

Minimal Sponsorship-Induced Bias in Web Survey Data

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April 24, 2015

Abstract

Over the past decade, survey data collection has moved away from personal face-to-face and telephone interviewing towards a model of computer-assisted self-interviewing. Given this increased reliance on online survey data, it is critical to re-examine questions of survey validity in the online context. It is an open question whether survey sponsorship contributes to total survey error. We measure the extent to which sponsorship (by a university or marketing firm) affects data quality, including in satisficing behavior, demand characteristics, and socially desirable responding. We employ a unique online survey that manipulates sponsorship after participants have opted in to participation, thus eliminating selection biases that would plague between-survey comparisons of data quality. In addition, we examine whether sponsor effects vary depending on the participant's experience with online surveys. Overall, we find no evidence that response quality is affected by survey sponsor or by past survey experience.

Words: 2740

* Authorship is equal and listed alphabetically. This paper was previously presented at the 2015 Annual Meeting of the Midwest Political Science Association, Chicago, IL. Thanks to Brad Jones for helpful feedback.

The rising cost of face-to-face interviewing combined with the decline in landline telephone use and telephone response rates has led to a rapid and dramatic shift in survey mode, especially for academic survey and experimental research. Research now relies heavily on web-based self-interviewing. This turn to online raises a number of considerations about recruitment, respondent engagement, and data quality.

A striking feature of much web-based interviewing is the prominence of a survey's sponsor throughout the interview. Whereas telephone interviewing may include a brief introductory message describing the sponsor, online surveys (especially those self-administered by academic researchers) typically contain introductory text describing the study, its sponsorship, the name of the principal investigator, and human subjects regulations. In many surveys, the university logo appears in the website header throughout the instrument. Participants in such online surveys are thus shown a much stronger exposure to the sponsor than in other modes.

While some previous research has examined the effect of sponsorship on response rates (Tourangeau, Presser and Sun 2014), no extant research examines how sponsorship affects response behavior. We test for sponsorship effects using an online survey experiment that randomly assigns sponsorship *after* participants have agreed to respond. Using a variety of measures of data quality, we find minimal influence of sponsorship by either a university or marketing firm nor any effect of past survey experience on survey data quality. The results give us confidence in the quality of web-based data collection but we caution that further research is needed to understand the full scope of sponsor-related dynamics.

Sponsorship and Branding in the Survey Interview

Assessing sponsor effects is increasingly important for two reasons: the move to researcher-programmed self-administered surveys and the increasing use of online recruitment platforms. Relatively recently, conducting a survey required contracting with a survey firm that maintained control over many aspects of the instrument. Indeed, studies of sponsor effects often took care to

distinguish between the *sponsor* of the survey (the public-facing entity conducting the research) and the *source*, or the entity providing the funds for this research (Albaum 1987). Today, the growth of online survey tools has blurred this distinction. Such websites allow researchers to program and distribute their own surveys on platforms like Mechanical Turk, Facebook, Craigslist, or email listservs, or by contracting with online survey panels to recruit respondents.

There are three main points at which respondents may learn the sponsor of an online survey: in the recruitment message, the consent form, or the body of the survey itself. When recruiting subjects (for example, from Mechanical Turk), some researchers choose to include their university affiliation in the request – a logical decision given the empirical evidence that university-sponsored surveys garner higher response rates (Boulianne, Klofstad and Basson 2011). After opting in, respondents are almost always given at least a brief exposure to the university’s name in the text of the consent form required by institutional review boards. Finally, many researcher-designed online surveys feature the university’s logo at the top of each page.

Past research suggests that surveys sponsored by academic institutions yield higher response rates than those administered by commercial firms (Fox, Crask and Kim 1988; Jones and Linda 1978), and this pattern holds true for surveys administered online as well as off (Boulianne, Klofstad and Basson 2011). Universities are perceived as being more trustworthy, likeable and having higher authority status than commercial companies, all of which increases the likelihood that a potential respondent will accede to the request (Groves, Cialdini and Couper 1992). Indeed, surveys sponsored by within-state universities garner higher response rates than those sponsored by out-of-state universities (Edwards, Dillman and Smyth 2014). However, the same factors that improve response rates for university-sponsored surveys may also bias results in several ways.

“Social desirability bias” occurs when respondents misrepresent themselves in order to appear compliant with social norms (Nederhof 2006). For example, social desirability often causes people to over-report voting (Belli et al. 1996). In health surveys, social desirability can lead people to under-report behaviors like over-eating or drug use. However, such bias is reduced in self-administered surveys as compared to telephone or in-person surveys (Kreuter, Preser and

Tourangeau 2008). This mode effect suggests that a respondent's sense of who is "listening" to their answers shapes how they respond. When the survey sponsor is an institution that the respondent likes and respects (such as a university), respondents may be more concerned with social desirability.

Respondents' attitudes towards the survey sponsor might also increase demand characteristics, specifically the "good-subject effect," in which subjects behave in a way that will "help" the researcher by confirming the hypothesis of the study (Weber and Cook 1972). Finally, university sponsorship might also increase attentiveness and reduce satisficing. Satisficing occurs when respondents expend minimal energy in answering questions. This may include careless reading of response options or a less effortful memory search (Krosnick 1999).

We hypothesize that a survey's sponsor modifies respondents' response behavior in a number of ways. In particular, we expect that compared to a no-sponsor control group, the university sponsor will socially desirable responding and demand effects (Nichols and Maner 2008) and will decrease satisficing-type behavior (Krosnick 1991). Similarly, we expect that compared to the control condition, a commercial marketing sponsor will decrease socially desirable responding and demand effects, while increasing satisficing.

Design

There are two challenges to assessing sponsorship effects in surveys. First, a proper assessment requires the use of identical questionnaires so that response behavior is not affected by question or response wording, or by other features of the self-interviewing interface. Second, sponsorship may affect who is willing to participate in a survey, so different sponsors (due to their reputations, or variations in recruitment techniques) may yield samples that differ in unobserved ways. Consequently, any differences in response behavior between survey sponsors may be due to selection bias in the sample of respondents rather than differences in respondents' behavior due to sponsorship. Thus a test of sponsorship bias requires a randomized experiment where all respondents complete

the same questionnaire but do so *after* opting in to survey participation thus ensuring that the only difference between interviews from each sponsor is the sponsorship alone.

To implement such an experiment, we gathered interviews from Amazon’s Mechanical Turk (MTurk), an online opt-in crowdsourcing platform based in the United States. While MTurk does not demographically reflect the U.S. population as a whole, the platform provides us the ability to test for the effect of sponsorship bias on response behavior, holding constant respondents’ willingness to participate in the survey (thus mitigating selection biases). To manipulate sponsorship, we recruited U.S.-based respondents to “Complete a 10-15 minute survey about your attitudes and opinions” offering \$1.00 of compensation. The MTurk “requester” (sponsor name that was displayed to potential participants) was “Aarhus Research”¹ and no other information about the study was available to respondents until they agreed to participate in the study.

We additionally engaged in quota sampling to obtain a sample of respondents stratified by the amount of their experience on MTurk.² Each task an MTurk “worker” completes is called a HIT, and we used MTurk’s “Qualification Requirements” to create separate survey opportunities (i.e., separate HITs) for workers with varying numbers of completed HITs (<100, 100–500, 500–1000, 1000-2000, and >2000 HITs). We are therefore able to detect whether any observed effects of sponsorship are moderated by previous task experience. This helps to address concerns about different patterns of behavior among respondents who participate in many online surveys (Binswanger, Schunk and Toepoel 2013).

Once each respondent agreed to participate in the survey, they were randomly assigned to one of five conditions. In the first (control) condition, the survey was not attributed to any particular sponsor and the survey itself employed a generic template with no logos or images. In the next two conditions, respondents were told the survey was being conducted by a marketing research firm called “Aarhus Market Research.” In one of these conditions (*marketing light*), participants were simply told the name of the sponsor and then continued with the survey. In the other (*mar-*

¹This was a new requester account created specifically for this study, so as to mitigate any reputational concerns that might affect who would participate in the study.

²See Appendix D for details.

keting heavy), participants were also given a longer description of the firm and asked whether they had previously completed any surveys for this firm.³ In both the heavy and light conditions, respondents saw the logo at the top of each page of the survey.

In the final two conditions, respondents were instead told that the survey was being conducted by The University of Aarhus and shown a university logo. In one condition (*university light*), respondents were simply told the name of the university sponsor, while in the other (*university heavy*), respondents were given a longer description of the university and asked whether they had participated in any research for the university before. The light and heavy versions of our two sponsor treatments are meant to test the conditionality of any effects.

Data Quality Measures

To measure the influence of sponsorship, we implement a number of survey and experimental measures of data quality that can broadly be sorted into four categories of survey measures: questions likely to evoke socially desirable responding, measures of the “good subject effect,” attentiveness measures, and two knowledge batteries that also serve as measures of satisficing. These sets of measures were presented to respondents in random order.

We implemented four tests of socially desirable responding. The first asked respondents: “We’re interested in how many people get out to vote in different elections. Please indicate which of the following recent elections you voted in” and listed all national elections from 2006 to 2014. The second measure consisted of a “double list experiment” modified from (Glynn 2013). The fourth asked respondents a “check all that apply” question listing a variety of socially desirable and undesirable items. The final measure asked respondents to report their level of interest in a variety of topics, one of which was “politics and public affairs.”

Our second measure of data quality was an experimental test of the “good subject effect,” in

³While this manipulation involves deception, only participants in the marketing conditions were misled about the survey sponsor and these participants were debriefed about the manipulation after completing the study. Given that participants already agreed to participate in the survey (not knowing the sponsor), we felt that this manipulation involved bare minimum risk of harm to participants.

which respondents alter their behavior to confirm the researcher's hypothesis after learning the purpose of a study. In this measure, a version of which was previously employed by Nichols and Maner (2008), we displayed a sequence of ten pairs of neutral images and asked respondents to select the image they preferred from each pair. Half of respondents were randomly assigned to receive introductory text telling them that "we believe that when people are choosing between two images that are very much alike, they prefer images on the left." We then compared the number of "left" images selected in this group to the number of "left" images selected in a control group that did not receive the hypothesis explanation.

Our third category of measures assessed attentiveness. In the first measure, we provided respondents with a short excerpt from a news article about politics. We timed how long respondents spent reading the text, and then asked them to write down everything they could remember about the text in an open-ended textbox. Responses were transformed into a variable counting the total number of characters typed as well as coded for the total number of correct and incorrect pieces of information recalled. Our final measure was an instructional manipulation check.

The final category of measures consisted of knowledge questions concerning two categories of information: politics and scientific understanding. The political knowledge questions included five typical political knowledge questions in open-ended form, each with an explicit "don't know" option. The scientific knowledge questions were in "true or false" form, again with an explicit "don't know" option. These questions yielded three measures. The first tabulates the number of correct responses to knowledge questions. The second tabulates the number of "don't know" responses to these questions. Finally, we asked respondents explicitly if they had cheated on any of the knowledge questions (by using the internet to look up correct answers; see Jensen and Thomsen 2013).

The survey also included measures of basic demographic characteristics (sex, race, education, party identification, ideology, and cognitive measures of need for cognition and need to evaluate) and four final questions measuring perceptions of the survey interview. These included: (1) a feeling thermometer measures of respondents' attitudes toward different types of organizations

including universities and market research companies, (2) a measure assessing respondents' perceptions of the quality of the survey compared to others they have responded to, (3) an open-ended measure asking participants how much they felt they should have been paid for participation in the survey, and (4) a yes-no question asking whether respondents would be willing to receive further emails from the investigators. Participants in the marketing conditions were then debriefed and told that the study was not sponsored by Aarhus Market Research and had in fact been sponsored by academic researchers.

Results

While not a representative sample of any population, the 856 participants in the experiment constitute a diverse group: 51% were men; their mean age was 36 (median was 33); and 82.2% were white or Caucasian, 4.7% were black or African American, and 6.1% were Asian American. All had at least some high school education, 37.6% had four-year university degrees, and 14.6% had post-bachelors training. The sample, typical of MTurk respondents, had a clear liberal-Democratic bias with 52.7% of respondents identifying as Democrats or Democratic-leaning and only 15% identifying as Republicans or Republican-leaning. Similarly, 53.0% identified as liberal while only 13.3% identified as conservative.

TABLE 1 HERE

To assess the impact of sponsorship on our measures of survey response behavior, we employ a series of regressions. Table 1 summarizes the results, which are available in full in Appendix A. For each analysis, one measure of survey responding is regressed on indicators for each of our treatment conditions (with the control group as the baseline).

Respondents in the marketing sponsorship conditions reported lower rates of voting than those in the control group or in the university sponsorship conditions. This is the only significant effect for any the three measures (and indeed the only consistently significant relationship we find for any response behavior we examined). For both the measure of good behavior and self-reported

interest in politics, there is no effect of survey sponsorship on response behavior.

There is no effect of sponsorship on any of the social desirability measures. Regarding the good-subjects effect, we see a large and positive treatment effect that replicates the results of Nichols and Maner (2008): when told about the researchers' hypothesis, individuals engage in behavior that strongly conforms with that hypothesis. While this effect holds across all conditions, its magnitude is unaffected by the survey sponsor.

Finally, the knowledge and attentiveness measures show that there is no statistically significant effect of sponsorship on respondent engagement. In addition, sponsorship did not affect the rate at which respondents passed the more explicit attention check questions. Respondents with the most MTurk experience (more than 2000 HITs) were slightly less likely to give "don't know" responses to or report cheating on political knowledge questions.⁴

In addition to the measures of response behavior already reported, we also asked respondents several questions related to their evaluations of the survey itself. Across all five of these aspects of respondents' evaluations of the survey experience, we see no effect of sponsorship. However, more experienced MTurk users are more likely to agree to receive emails in the future. It is also worth noting that in each of the conditions (including the control condition), respondents were significantly more favorable towards "colleges and universities" than "market research firms," which is in line with previous research suggesting that universities are perceived more positively than other common survey sponsors (Boulianne, Klofstad and Basson 2011; Fox, Crask and Kim 1988).

Discussion

While survey sponsorship is an increasingly prominent part of survey interviewing, no extant research has tested the influence of sponsorship on response behavior. We fill this gap using a novel experiment that randomized sponsorship *after* respondents agreed to participate, thus mitigating concerns about sponsorship-induced selection biases. The results indicate sponsorship had little

⁴However, very low numbers of respondents reported cheating behavior (32 for the political knowledge items and 13 for the science items).

effect on socially desirable responding, attentiveness, satisficing, or demand effects. These minimal effects are encouraging given the increasing use of researcher-designed, self-administered surveys, although more research is needed to better understand the circumstances under which sponsorship affects survey error. For example, interactions between the sponsor and the survey topic (such as a university-sponsored survey about student debt) could create more bias than the relatively neutral content in this study. The sample for our study also leaned liberal-Democratic and had higher levels of education than the U.S. general population. It would be worth examining whether those with low levels of education might respond differently to survey sponsorship. Finally, we caution that while our university and market research firms did not affect response quality, effects may exist for other sponsors, especially those perceived as being partisan or having a distinct agenda (Tourangeau et al. 2009; Presser, Blair and Triplett 1992; Tourangeau, Presser and Sun 2014). Finally, it is also important to highlight that we found no indications that survey experience had any effect on survey response behavior. While it is reasonable to be concerned that “professional respondents” might be more or less likely to engage in problematic survey behaviors than novice respondents, we see little reason to be concerned based on the results of this study.

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Tables

Table 1: Summary of Effects

	Marketing	University	MTurk experience
Socially desirability			
Past voting	negative	none	none
Good behavior	none	none	none
Political interest	none	none	none
List experiment	none	none	none
Good-subject effect			
Photo selection	none	none	none
Attention			
Recall (characters)	none	none	none
Recall (total correct)	none	none	none
Recall (total incorrect)	none	none	none
Reading time	none	none	none
Knowledge/Satisficing			
Political knowledge	none	none	none
Science knowledge	none	none	none
DKs (political)	none	none	negative
DKs (science)	none	none	none
Cheating (political)	none	none	negative
Cheating (science)	none	none	none
Survey evaluation			
Receive email	none	none	positive
Survey rating	none	none	none
Compensation	none	none	none
University eval	none	none	none
Marketing eval	none	none	none

Cell entries indicate the presence and direction of effects from regression of the data quality measure on indicators for sponsorship condition and past survey experience. Full results are included in Appendix A.

Appendix A Results Tables

Table 2: Socially Desirable Responding

	(1)	(2)	(3)
	Past Voting	Good Behavior	Political Interest
Marketing (Heavy)	-0.36* (0.18)	-0.00 (0.03)	-0.04 (0.03)
Marketing (Light)	-0.41* (0.17)	-0.01 (0.02)	-0.02 (0.03)
University (Heavy)	0.04 (0.18)	0.01 (0.03)	-0.03 (0.03)
University (Light)	-0.11 (0.18)	-0.00 (0.03)	-0.04 (0.03)
100-500 HITs	0.17 (0.18)	-0.01 (0.03)	-0.03 (0.03)
500-1000 HITs	-0.02 (0.18)	-0.03 (0.03)	0.01 (0.03)
1000-2000 HITs	-0.04 (0.21)	-0.04 (0.03)	0.00 (0.03)
Over 2000 HITs	0.30 (0.16)	-0.06* (0.02)	0.01 (0.03)
Constant	2.96*** (0.17)	0.54*** (0.02)	0.52*** (0.03)
N	749.00	872.00	856.00
rmse	1.50	0.23	0.27

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: List Experiment

	(1)	(2)	(3)
	List Experiment 1	List Experiment 2	Within-Subjects
Treatment	0.39*** (0.11)	0.28* (0.12)	
Marketing (Heavy)	0.02 (0.11)	0.10 (0.13)	0.10 (0.10)
Marketing (Light)	-0.03 (0.11)	0.00 (0.12)	0.10 (0.09)
University (Heavy)	0.06 (0.11)	0.06 (0.13)	0.01 (0.10)
University (Light)	0.11 (0.11)	0.16 (0.13)	0.05 (0.10)
Treatment × Marketing (Heavy)	0.19 (0.16)	0.02 (0.18)	
Treatment × Marketing (Light)	0.17 (0.15)	0.05 (0.17)	
Treatment × University (Heavy)	-0.01 (0.16)	0.09 (0.18)	
Treatment × University (Light)	0.01 (0.16)	0.08 (0.18)	
100-500 HITs	-0.02 (0.08)	0.08 (0.09)	0.08 (0.10)
500-1000 HITs	-0.02 (0.08)	0.03 (0.09)	-0.08 (0.10)
1000-2000 HITs	-0.05 (0.09)	0.06 (0.10)	-0.06 (0.11)
Over 2000 HITs	-0.01 (0.07)	0.06 (0.08)	-0.10 (0.09)
Constant	1.66*** (0.10)	1.29*** (0.11)	0.37*** (0.09)
N	840.00	842.00	838.00
rmse	0.72	0.79	0.86

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Good Subjects Behavior

	(1) Good Subjects
Treatment	0.53* (0.22)
Marketing (Heavy)	0.37 (0.22)
Marketing (Light)	0.17 (0.21)
University (Heavy)	0.45* (0.22)
University (Light)	0.30 (0.23)
Treatment × Marketing (Heavy)	-0.26 (0.31)
Treatment × Marketing (Light)	-0.22 (0.30)
Treatment × University (Heavy)	-0.41 (0.32)
Treatment × University (Light)	-0.41 (0.32)
100-500 HITs	0.22 (0.16)
500-1000 HITs	0.10 (0.16)
1000-2000 HITs	0.20 (0.18)
Over 2000 HITs	0.17 (0.14)
Constant	3.00*** (0.19)
N	854.00
rmse	1.42

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Attention Measures

	(1) Recall (characters)	(2) Recall (characters)	(3) Incorrect Responses	(4) Reading Time
Marketing (Heavy)	-0.62 (13.24)	-1.02 (11.91)	0.03 (0.07)	-26.93 (16.20)
Marketing (Light)	8.99 (12.51)	4.20 (11.26)	0.03 (0.07)	-27.11 (15.33)
University (Heavy)	22.92 (13.31)	12.08 (12.01)	0.06 (0.07)	-13.53 (16.23)
University (Light)	5.53 (13.46)	5.61 (12.10)	0.15* (0.07)	-30.17 (16.49)
100-500 HITs	-3.70 (13.71)	-3.21 (12.32)	-0.06 (0.07)	-3.18 (16.77)
500-1000 HITs	-5.09 (13.83)	-4.67 (12.44)	-0.11 (0.07)	11.76 (16.90)
1000-2000 HITs	4.34 (15.37)	4.84 (13.82)	-0.15 (0.08)	14.43 (18.84)
Over 2000 HITs	2.12 (12.14)	-6.91 (10.94)	-0.08 (0.06)	13.67 (14.86)
Constant	179.13*** (12.80)	182.11*** (11.51)	0.40*** (0.07)	66.30*** (15.69)
N	872.00	869.00	844.00	861.00
rmse	121.04	108.83	0.64	147.38

Standard errors in parentheses

Column 2 excludes extreme outliers (> 1000) characters

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Political and Science Knowledge

	(1)	(2)	(3)	(4)
	Political Knowledge	DKs (Political)	Science Knowledge	DKs (Science)
Marketing (Heavy)	-0.14 (0.11)	0.02 (0.02)	-0.04 (0.19)	0.00 (0.02)
Marketing (Light)	0.00 (0.10)	0.01 (0.02)	0.04 (0.18)	-0.01 (0.02)
University (Heavy)	0.03 (0.11)	-0.01 (0.02)	-0.02 (0.19)	0.01 (0.02)
University (Light)	-0.01 (0.11)	-0.00 (0.02)	-0.19 (0.20)	0.01 (0.02)
100-500 HITs	0.15 (0.11)	-0.02 (0.02)	-0.41* (0.20)	0.02 (0.02)
500-1000 HITs	-0.14 (0.11)	-0.02 (0.02)	-0.10 (0.20)	-0.00 (0.02)
1000-2000 HITs	0.19 (0.13)	-0.02 (0.02)	-0.28 (0.22)	0.01 (0.02)
Over 2000 HITs	-0.17 (0.10)	-0.05** (0.02)	-0.28 (0.18)	-0.00 (0.02)
Constant	5.68*** (0.11)	0.13*** (0.02)	5.96*** (0.19)	0.14*** (0.02)
N	568.00	872.00	872.00	872.00
rmse	0.79	0.17	1.76	0.16

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Self-Reported Cheating Political and Science Knowledge

	(1) Political Knowledge	(2) Science Knowledge
main		
Marketing (Heavy)	0.71 (0.63)	0.97 (1.16)
Marketing (Light)	0.34 (0.64)	1.87 (1.07)
University (Heavy)	0.26 (0.69)	0.00 (.)
University (Light)	0.79 (0.63)	0.05 (1.42)
100-500 HITs	-0.85 (0.52)	0.21 (0.78)
500-1000 HITs	-0.48 (0.47)	0.00 (.)
1000-2000 HITs	-1.50 (0.78)	0.33 (0.84)
Over 2000 HITs	-1.82** (0.59)	-0.69 (0.83)
Constant	-2.88*** (0.56)	-4.75*** (1.12)
N	856.00	566.00
rmse		

Standard errors in parentheses

Cell entries are average marginal effects calculated from logistic regression estimates

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Respondents' Evaluation of Survey

	(1)	(2)	(3)	(4)	(5)
	Receive email	Survey Rating	Compensation	Universities	Marketing Firms
main					
Marketing (Heavy)	-0.00 (0.26)	-0.02 (0.08)	0.06 (0.06)	-1.24 (3.00)	4.60 (2.76)
Marketing (Light)	-0.31 (0.24)	-0.03 (0.07)	0.03 (0.06)	-0.56 (2.87)	3.05 (2.60)
University (Heavy)	-0.37 (0.25)	-0.08 (0.08)	-0.03 (0.06)	-0.18 (3.00)	-1.30 (2.75)
University (Light)	0.06 (0.26)	-0.16 (0.08)	0.06 (0.07)	-0.69 (3.05)	-2.02 (2.81)
100-500 HITs	0.77** (0.24)	-0.02 (0.08)	-0.08 (0.07)	-6.00 (3.15)	0.20 (2.87)
500-1000 HITs	1.46*** (0.26)	-0.08 (0.08)	-0.10 (0.07)	0.43 (3.18)	-0.04 (2.88)
1000-2000 HITs	1.17*** (0.28)	-0.17 (0.09)	0.05 (0.07)	-1.73 (3.48)	0.46 (3.18)
Over 2000 HITs	1.14*** (0.22)	-0.20** (0.07)	0.03 (0.06)	-1.33 (2.78)	-1.80 (2.53)
Constant	0.12 (0.23)	3.98*** (0.08)	1.28*** (0.06)	66.33*** (3.03)	42.58*** (2.70)
N	847.00	844.00	872.00	757.00	822.00
rmse		0.71	0.59	25.42	24.37

Standard errors in parentheses

Cell entries in Column 1 are average marginal effects calculated from logistic regression estimates

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix B Sponsorship Treatments

Control Condition

On the following pages, we will ask you some questions. Please click the “>>” button to begin. If you have any questions or there is something you do not understand, please ask.

University Light



University of Aarhus

On the following pages, we will ask you some questions. Please click the “>>” button to begin. If you have any questions or there is something you do not understand, please ask.

University Heavy



University of Aarhus

This research study is being run by researchers at the University of Aarhus. Please let us know if you have ever taken a survey for the University of Aarhus before. This will not disqualify you from taking this survey.

- Yes, I have taken a survey for the University of Aarhus before.
- No, I have not taken a survey with the University of Aarhus before.
- I'm not sure.

[PAGE BREAK]

Research Study: Opinions and Attitudes
Principal Investigator: Dr. Thomas J. Leeper, University of Aarhus

You are invited to take part in a research study.

Eligibility

You are being asked to participate in this study because you are 18 years old or older and reside in the United States. There will be a total of 1,000 participants in this study.

Compensation

The survey will take approximately ten minutes. Participants who complete the study will be paid \$1.

Purpose and Description of Procedures

The purpose of the study is to learn about attitudes and opinions. During the study, you will be asked to answer questions about your attitudes concerning a number of issues.

Confidentiality

All the information you tell us during the study will be kept strictly confidential, as required by law. Data from this study will be stored on a computer. No identifying information about you will be collected, and your name will not be associated with your answers.

Benefits and Risks

There is minimal risk associated with participating in this research. The results of the research will improve our understanding of opinions but may not benefit you personally. You are being compensated for your time.

Rights

You have the option to not participate in this study. You may close the survey and return the HIT if you do not wish to participate. Your participation in this study is voluntary and you are free to withdraw at any time.

Contact Information

If you have questions, concerns or complaints regarding your participation in this research study or if you have any questions about your rights as a research subject, you can contact Dr. Thomas J. Leeper, thosjleeper@gmail.com. Please click the “>>” button if you understand the above and agree to take part in this research study. If you have any questions or there is something you do not understand, please ask.

Marketing Light



On the following pages, we will ask you some questions. Please click the “>>” button to begin. If you have any questions or there is something you do not understand, please ask.

Marketing Heavy



This research study is being run by researchers at the Aarhus Marketing Research. Please let us know if you have ever taken a survey for Aarhus Marketing Research before. This will not disqualify you from taking this survey.

- Yes, I have taken a survey for Aarhus Marketing Research before.
- No, I have not taken a survey with Aarhus Marketing Research before.
- I'm not sure.

[PAGE BREAK]

Marketing Study: Opinions and Attitudes

You are invited to take part in a marketing study for Aarhus Marketing Research. You must be 18 years or older and reside in the United States to participate. The survey will take approximately ten minutes. Participants who complete the study will be paid \$1.

Who we are

Aarhus Marketing Research was founded in 2010 to help companies and brands ensure that they are reaching the best possible audience. We provide strategic insights that allow our clients make confident business decisions.

Contact Information

If you have questions, concerns or complaints regarding your participation in this marketing study, you can contact Thomas J. Leeper, thosjleeper@gmail.com. Please click the ">>" button if you understand the above and agree to take part in this study. If you have any questions or there is something you do not understand, please ask.

Appendix C Complete Questionnaire

We're interested in how many people get out to vote in different elections. Please indicate which of the following recent elections you voted in:

- 2014 (midterm election year)
- 2012 (Presidential election year)
- 2010 (midterm election year)
- 2008 (Presidential election year)
- 2006 (midterm election year)

Which of the following statements describe you? Check all that apply.

- I know the names of both of the Senators from my state.
- I have done volunteer work in the last year.
- I read the newspaper (online or print copy) every day.
- I live in a different city than the one I was born in.
- I go out to eat at least once a week.
- I own a pet.
- I exercise at least three times a week.
- I own a car.
- I have one or more children.
- I have at least 6 alcoholic drinks per week. (10)

Below are five things. Please tell us how many of them you would dislike.

- Listening to music
- Making it legal for two men to marry
- Teaching intelligent design along with evolution in public schools
- Getting a phone call from a telemarketer
- Undocumented immigrants moving into the house next door to you

We do not need to know which ones you would dislike, just how many.

Below are four things. Please tell us how many of them you would dislike.

- Watching movies
- Making it legal for two men to form a civil union
- Teaching creationism along with evolution in public schools
- Being a garbage collector

We do not need to know which ones you would dislike, just how many.

Below are four things. Please tell us how many of them you would dislike.

- Listening to music
- Making it legal for two men to marry
- Teaching intelligent design along with evolution in public schools

- Getting a phone call from a telemarketer

We do not need to know which ones you would dislike, just how many.

Below are five things. Please tell us how many of them you would dislike.

- Watching movies
- Making it legal for two men to form a civil union
- Teaching creationism along with evolution in public schools
- Being a garbage collector
- Undocumented immigrants moving into the house next door to you

We do not need to know which ones you would dislike, just how many.

Control: Next, you will be asked to choose between two images. You will see ten pairs of photographs. For each pair, please select the photograph you prefer.

Treatment: The location of an image on a website can affect how people feel about it. We believe that when people are choosing between two images that are very much alike, they prefer images on the left. Next, you will be asked to choose between two images. We expect that you will be more likely to choose images on the left. You will see ten pairs of photographs. For each pair, please select the photograph you prefer.

Please read the following biographical information about Staci Appel, who ran for Congress in Iowa in 2014.

Staci Appel served in the Iowa Senate as the Assistant Majority Leader from 2007 to 2011 representing the 37th district. Appel was born in Waterloo, Iowa. She grew up in Iowa City, Iowa, and completed her formal education at Iowa City West High School. Appel's husband, Brent R. Appel, serves on the Iowa Supreme Court. The Appels live with their six children in Ackworth, Iowa. Appel served on several committees in the Iowa Senate the Agriculture committee; the State Government committee; the Ways and Means committee; and the Education committee, where She was vice chair. She also served as vice chair of the Administration and Regulation Appropriations Subcommittee. Appel is pro-choice and supports same-sex marriage. She has stated her support for the Affordable Care Act and would not repeal it. On immigration, she has stated her support for increased border security and a pathway for citizenship for the estimated 11 million undocumented immigrants currently in the United States. On gun rights, Appel has stated that the gun-show loop-hole should be closed and that background checks should be required wherever a gun is purchased.

Do you think that Staci Appel won or lost?

- Won
- Lost
- Don't know

What is the current unemployment rate?

About what percentage of Americans do you think have a four-year college degree?

How many states have legalized gay marriage?

Please write down everything you can recall about Staci Appel.

How many times can someone be elected the President of the United States?

- Your answer here:
- Don't know

What are the first ten amendments to the U.S. Constitution called?

- Your answer here:
- Don't know

In American politics today, which political party is more conservative: the Democratic Party or the Republican Party?

- Your answer here:
- Don't know

How many years long is the term of office for a United States Senator?

- Your answer here:
- Don't know

Whose responsibility is it to nominate judges to serve on the federal courts?

- Your answer here:
- Don't know

Did you use the internet to find answers for any of the questions on the previous page? (Your answer will not affect your compensation for this study.)

- Yes
- No

Are the following statements true or false?

- It is the father's gene which decides whether the baby is a boy or a girl.
- Antibiotics kill viruses as well as bacteria.
- The universe began with a huge explosion.
- The center of the Earth is very hot.
- The continents on which we live have been moving their location for millions of years and will continue to move in the future.
- All radioactivity is man-made.
- Lasers work by focusing sound waves.
- Electrons are smaller than atoms.

- True
- False
- Don't know

Did you use the internet to find answers for any of the questions on the previous page? (Your answer will not affect your compensation for this study.)

- Yes
- No

Which of the following are animals?

- Dog
- Cat
- Cow
- Turtle
- None of the above

Which of the following are automobile brands?

- Ford
- Chrysler
- BMW
- Lexus
- None of the above

Which of the following are fruits?

- Banana
- Apple
- Orange
- Grapefruit
- None of the above

Which of the following are months in a year?

- December
- April
- August
- July
- None of the above

Which of the following are vegetables?

- Hammer
- Automobile
- Cow
- Book
- None of the above

Which of the following are television channels?

- CBS

- Fox
- NBC
- ABC
- None of the above

- How interested are you in celebrities and entertainment? Please select one of the following.
- How interested are you in politics and public affairs? Please select one of the following.
- How interested are you in online clothes shopping? Please select one of the following.
- How interested are you in agricultural subsidies? Please select "Extremely interested".
- How interested are you in schools and education? Please select one of the following.
- How interested are you in craft beer? Please select one of the following.

- Not at all interested
- Somewhat interested
- Moderately interested
- Very interested
- Extremely interested

Are you male or female?

- Male
- Female

Which of the following do you consider to be your primary racial or ethnic group?

- White or Caucasian
- Black or African American
- Asian American
- Hispanic
- Native American
- Other:

What is your age in years?

What is the last grade or class that you completed in school?

- None, or grade 1-8
- Some high school
- High school (Grade 12 or GED)
- Technical, trade, or vocational school after high school
- Some college
- College graduate
- Post-graduate training or professional schooling after college

Generally speaking, do you consider yourself a Democrat, Independent, or Republican?

- Strong Democrat
- Weak Democrat
- Independent leans Democrat

- Independent
- Independent leans Republican
- Weak Republican
- Strong Republican

Below is a 7-point scale on which the political views that people might hold are arranged from extremely liberal to extremely conservative. Where would you place yourself on this scale?

- Extremely liberal
- Liberal
- Somewhat liberal
- Moderate
- Slightly conservative
- Conservative
- Extremely conservative

Some people like to have responsibility for handling situations that require a lot of thinking, and other people don't like to have responsibility for situations like that. What about you? Do you like having responsibility for handling situations that require a lot of thinking, do you dislike it, or do you neither like nor dislike it?

- Like a lot
- Like somewhat
- Neither like nor dislike
- Dislike somewhat
- Dislike a lot

Some people prefer to solve simple problems instead of complex ones, whereas other people prefer to solve more complex problems. Which type of problem do you prefer to solve: simple or complex?

- Simple
- Complex

Some people have opinions about almost everything; other people have opinions about just some things; and still other people have very few opinions. What about you? Would you say you have opinions about very few things, some things, many things, or almost everything?

- Very few things
- Some things
- Many things
- Almost everything

Compared to the average person, do you have far fewer opinions about whether things are good or bad, somewhat fewer opinions, about the same number of opinions, somewhat more opinions, or far more opinions?

- Far fewer opinions

- Somewhat fewer opinions
- About the same
- Somewhat more opinions
- Far more opinions

Some people say it is important to have firm opinions about lots of things, while other people think it is better to remain neutral on most issues. What about you? Do you think it is better to remain neutral on most issues or to have firm opinions about lots of things?

- Remain neutral
- Firm opinions

Below is a list of organizations and institutions. Please indicate how favorably you feel towards each of them, with 0 being "very unfavorable" and 100 being "very favorable."

- Universities
- Congress
- Market research companies
- Colleges
- Advertising companies
- Hospitals
- Insurance companies

You're almost done! Please take a moment to help us make our survey better by telling us how it compares to other surveys you have taken on Mechanical Turk.

- Far Below Average
- Below Average
- Average
- Above Average
- Far Above Average
- Don't know

You will be paid \$1.00 for completing this survey. What do you think a fair compensation would be? In other words, how much money do you think Mechanical Turk workers who take this survey should be paid for their work?

Would you be willing to receive emails from us in the future?

- Yes
- No

Appendix D MTurk Implementation Details

The survey was implemented on MTurk using MTurkR, an R client for the MTurk requester API. Respondents were quota sampled based on experience using QualificationRequirements based on the built-in “NumberApproved” qualification. We restricted the sample to MTurk workers who were located in the United States and had a previous approval rating of 90% or greater. Respondents were randomly assigned to experimental conditions using javascript embedded in the MTurk HIT. We include the MTurkR code needed to produce the quota sampling and the HIT HTML and javascript needed to perform the randomization.

MTurk Replication Code

```
library("MTurkR")

# Use qualification requirements to stratify by HIT experience
gqr <- GenerateQualificationRequirement
## < 100
qual_req1 <- gqr(c("Locale", "Approved", "NumberApproved"),
                c("==", ">", "<"),
                c("US", 90, 100), preview = TRUE)
## 100 - 500
qual_req2 <- gqr(c("Locale", "Approved", "NumberApproved", "NumberApproved"),
                c("==", ">", ">", "<"),
                c("US", 90, 100, 500), preview = TRUE)
## 500 - 1000
qual_req3 <- gqr(c("Locale", "Approved", "NumberApproved", "NumberApproved"),
                c("==", ">", ">", "<"),
                c("US", 90, 500, 1000), preview = TRUE)
## 1000 - 2000
qual_req4 <- gqr(c("Locale", "Approved", "NumberApproved", "NumberApproved"),
                c("==", ">", ">", "<"),
                c("US", 90, 1000, 2000), preview = TRUE)
## > 2000
qual_req5 <- gqr(c("Locale", "Approved", "NumberApproved"),
                c("==", ">", ">"),
                c("US", 90, 2000), preview = TRUE)

# register HITType
d <- "Complete a 10-15 minute survey about your attitudes and opinions."
k <- "easy, opinions, attitudes, survey, questionnaire, study, answers, questions"
## < 100
hittypeid1 <-
RegisterHITType(title="Short 10-15 Minute Survey",
                description = d,
                reward="1.00",
                duration=seconds(hours=2),
                auto.approval.delay = seconds(days = 5),
                qual.req = qual_req1,
                keywords = k)
## 100 - 500
hittypeid2 <-
RegisterHITType(title="15 Minute Survey",
```

```

        description = d,
        reward="1.00",
        duration=seconds(hours=2),
        auto.approval.delay = seconds(days = 5),
        qual.req = qual_req2,
        keywords = k)

## 500 - 1000
hittypeid3 <-
RegisterHITType(title="Short 10-15 Minute Survey",
        description = d,
        reward="1.00",
        duration=seconds(hours=2),
        auto.approval.delay = seconds(days = 5),
        qual.req = qual_req3,
        keywords = k)

## 1000 - 2000
hittypeid4 <-
RegisterHITType(title="Short 10-15 Minute Survey",
        description = d,
        reward="1.00",
        duration=seconds(hours=2),
        auto.approval.delay = seconds(days = 5),
        qual.req = qual_req4,
        keywords = k)

## > 2000
hittypeid5 <-
RegisterHITType(title="Short 10-15 Minute Survey",
        description = d,
        reward="1.00",
        duration=seconds(hours=2),
        auto.approval.delay = seconds(days = 5),
        qual.req = qual_req5,
        keywords = k)

# question content (same for all levels of experience)
eq <- GenerateHTMLQuestion(file = "mturk.html", frame.height = "600")

# Create HIT
## < 100
hit <- CreateHIT(hit.type = hittypeid1$HITTypeId,
        question = eq$string,
        expiration = seconds(days=7),
        assignments = 10,
        annotation = "Survey Sponsor Bias Study")

## 100 - 500
hit <- CreateHIT(hit.type = hittypeid2$HITTypeId,
        question = eq$string,
        expiration = seconds(days=7),
        assignments = 100,
        annotation = "Survey Sponsor Bias Study")

## 500 - 1000
hit <- CreateHIT(hit.type = hittypeid3$HITTypeId,

```



```

        question = eq$string,
        expiration = seconds(days=7),
        assignments = 100,
        annotation = "Survey Sponsor Bias Study")
## 1000 - 2000
hit <- CreateHIT(hit.type = hittypeid4$HITTypeId,
        question = eq$string,
        expiration = seconds(days=7),
        assignments = 100,
        annotation = "Survey Sponsor Bias Study")
## > 2000
hit <- CreateHIT(hit.type = hittypeid5$HITTypeId,
        question = eq$string,
        expiration = seconds(days=7),
        assignments = 100,
        annotation = "Survey Sponsor Bias Study")

```

MTurk HIT HTML File

```

<!doctype html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>MTurk Consent/Recruitment HIT</title>
  <link href='https://fonts.googleapis.com/css?family=Roboto' rel='stylesheet' type='text/css' />
  <style>
    p {
      font-size: 1.2em;
      font-family: "Roboto", "Helvetica Neue", Arial, sans-serif;
    }
  </style>
</head>
<body>
<div style="font-family:sans-serif;margin-top:10%;margin-left:10%;margin-right:10%;">
<p style="font-weight:bold;text-align:center;font-size:2em;">Short 10-15 Minute Survey</p>
<p>This HIT contains a short, 10-15 minute survey about your attitudes and opinions.
A link to the HIT will become available once you accept the HIT.
If you do not wish to participate, please do not accept the HIT.
At the end of the survey, you will be shown a completion code that can be
copied into the box below to confirm your participation.</p>
  <br />
<form name='mturk_form' method='post' id='submitform'
  action='https://www.mturk.com/mturk/externalSubmit'>
  <input type='hidden' value='' name='assignmentId' id='assignmentId' />
  <input type='hidden' value='' name='nonrandom' id='nonrandom' />
  <script>
function turkGetParam( name ) {
  var regexS = "[\?&]" + name + "=( [^&#]* )";
  var regex = new RegExp( regexS );
  var tmpURL = fullurl;
  var results = regex.exec( tmpURL );
  if( results == null ) {
    return "";
  } else {

```

```

        return results[1];
    }
}

var fullurl = window.location.href;

var assign = turkGetParam('assignmentId');
var hit = turkGetParam('hitId');
var worker = turkGetParam('workerId');

if(assign=="ASSIGNMENT_ID_NOT_AVAILABLE")
{
document.write("<p style='font-weight:bold;text-align:center;'>" +
"The link is only available once you accept the HIT.</p>");
}
else
{
var ascii = worker.charCodeAt(worker.length-1);
var j;
if (ascii <=57) {
j = ascii-47;
}
else if (ascii <=90) {
j = ascii-54;
}
else {
j = ascii-60;
}
if (j>=1 && j<13) {
i = 4;
}
else if (j>=13 && j<25) {
i = 3;
}
else if (j>=25 && j<37) {
i = 2;
}
else if (j>=37 && j<49) {
i = 1;
}
else if (j>=49 && j<63) {
i = 0;
}
else {
i = 0;
}
var sid = new Array ();
sid[4] = "SV_8uK1newVzci8vY1";
sid[2] = "SV_3gZvsP43xPZX2bX";
sid[1] = "SV_1YWsoU3D2mFjKdL";
sid[0] = "SV_6LPZNBGoqenF7lH";
sid[3] = "SV_8qRvUisAJTksam9";

document.getElementById("nonrandom").value = sid[i];

```

```

document.getElementById('assignmentId').value = assign;
var surveylink = new String("http://aarhus.eu.qualtrics.com/SE/?SID=" + sid
                             "&workerId=" + worker + "&assignmentId=" + assign);

document.write("<p style='font-weight:bold;text-align:center;'><a href=\"" +
               surveylink +
               "\" target=\"_blank\">Complete the Survey Here!</a></p><br />");
document.write("<p>Please enter the completion code from last page of the"
               " survey here:&nbsp;&nbsp;&nbsp;<input type='text' id='complete'"
               " name='complete' />&nbsp;&nbsp;&nbsp;<input type='submit' value='Submit'"
               " id='submitButton' value='Submit' /></p>");
}
</script>
</form>
<br />
<p>Please note that you may see multiple HITs available from us with slightly
different qualification requirements. You may only complete one of our HITs at
this time. Thank you for your understanding!</p>
<br />
</div>
</body>
</html>

```