

Don't Expose Yourself: Discretionary Exposure to Political Information*

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The news media have been disrupted. Broadcasting has given way to narrowcasting, editorial control to control by 'friends' and personalization algorithms, and a few reputable producers to millions with shallower reputations. Today, not only is there is a much broader variety of news, but there is also more of it. The news is also always on. And it is available almost everywhere. The search costs have also come crashing down. And the world's information is now at our fingertips. Such a dramatic expansion of choice and access is generally considered a Pareto improvement. But the worry is that we have fashioned defeat from the bounty by choosing *badly*. In this chapter, we reconsider the evidence for the claim. We first consider what aspects of information give people utility. And how the changes in the market may have affected consumption and consequent variables. Discussion about evidence leads us to reconsider and define the key quantities of interest, and to discuss how various measures may fall short.

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We live in the proverbial information age. A myriad of stimuli constantly vie for our attention. And we constantly decide which stimulus to attend to. Much of the decision-making happens ‘automatically’, beyond our conscious control. Vital as such decisions are, the chapter doesn’t discuss them. Instead, it focuses on the complementary question. How do people consciously choose what information to attend to?

We begin with a patent premise. People consume the media they prefer. They choose from a rich, near unlimited, menu. And deduce what they prefer based on information that is easily available to them. Their deductions are often flawed. Limited available information, finite cognitive capacity, a bias toward cognitive miserliness, among other things, circumscribe their ability to choose correctly.

On rare occasions what we want is not on the menu. More often, what we want isn’t easy to find. Other times the available information leads us astray. For instance, when deciding, name of the outlet is often one of the few pieces of information we have. But source cues can mislead. For instance, *The New York Times* (NYT) may lean liberal, but it often carries news that is congenial to the right (Garz et al. 2017; Barberá and Sood 2014). Yet other times, laziness explains what we consume. For instance, merely changing the position of the channel on the menu affects what we consume (Martin and Yurukoglu 2014). These limitations mean that there is often a sizable gap between people’s ideal points and the ideal point of what they consume.

However inexpertly and desultorily, people try to choose what maximizes their utility. Except what gives people utility in the moment often differs from what gives them utility after they have had a chance to reflect (Akerlof and Shiller 2015). In the moment, people may want to be entertained. On reflection, they may want to be improved. So in the moment, they may pick burgers. And on reflection, kale.

For most people, most of the time, less considered goals likely dictate consumption. Confining ourselves to decisions about decisions about consumption of political information,

interest in politics, interest in partisan (or ideologically) congenial information, and interest in accurate information give a lot of utility. Aside from these, people have preferences about style. For instance, satire over hard news, or video over text. People also prefer learning about some issues more than others (see for e.g., [Iyengar et al. 2008](#)). For instance, old people likely prefer reading news about Medicare than student loans; immigrants, news about their home country to another country; the young, news about student loans than Medicare.

Besides these, there are other more widely shared preferences. People prefer negative information ([Trussler and Soroka 2014](#)). And they prefer important information, however construed. This isn't an exhaustive inventory. But these aspects are typically what people have information about when they are deciding on what to consume.

What people prefer depends on the context. For instance, even those who abstain from the news likely have eyes glued to it when a terrorist attack happens. By the same token, as the election day approaches, people consume more political information ([Gentzkow and Shapiro 2011](#); [Garz et al. 2017](#)). Preferences also evolve with time. For instance, our current affairs knowledge peaks around middle age (see [Appendix A](#)), suggesting that we pay greatest attention to news then. Similarly, which issues we find interesting depend on where we are in life.

Not only are preferences mutable, they also vary across people. The taste for political information varies *immensely*. At one end are those who live and breathe politics, keeping track of every latest poll. At the other, much deeper, end are those who couldn't be bothered with knowing which party holds a majority in the House. (Only 47% of the people know the fact ([Bawn et al. 2012](#)).) Taste for congenial political information also varies tangibly (see, for e.g., [Iyengar and Hahn 2009](#)).

In toto, preferences for consumption of political information are complex, variable, and mutable. Given the richness, we need to make some choices about what to explore in greater detail. The rise of polarization and potential rise in inequality of political knowledge are con-

cerning. And media's role in both is hotly debated. Thus, we opt for exploring preferences for political information and partisan congenial information. We begin by considering theory and some evidence. And then delve more deeply into the conceptual and methodological issues around measurement. We start by defining what we ideally want to measure. We then use the ideal to bring greater clarity to the consequences of compromises in measurement that various measures make.

A Preference for Entertainment

Political ignorance is in vogue again. Sharp rise in economic inequality in advanced democracies has brought to fore concerns about political ignorance. Many people think that inequality is a bad thing but still prefer policies that would increase it (Bartels 2005). Analysis by Bartels finds that ignorance explains a good bit of the puzzle. As goes for inequality, so goes for other political issues. Many people prefer particular policies because they are uninformed (Luskin, Fishkin and Jowell 2002). For a fuller discussion on the importance of current affairs knowledge, see Graber (2004); Leighley (2003); Schudson (1998); Zaller (2003).

Given its importance, it is distressing that people know so little about politics. For instance, in 2000, just 42% of the people knew that Bush wanted more restrictions on abortion than Gore (Bawn et al. 2012). Seven years after Putin first became president of Russia, 64% of the people couldn't name him (Kohut, Morin and Keeter 2007). What explains this umbra of political ignorance?

Like many things in life, you need a trifecta to learn about politics. You need opportunity. When given the opportunity, you need to be interested in capitalizing on the opportunity. And to capitalize on the opportunity, you must have the wherewithals. Or, access to political information, interest in consuming it, and the ability to process it explain what we know about politics (p. 335, Luskin 1990). Of the three, ability has likely increased over the past 50

years, though likely not enough to make much of a difference. This leaves us with interest and opportunity.

Interest in politics is often founded in differences in taste (Luskin 1990; Prior 2003; 2007; Iyengar and Hahn 2008; Prior 2003). Taste in politics forms early and is stable through life (Prior 2010). Aside from taste, interest in politics is also shaped by its intrinsic and instrumental value. Some like to stay informed because it helps them vote ‘correctly’ (Shineman 2012). Others, because people they talk to value such information (Sood 2014; Genova and Greenberg 1979).

Neither intrinsic nor instrumental value of political information is large enough for most people to consume much of it. For instance, over a three month period, only 4% of the people read 10 or more news articles and 2 or more opinion pieces on their computer (Flaxman, Goel and Rao 2016). To give you more perspective, more than half the people viewed 991 or more pages during the three months. Analysis of 10 million self-identified partisans on Facebook yielded similarly depressing results. Only 13% of the shared articles were about politics (Bakshy, Messing and Adamic 2015).

Offline things are no different. Less than 8% of Americans tune into network news regularly, and less than 1% watch cable news regularly (Prior 2009). Rather than watch public affairs programming, Americans consume entertainment. In 2011, according to Nielsen, Americans spent 9.6% of the time spent watching television on watching news. They spent 15.5% of the time watching television watching reality television, 11.4% watching sitcoms, 22.5% watching sports, and 41.1% watching drama.

Even those who prefer news over entertainment do not always choose news high in nutritional value. Instead of news about major political issues, people often choose personality-centric, sensational news. According to Nielsen, in 1999, soft news was about as popular as network news (Prior (2003)).

Unlike interest, opportunity to consume news has grown considerably in the last few

decades. Where there was a piddly stream, today there is a biblical flood. Today, people have access to news 24 hours a day, on smartphones, tablets, and television. And there is a rich selection of style and viewpoints to choose from. But there is little evidence that people know more today (Kohut, Morin and Keeter 2007). (The only column in possible ascendance is misinformation.) Markus Prior posits an explanation for the stagnation. Today, not only is the opportunity to consume politics greater, so is the opportunity to escape it (Prior 2007).

Till a quarter a century or so ago, consumption of political news likely depended a shade less on how interested people were in politics. During certain times in a day, people could not easily escape political news. At night, when most people were at home and seated in front of their televisions, there was no other programming on the television except for news. And rather than turn off the television and wait for the next sitcom, some people sat through the news (Robinson 1976). The *captive* audience was likely not very interested in news. But people likely absorbed some information (Keeter and Wilson 1986; Krugman and Hartley 1970; Zukin and Snyder 1984). For “mere exposure produces learning” (pg. 114, Graber 1998).

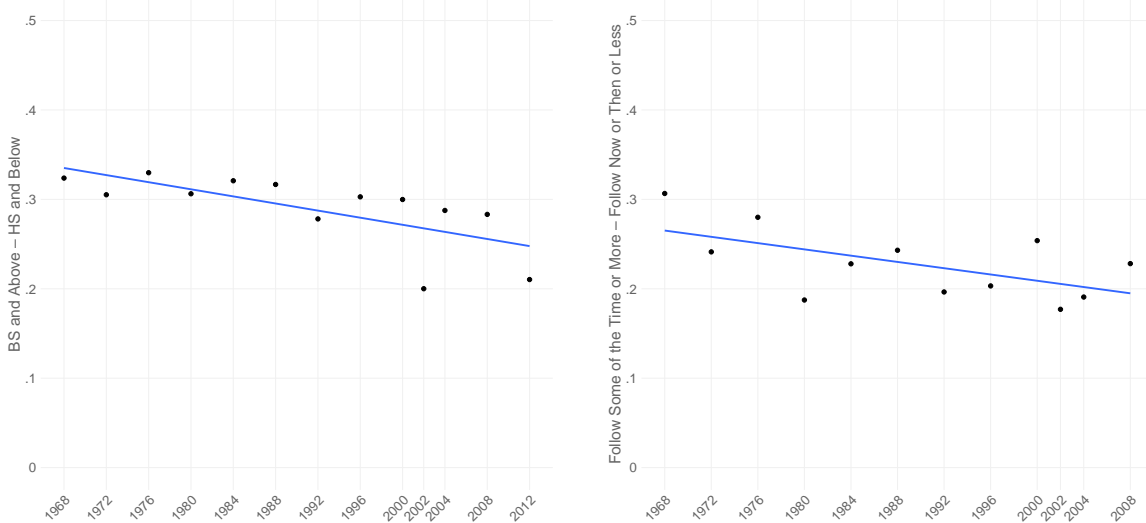
But the evidence for broadcast television’s impact on political knowledge points the other way. Exploiting exogenous variation in the introduction of television, Gentzkow (2006) find that television led to a 25-50% decline in turnout. They attribute the decline to lower informativeness of television vis-à-vis newspapers. Thus, despite creating an inadvertent audience for news, broadcast media reduced net consumption of public affairs.

But what about cable, Internet, and mobile? Are the politically disinterested taking advantage of the greater opportunity to opt out of news? If they are, the knowledge gap between those less and more interested in politics should be increasing. To investigate, we turn to data from the American National Election Studies (ANES). The ANES asks interviewers to rate “respondent’s general level of information about politics and public.” The interviewers rate respondents on a 5-point scale ranging from “Very Low” to “Very High.” These ratings are a good measure of political knowledge (pg. 333-344, Zaller 1992)). ANES also includes

measures of political interest and education. (See [Appendix A](#) for question text and variable names.) We recoded all the responses linearly to lie between 0 and 1.

To check how the knowledge gap between politically interested and disinterested, and the better-educated and worse-educated has evolved over time, we began by estimating year-wise bivariate regressions between political knowledge and political interest and education. The trend in the coefficients—correlation with year—gives one bare bones estimator of trend in knowledge gap. Contrary to expectations, for both political interest and education (coded in 7 categories), the correlations are robustly negative ($r_{\text{polint}} = -.43, r_{\text{education}} = -.51$). Regressing knowledge on interviewee characteristics (age, age squared, gender, race) and mode of the interview and interaction between political interest and year of the interview (recoded 0 to 1) yields an estimate of $-.06$ for the interaction term, suggesting declining knowledge gap. Replicating the same regression with education yields a coefficient of $-.11$ for the interaction. Controlling for interviewer race and gender leads to a loss of a majority of the sample, but the magnitude of the coefficient on the interaction term becomes larger. To illustrate the point, we plot the knowledge gap between those with college or more and those with high school or less (note the y-axis) (see [Figure 1](#)).

Figure 1: Knowledge Gaps Across Education and Political Interest



Both political interest and political knowledge are measured much too crudely to confidently rule out anything. But the data suggest skepticism about the new conventional wisdom about the new salience of political interest. What is likelier is that changing information landscape has made a tiny minority much more knowledgeable. The rapid decline in local news outlets has also likely affected how much people know about local politics (see also [Snyder Jr and Strömberg 2008](#)). But these and many other fundamental questions about how transition to new media has affected people and politics remain. And a key reason why the questions remain unanswered is because of the enormous measurement challenges. We discuss these challenges later in the chapter.

A Preference for Congenial Political Information

Some people prefer congenial information because they think it is more accurate ([Gentzkow and Shapiro 2006](#); [Lord, Ross and Lepper 1979](#); [Metzger, Hartsell and Flanagin 2015](#)). But it may not all be wishful thinking. Often people do not have much information on which to judge the accuracy of a piece of information. Often enough, they also lack the skills to deduce how accurate a piece of information is. Deductions from study design and sample size remain beyond the pale even for scientists. For instance, a vast majority of scientists obey the law of *small* numbers ([Tversky and Kahneman 1971](#)). Bereft of the two tools, people often have no option than to judge the credibility of a number based on how far it is from their priors. The further it is, the less credible. This is the rule we use when we ignore heat induced mirages when driving on a hot day in the desert. Or when struck with vertigo, we discount the possibility that it is the roof that is spinning. The fact that congenial information is seen as more accurate has consequences beyond consumption. It also means that congenial information likely influences opinions more.

Others prefer congenial information because it is unpleasant to receive uncongenial

news (Festinger 1957). Uncongenial news is unpleasant because it shows us to be wrong. And some people prefer to be proven right than be correct. There is a potential further wrinkle to psychic rewards for congeniality. People may feel ‘losses’ from uncongenial information more than rewards from congenial information (Garrett 2009).

The evidence for these theories is often hard to muster. And the difficulty is often compounded by a common confusion. People often confuse preference for information from a congenial source with preference for congenial information. The two are not the same. First, prominent sources with partisan reputations often carry lots of uncongenial information (Garz et al. 2017; Barberá and Sood 2014). Second, preference for news from a congenial source may not stem from perceived accuracy and psychic benefits alone. News from a congenial sources can also provide greater instrumental value. Advice by an agent who shares your preferences is more valuable (Chan and Suen 2008).

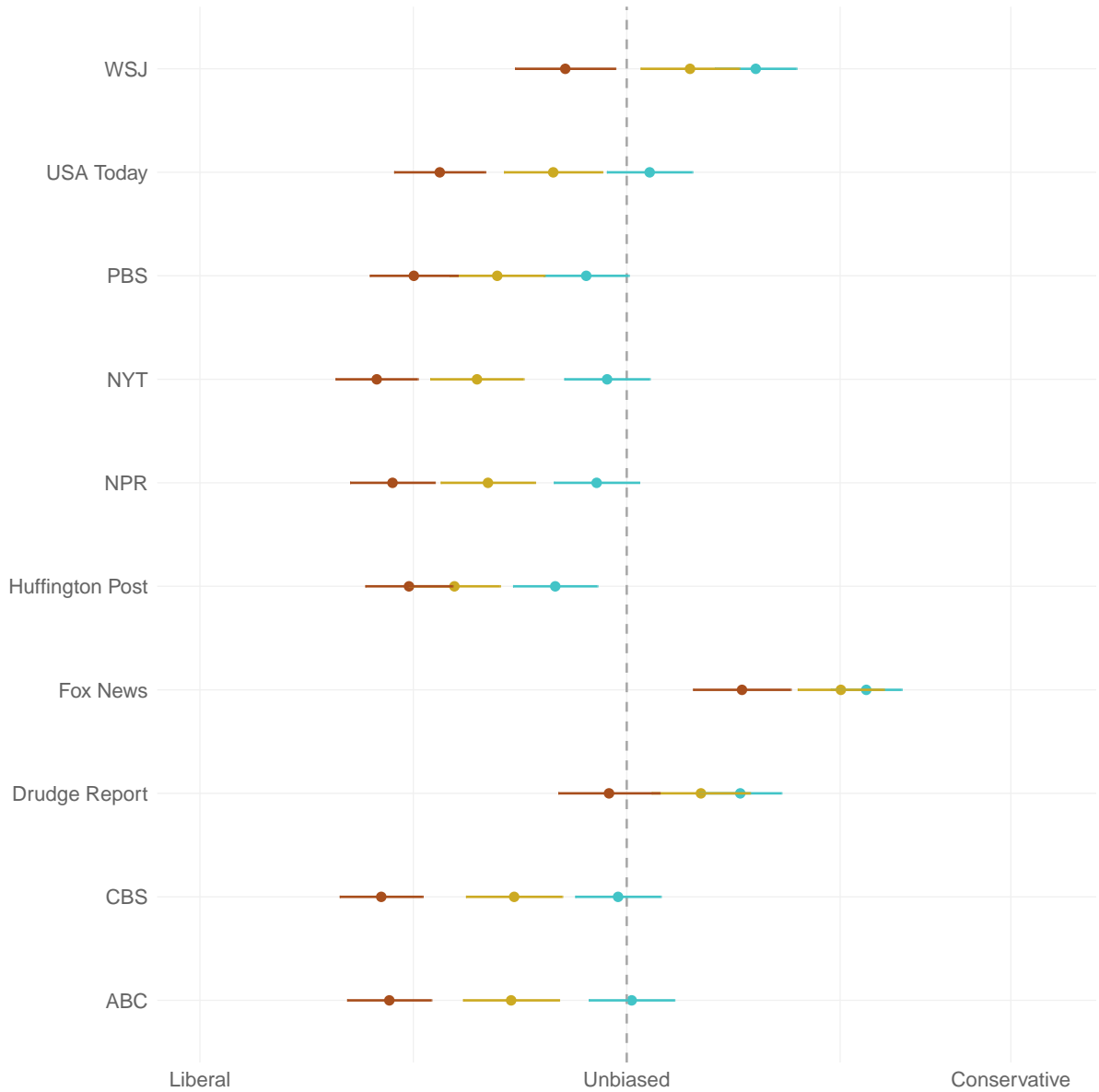
If we ignore instrumental value of congenial sources, we are left with perceived accuracy and psychic benefits. But the point about perceived accuracy is still underappreciated. So to complement other work showing people trust congenial sources more (see, e.g., Metzger, Hartsell and Flanagin 2015), we conducted a survey. Along with Shanto Iyengar, in 2011, we surveyed 1,000 respondents recruited by YouGov. We asked the respondents to place various news organizations on a 7-point ideological scale. The scale ranged from liberal (1) to conservative (7), with the midpoint labeled as ‘no bias at all.’ Objective assessments put NYT, NPR, ABC, CBS, USA Today, Huffington Post, and PBS to the left of center. And Fox News, *The Wall Street Journal* (WSJ), and the Drudge Report to the right of center (Barberá and Sood 2014).

Partisans rated outlets that shared their outlook as less biased than independents or opposing partisans (see Figure 2). Democrats on average rated NYT, NPR, and PBS near the midpoint. Republicans thought Fox News, WSJ, and the Drudge Report were less biased than other outlets. And Independents’ ratings fell between Democrats’ and Republicans’. All this was expected. But there was one surprising result. Independents, on average, got the sidedness of

the slant 'correct' for all outlets.

To parse the extent to which people choose news from a congenial source because they think it is more accurate from because it is more pleasant, we need to measure both. We need to measure the ideological distance between a person's ideal point and the ideal point of

Figure 2: Perceived Bias of News Organizations by Party Identification



the outlet. And we need a measure of perceived accuracy. We can then regress the choice on ideological distance and perceived accuracy. That perceived accuracy and perceived ideological distance are likely endogenous is immaterial. Perceptions are the causal quantities of interest. But even this scheme assumes that we know the utility function. We don't. There is another, simpler, way of estimating the extent to which the news selection is ideological than driven by trust. We can exploit the fact that judgments about trust and accuracy are generally made about media sources than about news stories. Thus, a measure can be built using revealed preferences over a series of choice tasks in which the congeniality of the stories, and the sources to which they are attributed to is manipulated. The key thing is that we need to limit inference to within outlets.

Regardless of whether the consumption of information from partisan sources is driven by trust or taste, people tend not to consume a lot of information from such sources (Prior 2009; Gentzkow and Shapiro 2011; Guess 2016). But underneath the modest average hides considerable variation. For instance, some people read partisan blogs. Often these blogs are very partisan, rarely linking to content on the other side (Adamic and Glance 2005; Hindman 2008). More generally, strength of partisanship is correlated with preference for information from congenial sources (Garrett 2009; Iyengar and Hahn 2008). The politically disinterested, on the other end, sometimes opt for entertainment than news (Prior 2005; 2007; Arceneaux, Johnson and Murphy 2012). Of course, that may be no escape from partisan outlets. Partisan cable channels, undoubtedly aware of demand for soft news, now carry a lot of it. Fox News Channel, for instance, has established a niche for sports coverage. MSNBC meanwhile specializes in late-night crime programming. And Huffington Post is one of the major sources of news about Hollywood and celebrities. This gives particular teeth to the evidence that people also prefer consuming *soft* news from partisan congenial sources (Iyengar and Hahn 2008).

To shed more light on preferences for political and apolitical news from partisan congenial sources, we mounted a survey. In 2013, we surveyed 2,000 people recruited by YouGov.

We showed each respondent 4 screens with 6 news stories each. And on each screen, we asked them to pick the story they were most inclined to read. For cover, we told them that we were developing a new way of displaying online news. In keeping with the cover, the screen layout followed that of Google News. A Google News logo also appeared in the upper left corner. The story headlines and logo of the sources were split into two rows of three headlines. (See [Appendix B](#) for screenshots of the selection screens.) To account for the impact of position, we randomized the position of stories.

Like [Iyengar and Hahn \(2008\)](#), we randomly assigned identical hard and soft news stories to different sources. Of the 24 stories, 12 were political and 12 apolitical. Political stories were on electoral politics and the economy. Apolitical stories focused on celebrity life, sports, movies, and sleep disorders. The first and third trial showed logos of news organizations, e.g., Fox News. The second and the fourth trials matched stories included information about the channel and the show, e.g., The O'Reilly Factor (Fox). All four screens featured two left-leaning sources, two right-leaning sources, and two non-partisan sources.

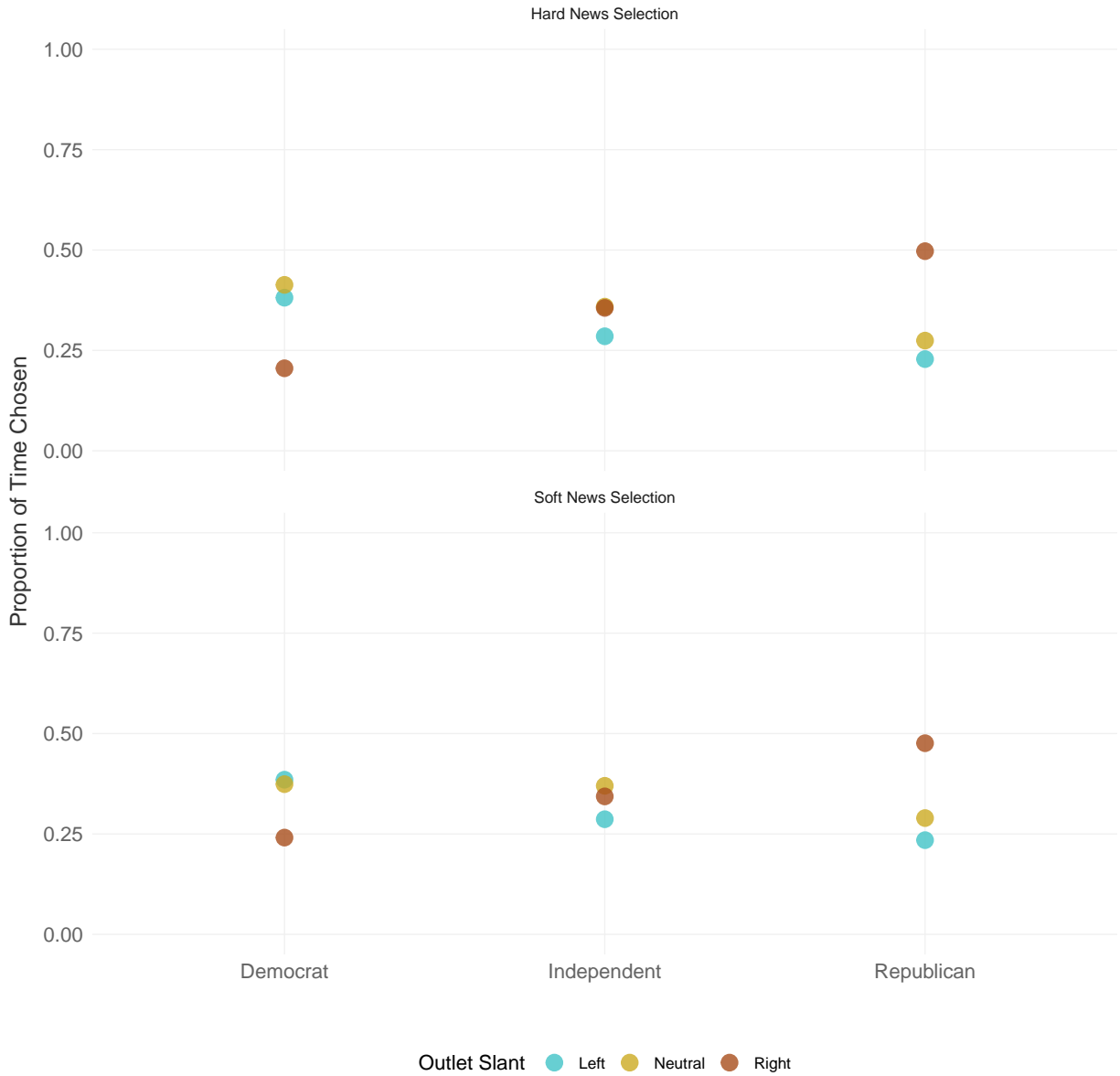
Partisans choose apolitical stories from partisan congenial sources about as often as they choose political stories (see [Figure 3](#)). Both Republicans and Democrats picked political and apolitical news from congenial outlets 10% more often than from uncongenial outlets.

Republicans, however, prefer information from congenial sources more than Democrats (see also, [Garrett 2009](#); [Iyengar and Hahn 2008](#)). Republicans chose right-leaning sources twice as often as left-leaning sources—50% versus 22%. But this is not proof that Republicans prefer information from congenial sources more than Democrats. First, all the studies treat MSNBC and Fox interchangeably. Fox is taken to be as right of center as MSNBC is to the left. They aren't ([Barberá and Sood 2014](#); [Martin and Yurukoglu 2014](#)). Second, Fox has been right of center for a much longer time than MSNBC has been left of center ([Martin and Yurukoglu 2014](#)). Thus, Fox News is likely to have greater 'brand' recognition than MSNBC.

Even if people consume all the information from partisan sources, it does not mean

that it will have a large effect on their attitudes and behaviors. Given the polarized sort into partisan media, the distance between positions of partisan media and the consumer may be small (Bennett and Iyengar 2008). And consumers may be aware of the biases, and may appropriately down weight what they hear from different media sources.

Figure 3: Patterns of News Selection by Slant of Source



Neither reason is compelling. Many media organizations are more ideologically extreme than the median partisan (Barberá and Sood 2014). Second, people are generally bad at estimating bias (see Figure 2).

Thus, we expect consumption of congenial over uncongenial bits of information to affect politically important variables. It should affect partisan affect, what people know, policy positions, trust, political participation (donating, attend a rally, voting, etc.), and whom they vote for (e.g., Stroud 2010; Levendusky 2013; Arceneaux, Johnson and Murphy 2012; Melican and Dixon 2008; Martin and Yurukoglu 2014). Existing stores of knowledge likely condition the extent to which consumption of partisan media affects various variables (Zaller 1992). The ignorant may be swayed by small changes in consumption. The bare stores of political knowledge of an average American likely explain why small changes in their media diet matter (DellaVigna and Kaplan 2007; Martin and Yurukoglu 2014).

Exposure to uncongenial information may also polarize. A Democrat watching Fox News Channel (FNC) may think that its coverage is defamatory and hateful. And that people who typically watch FNC endorse this. And may revise their views of Republicans as a result.

Hitherto, we have assumed that the effects of media are limited to the people who consume it. But that is almost certainly wrong. There is a long literature in Communication on the two-step flow (Katz 1957). And in an era where technology for sharing information has never been easier, it is likely that the consumption also affects the attitudes and preferences of people who interact with people who consume partisan media. In one recent study, Druckman, Levendusky and McLain (2015) exposed random subsets of participants to partisan news and then grouped all subjects in randomly composed discussion groups. They find that the effects of partisan news had an effect on the attitudes of those who were not exposed to partisan media.

Measurement

Both preferences and behavior are worth studying. But often we have access to nothing more than imprecise measures of behavior, be they self-reports or passively collected observations of actual consumption through some narrow porthole, e.g. data from the Bing toolbar in [Flaxman, Goel and Rao \(2016\)](#). Judgments about preferences based on such data rest on some heroic assumptions. Add to these issues, rapidly changing technology. How do you measure consumption when the number of devices on which people consume keeps increasing? How do you create commensurable over time measures?

Letting t denote all information consumed, and p denote all political information consumed, the conventional estimand for preference for and consumption of public affairs is $\frac{p}{t}$. Letting c denote total congenial political information consumed, for ‘partisan selectivity’, it is $\frac{c}{p}$. As a result of [Garrett 2009](#), another corresponding ratio was added. Letting u denote total uncongenial information consumed $\frac{u}{p}$.

Aside from the usual caveats that go into inferring preferences from consumption, it isn’t clear if the ratios are appropriate conceptualizations for all dependent variables. If the dependent variable is partisan affect, how ‘selective’ one is may not matter as much as net imbalance in consumption—difference between the number of congenial and uncongenial bits consumed ([Lelkes, Sood and Iyengar 2015](#)). For instance, someone who consumes 5 conservative units and 10 liberal units of information is by the ratio measure as selective as someone who consumes 50 conservative units and 100 liberal units. If the two hypothetical people start with the same partisan affect and knowledge, the impact of consuming 50 more liberal units of information is very likely different than the effect of consuming 5 more liberal units of information.

A yet more unequivocal case can be made for political knowledge. If we want to predict political knowledge (after regressing out political interest), surely, it is the total bits of political

information consumed that is a more appropriate right-hand side variable than proportion of media consumption that is news. More generally, the trouble with normalizing is that we assume people consume similar amounts of total (political) information. They don't. To our point, the Finns and the Danes know *more* about *both* celebrity affairs and public affairs than their US counterparts (Curran et al. 2009).

Whatever the estimand, to estimate it, we need to make a series of compromises. And we need to keep track of the various ways inferences are affected by the decisions we make. Ideally, we would like to track all the information consumed, precisely measure ideology of each unit of information on the same scale as the ideology of consumer. We could then look at the amount of, and the distribution of the ideology of the information consumed. If we so wanted, we could also summarize various moments of the distribution of ideological distances for each person. And if we were worried about dimensionality of ideology, we could do the same by issue area. But such granular data are hard, if not impossible, to get. And given the limitations, scholars have made a host of simplifying assumptions about each of the components of the measure. For a more systematic look at assumptions behind current measures, we deal with assumptions about measurement of ideology, and consumption independently. Comparing the measures we have to measures we would like to have illuminates how the current measures fall short.

Measurement of Ideology

The modal study on selective exposure makes three decisions about the measurement of ideology. First, it judges ideology at the outlet level. Making judgments about the ideology of Fox News than say *Fox and Friends*. Second, it takes ideology of the outlets as self-evident, skipping formal measurement all together. And third, it makes categorical judgments about ideology. It judges media as liberal (Democratic leaning) or conservative (Republican leaning). See for instance, Iyengar and Hahn 2008; Stroud 2010; Levendusky 2013; Garrett 2009;

Knobloch-Westerwick and Meng 2009. Each of the decisions has its attendant problems.

Making judgments at the level of outlet means measuring the first moment but not any higher moments. There is mean, but no variation. Or skew. Coding all the bits of information as having the same ideology seems unwise. The variance in ideological positions within outlets is sizable (Barberá and Sood 2014). A column by David Brooks is generally poles apart from a column by Paul Krugman. To illustrate how measuring at the outlet level can mislead, let's consider a toy example. Say a Republican only visits <http://foxnews.com> and <http://nytimes.com>, visiting each 10 times. The conventional estimand for selective exposure is number of visits to Fox News divided by total site visits. In this case, it would give an estimate of $\frac{10}{20}$. If Fox News had 7 conservative and 3 liberal stories, and NYT had 5 liberal and 5 conservative stories, the correct estimate is $\frac{7}{20}$.

The second point is self-explanatory. Measuring ideology by fiat is unscientific. Any claims based on such measures are suspect. The third point deserves greater attention. Making coarse judgments generally means losing information. And losing information often reduces our ability to learn. To illustrate the point, consider the following. Say we only code a piece of information as Republican-leaning or Democratic leaning. Assume that a bit of information is Republican-leaning. And a Republican consumes it. We will code that a Republican consumed a bit of congenial information. Say on a finer 1 to 7 liberal to conservative scale, the consumer is at 6 and information is at 5, we can say more. We can the consume consumed something more liberal than their own ideological position. Or the bit could be at 7. And then we would say the consumer consumed something to the right of where they are. Crude measurement means treating consuming a bit of information at 5 and another at 7 the same.

Aside from concerns about subjectivity and crudeness of measures, there are questions about how to measure ideology. There are three broad ways we can get at the ideology of content. We can measure the ideology by asking people about their opinions, by tallying the ideology of the audience, and by coding the content. There are a lot of ways of doing each.

And each decision demands care.

One way to measure slant is to ask consumers to rate the ideology. For instance, [Dilliplane \(2011\)](#) uses data from the 2008 National Annenberg Election Study (NAES). The survey asked respondents which outlets they used for information about the campaign. And then asked consumers of each outlet which presidential candidate it favored. If at least 25% of the self-reported consumers rated the outlet as favoring the Democratic candidate, it was rated as left-leaning. Switch the candidates, and you have the version for coding an outlet as right-leaning. All the remaining outlets were coded as neutral.

The audience rating based measure has three big weaknesses. First, the measure is subjective. People are bad monitors of bias, often confusing rooting for their side with unbiasedness ([Morris 2007](#); [Vallone, Ross and Lepper 1985](#), e.g.). [Dilliplane \(2011\)](#) uses ratings from Independents to try to address this concern. But Independents are not ideological moderates (see also [Figure 2.](#)) Second, the rationale for the 25% threshold is unclear. Third, the judgments are coarse. For instance, both *Good Morning America* (GMA) and *Countdown with Keith Olbermann* (CKO) are coded as left of center. This means coding someone who only watches CKO as selective as someone who only watches GMA.

Another way to measure the slant of content is to use audience's ideology as proxy ([Van Kempen 2007](#); [Goldman and Mutz 2011](#); [Flaxman, Goel and Rao 2016](#)). For instance, [Flaxman, Goel and Rao \(2016\)](#) call an outlet conservative if more than half its audience supports the Republican candidate. But well tread concerns about inferring ideology from behavior apply. For instance, New York City (NYC) is heavily Democratic. And NYT is the city's local newspaper. Say people in NYC read NYT because they like to get local news, not because it is liberal. In such cases, inferring that NYT is liberal based on the reading habits of NYC residents will be ill advised. One way to mitigate these concerns is to specify a more complete utility function. And estimate relative ideological location as ([Gentzkow and Shapiro 2011](#); [Barberá and Sood 2014](#)). The functional form is open to challenge, and so is what is included in the

function.

Another way to measure ideology is to code content (Gentzkow and Shapiro 2010; Groseclose and Milyo 2005; Ho, Quinn et al. 2008, see for instance,). But what aspect of content to code? One aspect of content that is informative about ideology is who is cited. Groseclose and Milyo (2005), for instance, track the number of times media outlets and lawmakers cite liberal and conservative think tanks. And infer ideology based on how similar an outlet's citation patterns are to legislators'. But such measures are sensitive to the dates and the specific think tanks included (Gasper 2011).

Others use information in editorials. They classify newspapers based on which party's candidate and which Supreme Court decision they endorse (Ho, Quinn et al. 2008; Puglisi and Snyder 2015). But editorials are a small section of the newspapers. And editorial content may not resemble the overall tone of the newspaper. For example, WSJ's editorial section is well to the right of its news section (Barberá and Sood 2014).

Yet others exploit the variation in coverage of facts that reflect badly on a party Larci-nese, Puglisi and Snyder (2011). If a media organization is more likely to cover scandals of a particular party, it is likely biased against that party. But this kind of inference runs the risk of maligning all coverage with biases observed in small portions of the coverage.

Lastly, we can use speeches made on the Congressional floor to estimate the relationship between words and ideology. And then use the model to infer ideology based on words used in the news (Gentzkow and Shapiro 2010; Sood and Guess 2015). There are at least three problems with such measures. First, the words used by members of Congress aren't the same as used by the news. So the model may not be valid when predicting ideology based on words used in news. Second, performance within training data is poor. For instance, the r^2 of some of the published models are no greater than .7 (see, for e.g., Barberá and Sood 2014; Gentzkow and Shapiro 2010). And within party r^2 of models is generally only half as large (Barberá and Sood 2014). Third, the method makes strong judgments about overlap in time between

congressional speech and news. This, in turn, relies on assumptions about overlap between congressional and the news media agenda.

Measurement of Consumption

Media consumption is measured in two main ways. A vast majority measure it using survey instruments. But increasingly, people passively track consumption. Both have their challenges.

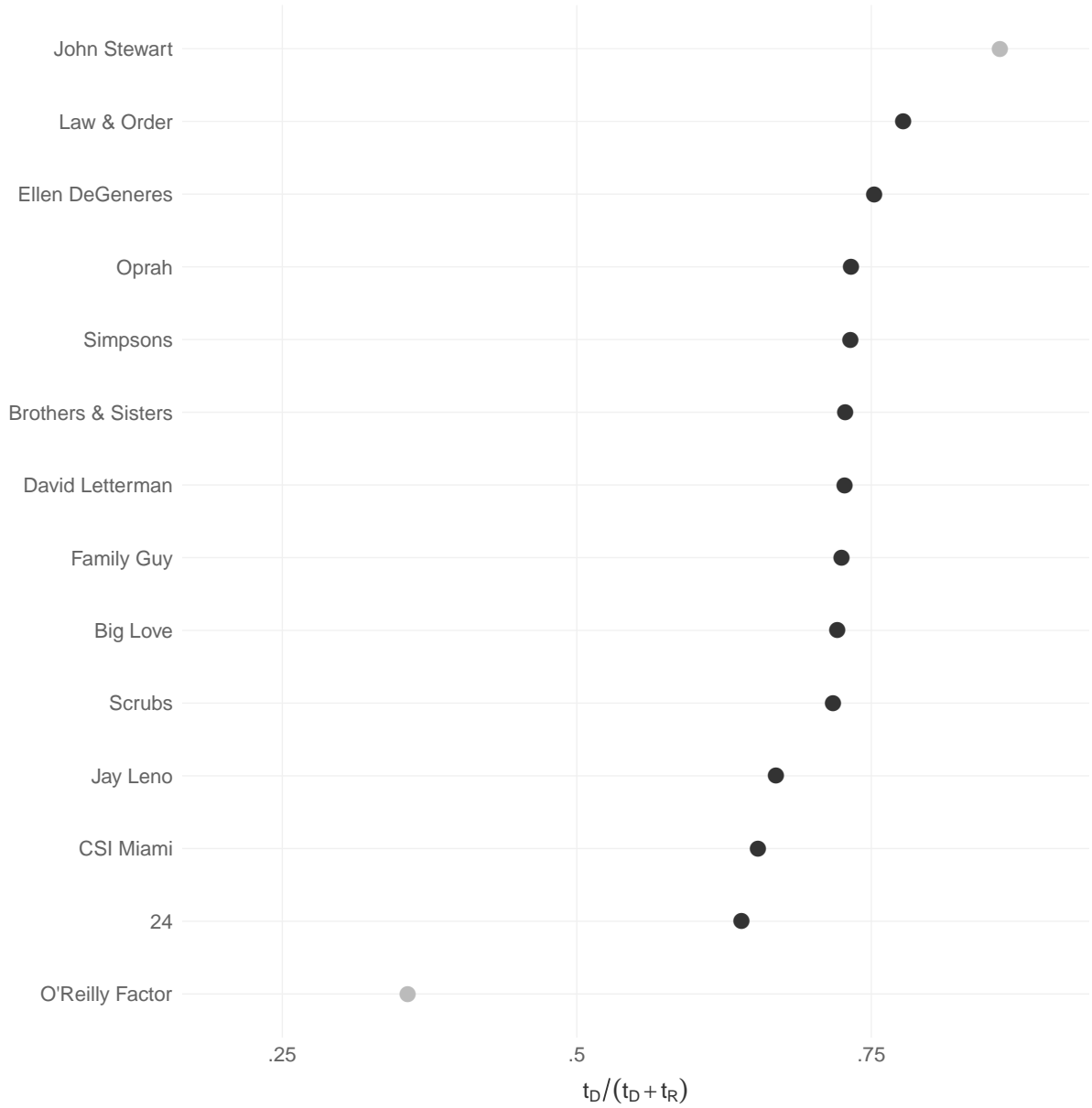
But before we discuss the techniques, some conceptual ground clearing is necessary. What is political information? One may respond with all information that influences people's political attitudes or behaviors. If so, then limiting ourselves to news is likely too constraining. Popular television shows like *The Handmaid's Tale*, *Narcos*, seem clearly political. But so are shows like *Will and Grace*, *Law and Order*, and *The Cosby Show*. For instance, watching *Law and Order* may convince people that public prosecutors are just and efficient (Sood and Trielli 2016). Nearly all 'entertainment' shows likely shape our political attitudes. Because, as cultivation theory suggests, the more time people spend living in the social worlds created by the shows, the more likely they are to adopt its beliefs (Shanahan and Morgan 1999).

To shed more light on the ideological content of entertainment shows, we used data from the 2008 NAES. The survey asked respondents whether they watched various shows. The survey also asked respondents about their partisanship. Like Dilliplane (2011), we used partisanship of self-reported audiences to infer partisan content of the show. Letting t_D denote the number of Democrats reporting watching the show, t_R the number of Republicans watching the show, we estimated $\frac{t_D}{(t_D+t_R)}$ for each show. Aside from prominent entertainment shows, we present the scores for O'Reilly Factor and The Daily Show for comparison. The partisan composition of the audience of varies a lot (see Figure 4). And much of the variation is expected—audiences for *24* and *CSI Miami* are less Democratic than audiences for *The Ellen DeGeneres Show* and *Oprah*. This variation very plausibly partly reflects ideological content of the shows. But the key point is not that this is a good measure of the politics of the show. In

fact, the measure suffers from some problems that we discuss later. But the point is that we may want to take account of exposure to ‘entertainment shows.’

Even if we limit ourselves to explicitly political information, the domain is still not clear.

Figure 4: Partisanship of Audiences of Entertainment Shows



Note: Data are from the 2008 NAES.

Is news about a bank robbery relevant political information? What about Hillary Clinton's haircut? To the extent that each of these affect people's attitudes, they are arguably pertinent. But care is needed to define the domain.

Browsing Data

Measuring consumption through passively collected data may seem without its faults, but it isn't. One big worry is that often passive collection needs consent. And people are aware that they are sharing their data with someone. And they may change their behavior in response to that (Rosenthal and Rosnow 2009). If that concern is wished away, another concern needs exorcising. Often passive data collection is limited to one device. In an era where people use many devices, extrapolating behavior from one device for everyone is very likely problematic. Even to estimate preference, we must assume that the rough proportions remain the same.

But even if were to elide over these difficulties, problems with coding content remain. To infer the kind of content people are consuming, we can rely on ad hoc lists of domains. For instance, Flaxman, Goel and Rao (2016) write,

We select an initial universe of news outlets (i.e., web domains) via the Open Directory Project (ODP, dmoz.org), a collective of tens of thousands of editors who hand-label websites into a classification hierarchy. This gives 7,923 distinct domains labeled as: news, politics/news, politics/media, and regional/news. Since the vast majority of these news sites receive relatively little traffic, to simplify our analysis we restrict to the one hundred domains that attracted the largest number of unique visitors from our sample of toolbar users. This list of popular news sites includes every major national news source, well-known blogs and many regional dailies, and collectively accounts for over 98% of page views of news sites in the full ODP list (as estimated via our toolbar sample)

Using these lists to estimate consumption raises three obvious concerns. First, there is the danger of treating a non-news site as a news site. Second, there is the danger of missing some news sites. And third, even ‘news’ sites, such as nytimes.com, carry a lot of apolitical news (Sood and Lelkes 2015).

Lists like those published by DMOZ seem well-enough curated to not contain too many false-positives. The real question is about how to calibrate false negatives. Here’s one proposal. Take a large random sample of the browsing data. Create a list of unique domains in the data. Then use a free large reputable database like Shallalist to get the kind of content hosted by the domain. For the domains that are not in the database, query a reputable web service like Trusted Source that provides the kind of content. You can query all the domains using a web service but the number of unique domains in browsing data can easily run into millions. Comparing against Shallalist helps reduce the amount of querying. Use the results to estimate the domain names carrying news that are not in the DMOZ list. Also estimate missed visitation time and missed page views. The downside to relying on external vendors is that we do not know or control how they code. Thus, methods that use machine learning to code the content of the domains are likely the best.

We can address the third concern by exploiting the URL structure. Many news include semantic information in the URLs. For instance, a sports story will often have a URL with “/sports/” in it. Flaxman, Goel and Rao 2016; Bakshy, Messing and Adamic 2015 use this to categorize content. And we can estimate false positive and negative rates using raw article data.

If the measure of ideology is continuous, there are still some risks. If we code all page views as having the same ideology as that of the outlet, we assume that the person views a random sample of pages from the outlet. (Or some version of that.) But that is too implausible an assumption. It is plausible that a liberal reading the NYT stays away from David Brooks’ columns. If you account for such within source self-selection, selective exposure measures

based on source level coding are going to be downwardly biased. They will people as less selective than they are.

Survey Data

Survey measures suffer from all the problems of passive observation measures. And they have more problems besides that. The problems can be broken down by issues with respondents, and with the instrument.

For respondents, one problem is inflation. In the 2008 NAES, 75% of Americans reported that they read news at least daily in some form. The number is hard to reconcile with another number: 43% of the people do not know which party is more conservative. The answer to the puzzle is that survey measures of political news consumption are grossly inflated. People lie or misremember in ways that makes them look good. A comparison between survey estimates of audience for network news and passive observation measures reveals inflation of 300% (Prior 2009).

Another is expressive responding (Prior 2013). People are allegedly particularly prone to inflating their reports of watching congenial media. Republicans may report watching Fox News because they want to signal that they consume news that is consistent with their self-identity. By the same token, Democrats may be averse to acknowledging that they consume Fox News. This potentially explains why preferences for partisan media uncovered in survey data are much stronger than obtained by passive tracking data. Data from passive tracking shows that the partisan overlap in audiences of prominent partisan sources is considerable (Gentzkow and Shapiro 2011; Guess 2016).

A big problem with survey instruments is sampling bias. One kind of sampling bias is focus on salient options. This may not be as much of an issue given the huge skew in consumption. Even the list in Dilliplane, Goldman and Mutz (2013) only has a few of the most popular shows on television. The skew towards salient news sources in most survey media

consumption batteries is problematic. It will yield biased estimates if people are more (or less) selective about less mainstream political sources. For instance, if people went to mainstream news sources to get the information, and to less mainstream sites carrying sympathetic interpretation for opinion about the facts, we would underestimate partisan selectivity on conventional sources.

Another sampling problem is that of the composition of the domain. Some measures include a media battery with equal proportions of conservative, liberal, and moderate news sources (see, for e.g., [Iyengar and Hahn 2008](#); [Knobloch-Westerwick and Meng 2011](#); [2009](#)). The true composition of the domain is likely closer to a bulk of choices being at or near the center, with only a few outlets with clear ideological slants. To infer preferences from selections across these domains is hard. Especially categorical statements about what proportion of times people watch news from partisan sources are hard to make.

Given the problems with self-reports, some use behavioral measures in a survey (see [Iyengar and Hahn 2008](#)). A respondent sees a few screens, each with a few headlines. The source to which each of the headlines is attributed to is randomized. And tallying the extent to which people click on stories from a congenial outlet over an uncongenial one given an estimate. The behavioral measure suffers from some of the same problems as the conventional survey measures. When you have a small choice set, the task of choosing is fundamentally different from the real world. And often the sampling issues and representation of domain apply there too. Additionally, because of a small number of trials, the measure also tends to be noisy.

To shed light on issues with behavioral measures, we used data from a YouGov study. We gauged the reliability of measures of preferences for partisan congenial news sources using a small number of trials. Like [Iyengar and Hahn \(2008\)](#), we randomly attributed the same hard and soft news stories to different sources, and asked participants to select the story they were most inclined to read. To estimate the reliability, we calculated the correlation between trials.

We coded congeniality trichotomously: congenial, neutral, or uncongenial. The correlations between trials are alarmingly low. The polychoric correlation between any two trials range between .06 to .20. And the correlation between choosing political news in any two trials is between -.01 and .05.

To probe the validity, we calculated correlations with indicator variables. The correlation between preference for congenial news and preference for political news is extremely weak ($r = -.05$). (See [Appendix B](#) for the operationalization of these measures.) This is puzzling. We expect those who prefer political news to prefer politically congenial news more [Iyengar et al. \(2008\)](#). In fact, self-reported news interest, while more strongly correlated with a preference for congenial news than the latent measure ($r = .21$), was still only moderately correlated with the latent trait model based on manifest choices ($r = -.36$). Similarly, the correlation between political knowledge and preference for congenial news was $r = .21$, while the correlation between political knowledge and preference for soft news was $r = -.36$. In fact, the correlation between political knowledge and self-reported interest in news was much stronger ($r = .59$). This suggests that latent trait models based on small number of choices are less valid than self-reports.

Measurement of Consequences

If our aim is to find a behavioral analog to preferences, 'selectivity' seems reasonable. To estimate consequences of media diets, we need to how many calories came from which item. For instance, if we want to explain political knowledge, the pertinent media consumption variable is the total amount of political information consumed. If we are looking to explain knowledge about a topic, we may want to restrict to all information about that topic. If the dependent variable is partisan affect, we may want two separate totals. We may want total congenial information consumed. Given exposure to uncongenial information likely also polarizes, we may also want to tally consumption of uncongenial information.

Studies estimating the causal impact of interest in consuming political information are hard to come by. One reason for the shortfall is political interest is largely stable (Prior 2010). Even so, interest in political campaigns does increase over the course of the campaign (NAES File). And exogenous factors like closeness of the race likely matter too.

But most work takes preferences as fixed. And estimates the impact of changes in information environment. Snyder Jr and Strömberg (2008), for instance, identify the impact of local newspapers on knowledge about local representatives by using discontinuities in newspaper distribution areas. Others exploit cross-national variation in institutions. Curran et al. (2009) assume that questions about international politics are equally hard for everyone. And infer that Americans know less than Danes and the Fins. But attributing political ignorance to media “systems” is hard, near impossible. The source of variation could be institutions, “culture”, education systems, or weather. Deducting knowledge of civics may help rule out some of the explanations.

The impact of changes in the information environment over time on consumption have been harder to pin down. One reason for that is identifying changes in consumption in presence of substitutes and variation in quality is hard. So researchers have generally side stepped it.

The other common dependent variable in research on media consumption has been ideological polarization and vote choice (e.g., Stroud 2010). Exposure to partisan media also likely causes people to hold ill-will towards the other party, without changing their policy positions. An analysis of programming from cable television, talk radio, and political blogs found that “efforts to provoke visceral responses (e.g., anger, righteousness, fear, moral indignation) from the audience through the use of over-generalizations, sensationalism, misleading or partially inaccurate information, ad hominem attacks, and partial truths about opponents ...” occur regularly in the vast majority of programs examined (pg. 29, Sobieraj and Berry 2011).

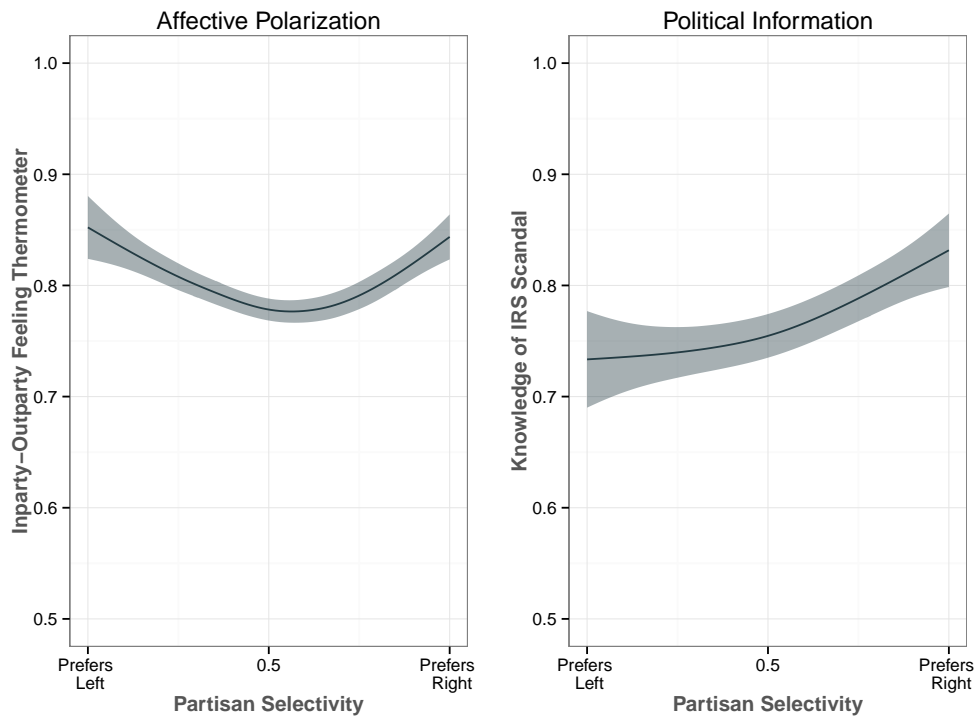
Whatever the cause, the correlation between preference for partisan media and partisan animus is sizable. In the YouGov survey, we had asked respondents about their feelings towards

the parties and assessed their preferences for partisan media (see [Appendix B](#) for additional details). People with strongest preferences for partisan media are roughly 7% more polarized than those who prefer moderate sources or are omnivores (see left panel of [Figure 5](#)).

We also expect exposure to partisan congenial media to skew what people know. Partisan media cover congenial information more often than uncongenial information ([Larcinese, Puglisi and Snyder 2011](#)). And such biases can lead to partisan gaps in knowledge and misinformation. Such biases may be responsible for partisans believing that the leaders of their own party are less extreme than they are ([Sood and Iyengar 2013](#)).

To shed light on the issue, we collected some evidence for selective learning. Roughly one year after the initial YouGov study, we surveyed 1,000 respondents in a second wave. Between the first and second wave of our study, the IRS scandal enveloped the Obama Administration. The attention devoted to the scandal by various media outlets varied as expected. A

Figure 5: The Relationship between Partisan Selectivity and Affective Polarization & Scandal Knowledge



Boolean search on archive.org's TV News database of mentions of the words 'IRS' AND 'Tea Party' from January until July 2013 reveals 806 mentions on Fox News, 464 mentions on MSNBC, and 266 mentions on CNN. Given this asymmetry, we expected an asymmetry in knowledge of the IRS scandal between those that preferred partisan media to non-partisan media. And since, right-wing partisan media likely devoted more attention to the IRS scandal than did the left-wing media, we expected Republicans with strong preferences for partisan sources to be more informed about the scandal than Democrats with similar preferences. The expectation was born out (right panel of Figure 5). Those with the strongest preferences for right-wing media knew roughly 10 percent more about the IRS scandal than those with the strongest preferences for left-wing media and those with mixed preferences.

Despite these strong correlations, untangling the antecedents of imbalances in media exposure from its effects is hard. In most Democratic countries, what people consume is a function of their preferences. Thus, we cannot take correlations between imbalances in consumption and preferences as evidence of causation. It also means that to tally impact of exposure on preferences, we must rely on exogenous changes in people's menu of media choices.

The menus from which people choose in the real world cannot be manipulated easily. But a peek can be had in the lab. That is the strategy that some scholars have used to identify the impact of changes in menu. Manipulations in laboratory or online survey experiments, however, lack ecological validity. The menu of choices in most survey experiments is exceedingly small. And the relative change in the menu as a result of changing even one item, large. These large changes don't translate well to the real world, where the menu is vast, if not limitless, though people limit most of their consumption to a small set of sources.

Our discussion also elides over attempts to identify media effects by forcing exposure to it. Despite their obvious limitations, forced exposure experiments help highlight the extent to which the source matters. But studies providing limited choice suggest that forced exposure exaggerates the impact of exposure to partisan news ([Arceneaux and Johnson 2013](#)). Those

disinterested in news are unlikely to see it, while those who prefer news tend to hold strong attitudes, and are thus immune to its effects.

Recognizing the limitations of laboratory and mandating exposure, other scholars have tried to capitalize on ‘natural experiments,’ exogenous changes in menus due to entry and exit of channels (Martin and Yurukoglu 2014), misalignment of strategic incentives and personal preferences in entry of new cable news channels (DellaVigna and Kaplan 2007), and laws affecting price of broadband (Lelkes, Sood and Iyengar 2015), among others. These research designs, however, give us a brief and shallow glimpse into consequences of imbalances in media exposure. For instance, as we note above, we never get to observe, not with any great precision, how much do people already consume. This means that we must elide over important variation.

Another important limitation is that with instrumental variable models, we only get ‘Local Average Treatment Effect’ (LATE) estimates. For instance, in Lelkes, Sood and Iyengar (2015), if the assumptions hold, the effect is driven by people who were encouraged to adopt broadband. This particular population of adopters, however, may not be of sufficient theoretical or political interest, and doesn’t answer the question of what would happen if the entire population were to get broadband. If the treatment effects vary by kinds of people, the population estimates can be far from LATE.

A yet more important limitation of most media effects research is that the treatment effects are not calibrated. If we ever want to generalize the findings, we need to know the exact dose delivered. There are a few exceptions. Curran et al., for instance, measure informativeness. But, the treatments are notoriously multidimensional. And we still struggle to map what aspect of the treatment, in what quantity, explains the changes we see.

Discussion

The media have been revolutionized—repeatedly. In the 1970s, most of us wouldn't have forecast the success of cable, and the overwhelming number of options available on it. In the 1980s, most wouldn't have forecast the current version of Internet. And in the early 2000s, most of us wouldn't have forecast the current smartphones, and their success. Or the social media and its success. And again only a few of us would have forecast that miniaturization of cameras and social media would come together to highlight police malpractice. For even if we boast of understanding the larger capitalist institution behind production of technology and content, the future constantly surprises us. For not only do we not understand how technology is created and appropriated, we do not understand *us* very well.

As social scientists, our work is cut out. And while the tools at our disposal have never been better—access to massive amounts of data, super fast computers along with incredible software that allows us to not only calculate complex things but also allows us to fail quickly, the challenge has also never been greater—the number of devices per person on which people consume information is expected to exceed 6 in the next 5 years.

Add to this, the pessimism that many media scholars feel. The move away from media carried over public waves, means that today the American government has few levers with which to influence what media outlets can carry. And in absence of expected policy consequences, some media scholars wonder about the purpose of research. There is some heart to be taken on that front. If not policy, the research can feed into products. For instance, measures of media ideology can be used to build media consumption tools that alert people about the potential bias.

To bring our focus back to the key points of the chapter—social scientists have taken some decisive steps in quantifying the extent to which people consume various media, but a variety of issues remain. In the chapter we have tried to clarify what issues and to what extent

they impinge upon our inferences. In the chapter, we also tried to make a case that some more original thinking is needed in how we conceptualize the independent variable and the potential dependent variables. In particular, we think that net imbalance rather than 'selectivity' is a more apt variable for many of the decisions. More generally, we hope that the discussion in the chapter provokes greater discussion on measurement, and helps provide greater clarity to the cost of the trade offs.

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Appendix A American National Election Studies

The data are from the American National Election Studies Cumulative Data File.

Appendix A.1 Political Knowledge Over the Lifetime

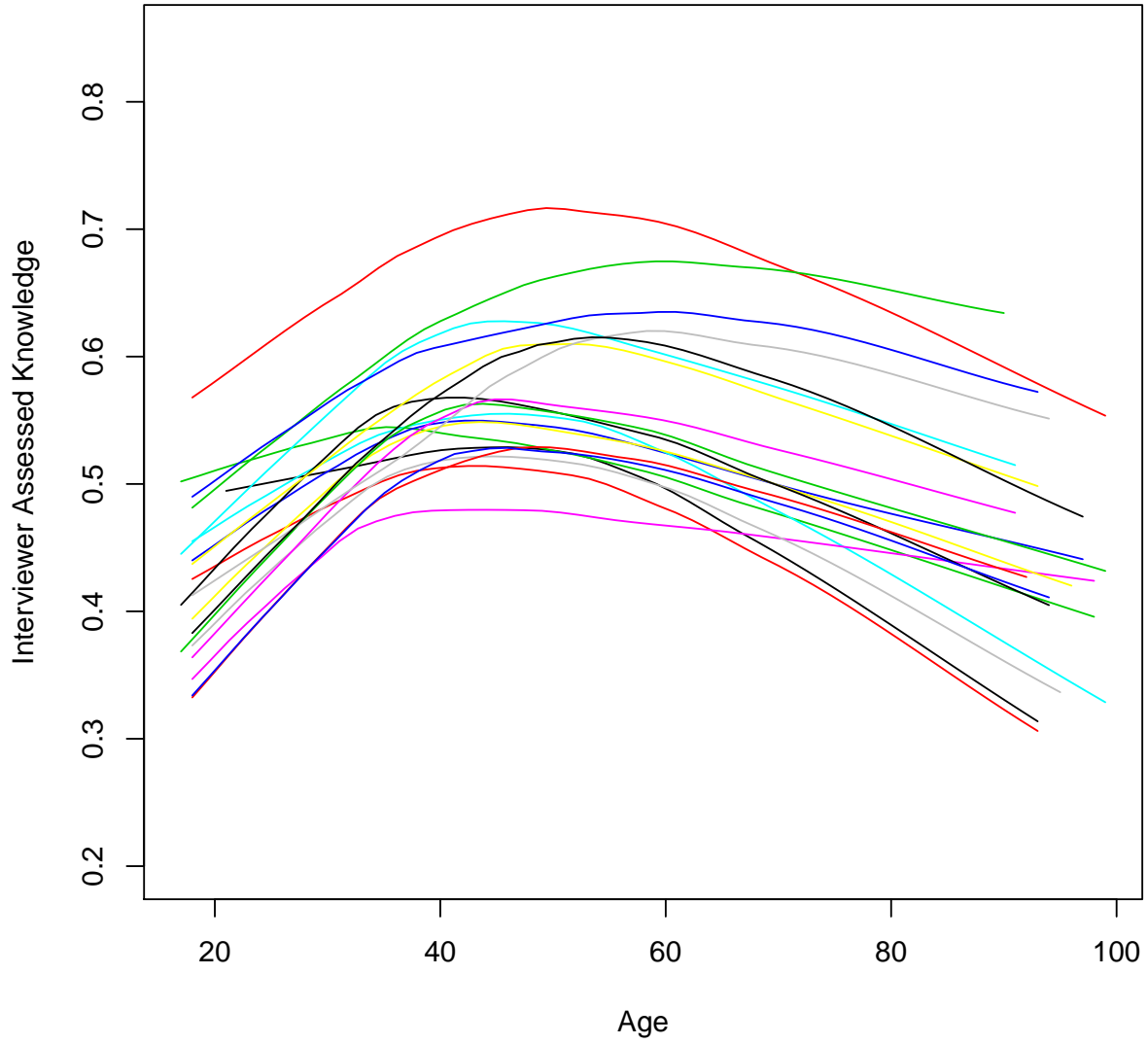
The data from the American National Election Studies. And each line represents data from a different year. Political knowledge was accessed by the interviewer.

Measures

Political interest (VCF0313) typically ran as follows: Some people seem to follow what's going on in government and public affairs most of the time, whether there's an election going on or not. Others aren't that interested. Would you say you follow what's going on in government and public affairs most of the time, some of the time, only now and then, or hardly at all?"

Education (VCF0140a) measures education in 7 categories: 8 grades or less ('grade school'), 9-12 grades ('high school'), no diploma/equivalency, 12 grades, diploma or equivalency, 12 grades, diploma or equivalency plus non-academic training, Some college, no degree; junior/community college level degree (AA degree), BA level degrees, Advanced degrees incl.
LLB

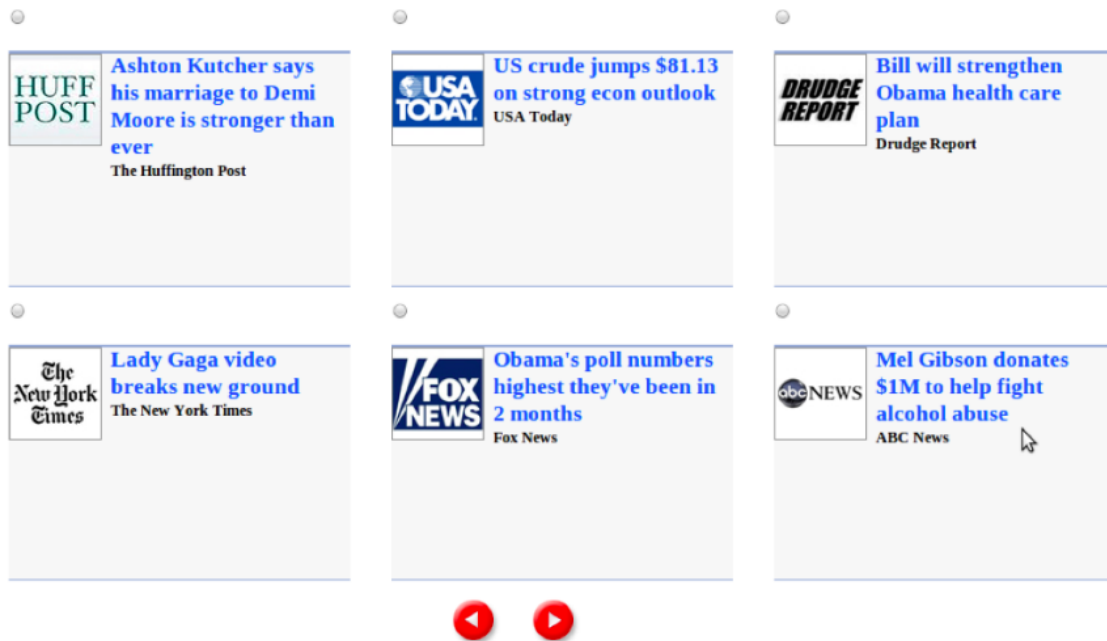
Figure 6: Political Knowledge Over the Lifetime



Appendix B YouGov Study

Figure A1: News Organization Trial

Google news

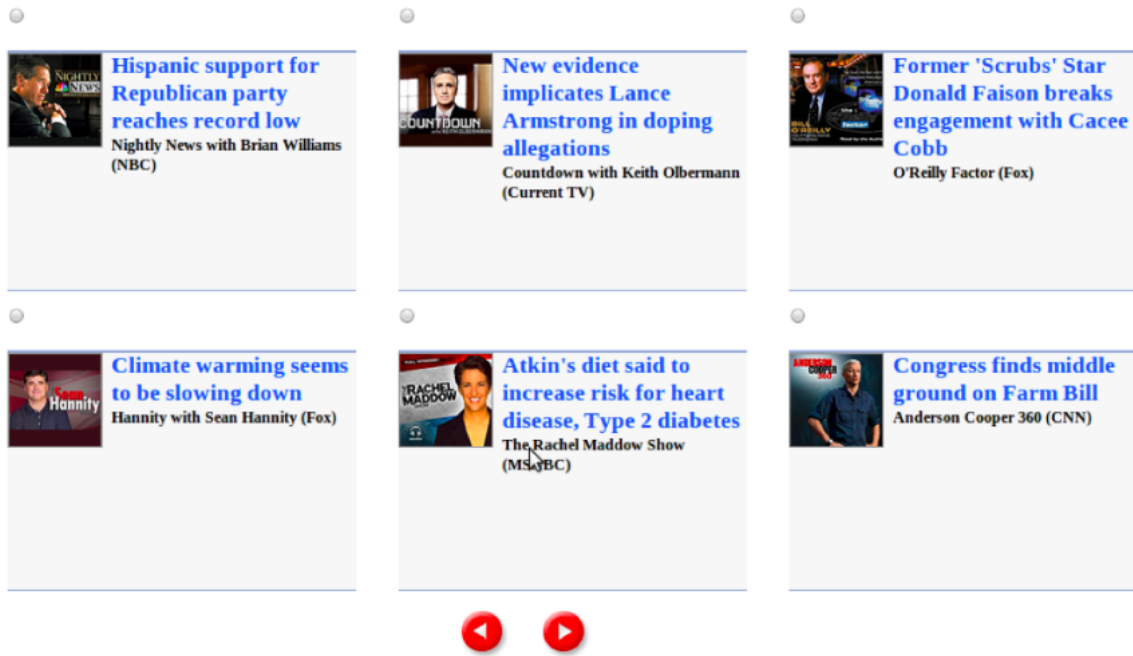


Following the four news selection screens, we asked respondents to select a short video sound bite from major political figures. We had included the video selection task to assess the overlap in selectivity between news sources and campaign advertising, and investigate whether people who preferred to get their news from partisan sources also preferred to listen to their own party's candidates engage in attack-oriented rather than promotional rhetoric.

There were two video selection screens. Each screen featured one prominent Democrat and one prominent Republican making either a positive or negative appeal. For example, respondents could select between two Romney clips, one titled "I'll get America working again" and another titled "We have zero faith in our President." While the first screen presented clips from Obama and Romney, the second screen included clips from Nancy Pelosi and Michele

Figure A2: News Personality Trial

Google news



Bachmann. The order of videos within each of the two screens was randomized.

Measures

Preference for Soft News. If a respondent selected a soft news story on any trial, we coded it as 1; hard news selections were coded 0. We next fitted these choices as a function of an underlying latent trait (preference for soft news) using a two-parameter item response model (Lord, Ross and Lepper 1979). Letting i index items (trials), j index respondents, the model can be written as follows:

$$P(y_{ij} = 1|\eta_j) = \frac{\exp(\beta_i + \lambda_i\eta_j)}{1 + \exp(\beta_i + \lambda_i\eta_j)} \quad (1)$$

In 1, y_{ij} is respondent j 's response to item i , η_j is the unobserved preference for soft news for respondent j , λ_i is the discrimination parameter telling us how much responses to item (trial) i distinguish between respondents who prefer soft news more from those to who prefer it less, and $\frac{-\beta_i}{\lambda_i}$ is the “difficulty” parameter. We recover the ordinal arrangement of respondents on the latent dimension. We rescale the scores to lie between 0 (weakest preference for soft news) to 1 (strongest preference for soft news).

Preference for Partisan Congenial Sources. To estimate preference for news from partisan congenial sources, we categorized the items into three ordinal categories—left-leaning, right-leaning and non-partisan. We then fit the participants' choices to a graded response model (Samejima 1969; Johnson and Albert 2006), which can be seen as an extension of the two-parameter logistic item response model that we described above. Keeping the notation we used above, and assuming k indexes categories of an item (trial):

$$P(y_{ij} = 1|\eta_j) = \frac{\exp(\beta_i + \lambda_i\eta_j)}{1 + \exp(\beta_i + \lambda_i\eta_j)} \quad (2)$$

Once again we rescale our estimate of preference for partisan congenial sources to lie between 0 (strongest preference for left-leaning sources in our data) and 1 (indicating strongest preference for right-leaning sources in our data).

Scandal Knowledge: To assess knowledge of the IRS scandal, we asked the respondents to identify which groups received extra scrutiny by the IRS (right-wing groups), the name of the IRS commissioner that resigned (Steve Miller), and the location of the IRS office at the center of the scandal (Cincinnati). We added the number of correct answers and rescaled the sum to lie between 0 and 1.