	26	3
Total	800	100

Source:Arkansas Poll 2016.

Table 3
Gender.

Gender	Number	Percent
Male	357	45
Female	443	55
Total	800	100

Source:Arkansas Poll 2016.

Table 4
Education.

Education	Number	Percent
No high school	12	2
Some high school	75	9
High school graduate	218	27
Some college including business or trade school	193	24
College graduate	150	19
Some graduate school	28	4
Graduate or professional degree	104	13
Don't know	3	0
Refused	17	2
Total	800	100

Source: Arkansas Poll 2016.

Table 5
Income

Income	Number	Percent
\$7,500 or less	58	7
\$7,501–\$15,000	57	7
\$15,001–\$25,000	70	9
\$25,001–\$35,000	76	10
\$35,001–\$50,000	99	12
\$50,001–\$75,000	94	12
\$75,001–\$100,000	67	8
\$100,001 or over	69	9
Don't know	51	6
Refused	159	20
Total	800	100

Source: Arkansas Poll 2016.

Table 6
Arkansas Poll balance table.

	Implicit	Explicit	(1) vs. (2)
Male	0.470 (0.027)	0.440 (0.027)	0.430
Age	59.361 (0.985)	60.101 (0.983)	0.595
Educated	0.606 (0.026)	0.629 (0.026)	0.545
Democrat	0.231 (0.022)	0.265 (0.024)	0.303
Republican	0.318 (0.025)	0.301 (0.025)	0.615
Independent	0.400 (0.026)	0.360 (0.026)	0.281

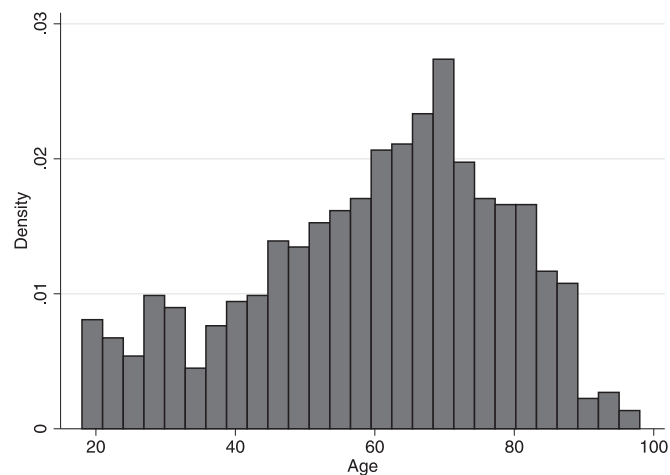
Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Fig. 1. Source: Arkansas Poll 2016.

A.2. Mechanical Turk Survey 1 demographics

Table 7
Gender.

Gender	Number	Percent
Male	583	58
Female	423	42
Total	1,006	100

Source: Mechanical Turk: Nov. 1 Survey.

Table 8

Party.

Affiliation	Number	Percent
Democrat	371	37
Lean Democrat	327	33
Lean Republican	224	22
Republican	84	8
Total	1006	100

Source: Mechanical Turk: Nov. 1 Survey.

Table 9

Education.

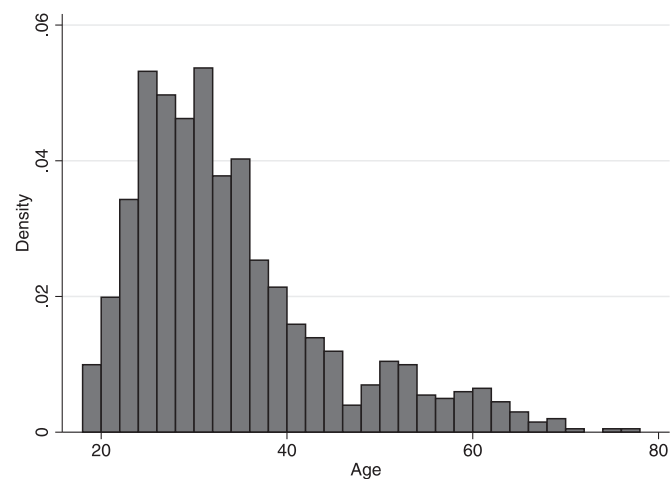
Education	Number	Percent
High school	3	0
Some college	88	9
College degree	259	26
Some graduate	99	10
Graduate or professional degree	413	41
Refused	144	14
Total	1006	100

Source: Mechanical Turk Survey: Nov. 1.

Table 10

Mechanical Turk 1 balance table.

	Clinton × Explicit	Clinton × Implicit	Trump × Explicit	Trump × Implicit	(1) vs. (2)	(1) vs. (3)	(1) vs. (4)	(2) vs. (3)	(2) vs. (4)	(3) vs. (4)	Joint F- test
Male	0.594 (0.033)	0.549 (0.033)	0.608 (0.034)	0.566 (0.033)	0.331	0.755	0.544	0.206	0.714	0.365	0.578
Age	32.948 (0.649)	32.991 (0.700)	34.274 (0.726)	34.272 (0.768)	0.964	0.173	0.188	0.204	0.218	0.999	0.340
Education	4.310 (0.081)	4.226 (0.088)	4.311 (0.085)	4.184 (0.079)	0.480	0.991	0.269	0.485	0.726	0.275	0.629
Democrat	0.738 (0.029)	0.695 (0.031)	0.703 (0.031)	0.689 (0.031)	0.307	0.412	0.244	0.853	0.889	0.746	0.658

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.**Fig. 2.** Source: Mechanical Turk: Nov. 1 Survey.

A.3. Mechanical Turk Survey 2 demographics

Table 11

Gender.

Gender	Number	Percent
Male	544	55
Female	441	45
Total	985	100

Source: Mechanical Turk: Nov. 8 Survey.

Table 12

Education.

Education	Number	Percent
Some high school	11	1
High school degree	108	11
Some college	280	29
Associate's degree	101	10
Bachelor's degree	383	39
Graduate degree	102	10
Total	985	100

Source: Mechanical Turk Survey: Nov. 8.

Table 13

Party.

Affiliation	Number	Percent
Democrat	353	36
Lean Democrat	303	31
Lean Republican	211	21
Republican	118	12
Total	985	100

Source: Mechanical Turk: Nov. 8 Survey.

Table 14

Mechanical Turk 2 balance table.

	Clinton × Explicit	Clinton × Implicit	Trump × Explicit	Trump × Implicit	(1) vs. (2)	(1) vs. (3)	(1) vs. (4)	(2) vs. (3)	(2) vs. (4)	(3) vs. (4)	Joint F- test
Male	0.594 (0.033)	0.549 (0.033)	0.608 (0.034)	0.566 (0.033)	0.331	0.755	0.544	0.206	0.714	0.365	0.578
Age	32.948 (0.649)	32.991 (0.700)	34.274 (0.726)	34.272 (0.768)	0.964	0.173	0.188	0.204	0.218	0.999	0.340
Education	4.310 (0.081)	4.226 (0.088)	4.311 (0.085)	4.184 (0.079)	0.480	0.991	0.269	0.485	0.726	0.275	0.629
Democrat	0.738 (0.029)	0.695 (0.031)	0.703 (0.031)	0.689 (0.031)	0.307	0.412	0.244	0.853	0.889	0.746	0.658

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.**Table 15**

Mechanical Turk Study 1: Total Affirmations by own- or opposing-party candidate.

	Total Affirmations	
Own-Party	2.276 (0.06)	2.204 (0.84)
Own-Party × Explicit	0.100 (0.08)	0.090 (0.08)
Opposing-Party	1.901 (0.04)	1.820 (0.85)
Opposing-Party × Explicit	−0.108* (0.07)	−0.122* (0.06)
Controls	No	Yes
N	1006	1006

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors.

Table 16
Mechanical Turk Study 1: Total Affirmations by education.

	Total Affirmations	
Trump × More Educated	1.963 (0.06)	0.993 (0.26)
Trump × More Educated × Explicit	−0.102 (0.09)	−0.137 (0.09)
Trump × Less Educated	2.067 (0.09)	1.427 (0.18)
Trump × Less Educated × Explicit	−0.056 (0.13)	−0.033 (0.13)
Clinton × More Educated	2.210 (0.07)	1.225 (0.26)
Clinton × More Educated × Explicit	0.176* (0.09)	0.188** (0.09)
Clinton × Less Educated	2.112 (0.10)	1.497 (0.18)
Clinton × Less Educated × Explicit	−0.065 (0.14)	−0.080 (0.14)
Controls	No	Yes
N	1,006	1006

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors. Controls: gender, age, & education.

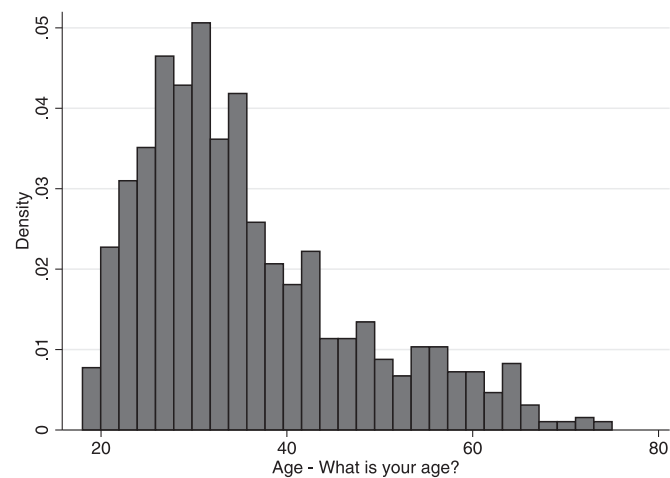


Fig. 3. Source: Mechanical Turk: Nov. 8 Survey.

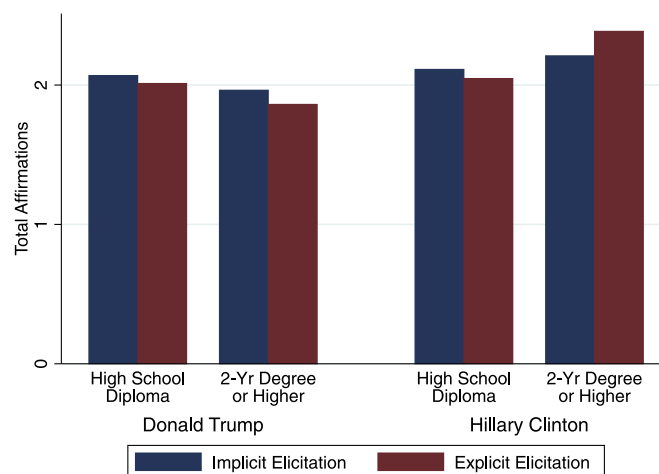


Fig. 4. Subjects divided by party affiliation and assigned candidate.

A.4. Additional sub-group analysis for Mechanical Turk Study 1

Political party

The effect of SDR is highest on statements of agreement with the candidate from the opposing party. Below, we repeat our primary regressions from our first Mechanical Turk survey. Here, we combine Democrats expressing agreement with Clinton and Republicans expressing agreement with Trump into “Own-Party” participants. The remaining participants are assigned to “Opposing-Party.” The difference-in-differences effect of SDR on Own-Party candidates relative to Opposing-Party candidates shows that the effect of SDR is 0.21 points greater on statements of agreement with the Opposing-Party candidate ($p = 0.039$).

Education

The effect of the Explicit elicitation is largest on respondents with a 2-year degree or higher education level. More educated respondents express significantly more agreement with Hillary Clinton when asked explicitly. The effect of the Explicit elicitation is significantly different across the two candidates for the more-educated respondents with a difference-in-differences of 0.325 ($p = 0.010$). The same difference-in-differences for less-educated respondents is -0.047 ($p = 0.803$).

A.5. Regressions with revealing responses removed from Implicit treatment

Table 17
Arkansas Poll: Total Affirmations.

	Total Affirmations
Explicit	2.439 (0.06)
Implicit	2.451 (0.05)
Controls	No
N	692

Heteroskedasticity-robust standard errors.

Table 18
Arkansas Poll: Total Affirmations by party affiliation.

	Total Affirmations
Democrat	2.177 (0.10)
Democrat \times Explicit	-0.263^{**} (0.13)
Republican	2.857 (0.09)
Republican \times Explicit	0.192 (0.13)
Independent	2.304 (0.08)
Independent \times Explicit	0.058 (0.13)
Controls	No
N	692

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors. Note: The difference in differences estimate is 0.455 ($p = 0.012$).

Table 19
Mechanical Turk Study 1: Total Affirmations.

	Total Affirmations
Clinton	2.199 (0.05)
Clinton \times Explicit	0.072 (0.07)
Trump	2.016 (0.05)
Trump \times Explicit	-0.103 (0.07)
Controls	No
N	999

Heteroskedasticity-robust standard errors. Note: The difference in differences estimate is 0.17 ($p = 0.097$).

Table 20

Mechanical Turk Study 1: Total Affirmations by assigned candidate and party affiliation.

	Total Affirmations
Trump × Democrat	1.865 (0.05)
Trump × Democrat × Explicit	−0.187*** (0.07)
Trump × Republican	2.346 (0.11)
Trump × Republican × Explicit	0.084 (0.16)
Clinton × Democrat	2.268 (0.06)
Clinton × Democrat × Explicit	0.084 (0.09)
Clinton × Republican	2.051 (0.09)
Clinton × Republican × Explicit	0.018 (0.14)
Controls	No
N	999

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors.**Table 21**

Mechanical Turk Study 2: Total Affirmations by assigned candidate and economic ideology.

	Total Affirmations
Liberal × Clinton	2.360 (0.0587)
Liberal × Clinton × Explicit	−0.0134 (0.0858)
Moderate × Clinton	2.160 (0.186)
Moderate × Clinton × Explicit	−0.160 (0.337)
Conservative × Clinton	1.927 (0.106)
Conservative × Clinton × Explicit	0.205 (0.141)
Liberal × Trump	1.853 (0.0520)
Liberal × Trump × Explicit	0.0171 (0.0762)
Moderate × Trump	2.750 (0.241)
Moderate × Trump × Explicit	−0.135 (0.317)
Conservative × Trump	2.556 (0.134)
Conservative × Trump × Explicit	0.159 (0.196)
Controls	No
N	968

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Heteroskedasticity-robust standard errors.

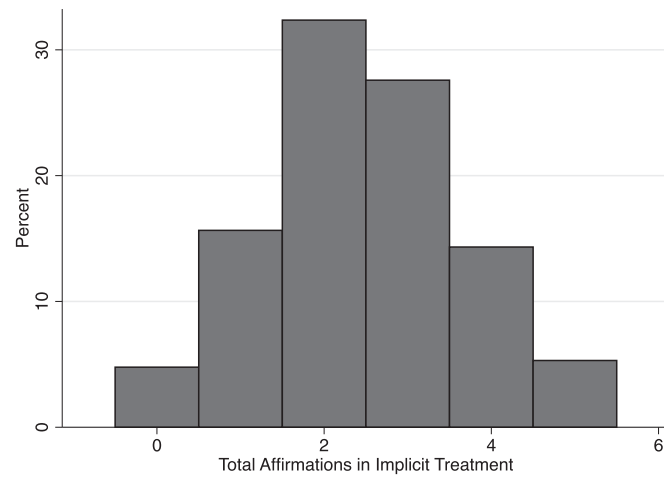


Fig. 5. AR Poll: Histogram of responses in Implicit treatment.

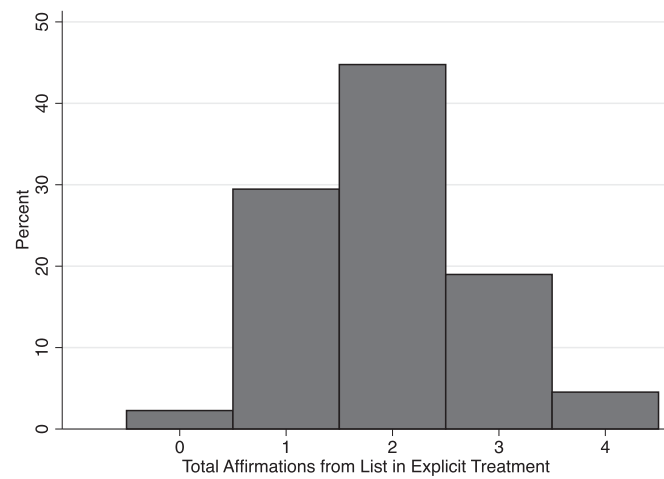


Fig. 6. AR Poll: Histogram of responses from 4-item list in Explicit treatment.

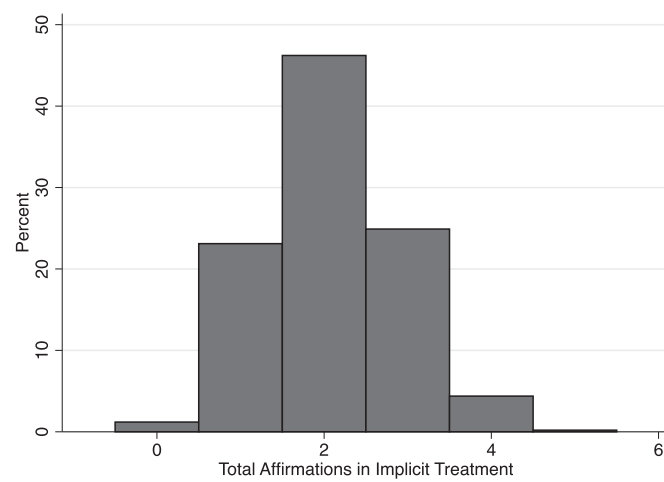


Fig. 7. MTurk 1: Histogram of responses in Implicit treatment.

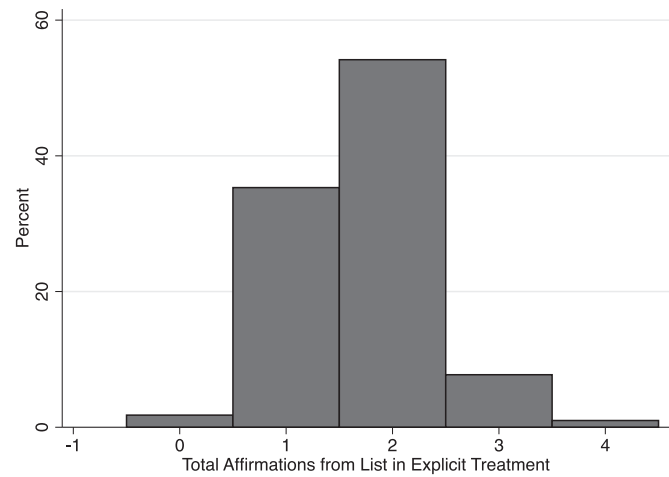


Fig. 8. MTurk 1: Histogram of responses from 4-item list in Explicit treatment.

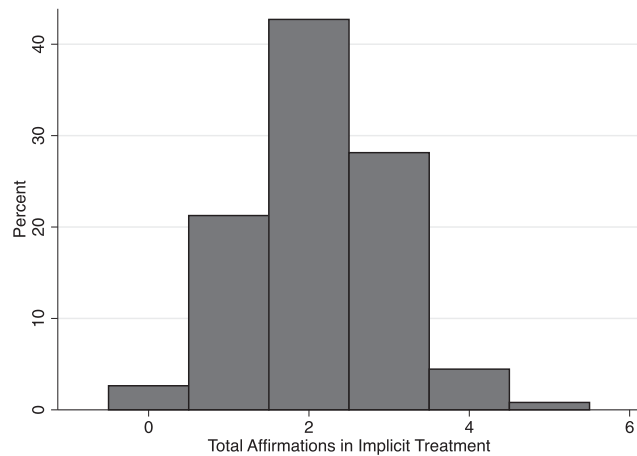


Fig. 9. MTurk 2: Histogram of responses in Implicit treatment.

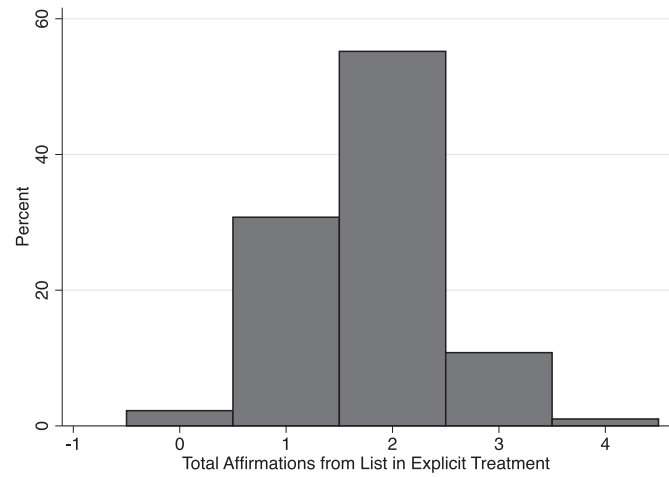


Fig. 10. MTurk 2: Histogram of responses from 4-item list in Explicit treatment.

A.6. Graphical results by county

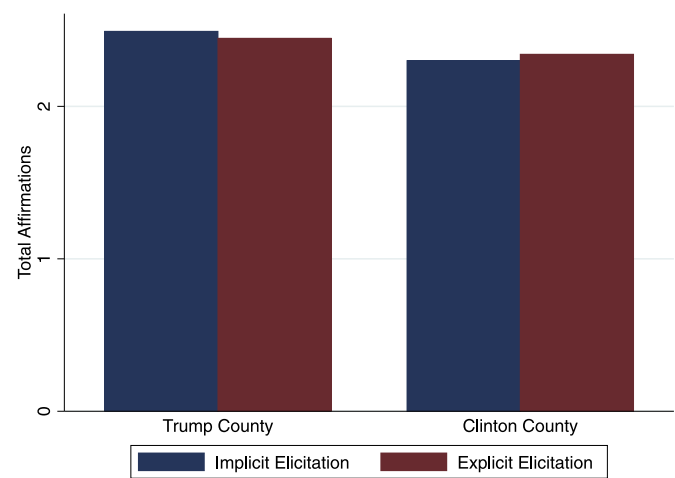


Fig. 11. AR Poll: Statements of agreement with Trump divided by county election outcome.

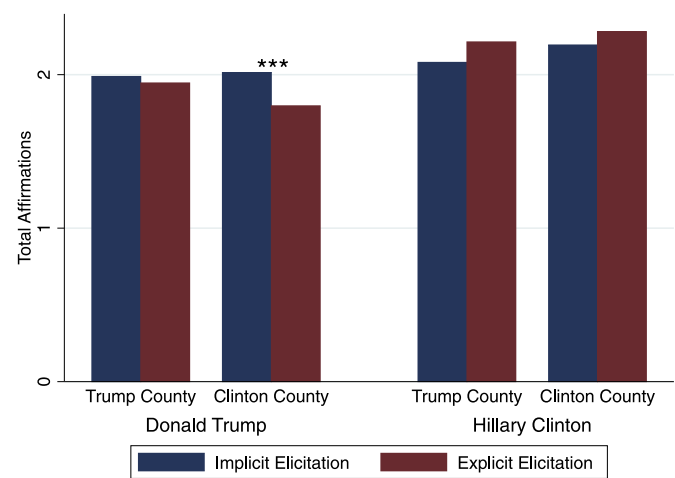


Fig. 12. MTurk 1: Statements of agreement with Trump and Clinton divided by county.

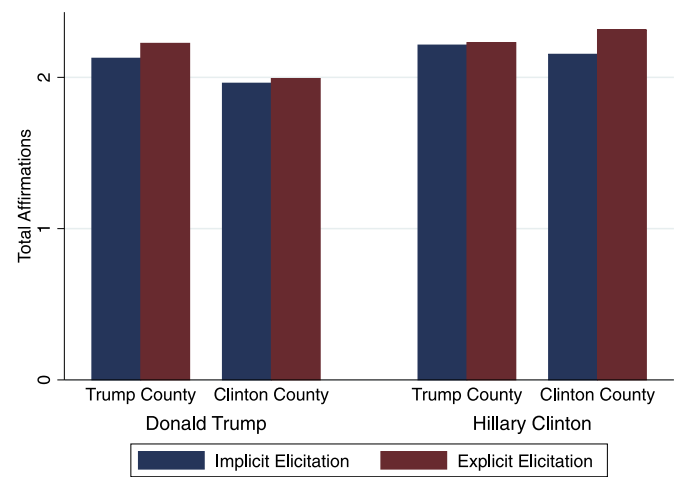


Fig. 13. MTurk 2: Statements of agreement with Trump and Clinton divided by county.

Consider the following list of statements. Below, we will ask how many of the statements you agree with.

- I think small businesses are important for the economy.
- I agree with George H.W. Bush's foreign policy.
- I think the threat of global warming is exaggerated.
- I often find myself agreeing with Hillary Clinton.
- I prefer presidential candidates who oppose the NRA.

How many of the previous statements do you agree with?

Fig. 14. Screenshot from Qualtrics survey for Implicit treatment.

A.7. County-level analysis using continuous measures of vote margin

Table 22

Total Affirmations and county voting margin.

	Arkansas Poll	MTurk Study 1	MTurk Study 2
Trump	1.982 (0.46)	0.995 (0.38)	1.707 (0.16)
Trump × Explicit	−0.051 (0.13)	−0.141 (0.09)	0.089 (0.09)
Trump × Trump Vote-Margin	0.193 (0.27)	−0.138 (0.15)	0.032 (0.18)
Trump × Trump Vote-Margin × Explicit	0.011 (0.33)	0.255 (0.23)	0.282 (0.25)
Clinton		1.166 (0.36)	1.847 (0.15)
Clinton × Explicit		0.094 (0.08)	0.073 (0.08)
Clinton × Trump Vote-Margin		−0.074 (0.20)	−0.055 (0.17)
Clinton × Trump Vote-Margin × Explicit		0.109 (0.28)	−0.165 (0.24)
Controls	Yes	Yes	Yes
N	721	890	851

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Standard errors clustered by county where possible, otherwise by city. Controls: age, gender, education. Income control added for Arkansas Poll.

A.8. Script for Arkansas Poll and Mechanical Turk screenshots

“Thank you. Lets change things up again. I will read a list of five statements; I am interested in how many of the five you agree with. Rather than going item by item, please think about how many total statements you agree with and tell me that number when I'm finished, okay?” (INTERVIEWER: AVOID AN ITEM-BY-ITEM RESPONSE) (READ STATEMENTS) [RANDOMIZE ORDER OF STATEMENTS]

1. I think small businesses are important for the economy.
2. I agree with George H.W. Bush's foreign policy.
3. I think the threat of global warming is exaggerated.
4. I often find myself agreeing with Donald Trump.
5. I prefer presidential candidates who oppose the NRA.

“How many of these statements do you agree with? ”

A.9. Economic policy questions from Mechanical Turk Study 2

- Questions about alignment with Hillary Clinton:
 - Government investments in education, infrastructure, and science are necessary to ensure America's long-term economic growth.
 - Government regulations are necessary to keep businesses in check and protect workers and consumers.
 - Rich people like to believe they have made it on their own, but in reality society has contributed greatly to their wealth.
- Questions about alignment with Donald Trump:
 - Government spending is almost always wasteful and inefficient.
 - Cutting taxes for individuals and businesses is the key to economic growth.
 - Immigrants today are a burden on our country because they take our jobs and abuse government benefits.

References

- Agranov, M., Goeree, J.K., Romero, J., Yariv, L., 2017. What makes voters turn out: the effects of polls and beliefs. *Journal of the European Economic Association*. <http://dx.doi.org/10.1093/jeaa/jvx023>. jvx023.
- Akerlof, G.A., Kranton, R.E., 2000. Economics and identity. *The Quarterly Journal of Economics* 115 (3), 715–753.
- Andreoni, J., Bernheim, B.D., 2009. Social image and the 50–50 norm: a theoretical and experimental analysis of audience effects. *Econometrica* 77 (5), 1607–1636.
- Andris, C., Lee, D., Hamilton, M.J., Martino, M., Gunning, C.E., Selden, J.A., 2015. The rise of partisanship and super-cooperators in the us house of representatives. *PLoS one* 10 (4), e0123507.
- Armstrong, J.S., 2001. *Principles of Forecasting: A Handbook for Researchers and Practitioners*. 30 Springer Science & Business Media.
- Bénabou, R., Tirole, J., 2011. Identity, morals, and taboos: beliefs as assets. *The Quarterly Journal of Economics* 126 (2), 805–855.
- Berinsky, A.J., 1999. The two faces of public opinion. *American Journal of Political Science* 1209–1230.
- Bishop, G.F., Fisher, B.S., 1995. Secret ballots and self-reports in an exit-poll experiment. *Public Opinion Quarterly* 59 (4), 568–588.
- Blair, G., Imai, K., 2012. Statistical analysis of list experiments. *Political Analysis* 20 (1), 47–77.
- Brown-Iannuzzi, J.L., Najle, M.B., Gervais, W.M., 2018. Illusion of political tolerance. *PsyArXiv*.
- Bursztyjn, L., Cantoni, D., Funk, P., Yuchtman, N., 2017. Polls, the press, and political participation: the effects of anticipated election closeness on voter turnout. No. w23490. National Bureau of Economic Research, 2017.
- Charness, G., Gneezy, U., 2008. What's in a name? anonymity and social distance in dictator and ultimatum games. *Journal of Economic Behavior & Organization* 68 (1), 29–35.
- Claassen, R.L., Ryan, J.B., 2016. Social desirability, hidden biases, and support for hillary clinton. *PS: Political Science & Politics* 49 (4), 730–735.
- Coffman, K.B., Coffman, L.C., Ericson, K.M.M., 2016. The size of the LGBT population and the magnitude of antigay sentiment are substantially underestimated. *Management Science*.
- Connors, E., Klar, S., Krupnikov, Y., 2016. There May Have Been Shy Trump Supporters After All. *The Washington Post*.
- Coppock, A., 2017. *Coppock. Did Shy Trump Supporters Bias the 2016 Polls? Evidence from a Nationally-representative List Experiment*. *Statistics, Politics, and Policy* 8 (1), 29–40.
- Corstange, D., 2008. Sensitive questions, truthful answers? modeling the list experiment with listit. *Political Analysis* 17 (1), 45–63.
- Dana, J., Weber, R.A., Kuang, J.X., 2007. Exploiting moral wiggle room: experiments demonstrating an illusory preference for fairness. *Economic Theory* 33 (1), 67–80.
- Droitcourt, J., Caspar, R.A., Hubbard, M.L., Parsley, T.L., Visscher, W., Ezzati, T.M., 1991. The item count technique as a method of indirect questioning: a review of its development and a case study application. *Measurement Errors in Surveys* 185–210.
- Dropp, K., 2015. Why Does Donald Trump Perform Better in Online Versus Live Telephone Polling? *Morning Consult*.
- Edwards, A.L., 1957. *Edwards. The Social Desirability Variable in Personality Assessment and Research*. Dryden Press, Fort Worth, TX, US.
- Enten, H., 2016. Americans Dislike Both Trump and Clinton in Record-Breaking. *FiveThirtyEight*.
- Enten, H., 2016. 'Shy' Voters Probably Aren't Why the Polls Missed Trump. *FiveThirtyEight*.
- Exley, C.L., 2016. Excusing selfishness in charitable giving: the role of risk. *Review of Economic Studies* 83 (2), 587–628.
- Fisher, R.J., 1993. Social desirability bias and the validity of indirect questioning. *Journal of consumer research* 20 (2), 303–315.
- Fox News, 2016. See which candidates qualified for the fox news-google gop debates.
- Goffman, E., 1959. *The Presentation of Self in Everyday Life*. Harmondsworth.
- Halpin, J., Agne, K., 2009. *State of American Political Ideology*. Center for American Progress.
- Heerwig, J.A., McCabe, B.J., 2009. Education and social desirability bias: the case of a black presidential candidate. *Social Science Quarterly* 90 (3), 674–686.
- Hoffman, E., McCabe, K., Smith, V.L., 1996. Social distance and other-regarding behavior in dictator games. *The American Economic Review* 86 (3), 653–660.
- Hopkins, D.J., 2009. No more wilder effect, never a whitman effect: when and why polls mislead about black and female candidates. *The Journal of Politics* 71 (3), 769–781.
- Huang, J., Low, C., 2017. Trumping norms: lab evidence on aggressive communication before and after the 2016 us presidential election. *American Economic Review* 107 (5), 120–124.
- Janus, A.L., 2010. The influence of social desirability pressures on expressed immigration attitudes. *Social Science Quarterly* 91, 928–946.
- Kane, J.G., Craig, S.C., Wald, K.D., 2004. Religion and presidential politics in florida: a list experiment. *Social Science Quarterly* 85 (2), 281–293.
- Kantchev, G., Whittall, C., 2017. After another surprise election result, investors grow skeptical of pollsters. *Wall Street Journal*, eastern ed.. Retrieved from <https://www.wsj.com/articles/after-another-surprise-election-result-investors-grow-skeptical-of-pollsters-1497087000>.
- Karlan, D.S., Zinman, J., 2012. List randomization for sensitive behavior: an application for measuring use of loan proceeds. *Journal of Development Economics* 98 (1), 71–75.
- Keeter, S., Samaranayake, N., 2007. Can You Trust what Polls Say about Obama's Electoral Prospects. *Pew Research Center*.
- Krysan, M., 1998. Privacy and the expression of white racial attitudes: a comparison across three contexts. *Public Opinion Quarterly* 62 (4), 506–544.
- LaPiere, R.T., 1934. Attitudes vs. actions. *Social forces* 13 (2), 230–237.
- Lax, J.R., Phillips, J.H., Stollwerk, A.F., 2016. Are survey respondents lying about their support for same-sex marriage? lessons from a list experiment. *Public Opinion Quarterly* 80 (2), 510–533.
- Maccoby, E.E., Maccoby, N., 1954. The interview: a tool of social science. *Handbook of social psychology* 1, 449–487.
- Mas, A., Moretti, E., 2009. Racial bias in the 2008 presidential election. *The American Economic Review* 99 (2), 323–329.
- Miller, J. D., 1984. *A New Survey Technique for Studying Deviant Behavior*. Unpublished doctoral dissertation, George Washington University, Washington, DC.
- Miller, J.M., Krosnick, J.A., 1998. The impact of candidate name order on election outcomes. *Public Opinion Quarterly* 62 (3), 291–330.
- Paulhus, D.L., 1984. Two-component models of socially desirable responding. *Journal of personality and social psychology* 46 (3), 598.
- Pew Research Center, 2012. *Assessing the representativeness of public opinion surveys*. Pew Research Center, 2016. *Partisanship and political animosity in 2016*.
- Powell, R.J., 2013. Social desirability bias in polling on same-sex marriage ballot measures. *American Politics Research* 41 (6), 1052–1070.
- Raghav Rao, D., Federer, W.T., 1979. Block total response as an alternative to the randomized response method in surveys. *Journal of the Royal Statistical Society. Series B (Methodological)* 41, 40–45.
- Redlawsk, D.P., Tolbert, C.J., Franko, W., 2010. Voters, emotions, and race in 2008: Obama as the first black president. *Political Research Quarterly* 63 (4), 875–889.
- Rothschild, D., 2009. Forecasting elections: comparing prediction markets, polls, and their biases. *Public Opinion Quarterly* 73 (5), 895–916.
- Rudman, L.A., Kilianski, S.E., 2000. Implicit and explicit attitudes toward female authority. *Personality and social psychology bulletin* 26 (11), 1315–1328.
- Shepard, S., 2016. *Gop Insiders: Polls don't Capture Secret Trump Vote*. Politico.
- Stephens-Davidowitz, S., 2014. The cost of racial animus on a black candidate: evidence using Google search data. *Journal of Public Economics* 118, 26–40.
- Streb, M.J., Burrell, B., Frederick, B., Genovese, M.A., 2008. Social desirability effects and support for a female american president. *Public Opinion Quarterly* 72, 76–89.
- Traugott, M.W., Price, V., 1992. A review: exit polls in the 1989 virginia gubernatorial race: where did they go wrong? *Public Opinion Quarterly* 56 (2), 245–253.
- Tsuchiya, T., Hirai, Y., Ono, S., 2007. A study of the properties of the item count technique. *Public Opinion Quarterly* 71 (2), 253–272.
- Wagner, A., Zeckhauser, R.J., Ziegler, A., 2017. *Company Stock Reactions to the 2016 Election Shock: Trump, Taxes and Trade*. Technical Report. National Bureau of Economic Research.
- Warner, S.L., 1965. Randomized response: a survey technique for eliminating evasive answer bias. *Journal of the American Statistical Association* 60 (309), 63–69.
- Wolfers, J., Zitzewitz, E., 2004. Prediction markets. *The Journal of Economic Perspectives* 18 (2), 107–126.
- Wolfers, J., Zitzewitz, E., 2016. *Wolfers, Zitzewitz. What do Financial Markets Think of the 2016 Election*. Brookings Institution.