The (Null) Effects of Clickbait Headlines on Polarization, Trust, and Learning

Kevin Munger ✉, Mario Luca, Jonathan Nagler, Joshua Tucker

Author Notes

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Abstract

"Clickbait" headlines designed to entice people to click are frequently used by both legitimate and less-than-legitimate news sources. Contemporary clickbait headlines tend to use emotional partisan appeals, raising concerns about their impact on consumers of online news. This article reports the results of a pair of experiments with different sets of subject pools: one conducted using Facebook ads that explicitly target people with a high preference for clickbait, the other using a sample recruited from Amazon's Mechanical Turk. We estimate subjects' individual-level preference for clickbait, and randomly assign sets of subjects to read either clickbait or traditional headlines. Findings show that older people and non-Democrats have a higher "preference for clickbait," but reading clickbait headlines does not drive affective polarization, information retention, or trust in media.

Today's marketplace for online news is both abundant and aggregated; there is far more news than anyone could hope to consume, from a huge variety of sources. Many people turn to social media or news aggregators to select their daily news, resulting in competition between media firms at the level of attracting this audience's attention. This competition entails the use of eye-catching "clickbait" headlines.

Although clickbait headlines have become increasingly common since the mid-2010s, their political implications are not yet well understood. The structure of many politically oriented clickbait headlines is consonant with some of the theoretical causes of

important trends in contemporary media and politics, including selective exposure, affective polarization, information retention, and trust in media. Affective polarization, the tendency for partisans to dislike and distrust out-partisans, has been rising. While the connection to partisan media is unclear (Iyengar et al. 2019), the partisan cues contained in clickbait headlines might plausibly inflame partisan animosity. Americans' distrust of media also has been rising (Ladd 2011). "Clickbait" is generally used as a derogatory term, and while it does cause people to click, it might also make them resent feeling manipulated and thus decrease their trust in media further. The increased arousal associated with clickbait could also have the unintended positive effect of increasing information retention, analogous to the effects of incivility found by Mutz (2015).

This article thus provides initial answers to several questions about the impact of clickbait headlines. First, what kinds of people are the most likely to prefer clickbait headlines? The highly personalized nature of online media suggests that a necessary first step for studying something like clickbait headlines is to understand their scope. We find robust evidence that older people have a high preference for clickbait, and that Democrats have a low preference for clickbait. One of our two samples also demonstrates that frequent Facebook users have a high preference for clickbait, and more educated people have a low preference for clickbait.

Second, what are the effects of consuming clickbait headlines? Specifically, to what extent does consuming clickbait headlines exacerbate the key manifestations of a politically fractured society? We find null results from a series of experiments measuring the effect of clickbait headlines on affective polarization, information retention, and trust in media. Overall, our results suggest that the most important pathway by which clickbait could affect political outcomes is by changing which or how many news stories people consume. However, it bears emphasizing that the magnitude of respondents' preference for ideologically congruent headlines was much larger than any of these effects.

The Rise of Clickbait Headlines

Trust in the news media has been declining steadily ever since the 1970s (Ladd 2011), especially among conservatives. This same time period has seen a rise in "affective polarization"—the extent to which Republicans and Democrats dislike and distrust each other (Iyengar, Sood, and Lelkes 2012). Cultural and technological changes in the media environment have been theorized as causes of the latter trend, with an increasingly fragmented political news industry able to target niche political audiences (Stroud 2011) and the increasing range of entertainment options and decline of incidental exposure to the nightly news pushing low-political-interest moderates out of the electorate (Prior 2007; Arceneaux and Johnson 2013).

The economic model of the contemporary online news industry is distinct from print journalism. Although a small number of publications are financed by subscription revenue (the *New York Times* gets 60 percent of its revenue from subscriptions [Ember 2018]), the primary business model is based on click-based advertisements. Competition comes from trying to attract readers' eyeballs by writing stories with headlines that entice them to click; hence, "clickbait."

Although the marketplace for online news has been consistently driven by these attention-grabbing headlines, competition has caused the most effective "clickbait" formula to shift over time. The canonical "information-gap" headline pioneered by Upworthy, the "fastest-growing media site of all time," was designed to entice consumption by strategically withholding information (Sanders 2017). This information-gap style of headline is also referred to as "forward-referring," especially among scholars of journalism (Blom and Hansen 2015; Scacco and Muddiman 2016). Less than two years after its founding in March 2012, Upworthy had over 80 million unique visitors each month—more than the *New York Times* or *Washington Post.*

The following year, Merriam-Webster added "clickbait" to its dictionary, defining it as "something (such as a headline) designed to make readers want to click on a hyperlink especially when the link leads to content of dubious value or interest."

This initial information-gap headline (the classic format is "XXXXXX . . . And You'll Never Believe What Happened Next!") played up the asymmetry inherent in the market for information goods. Consumers cannot evaluate the quality of information goods ex ante; consumption and evaluation happen simultaneously (Varian 1999). Information-gap clickbait profited from the intersection of the structure of the market for online news and readers' naturally developed curiosity.

However, the "market failure" entailed by this information asymmetry was detected and (largely) solved by Facebook. Facebook measured the time spent reading a given story and adjusted their News Feed algorithm to downweight stories that quickly led users back to Facebook (suggesting they had not been satisfied with their information consumption experience). After Facebook made this change in November 2013, Upworthy's business collapsed. In November 2014, the site had only 20 million unique visitors (Karpf 2016).

Contemporary clickbait headlines take a different and more politically relevant form. We propose to define this type of clickbait headline as partisan emotional clickbait: a headline that appeals directly and explicitly to the emotions of the partisan reader. This form of clickbait serves the twin purposes of inducing excitement by appealing to group competition (Abramowitz and Saunders 2006; Mason 2018), and being easily spread among online social networks, which tend to be homophilous (Centola 2010). A paradigmatic example (from pre-internet clickbait experts at the *New York Post*, on May 23, 2016) would be "Democrats are freaking out over a possible President Trump." There is no information gap, but the headline directly primes the reader's partisan identity and tells them that people who share that identity are experiencing a strong emotion.

We believe that partisan emotional clickbait headlines are currently widespread. However, there is no published academic research to this effect—in fact, there may never be. This kind of knowledge (about the current state of a massive, competitive, and fast-moving system like the online media economy) is low in "temporal validity," and it decays faster than the cycle of academic publishing can keep up. As a

result, we rely on industry analyses put out by Buzzsumo, an online content tracker and aggregator.[1]

Buzzsumo's 2018 Content Trends Report demonstrates that the market for clickbait headlines has continued to evolve. Facebook is a powerful actor. In 2016, they built a human-labeled classifier to detect posts that withheld information or misled readers— and then punished publishers whom they found to be frequently posting clickbait. Then, in 2017, they refined the classifier to target both individual posts and their publishers.

Buzzsumo documents the dramatic effects of these changes. Top information-gap headlines before the 2017 change were shared on Facebook millions of times, but only two such posts were shared more than 200,000 times post-2017 (Rayson 2018). The report documents a general decline in social shares and notes that "clickbait style headlines and listicles are far less effective." There is one important exception: "there has been more tribal and partisan sharing of content in recent years."

Another Buzzsumo report documents the headline formats with the highest engagement (from March to May 2017, after the Facebook Newsfeed changes) (Rayson 2017). Their first conclusion is that "emotional headlines drive Facebook interactions," and the far-and-away more effective headline format contains the phrase "will make you." These headlines promise that the story "will have a direct impact on the reader, often an emotional impact."

Clickbait Headlines: Consumption and Effects

The first question this study aims to answer is exploratory: What kinds of people are more likely to consume partisan emotional clickbait? There is not any strong extant theory here, so the analysis related to this research question should be treated as descriptive and exploratory rather than confirmatory.

Research Question: *What kinds of people are more likely to consume partisan emotional clickbait?*

Our experimental investigation of the effects of partisan emotional clickbait is novel, so our hypotheses do not follow directly from published results. Instead, we synthesize findings about the effects of theoretically relevant media developments to motivate our hypotheses. Three outcomes of interest to public opinion scholars today are related to media consumption: affective polarization (the extent to which partisans dislike and distrust out-partisans; Iyengar et al. 2019); trust in media (how well people believe the media perform their role, including the tasks of selecting news and ensuring its accuracy; Schiffrin 2019); and information retention (how well people can recall politically relevant information after consuming media; Hoffman 2015).

Our expectations about the individual-level effects of partisan emotional clickbait are tempered by the overall sociotechnical media environment; fractured and elective media consumption entails minimal effects (Bennett and Iyengar 2008). Even constant elective exposure to biased media may not be enough to cause polarization, at least during the time frame of a single study (Peterson, Goel, and Iyengar 2018). However, the novelty and prominence of partisan emotional clickbait motivate our desire to test the minimal effects framework in this case. Furthermore, the minimal effects paradigm does not have strong implications for the effect of partisan emotional clickbait on either information retention or trust in media.

The primary mechanism by which we theorize partisan emotional clickbait to operate is increased arousal. In a book-length investigation of the effects of arousal caused by televised close-ups of partisan incivility, Mutz (2015, p. 8) defines arousal as when "a person becomes psychologically and physiologically prepared to respond to stimuli of some kind." She investigates the effect of adding emotion to a partisan broadcast—a theoretical analogue to our current investigation. Mutz finds that increased arousal is responsible for increased information retention and affective polarization, the latter primarily in the form of decreased warmth toward the outparty.

This is what Abramowitz and Webster (2016) call "negative partisanship," out-partisan animosity, which is a powerful motivator for a range of political behaviors. Mason (2016) finds experimental support for the presence of anger in response to partisan threats, and Mason (2018) presents extensive evidence of the effect of partisan emotion on affective polarization. This literature is rapidly developing, and emotional arousal is far from the only dimension of interest. Affective polarization has been shown to have an effect in non-emotional contexts like employment (McConnell et al. 2018), and the limits of affective polarization on the propensity of partisans to intentionally harm the opposition have been established (Lelkes and Westwood 2017). Still, increased arousal is a theoretically powerful pathway by which partisan emotional clickbait could drive politically relevant outcomes.

Furthermore, one of the few studies conducted on information-gap clickbait provides support for this mechanism by using eye tracking data and self-reported arousal. Pengnate (2016) find that subjects exposed to clickbait headlines experienced increased arousal.

The theory, then, is that partisan emotional clickbait increases arousal, which amplifies the effect of partisan media on affective polarization. The following hypotheses were all preregistered.[2]

Hypothesis 1 is essentially a replication of research suggesting that exposure to partisan media or campaigns increases affective polarization (Iyengar, Sood, and Lelkes 2012; Levendusky 2013).

> **H1:***Headlines that favor one party will positively impact affect toward that party.*

In the current experimental design, the Republican president is the primary political actor mentioned in the headline, so hypotheses 1(a) and 1(b) predict a change in the way that individuals feel about the Republican Party depending on the partisan leaning of the headline. There are no headlines about Democratic political actors and thus no corresponding hypothesis for Democrats.

> **H1a:***Headlines that favor Republicans should increase reported affect toward Republicans.*

> **H1b:** *Headlines that favor Democrats should decrease reported affect toward Republicans.*

Given the extant literature on partisan emotional clickbait, our second hypothesis posits:

> **H2:** *The tendencies described in hypothesis 1 will be more pronounced when the headlines are partisan emotional clickbait.*

Arousal is also theorized to increase information retention, the outcome variable of our third hypothesis. Mutz (2015) motivates her findings to this effect with reference to a broad literature in psychology that investigates the connection between memory and arousal. The precise nature of this relationship is under debate; under different conditions, arousal can either improve or impair recall. However, the theory of affect-based attention predicts that emotional arousal will increase the attention paid to (and the subsequent recall of) affectively relevant information (Todd et al. 2012).

> **H3**: *Partisan emotional clickbait will enhance information retention.*

The public's general attitude toward clickbait is negative; complaints about clickbait were what drove Facebook to penalize it. Our final hypothesis thus posits that partisan emotional clickbait will decrease trust in (online) media. Just as Ladd (2011) demonstrates in the case of tabloid news, individuals who read partisan emotional clickbait headlines should report lower trust in media.

Research on alternative clickbait formats suggests that they can decrease readers' trust in the headline and associated story. Scacco and Muddiman (2016) find evidence for this effect with "question-based" clickbait, a form of the information-gap headline that consists of a question that is only answered in the body of the article. The issue of media credibility is of clear importance to mainstream media firms, and they report a need to balance attracting readers with maintaining that credibility. Citing a personal conversation with editors at the *Washington Post*, Hindman (2018, p. 154) reports that

"the *Post* found that headlines chosen for maximum clicks actually lowered traffic . . . [they] turned off those readers most inclined to visit the second or third article." Readers appear to lose faith in the media when exposed to effective clickbait headlines.

> **H4:***Partisan emotional clickbait will reduce trust in (online) media.*

Methods

To test these preregistered hypotheses, we conducted two survey experiments, one using Amazon's Mechanical Turk and the other using subjects recruited using Facebook advertisements. The survey instrument was designed to take around 10 minutes to complete, and contained an attention check and built-in delays to discourage respondents from giving low-quality answers.

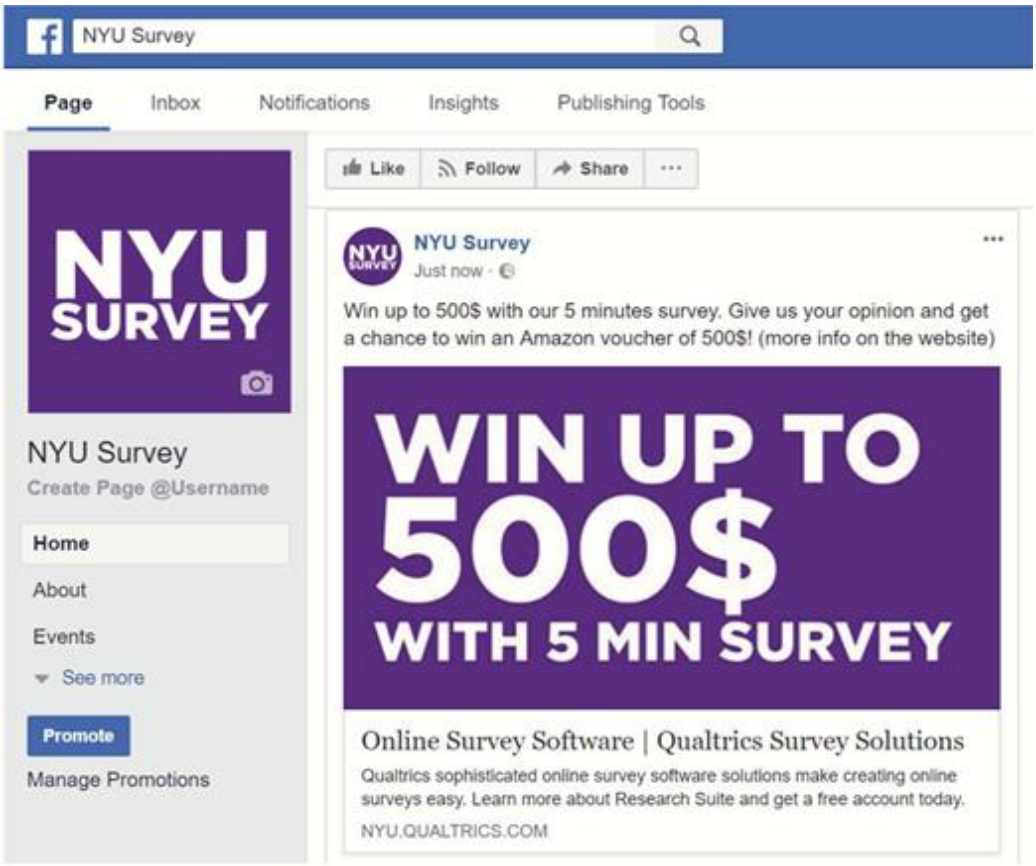
Sampling and recruitment

The Mechanical Turk sample consisted of 2,803 total respondents across three slightly different experimental setups; in each case, because the pool of MTurk workers contains more Democrats than Republicans, we supplemented the first draw with a sample of self-reported Conservatives.[3] This sample was intended to serve as the baseline, as Mechanical Turk is a standard source of subjects for online survey experiments. Each Mechanical Turk subject was compensated $1.

The first session (N = 1,140) provided demographic information and nonexperimental preference for clickbait questions.[4] The second session (N = 826) included those same questions as well as the experimental manipulation described below. The final session (N = 837) replicated the experimental manipulation but dropped the pretreatment preference for clickbait questions; we performed this analysis to check whether this portion of the instrument was dampening treatment effects.

The Facebook sample was recruited through a Facebook advertising campaign run by a Facebook page we created. We paid for an advertisement to appear on the News Feed of our potential subjects. The structure of Facebook's advertising platform meant that we pay only when a potential subject actually clicks on the ad. The overall cost paid to Facebook for the subject recruitment was $1,858 for 2,766 subjects who clicked on our ad. We compensated subjects by entering them (the 1,232 who completed the survey) into a lottery to win a $500 Amazon gift card, meaning that the overall cost per subject was $0.85 for subjects who began the survey and $1.91 for subjects who completed the survey. The advertisement we used is displayed in figure 1.

Figure 1.



Recruitment instrument for Facebook sample.

The motivation for the lottery (and the design of the recruitment instrument) was twofold. First, one distinct advantage of Mechanical Turk over Facebook for subject recruitment is the former's built-in system for processing microtransactions. The need to perform an

individual $1 transaction for each subject would have represented a significant additional cost for the experiment.

More substantively, the advertisement was designed to be as eye-catching as possible. Facebook ads can be used with quota sampling to generate valid measures of public opinion (Zhang et al. 2018), but we were particularly interested in a nonrepresentative sample of Facebook users: people who were most likely to click on an eye-catching ad.

The Facebook sample, then, is unbalanced on a number of important dimensions. A full 75 percent of the Facebook sample were women, and the partisan breakdown was 21 percent Republican, 28 percent Independent, and 51 percent Democrat (including leaners). Unsurprisingly, 90 percent reported using Facebook more than once per day, relative to only 52 percent of the MTurk sample.

However, this 3:1 gender ratio might not reflect true click rates given Facebook's advertising software, which involves a multiarmed bandit algorithm that optimizes the efficiency of ad buys throughout the duration of their run (Zhang et al. 2018). For example, after detecting that women are slightly more likely to click the ad than are men, the algorithm would start displaying the ad to more women.

This does not seem to be driving results in this case, as the proportion of women in the beginning and end of the ad run are identical. Even so, given the opacity of the Facebook algorithm, we should not read the proportions from the Facebook sample as necessarily reflecting the true population of people who might have clicked on the ad.

EXPERIMENTAL DESIGN AND MEASURES

In each experiment, respondents were directed to a Qualtrics survey in which they first reported some pretreatment information. Respondents were asked their age ("How old are you?," open response), gender ("What is your gender?"), and education ("What is the highest level of education you've completed?," using a six-point categorical scale). In addition, they were asked the standard five-point partisan-identification scale ("Generally speaking, do you

usually think of yourself as a Democrat, a Republican, an independent, or what?").

Respondents also asked how often they engage with five different types of media or media technology, using the same fixed scale ("How often do you use [the Internet/Twitter/Facebook]?" and "How often do you read news stories [online/offline (in the newspaper, printed news magazines)]?"). Responses were measured on a seven-point scale.

Subjects then were presented with a series of nine tasks, one of which was an attention check. In each task they were shown four headlines and asked which they would most like to read. "In this section, we're going to present you with several hypothetical headlines. If you could only choose to read one of these stories, which would it be?" The choices included: Warriors, Steph Curry agree to 5-year, $201M deal that's richest in NBA history; Report shows that climate change is much worse than previously feared; "The Grand Tour" host Richard Hammond injured in car crash; and People are loving this: President Trump dismisses mainstream media frenzy about Russia allegations.

Note that respondents were not actually given links to these stories nor asked to actually read the stories at this point. In each task, there were two political stories (one Democrat-favorable, one Republican-favorable) and two nonpolitical stories (one sports, one entertainment).[5] One of the two political headlines (either the Democrat-favorable or Republican-favorable) in each decision set was turned into a partisan emotional clickbait headline through the addition of an attention-grabbing phrase to the beginning, so that there were four instances in which the Democrat-favorable headline was clickbait and four instances in which the Republican-favorable was clickbait. In the task set up as an attention check, one of the four answers read "Survey taker: always select this option, ignore the other choices."

The purpose of this part of the survey was to calculate individual-level preference for clickbait (PfCB): how often each respondent claimed they would prefer to read the clickbait headline rather than the nonclickbait headline, ignoring the preference for nonpolitical headlines.[6] This process was nonexperimental: Our goal was to see

how PfCB varied across respondent demographics, and to see how the experimental treatment effect (described below) varied with individual-level PfCB. PfCB could thus range from 0 (if they never selected clickbait headlines) to 1 (if they only selected clickbait headlines).

Respondents then were assigned randomly to one of four treatment conditions or a fifth "placebo" condition (in which respondents were given a story about sports) through a 2x2 treatment design. The two factors were the partisan leaning of a headline and whether the headline was clickbait. In each case, respondents were presented with a hyperlinked headline; when they clicked the headline, they were directed to a separate tab that displayed the given headline and a news story. The text of the news story was held constant across the conditions.

Treatment: "In this section, we're going to ask you to read a news story, paying careful attention to detail. Please click the following link and read the news story it links to. When you're done reading, close that tab and continue this survey."

The treatment headlines for the experiments are displayed in table 1. These headlines are symmetric, adding only a "not" to switch the partisan leaning. The text of the story used in this experimental manipulation summarized the findings from the Bureau of Labor Statistics' October jobs report and was taken from CNN Money, a politically neutral news source.

Table 1. Treatment headlines

R: Baseline	Trump economic policies working
R: Clickbait	Democrats won't like this economic news: Trump policies working!
D: Baseline	Trump economic policies not working
D: Clickbait	Republicans won't like this economic news: Trump policies not wo

After respondents read the story and closed the tab, they were asked traditional feeling thermometer rating questions for Republicans, Democrats, as well as online media and traditional media. Respondents were told, "We'd like to get your feelings toward certain groups related to US politics. Ratings between 50 and 100 degrees mean that you feel favorable and warm toward the group. Ratings between 0 and 50 degrees mean that you don't feel favorable toward the group and that you don't care too much for that group. You would rate the group at 50 degrees if you don't feel particularly warm or cold toward the group." In addition, they were asked a multiple-choice question about their trust in online media and traditional media: "In general, how much trust and confidence do you have in the offline mass media [*online-only media]*—such as newspapers, T.V. and radio [*blogs and online-only news websites*]—when it comes to reporting the news fully, accurately, and fairly—a great deal, a fair amount, not very much, or none at all?"

On the next page, respondents were asked three multiple-choice questions based on facts presented in the story they had been given to read plus an additional, placebo factual question about the sports story. Fact 1: The October economy report indicated that the unemployment rate: is lower than it was a year ago; is pretty much the same as it was a year ago; is higher than it was a year ago. Fact 2: The October economy report indicated that the number of people either employed or actively looking for work: fell; stayed pretty much the same; increased. Fact 3: The October economy report indicated that wages for non-managers: fell; stayed pretty much the same; increased.

Results

PREFERENCE FOR CLICKBAIT

To analyze the individual-level preference for clickbait (PfCB), we compare the results from the MTurk and Facebook experiments. First, we provide a validation of the headlines used in this choice task; it is important that the headlines we designated as "partisan emotional clickbait" are in fact recognizable as such. To that end, we

recruited a sample from MTurk to evaluate a series of 360 binary headline choices, rating one as either more partisan or more emotional. Our clickbait headlines were rated as more partisan than our non-clickbait headlines 77 percent of the time, and as more emotional 93 percent of the time. These are each significant at $p < 0.001$.

PfCB is calculated by estimating what percentage of the political stories the subjects selected to read were clickbait. We also estimate the individual-level preference for Republican (PfR) news. Note that these two quantities are structurally (negatively) correlated: An individual who selected eight out of eight clickbait stories would necessarily have selected four out of eight Republican stories.

Partisans made the expected choices: In both samples, the mean PfR was 0.61 for Republicans and 0.36 for Democrats, including leaners. For Republicans (including leaners), the mean PfR was 0.60 in the Facebook sample and 0.64 in the MTurk sample. Restricting to strong partisans heightens these trends only slightly. This preference for coattitudinal news restricts the range of possible values for PfCB.

Still, the overall results were surprising: The overall PfCB was negligible. The rate of selecting the clickbait political stories was in fact slightly lower than the nonclickbait political stories (median PfCB = 0.50, mean PfCB = 0.47); this rate did not vary across the samples.

We also estimate the subjects' relative PfCB. Table 2, columns 1 (MTurk) and 2 (Facebook), displays the results of an ordinary least squares regression, with PfCB as the dependent variable and users' demographic information as independent variables. In all tables, the standard errors are in parentheses. Across both samples, the only consistent results predicting PfCB are that older individuals have a higher PfCB and Democrats have a lower PfCB. Many of the other coefficients are estimated to have significant relationships in one sample and negligible relationships in the other.

Table 2. Preference for clickbait

	Dependent variable

	Preference for clickbait		
	MTurk		FB
	B	(s.e.)	B
Facebook use	0.003	(0.003)	0.015**
Twitter use	0.003	(0.003)	0.002
Internet use	0.009	(0.008)	−0.009#
Age	0.001#	(0.0005)	0.001**
Education	−0.005	(0.007)	−0.014**
Offline news consumption	0.009*	(0.004)	0.001
Online news consumption	0.006	(0.005)	0.005#
Democrat	−0.052**	(0.016)	−0.020#
Lean Democrat	−0.032#	(0.019)	−0.032
Lean Republican	0.067**	(0.018)	0.012
Republican	0.036*	(0.018)	0.021
Constant	0.308**	(0.063)	0.364**
Observations	1,889		2,256
R^2	0.039		0.034
Adjusted R^2	0.033		0.029

Note.—Entries are coefficients from ordinary least squares regressions, with standard errors in parentheses.#$p < 0.10$; *$p < 0.05$; **$p < 0.01$

Subjects recruited via Facebook have higher values for PfCB when all of the covariates take the value of 0. However, it is possible that these factors behave differently in subjects in the different samples. We thus reanalyzed the data, combining the two samples and running models that fully interacted the treatment with a dummy for the sample from which a subject was drawn; these results are reported in

appendix table A1. There are no significant interaction effects in the models that estimate the PfR, but there are a few in the models of PfCB. The difference between Democrats' and Republicans' PfCB is less pronounced among the Facebook sample, and increased Facebook use is increased with PfCB only among the Facebook sample.

EFFECTS OF CONSUMING CLICKBAIT

Turning to the results from the experimental condition, a striking pattern emerges. We estimate that each of the hypothesized treatment effects on the relevant outcome variable was significantly indistinguishable from zero. No support emerges for hypothesis 2, which posited that the partisan primes would be more effective when they took the form of partisan emotional clickbait. Nor do we find support for hypothesis 3, that partisan emotional clickbait would increase information retention, or hypothesis 4, that partisan emotional clickbait would reduce trust in online media.

Table 3 presents two models (in columns 1 and 2) that estimate the effects of our four treatment conditions on affect toward Republicans, the dependent variable from hypothesis 1. None of these four treatments show any significant effect, on either sample.

Table 3. Republican feeling thermometer

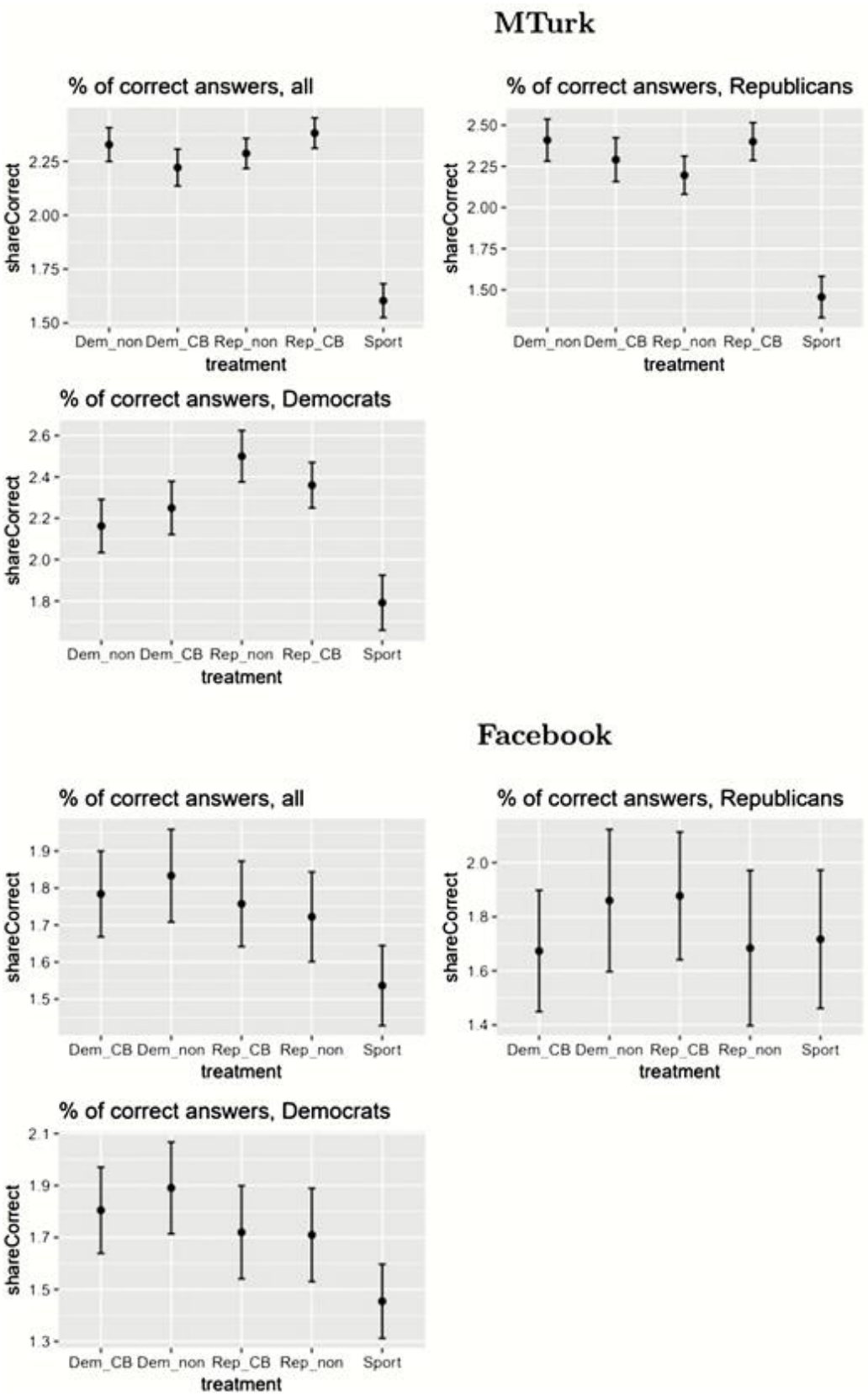
	MTurk		Facebook	
	B	**(s.e.)**	**B**	**(s.e.)**
Shortened survey	3.978**	(1.253)		
Dem CB	1.121	(2.030)	−0.648	(1.993)
Dem non-CB	0.041	(1.977)	−1.392	(2.013)
Rep CB	−1.247	(1.939)	0.397	(1.943)
Rep non-CB	−0.941	(1.991)	−0.962	(1.965)
Democrat	−18.282**	(1.692)	−15.496**	(1.523)
Lean Democrat	−12.213**	(2.095)	−11.583**	(2.296)

Lean Republican	19.427**	(1.975)	23.924**	(2.577)
Republican	34.906**	(1.915)	38.264**	(2.086)
Dem CB X Democrat				
Dem non-CB X Democrat				
Rep CB X Democrat				
Rep non-CB X Democrat				
Dem CB X Lean Democrat				
Dem non-CB X Lean Democrat				
Rep CB X Lean Democrat				
Rep non-CB X Lean Democrat				
Dem CB X Lean Republican				
Dem non-CB X Lean Republican				
Rep CB X Lean Republican				
Rep non-CB X Lean Republican				
Dem CB X Republican				
Dem non-CB X Republican				
Rep CB X Republican				
Rep non-CB X Republican				
Constant	46.693**	(2.690)	39.474**	(2.578)
Observations	1,608		1,303	
R^2	0.370		0.397	
Adjusted R^2	0.367		0.394	

Note.—Entries are coefficients from ordinary least squares regressions, with standard errors in parentheses.#$p < 0.10$; *$p < 0.05$; **$p < 0.01$

In our analysis of the information retention results, we note that the placebo condition demonstrates that some information retention did in fact take place: Subjects assigned to one of the four treatment conditions recalled significantly more information, although this was unrelated to whether they received a partisan emotional clickbait treatment. Figure 2 displays these results. There were three information retention questions, so each respondent could get 0, 1, 2, or 3 correct.

Figure 2.

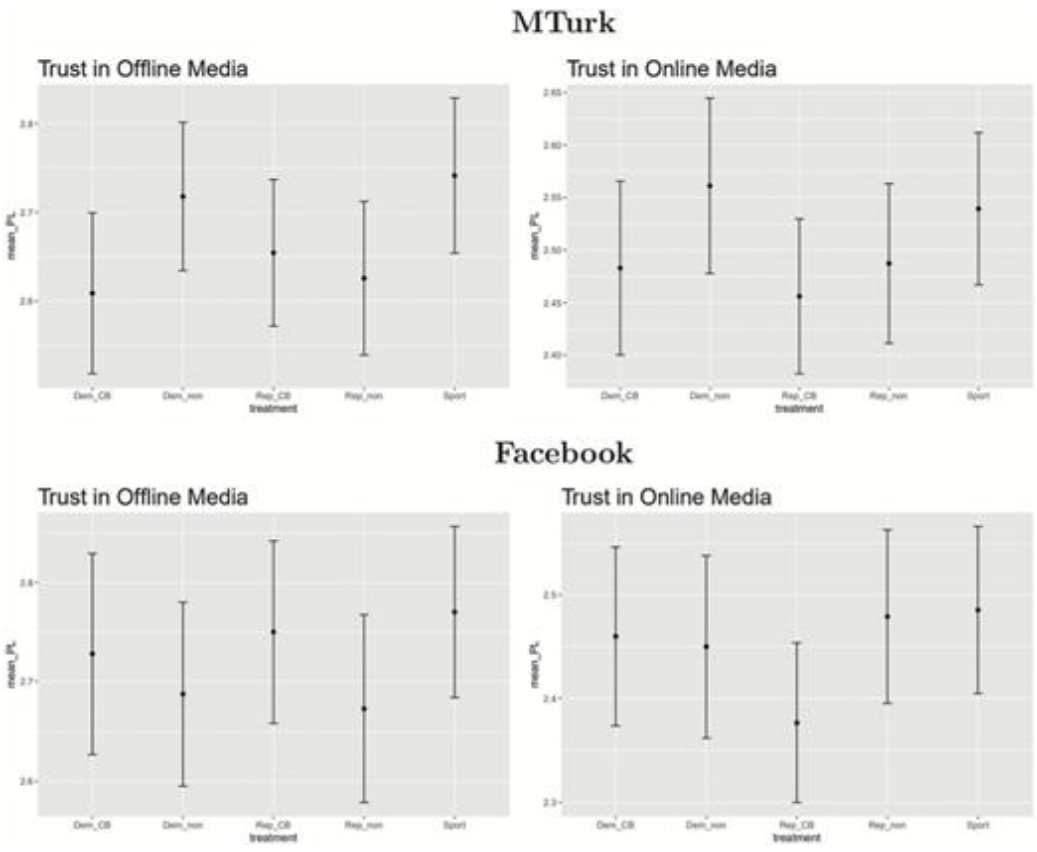


Effects of clickbait on information retention. Bars represent 95 percent confidence intervals.

In both the Mechanical Turk and Facebook samples, subjects in the placebo condition answered far fewer questions correctly (see the fifth column of each of the plots in figure 2). This is evidence that subjects were in fact reading the stories carefully and retaining the information, rather than relying on their ex ante knowledge. The one exception is the sample of Republicans recruited from Facebook; their rate of correct answers was similar across all five conditions, but their overall average correct was similar to that of Democrats. This analysis thus does not support hypothesis 3.

Figure 3 presents the results for trust in online and offline media. The expectation that the clickbait treatments would decrease trust in media was not realized. The one exception is a marginally significant (p = 0.09) reduction in trust in online media among the MTurk sample. This analysis thus does not support hypothesis 4.

Figure 3.



Effects of clickbait on trust in media. Bars represent 95 percent confidence intervals.

POST HOC ANALYSIS: MTURK AND FACEBOOK SAMPLES

The above results were all preregistered, but we here present two additional tests that arose during the course of research. The first is the inclusion of an interaction term for partisan identification with the treatment conditions, for the models testing H1(a) and H1(b). Partisan identification has repeatedly been shown to moderate media effects in contexts involving partisan affect, and we decided to test whether there were offsetting heterogeneous effects that might have produced the null effects in the first two columns of figure 2.

In the model using the Mechanical Turk sample, we find that (relative to the placebo sports headline) two Republican-leaning headlines cause a significant reduction in warm feelings toward the Republican Party; the two Democrat-leaning headlines cause a nonsignificant reduction (column 3, rows 2–5 of table 3).

These reductions are more than counterbalanced by the positive and significant interaction terms when the treatment effects are estimated on Republicans and Republican leaners (in column 3, rows 20–21 and rows 24–25 of table 3). The ignored category in the Party ID variable is Independents, so in the aggregate, the results of column 3 can be summarized as such: The Republican-leaning treatment conditions caused a reduction in warm feelings toward the Republican Party among Independents, had no effect on Democrats, and increased warm feelings among Republicans. We do find support for hypothesis 1(a), although only among Republican respondents. Furthermore, this trend was observed only in the Mechanical Turk sample. The estimates on the Facebook sample are both noisy and inconsistent.

The second post hoc test concerns the two distinct samples we recruited. As discussed above, our motivation for the unorthodox, nonrepresentative Facebook sample was to recruit individuals with a demonstrated propensity for clicking on eye-catching Facebook posts. This sample was not our first choice. Only after finding null results on the MTurk sample did we decide to pursue this second sample.

A frank discussion of our sequential sampling process is in keeping with the ideals of open science, and it allows us to test an implicit "hypothesis 5": The treatment effects will be non-zero on the Facebook sample. However, looking across the results in figures 2 and 3 and table 3, there is no support for this hypothesis 5. One plausible explanation for this lack of support is that there was massive attrition from the Facebook sample at the stage of assigning treatment, leaving us with a non-random half of the original sample.

The experimental treatment involved clicking on a hyperlinked headline that opened up the news story in a separate tab. At this point in the survey, 6 percent of the Mechanical Turk sample dropped out, compared to 31 percent of the Facebook sample. This dramatically reduces the statistical power to detect any treatment effects in the Facebook case, but because this attrition could be non-random, it could also produce biased estimates of treatment effects.

In particular, one limitation of the MTurk sample is that it did not contain enough older people, precisely the people who might be most likely to consume and be affected by partisan emotional clickbait. The initial Facebook sample did not have this problem, but older people were much more likely to leave the sample midway through the survey instrument.

As a result, we cannot be sure that the treatment effects estimated on the sample of Facebook users who completed the survey generalize to any relevant population: to the population of "people who click on Facebook ads" from which the entire sample was drawn, or to the population of Facebook users (Coppock 2019). Posttreatment bias caused by nonrandom attrition has been the subject of increasing concern (Montgomery, Nyhan, and Torres 2018), and we want to draw attention to this issue in the context of digital experiments conducted on older populations.

Conclusion

Clickbait news media are here to stay. Although Facebook and other online platforms try to combat deceptive headlines to improve the experience of their users, the fundamental economic dynamic of the

social media feed is that it incentivizes media companies to compete on the level of individual stories. Crafting attention-grabbing headlines is essential: With a near-infinite amount of news content available, media companies need to make readers choose their stories. With the proliferation of online media outlets enabled by the reduced cost of producing news content, one strategy has been to create headlines that appeal directly to readers' identities via the mechanism of emotional arousal.

In the context of politics, these identities tend to be partisan. "Partisan emotional clickbait" headlines include explicit cues about how partisans should feel in response to a given piece of news. This phenomenon has become more relevant with the increasing alignment of partisan identities with other social identities; partisans tend to experience political news in terms of it being good or bad for their party, and partisan media reinforces this tendency (Mason 2018).

We hypothesized that random assignment to read an emotional clickbait headline would provide evidence that this media trend might be able to explain some of the worrying trends among American partisans. The concerns about sample attrition discussed above notwithstanding, the experimental results presented in this paper failed to provide evidence for the hypotheses that emotional clickbait has direct effects on affective polarization, information retention, or trust in media. We have complete data from a total of 2,911 respondents. Using our preregistered code to analyze this data, we find null results. Even a post hoc analysis of the data that confirms the replication of the well-known effects of partisan cues fails to find evidence of the effect of clickbait headlines.

Our confidence in these null results is heightened because they were observed in two separate populations. The first sample was recruited from Amazon's Mechanical Turk, a standard source of research subjects that has been shown to be generally reliable, producing experimental results that closely match results from nationally representative samples (Mullinix et al. 2015; Coppock 2019; Snowberg and Yariv 2018).

The second sample was less standard: We used eye-catching Facebook ads to recruit these subjects. Facebook ads can be used to generate valid measures of public opinion (Zhang et al. 2018), but we were particularly interested in a nonrepresentative sample of Facebook users: people who were most likely to click on an eye-catching ad.

Although nonrepresentative, this sample is of particular interest because it consisted of people with a demonstrated propensity to consume clickbait headlines. The Facebook sample is also considerably older than the MTurk sample (55–75-year-olds are overrepresented compared to the US population). Recent evidence suggests that older Americans' online news consumption and sharing habits are importantly different from younger Americans, so their inclusion in this sample is essential (Grinberg et al. 2019; Guess, Nagler, and Tucker 2019).

The experimental manipulation implemented was relatively small—only the headlines of the news story changed while the text of the story was kept constant—which should bias against finding treatment effects of clickbait. It is also possible that a larger (and in some ways more realistic) experimental setup that varied the body of the story to mirror the tenor of the headline might find a larger effect.

Our nonexperimental analysis, however, allows for another pathway by which clickbait could affect American politics: by differentially changing the media diets of different types of social media users. We find evidence of heterogeneously distributed preference for clickbait; in both samples, older respondents scored higher on this dimension while Democrats scored lower. Also, some variables were significantly associated with PfCB in one sample but not the other. Among the Facebook sample are two particularly strong relationships. More frequent Facebook users have a higher PfCB, while more educated respondents have a lower PfCB.

The upshot of these descriptive findings is that the impact of social media use on behavior and attitudes is heterogeneous.

The heterogeneity of the effects of different media technologies is well established in political science. The clearest example comes from Prior (2007), who conceptualizes two populations of television

consumers: those with a high preference for entertainment (PfE), who will always choose to watch non-news programs, and those with low PfE. In the broadcast era, these groups were indistinguishable because of the lack of choice among the three broadcast providers. Broadcast television thus had a relatively homogeneous effect on viewers' political attitudes and information levels. With the advent of cable television, however, people with high PfE avoided news programs. The effect of cable television viewing was thus heterogeneous in the viewer's PfE; cable television led to a more polarized electorate as moderates became less politically engaged.

Changing the number of images simultaneously possible to view from 3 to 50 (broadcast to cable television) increased the heterogeneity of the effects of television. The internet and social media have made that number of possible images essentially infinite; you can never step in the same News Feed twice.

Heterogeneity should thus be central to any study of media or persuasive effects on social media. Average treatment effects on a representative population might be deceptively low, disguising effects in politically relevant subpopulations. Future research will be wise to address this point more explicitly, in terms of both theory and empirical research design.

Heterogeneity should thus be central to any study of media or persuasive effects on social media. Average treatment effects on a representative population might be deceptively low, disguising effects in politically relevant subpopulations.[7] Future research would be wise to address this point more explicitly, in terms of both theory and empirical research design.

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Appendix

Table A1. Preference for clickbait: fully interacted models

	Dependent variable

	Preference for clickbait		P
	B	(s.e.)	B
Facebook sample	0.057	(0.077)	–(
Facebook use	0.003	(0.003)	0.
Twitter use	0.003	(0.002)	–(
Internet use	0.009	(0.007)	0.
Age	0.001*	(0.0004)	0.
Education	–0.005	(0.006)	–(
Offline news consumption	0.009**	(0.003)	–(
Online news consumption	0.006	(0.004)	–(
Democrat	–0.052**	(0.014)	–(
Lean Democrat	–0.032#	(0.017)	–(
Lean Republican	0.067**	(0.016)	0.
Republican	0.036*	(0.016)	0.
Facebook use X Facebook sample	0.012#	(0.007)	0.
Twitter use X Facebook sample	–0.001	(0.003)	0.
Internet use X Facebook sample	–0.017#	(0.009)	0.
Age X Facebook sample	0.0003	(0.001)	–(
Education X Facebook sample	–0.009	(0.008)	–(
Offline news X Facebook sample	–0.008#	(0.004)	–(
Online news X Facebook sample	–0.0005	(0.005)	–(
Democrat X Facebook sample	0.032#	(0.018)	0.
Lean Democrat X Facebook sample	–0.0002	(0.024)	–(
Lean Republican X Facebook sample	–0.055*	(0.025)	–(
Republican X Facebook sample	–0.015	(0.023)	0.

Constant	0.308**	(0.056)	0.
Observations	4,145		4,
R^2	0.037		0.
Adjusted R^2	0.032		0.

Note.—Entries are coefficients from ordinary least squares regressions, with standard errors in parentheses.#$p < 0.10$; *$p < 0.05$; **$p < 0.01$

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Footnotes

1. Despite the unserious name, Buzzsumo is very influential in the digital research space. Academics have begun to use them as well; Allcott, Gentzkow, and Yu’s (2018) working paper on current trends in “fake news” diffusion is based on Buzzsumo data.

2. https://egap.org/registration/3175.

3. Mechanical Turk allows requesters the ability to specify the demographics of a given sample, including their ideological leaning.

4. This session did include an experimental manipulation, but unfortunately it was marred by a design flaw.

5. The inclusion of nonpolitical stories provides more reliable estimates of media choice (Arceneaux and Johnson 2013).

6. This process balances the concern expressed in Leeper (2017) for measuring

media treatment effects on the relevant population (those who would actually consume the given media) with the fact that we needed to disguise the nature of the manipulation from the respondent.

7. There is growing evidence for this view in the context of political engagement. Using web-tracking data, Guess, Nyhan, and Reifler (2017) conclude that the average number of times US internet users viewed Fake News during the 2016 election was quite low. This average masks the fact that "almost six in ten visits to Fake News websites came from the 10 percent of Americans with the most conservative information diets." It should be noted that this observational "preference for Fake News" finding closely mirrors our results about the preference for clickbait.

Author notes

Kevin Munger is an assistant professor of political science and social data analytics at Pennsylvania State University, State College, PA, USA

Mario Luca is a doctoral candidate in economics at Sciences Po, Paris, France

Jonathan Nagler and Joshua Tucker are professors of political science at New York University, New York, NY, USA