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At the Extremes: Assessing Readability, Grade Level, Sentiment, and Tone in US Media Outlets

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ABSTRACT

This study examines the question of asymmetry/symmetry regarding the use of language in partisan media outlets in the US. Some research has suggested that conservatives and conservative media are unique in how they present information to their audience, positing that conservatives use simpler, more uncivil language. Others have noted that some of these matters, such as use of uncivil language, applies to both conservative and liberal outlets. The current study adds to this literature by examining whether the ideological leanings of news sources correlate with reading ease, level of negativity (sentiment), and level of formality (tone). Specifically, we examine whether only conservative outlets use simpler, negative, and less formal language or if these trends appear for media outlets across the ideological spectrum. Our findings find support for the symmetry hypothesis. Indeed, our findings suggest that ideological extremity and partisanship strength correlate with use of easier-to-read language.

KEYWORDS

Readability; journalism; partisan media; sentiment; tone; polarization; extremity; news

As the number of partisan media outlets has increased in the United States, evidence suggests that exposure to these outlets contributes to higher levels of polarization (Holbert, Garrett, and Gleason 2010; Stroud 2011) and support for (or opposition to) specific policies and politicians (Barker 1999; Stroud 2011). A related line of inquiry relative to partisan media has examined how these outlets frame important public news and societal topics (Benkler, Farris, and Roberts 2018; Feldman et al. 2012). However, within this line of inquiry focused on partisan media, few studies have examined the complexity of the language and tone utilized by these outlets.

Studies examining language used across the ideological spectrum suggest conservatives use simpler language compared to their liberal counterparts (Cichocka et al. 2016; Schoonvelde et al. 2019). Generally, Republican politicians in the US and conservative politicians transnationally tend to use simpler language when making pronouncements to the public (Cichocka et al. 2016; Schoonvelde et al. 2019), and this simplified rhetoric is reflected in conservative-leaning media. However, some scholars note that extreme politicians across the ideological spectrum tend to use simpler, more negative language

(Bischof and Senninger 2018), which suggests a more symmetrical media landscape of language used across ideological outlets.

Utilizing the hierarchy-of-influences model (Shoemaker and Reese 2013), this study posits that structural factors in the news production process could affect the language utilized in conservative and liberal outlets. Specifically, we examine whether reading ease scores and use of negative, less formal language are concentrated among conservative outlets (asymmetry hypothesis) or whether similar results span across both liberal and conservative outlets (symmetry hypothesis). To test our hypotheses, we utilized three data sets. In general, our results support the symmetry hypothesis, which proposes that liberal and conservative outlets use easier, more negative, less formal language than their non-partisan counterparts.

Literature Review

Hierarchy of Influences and News Content

The news production process has been an area of interest for communication scholars to understand how structural factors could affect the content produced (Shoemaker and Reese 2013). One theory that has been utilized to understand how production is related to content is the Hierarchical Influences Model (HIM). This model details five levels of influence regarding news production: individual, organizational, routine, social institution, and social (Shoemaker and Reese 2013). Each level of influence has been shown to affect the production of news. For example, individual level influences such as motives, cultural backgrounds and attitudes could affect the way journalists write stories (Danielson, Lasorsa, and Im 1992; Weaver and Wilhoit 1991). Organizational level influences can manifest themselves in owner traits. For example, research has suggested the ideological views of the owner could influence the political bias of the news content (Jamieson and Cappella 2008; Wagner and Collins 2014). Routine level influences, such as beat assignments (Hansen et al. 1994) could also affect news content. Social institution influences can come in the form of advertisers, technological forces, or public pressure. For example, scholars point to instances of decisions to disseminate content that have bowed to advertiser threats (Price 2003). Lastly, social systems are tied to the norms within a country regarding what is acceptable opinion and practice among political, economic, and legal concerns that span beyond the organization or the industry (Hanitzsch et al. 2010).

Hierarchy of Influences: News Readability, Sentiment, & Tone

These levels of influence could also play an important role in understanding the language utilized in media content in terms of readability (e.g., the grade level of the language used in the stories), the level of negativity (e.g., sentiment), and level of formality (e.g., tone) writers use. For example, today's journalists typically have some university training that prepares them for their jobs (Grieco 2018). Part of this training focuses on proper story structure and language use. Journalism courses emphasize the inverted pyramid and objective writing structures, which impact readability (Agameya 2017; Gillman 1994). Objective writing, which utilizes a formal tone that avoids personal pronouns such as

"I" or "we," is also more difficult to read (Agameya 2017). In the end, newspapers that adhere to journalistic principles of objectivity tend to be harder to read than newspapers focused on sensationalized content (Stevenson 1964).

Organizational factors also play a role in the language used by media outlets. As the proliferation of audiences becomes more pronounced, pre-internet outlets have leaned on contextualization and analysis of news as a way to differentiate themselves from the crowd (Godler and Reich 2013; Schudson 2011). Increased issue complexity in these interpretive pieces makes the content more complex (Tetlock 1984), increasing the difficulty for the audience to read the material (Danielson, Lasorsa, and Im 1992; Weaver and Wilhoit 1991).

External factors such as audience pressures could also influence news content. Audience fragmentation and increased polarization factor into the decisions journalists make, as their duty to the public has changed (Ladd 2012.). Several studies have shown that audience characteristics push media outlets to use different structures of language (Fowler 1991; Tolochko and Boomgaarden 2018; Zelizer 2000). In one example, tabloid newspapers contained easier to read content for the sake of the audience (Zelizer 2000). These studies exhibit a pattern of journalistic practices and their effect on readability in which outlets that adhere to industry ideals, such as objectivity, tend to be harder to read.

Asymmetry, Symmetry, and Readability

The partisan lean of the news source could also explain differing levels of readability. Partisan outlets experience greater audience pressure because they have a more partisan audience (Dvir-Gvirsman 2017; Jamieson and Cappella 2008). Similarly, organizational factors, such as ownership, play a role in decisions made regarding the content presented by these news companies. For example, non-partisan outlets follow what Strömbäck (2008) calls "media logic," which subsists of journalistic norms such as objectivity and independence. By contrast, partisan media is more concerned with issues of "political logic," which focuses on policy decisions and the distribution of power. This emphasis on political logic could affect the readability of partisan media in the same way political speeches are affected by extremity, ideology, and strategic messaging factors. Partisan media opts for messages that fit the ideological framework for their identified audiences. Despite key differences in audience values between the right and left, both sets of audiences say non-partisan mainstream outlets are biased because of the political views of their owners and advertising interests (Rauch 2019). As Faris and colleagues describe, topic selection, topic amplification, and one-sided arguments are at the heart of partisan media operations (2017). These aspects of the news process fit into the organizational and structural levels of influence as discussed previously. The question then becomes whether the effects of these structural factors on language are concentrated among conservative outlets or if the effects are seen across both liberal and conservative outlets.

Asymmetry and Language Use

One set of research suggests that there should be differences in terms of language use between conservative outlets and the rest of the media, positing that conservative

outlets use easier language, more negative tone, and less formality. In general, partisan media outlets add a filter of news “through the lens of ideological selectivity” (Berry and Sobieraj 2014, 46). Where balance is an ideal in the non-partisan newsroom, partisan media often amplify events that work in favor of a particular ideological point of view or work against its opposition (Berry and Sobieraj 2014). This is especially true of right-wing media, which operates in ways that differ greatly from traditional outlets and the smaller number of left-wing sources (Benkler, Farris, and Roberts 2018). In their report on the media landscape after the 2016 US election, Faris and colleagues showed the media on the left and right are distinctly different—with separate forms of operating and differing levels of impact at the most extreme outlets (2017). The partisan left has less importance in the media landscape than the center left, and the partisan right is more important than the center right, which is just one of the illustrative factors showing the asymmetrical nature of liberal and conservative media (Faris et al. 2017).

One potential reason for conservative outlets’ distinctiveness is the way sources are used across these platforms. Conservative media tends to share and amplify unreliable sources more than the liberal media does (Faris et al. 2017). These sources often push outrage messages (Berry and Sobieraj 2014), which tend to paint us-versus-them picture of a story that require less complex language than complicated realities (Tetlock 1984). Faris and colleagues suggest that outlets most central to core left-wing audiences still adhere to journalistic commitments to impartiality, which is one reason they do not amplify these same narratives (2017). Additional scholarship has shown that right-wing politicians use less complex arguments, which allows for simpler language use among politicians and the partisan outlets that regularly cite them (Tetlock 1983, 1984). Conservative politicians transnationally tend to use less argument complexity and lower syntactical complexity (Schoonvelde et al. 2019). Similarly, political conservatives use simpler arguments in speeches, which researchers have attributed to social-cognitive processes and perceptions (Cichocka et al. 2016). Understanding that partisan media will reflect the political agenda of the party, this should indicate that conservative media will use simpler language than liberal and non-partisan media. Based on the content provided in this section of the paper, we propose our first hypothesis:

H1 (asymmetry hypothesis): Conservative outlets will have a) easier levels of reading ease, b) more negative sentiment, and c) less formal language structure compared to both centrist and liberal outlets.

Symmetry and Language Use

Although some have argued that there is asymmetry regarding language use for these different outlets, other research suggests that there could be symmetry across these outlets in terms of our outcomes of interest. Simple language can be used when issues are framed in two-side battles—right versus wrong or good versus evil (Tetlock 1984), which is commonly seen in the rhetoric of extreme groups of candidates and political parties. Research has shown that extreme politicians, on both the far left and far right of the political spectrum, tend to use simpler language in political campaign messages (Bischof and Senninger 2018). When extremist candidates use simple language and two-sided framing, they are often doing it through a populist, anti-elitist agenda, creating

a narrative that says those who speak with complex syntax and multi-layered arguments are the “political elite” who are out of touch with the “pure people” (Gerodimos 2015) they are supposed to represent (Bischof and Senninger 2018). Language simplicity helps media outlets in the same way. When issues fall to the extremes, they are easier to frame in a black/white, right/wrong narrative, which simplifies the language needed to explain them (Tetlock 1984), suggesting a connection to extremity and not just ideology.

Research has also looked at the tone used by extreme political parties. For example, Stewart (2020) found the language used by liberal and conservative populists during an election in 2016 was more pessimistic and abstract compared to non-populist candidates, which suggests that similar lingual patterns can be used by liberal and conservative politicians. Similarly, extremists from both sides of the political spectrum use more negative, angrier sentiment when compared to moderates (Frimer et al. 2019). As described earlier, these language differences can spill over into the language used in partisan media. To test the idea that there is symmetry across liberal and conservative outlets, we propose two hypotheses. First, we investigate whether more extreme sources (ignoring their ideological position) tend to be easier to read, use a more negative tone, and less formal language. Therefore, we propose the following:

H2 (symmetry hypothesis): There will be a relationship between ideological extremity and a) readability, b) sentiment, and c) language formality with more extreme outlets producing work that is easier to read, more negative on sentiment, and less formal on language formality.

One limitation of folding liberal and conservative outlets together on an extremity scale is that we cannot tell if correlations are driven by only the liberal or the conservative outlets. To better understand the nature of these results and provide additional evidence that these relationships could be symmetrical, we propose a second hypothesis to test whether there is a curvilinear relationship between ideology and our outcomes. In other words, these results would provide additional evidence for the symmetry hypothesis. As a result, we propose a second symmetry hypothesis:

H3 (symmetry hypothesis): There will be a curvilinear relationship between ideological extremity of news outlets and a) readability, b) sentiment, and c) language formality with more extreme outlets producing work that is easier to read, more negative on sentiment, and less formal on language formality.

Methods

Story Samples

For the current study, stories were pulled from a range of outlets for three separate weeks in the spring of 2021 (Data set 1: $N = 2019$; Data set 2: $N = 2084$; Data set 3: $N = 1744$).¹ Selection of the sample outlets met criteria set by the researchers for a range of partisanship, ideology, reliability, and bias levels. Specifically, outlets were compared in ratings on three bias-rating websites: Ad Fontes Media Bias, Media Bias Fact Check, and Allsides. To narrow the outlets included in the study, websites were chosen first for level of partisanship and ideology. Researchers made efforts to ensure balance of sources from liberal, conservative, and non-partisan media outlets.

The final set of outlets included a range of legacy brand, digital-native, and news wire outlets. The types of outlets were defined broadly by the researchers based on determinants such as outlet focus (Tungate 2004; Vara-Miguel 2020). We sought content that was text-based, not transcriptions of radio or television programs (e.g., *Sean Hannity*), as another way to control for the common practice of writing at different levels of readability for the media platforms utilized (Dalecki, Lasorsa, and Lewis 2009).

AllSides Rating

AllSides Media Bias Ratings are based on multiple methods of analysis including blind bias surveys, community feedback, editorial staff reviews, and third-party analysis such as studies done in academic research. Each outlet's description of its bias rating describes how the conclusion was made. The site also determines a level of confidence in that rating based on how many methods are used and the strength of the data (*How AllSides Rates Media Bias* 2016).

Media Bias/Fact Check (MBFC) Rating

MBFC determines bias based on editorial bias with alignment on specific subject areas—such as general philosophy, economic policy, gun rights, etc.—to either conservative or liberal ideals. The determination of editorial bias comes from editorial stances or source choices in news stories (*Left vs. Right Bias* n.d.).

Ad Fontes Media Bias Rating

To determine the reliability and bias totals for outlets, Ad Fontes Media calculates overall source scores based on individual article ratings by at least three human analysts per article. Each analyst is chosen based on their personal biases. Discrepancies in scores are discussed among coders and adjusted as necessary (*How Ad Fontes Ranks News Sources* n.d.). A full list of the sources and their ratings can be found in Table 1.

Other Selection Criteria

We also made decisions about the outlets to include in our study based on access and technological barriers. First, we had to gain access to the stories without having to pay for content, which means outlets with paywalls were excluded from the study. While paid subscriptions might yield higher quality content, stories behind paywalls are likely to reach smaller audiences (Myllylahti 2014; Olsen, Kammer, and Solvoll 2020; Park, Fisher, and Lee 2021). Additionally, paid content exists across the political spectrum, suggesting that effects of readability behind paywalls should not impact the core questions in the current study. The study also excluded sites determined to be conspiracy-based, as those did not have equivalent matches for both sides of the ideological spectrum.

Once the initial group of outlets was determined, the first round of collecting stories took place through a manual process of collecting the URLs of content produced on 15 sites (as indicated in Table 1) over the course of one week from 22 to 28 February 2021. Once collected, stories were stripped of extraneous information (such as advertisements and photograph captions) and run through a readability analysis application. A bot was used to pull content from websites through RSS feeds for data sets 2 and 3. Once the

Table 1. Outlets analyzed by type and ratings.

Outlet	Outlet type	All sides	Media bias/Fact check		Ad fontes		Data set inclusion
		Bias rating	Bias rating	Factual rep.	Bias score	Level	
American Thinker	Digital	Right	Extreme right	Low	25.36	Hyper partisan right	1, 2, 3
Associated Press	Wire	Center	Least biased	Very high	−2.12	Neutral	1
Bipartisan Report	Digital	–	Extreme left	Mixed	−21.78	Hyper partisan Left	1, 2, 3
Breitbart	Digital	Right	Right	Mixed	17.05	Skewed right	1, 2, 3
CNN	Legacy	Left	Left bias	Mixed	−8.98	Skewed left	2, 3
Counterpunch	Digital	–	Left	Mostly factual	−20.33	Hyper partisan left	1, 2, 3
Fox News	Legacy	Right	Right bias	Mixed	14.63	Skewed right	2, 3
Military Times	Legacy	Center	Least biased	High	−.23	Most neutral	1
New York Times	Legacy	Lean left	Left-center bias	High	−8.20	Skewed left	2, 3
NPR	Legacy	Center	Left-center bias	Very high	−4.84	Neutral	2, 3
NY Post	Legacy	Lean right	Right-center bias	Mixed	12.86	Skewed right	1, 2, 3
Reuters	Wire	Center	Least biased	Very high	−1.59	Most neutral	1
The Federalist	Digital	Right	Right	Mixed	20.25	Hyper partisan right	1, 2, 3
The Gateway Pundit	Digital	Right	Extreme right	Very low	17.20	Skewed right	1, 2, 3
The Hill	Legacy	Center	Least biased	Most factual	−.49	Neutral	1, 2, 3
UPI	Wire	–	Least biased	High	−1.02	Most neutral	1, 2, 3
USA Today	Legacy	Lean left	Left-center bias	High	−3.88	Neutral	2, 3
Vice	Legacy	Left	Left-center bias	Mostly factual	−11.38	Skewed left	1, 2, 3
Vox	Digital	Left	Left bias	Mostly factual	−10.87	Skewed left	1, 2, 3
Wonkette	Digital	–	Left bias	Mixed	−26.00	Hyper partisan left	1, 2, 3

bot pulled the URLs, the content from each story was stripped of extraneous information that would affect readability scores.

After the initial round of data collection, *Military Times* was excluded from the second and third data sets because it was determined to serve a niche audience, not general news, and the site is used more as an aggregator of content from four publications. *Reuters* added a paywall between the first and second rounds of collecting stories, which led us to exclude it from the second and third data sets. Finally, the use of a bot caused a problem with the *Associated Press* website, causing the site to reject the pull requests. Therefore, it was removed from the second and third data sets. However, the move to using automatic URL pulls allowed us to add content from the websites for *Fox News*, *CNN*, *The New York Times*, *USA Today*, and *National Public Radio*. Dates for the selection of stories from a total of 10 weeks of URLs collected were selected by a random number generator with weeks numbered 1–10. The second set of stories was collected for the week of March 29–April 4 (Week 6). The third set of stories was collected for the week of March 8–14 (Week 3) (see Table 1 for full list).

Each article was run through Readable.com to assess the readability and other writing characteristics for each story (e.g., word count, sentence count, etc.). For this analysis, researchers utilized four assessments of readability: the Flesch Reading Ease, Flesch-Kincaid Grade Level, Gunning FOG Readability, and Lensear Write scales. In addition, we also utilized measures of sentiment and tone. While other forms of text complexity exist, this study focuses specifically on syntactical complexity. One reason we focus on syntactical complexity, instead of lexical or morphological complexity, is because the measures ignore reader motivation and pre-existing knowledge, which have been shown to influence comprehension of information (Arya, Hiebert, and Pearson 2011; Vraga and Tully 2015). By contrast, lexical complexity measures the complexity of each word, which is dependent on the readers knowledge and beliefs (Bui 2019). Similarly, morphological complexity is concerned with how words are changed for meaning and inflection within language (Baerman, Brown, and Corbett 2015). Both lexical and morphological forms of complexity are dependent on heavily subjective measures, while syntactical is more objective.

Independent Variable

Source Ideology and Partisanship Strength (Extremity)

Scores from Ad Fontes were used to create the source ideology measure and measure of ideological extremity. First, we used Ad Fontes to create a three-category variable comprised of conservative, moderate, and liberal news outlets. Utilizing the Ad Fontes categorization system ("How Ad Fontes Ranks News Sources" [n.d.](#)), scores between -6 and 6 were coded as neutral/moderate; scores below -6 were coded as liberal; and scores above 6 were rated as conservative. Ratings tended to correspond with labels used by All-sides and Media Bias/Fact Check. Of the 20 total sources used across the three data sets, 7 were neutral; 4 were skewed right; 4 were skewed left; 2 were extreme right; and 3 were extreme left. To create the ideological extremity measure, we folded the Ad Fontes scale so a higher score corresponded to a more extreme ideology ($M_{data1} = 13.60$, $SD_{data1} = 10.46$; $M_{data2} = 15.93$, $SD_{data2} = 9.79$; $M_{data3} = 16.46$, $SD_{data3} = 9.48$). Lastly, the Ad Fontes bias measure was used to examine the curvilinear hypotheses. For these models, the bias measure and the squared measure were utilized to estimate our curvilinear model ($M_{data1} = 7.00$, $SD_{data1} = 15.66$; $M_{data2} = 7.47$, $SD_{data2} = 17.14$; $M_{data3} = 7.12$, $SD_{data3} = 17.62$).²

Dependent Variables: Readability Assessments

The construct of readability has varied in definitions across the literature, differentiating between an emphasis on comprehension of the audience (McLaughlin 1969), writing style (Klare 1963), or both (Chall and Stahl 1985). For the purposes of this analysis, the syntax of writing acts as the most efficient way to identify readability levels using preceptive measures.

Reading Ease

Flesch Reading Ease. The Flesch Reading Ease formula scores text between 0 and 100 with a higher score meaning a text is more readable. The formula calculates readability

ease (RE) by measuring average sentence length (ASL) and average number of syllables per word (ASW) (Flesch 1948) ($M_{data1} = 44.54$, $SD_{data1} = 11.60$; $M_{data2} = 46.69$, $SD_{data2} = 11.28$; $M_{data3} = 47.27$, $SD_{data3} = 11.85$).

$$RE = 206.835 - ASL(1.015) - ASW(84.6)$$

Lensear Write. The Lensear Write readability formula produces scores that typically range from 0 (hard to read) to 100 (easy to read), though some can go higher for extremely easy-to-read texts such as preschool stories (O'Hayre 1966) ($M_{data1} = 66.12$, $SD_{data1} = 7.45$; $M_{data2} = 67.64$, $SD_{data2} = 7.80$; $M_{data3} = 68.14$, $SD_{data3} = 8.40$).

$$lfr > 20, LW = r/2$$

$$lfr \leq 20, LW = r/2 - 1$$

Grade Level

Flesch-Kincaid Grade Level. The Flesch-Kincaid Grade Level scores text by grade level in the US education system. As a result, an 8 would be equivalent to reading for an 8th grader (Kincaid et al. 1975). Preschool books rank below 3 on the scale, and anything above an 18 would be graduate-level work ($M_{data1} = 12.24$, $SD_{data1} = 2.69$; $M_{data2} = 11.63$, $SD_{data2} = 2.65$; $M_{data3} = 11.61$, $SD_{data3} = 2.77$).

Gunning FOG. The Gunning FOG formula also calculates a grade level, estimating the number of years of education a person needs to understand the text (*The Gunning Fog Index* n.d.). For example, scores typically fall within the range of 0 (no formal education) and 17 (graduate degree) ($M_{data1} = 13.53$, $SD_{data1} = 2.95$; $M_{data2} = 12.88$, $SD_{data2} = 3.00$; $M_{data3} = 13.12$, $SD_{data3} = 2.87$). The formula utilized to calculate the FOG index is:

$$0.4 \left[\left(\frac{\text{words}}{\text{sentences}} \right) + 100 \left(\text{complex} \frac{\text{words}}{\text{words}} \right) \right]$$

Dependent Variable: Negativity and Formality

Sentiment (Positive or Negative)

While the word “tone” is used in research to refer to the ratio of positive to negative words in text, Readable.com uses the word “sentiment” as its descriptor of the same concept. The measure of this concept ranges from a low score (0) to indicate a use of more negative language to a high score (100) indicating a use of more positive language. The level of negativity is calculated using an algorithm that compares the number of negative words to positive words ($M_{data1} = 56.19$, $SD_{data1} = 27.63$; $M_{data2} = 54.05$, $SD_{data2} = 28.69$; $M_{data3} = 55.80$, $SD_{data3} = 28.06$).

Tone (Formality)

The measure of formality in the writing is called “tone” in Readable’s system. Tone focuses more on disposition, not the use of personal language; therefore, we refer to this concept as “level of formality.” The level of formality in the text is calculated by comparing the

number of formal words to number of informal words used in the written work. The scores on this measure range from a low score (0) for formal text to a high score (100) indicating a more conversational language structure. Utilizing the analyses in Readable.com's online tool for readability measures, tone and sentiment were calculated in processes that match other approaches to sentiment analyses (such as those described by Annett and Kondrak 2008) ($M_{\text{data1}} = 8.59$, $SD_{\text{data1}} = 8.40$; $M_{\text{data2}} = 8.51$, $SD_{\text{data2}} = 8.08$; $M_{\text{data3}} = 9.08$, $SD_{\text{data3}} = 9.45$).

Control Variable

Platform Differences

As media platform can also affect readability (White 2006), it was added as a control variable in the study. Outlets were categorized by their "brand heritage" (Tungate 2004). Using Vara-Miguel's (2020) differentiating factors, we used the term "legacy media" to refer to outlets that manage platforms both online and offline (such as a website and a newspaper) and "digital-native," which refers to online only outlets. Legacy and digital brands follow different organizational structures and priorities (Nicholls, Shabbir, and Nielsen 2017), making it likely they will differ in readability (Tolochko and Boomgaarden 2018). We divided our sample into digital, legacy, and wire service, which also have different purposes, structures, and categories. Out of the 20 publications, 3 were wire services; 8 were digital-natives; and 9 were legacy brands (see Table 1 for full list).

Analysis Strategy

To analyze these data, we utilized multi-level modeling in SPSS to account for variance that can be associated both to a specific story, as well as variance attributed to the news source. This approach accounted for variance clustering associated with different outlets. For instance, it accounts for variation that may be shared between two stories because they both originated from *The New York Post*, which has different news production processes than the *Associated Press*. For all analyses, the source was included as a nesting variable in the model. To assess H1, a categorical variable was used to compare conservative outlets to moderate and liberal sources. For H2, extremity scores were correlated with each outcome of interest. For H3, the squared measure of news source ideology was used to assess whether there was a curvilinear relationship between ideology and outcomes of interest.

Results

We begin by assessing our asymmetry hypotheses (H1a, H1b, H1c). Overall, our results did not find much support for H1a. For example, in data set 1, results showed that conservative outlets were easier to read compared to non-partisan outlets for the Flesch reading ($B = -9.02$, 95% CI = -17.85 – -0.19), Flesch-Kincaid grade ($B = 2.51$, 95% CI = 0.40 – 4.62), Gunning FOG ($B = 2.96$, 95% CI = 0.36 – 5.55), Lensear Write ($B = -5.52$, 95% CI = -10.46 – -0.58) measures of reading ease. However, there were no differences between the liberal outlets and conservative outlets on any measures of reading ease (see Table 2). For the second and third data sets, results did not find any differences between

conservative outlets and non-partisan or liberal outlets (see Supplemental Tables 1 & 4). The results suggest that conservative outlets are not different in terms of reading ease compared to liberal outlets, which provides evidence that higher readability is not unique to conservative-leaning media outlets. In the end, our results did not find much support for H1a (see Table 5 for summary of findings).

Using the same approach to assess whether there was asymmetry when looking at sentiment (H1b) and formality of language (tone) (H1c), we again found little support for the asymmetry hypothesis. Of the six results tied to these analyses, only two were significant. Conservative outlets had a more negative sentiment score compared to non-partisan outlets in data set 1 ($B = 15.11$, 95% CI = 4.10–26.11) (see Table 2), and conservative outlets had a more negative sentiment score compared to liberal outlets in data set 2 ($B = 8.64$, 95% CI = 1.45–15.83) (see Supplemental Tables 1 & 4). However, these were the only two instances of significant results for sentiment. Moreover, there were no significant results for level of formality. Therefore, our results did not find support for H1b or H1c (see Table 5 for summary of findings).

In testing the symmetry hypotheses, we first examined the correlation between extremity and readability (H2a). Our results show robust support for the second hypothesis. Across all three data sets, results consistently show that outlet extremity (regardless of ideology) was associated with reading ease. In data set 1, results showed that more extreme outlets were rated as easier to read on the Flesch Reading ($B = 0.57$, 95% CI = 0.18–0.95) and the Lensear Write ($B = 0.35$, 95% CI = 0.14–0.57) measures. Similarly, our results indicate that the more extreme the outlet, the lower it scored in terms of grade level on both the Flesch-Kincaid Grade measure ($B = -0.15$, 95% CI = -0.024 – -0.06) and the Gunning FOG measure ($B = -0.20$, 95% CI = -0.29 – -0.11) (see Table 3), suggesting that more extreme outlets correlate with easier reading scores. The same pattern emerged in the second data set, with higher extremity scores being associated with easier reading scores on the Flesch ($B = 0.52$, 95% CI = 0.15–0.90) and Lensear Write assessments ($B = 0.25$, 95% CI = 0.04–0.47), as well as the third data set when looking at the Flesch ($B = 0.57$, 95% CI = 0.12–1.01) and Lensear Write ($B = 0.32$, 95% CI = 0.05–0.58) measures of reading ease. This was also confirmed in the grade level scores for both the second and third data sets, with the second data set showing extremity associated with lower grade scores for the Flesch-Kincaid ($B = -0.14$, 95% CI = -0.24 – -0.04) and Gunning FOG ($B = -0.16$, 95% CI = -0.28 – -0.04) measures, and the same pattern in the third data set (Flesch-Kincaid $B = -0.14$, 95% CI = -0.26 – -0.03 ; Gunning FOG $B = -0.17$, 95% CI = -0.30 – -0.04) (see Supplemental Tables 2 & 5). These results found robust support for H2a (see Table 5 for summary of findings).

An examination of the correlation between sentiment and language formality (i.e., tone) shows robust support for H2b and H2c. Analyses of the first data set revealed that extremity was associated with more negative sentiment ($B = -0.74$, 95% CI = -1.31 – -0.17) and a less formal tone ($B = 0.28$, 95% CI = 0.08–0.47) (see Table 3). These results were replicated in the second and third data sets. Indeed, the second data set showed that the more extreme the outlet, the more likely the outlet's content had a negative sentiment ($B = -0.79$, 95% CI = -1.47 – -0.11) and a less formal tone ($B = 0.29$, 95% CI = 0.07–0.50), as did the third data set (sentiment: $B = -0.77$, 95% CI = -1.39 – -0.15 ; tone: $B = 0.28$, 95% CI = 0.03–0.54) (see Supplemental Tables 2 & 5). As a whole, the results find robust support for H2b and c (see Table 5 for summary).

Table 2. Comparing conservative to liberal and non-partisan outlets: Data set 1.

	Flesch reading	Flesch-Kincaid grade level	Gunning FOG	Lensear Write	Sentiment	Formality (tone)
Digital else	−1.24 (−11.44–8.97)	0.13 (−2.31–2.57)	0.52 (−2.47–3.52)	0.51 (−5.20–6.23)	10.57 (−2.31–23.44)	0.72 (−4.78–6.22)
Legacy else	0.86 (−6.83–8.54)	−0.09 (−1.92–1.75)	0.23 (−2.03–2.48)	0.36 (−3.94–4.66)	0.16 (−9.42–9.74)	0.10 (−4.02–4.23)
Non-partisan else	−9.02 (−17.85– −0.19)	2.51 (0.40–4.62)	2.96 (0.36–5.55)	−5.52 (−10.46– −0.58)	15.11 (4.10–26.11)	−3.61 (−8.35–1.13)
Liberal else	0.48 (−4.93–5.89)	0.30 (−0.99–1.59)	0.85 (−0.73–2.43)	0.19 (−2.85–3.23)	−0.57 (−7.64–6.50)	−0.35 (−3.30–2.61)

Note: The table includes unstandardized estimates with 95% confidence intervals in parentheses. Bold text indicates statistically significant findings.

To further assess symmetry across the ideological spectrum, we tested a curvilinear relationship. To do this, we squared the bias score measure and entered this into the model (along with the original bias measure). This analysis provided an assessment of whether the more neutral outlets were easier to read than both the liberal and conservative outlets. Overall, we found robust support for our second symmetry hypothesis regarding readability (H3a). Results show curvilinear relationships between outlet ideology and reading ease, with liberal and conservative outlets being easier to read compared to non-partisan outlets. This pattern emerged for all four reading measures in our first data set (Flesch Reading $B = 0.02$, 95% CI = 0.01–0.03; Lensear Write $B = 0.01$, 95% CI = 0.01–0.02; Gunning FOG $B = -0.01$, 95% CI = -0.01–0.00; Flesh-Kincaid Grade $B = -0.01$, 95% CI = -0.01–0.00) (see Table 4). Moreover, we found the same pattern of results in our second and third data sets (see Supplemental Tables 3 & 6 for results). Results showed consistent curvilinear patterns in which liberal and conservative outlets tended to have easier reading scores, while our non-partisan outlets tended to have more difficult reading scores (see Table 5 for summary).

The same approach was used to assess the hypotheses tied to sentiment and tone. Overall, results found robust support for the hypotheses associated with the measure of formality of language (i.e., tone) and some support for sentiment. The results were consistent across all three of the data sets relative to our measure of tone, showing a curvilinear relationship in the first ($B = 0.01$, 95% CI = 0.01–0.02) (see Table 4), second ($B = 0.01$, 95% CI = 0.01–0.02), and third ($B = 0.01$, 95% CI = 0.01–0.02) data sets (see Supplemental Tables 3 & 6). These results suggest that both liberal and conservative outlets use a more informal tone compared to non-partisan outlets, supporting H3c. For sentiment, our results found a curvilinear relationship between ideology and sentiment in data set 1 ($B = -0.02$, 95% CI = -0.04–0.00) (see Table 4). However, these results did not replicate in data set 2 ($B = -0.02$, 95% CI = -0.04–0.01) or data set 3 ($B = -0.02$, 95% CI = -0.05–0.00) (see Supplemental Tables 3 & 6). These results reveal some evidence for the symmetry hypotheses, though there is mixed support for H3b (see Table 5 for summary of findings).

Discussion

In general, the results found support for the symmetry hypotheses, suggesting that extreme outlets at both ends of the political spectrum are generally easier to read than non-partisan outlets. There were few differences when conservative outlets were compared to liberal and non-partisan outlets for measures of readability, sentiment and language formality. By contrast, findings showed that extremity was associated with readability, implying that more extreme partisan media outlets are associated with higher readability. Extremity was also associated with measures of sentiment and language formality. Lastly, our curvilinear test found additional support that both liberal and conservative outlets tended to be easier to read and use less formal language. There was less evidence relative to sentiment for our curvilinear analysis.

Overall, we believe our findings make three contributions to the extant literature. First, our results contribute to previous research looking at readability of news content.

Table 3. Extremity score and readability, negativity, and formality: Data set 1.

	Flesch reading	Flesch-Kincaid grade level	Gunning FOG	Lensear Write	Sentiment	Formality (tone)
Digital else	−2.70 (−11.61–6.21)	0.55 (−1.55–2.65)	1.83 (−0.41–4.06)	−0.47 (−5.38–4.48)	9.67 (−3.74–23.07)	−1.23 (−5.83–3.37)
Legacy else	3.11 (−2.95–9.18)	−0.66 (−2.09–0.77)	−0.22 (−1.74–1.31)	1.70 (−1.63–5.02)	−4.35 (−13.21–4.51)	0.67 (−2.41–3.74)
Extremity score	0.57 (0.18–0.95)	−0.15 (−0.24–0.06)	−0.20 (−0.29–0.11)	0.35 (0.14–0.57)	−0.74 (−1.31–0.17)	0.28 (0.08–0.47)

Note: The table includes unstandardized estimates with 95% confidence intervals in parentheses. Bold text indicates statistically significant findings.

Table 4. Examining the curvilinear relationship between bias scores and readability, negativity, and formality: Data set 1.

	Flesch reading	Flesch-Kincaid grade level	Gunning FOG	Lensear write	Sentiment	Formality (tone)
Digital else	−1.39 (−9.23–6.44)	0.08 (−1.86–2.01)	1.18 (−0.87–3.22)	0.37 (−4.02–4.75)	5.86 (−7.31–19.03)	−1.13 (−5.06–2.80)
Legacy else	4.07 (−1.72–9.86)	−0.90 (−2.34–0.53)	−0.52 (−2.04–1.00)	2.29 (−0.92–5.50)	−6.08 (−15.47–3.31)	1.10 (−1.71–3.91)
Bias score	−1.68 (−2.72–−0.64)	0.40 (0.14–0.65)	0.53 (0.26–0.80)	−1.02 (−1.60 –−0.44)	1.82 (0.05–3.58)	−0.92 (−1.45–−0.40)
Bias squared	0.02 (0.01–0.03)	−0.01 (−0.01–−0.00)	−0.01 (−0.01–−0.00)	0.01 (0.01–0.02)	−0.02 (−0.04–−0.00)	0.01 (0.01–0.02)

Note: The table includes unstandardized estimates with 95% confidence intervals in parentheses. Bold text indicates statistically significant findings.

Table 5. Summary of findings across data sets.

	Flesch reading	Flesch-Kincaid grade	Gunning FOG	Lensear write	Sentiment	Formality (tone)
Data set 1	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	<i>H1: Partially Supported</i> H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported
Data set 2	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	<i>H1: Partially Supported</i> H2a: Supported H2b: Not supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported
Data set 3	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported	H1: Not supported H2a: Supported H2b: Not supported Supported	H1: Not supported H2a: Supported H2b: Supported Supported

Previous research has examined issues relative to readability across different media outlets (e.g., tabloid vs. newspaper) (Fowler 1991; Ladd 2012.; Stevenson 1964; Tolochko and Boomgaarden 2018; Zelizer 2000). In this paper, we extend this line of inquiry by focusing specifically on the ideological leanings of the news outlet and their relationship to readability. These results indicate that the operational and structural influences that control what stories are selected and how those stories are written (Shoemaker and Reese 2013) at extreme outlets are similar in terms of the effect they have on the content they present to the public.

Additionally, this work contributes to the debate of whether conservative outlets are unique when compared to non-partisan and liberal outlets (asymmetry) or whether partisan outlets are relatively similar (symmetry). There is disagreement among scholars regarding individual level differences across liberals and conservatives regarding issues such as authoritarianism (Costello et al. 2021; Jost 2017), polarization (Hmielowski, Hutchens, and Beam 2020), and movement toward ideological communication bubbles (Hmielowski, Hutchens, and Beam 2020). Scholarship on political rhetoric of politicians and political elites has also shown that conservatives tend to use different language compared to their liberal counterparts (Lim 2012). However, far left rhetoric has gotten less attention. This study shows evidence that use of simple, less formal language in media is present across the ideological spectrum, supporting the idea of symmetry. Future research should continue to incorporate extreme left-wing outlets and politicians to assess questions tied to (a)symmetry.

Finally, these results suggest that partisan media outlets should be seen as qualitatively different than non-partisan outlets, as partisan outlets do not follow standards such as objective writing, contextual analysis, and information-driven decision-making. Instead, these outlets strive for content that is audience-driven, specifically to reinforce pre-existing attitudes for more attention from partisan audience members, which is a more market-driven position that does not adhere to professional journalism ethical codes or norms.

As with any research, there are limitations to this study. First, the assessment of the partisan lean of the outlet was an aggregated measure that applied to the outlet, not to the individual story. Ideally, individual scores for each story would provide better understanding, but that option was not available for this study. Second, this study focuses on content that could be accessed without a subscription. While paid outlets exist at all points on the partisan media landscape, further inquiry could extend this research to content at outlets that require paid subscriptions. Third, we do not have measures of internal organizational decisions such as journalist ideology, norms, and external pressures, as this type of data is difficult to collect. Moving forward, these types of data would be an important addition to research to actually examine correlations between the decision-making variables and the content produced by news organizations. Moreover, given that journalism routines and norms also change during election years (León, Vermeer, and Trilling 2021), future research should examine how the nature of language used in both partisan and non-partisan outlets changes as election day approaches.

A final weakness with this study is that it does not assess the role direct quotes have on our outcomes of interest. Content complexity, tone, and sentiment can be influenced by the journalist's use of quotes from politicians. Using direct quotes is an accepted practice within the journalism industry. However, partisan outlets might utilize different rules when using quotes. Regardless, political rhetoric inclusion through direct quotes would further validate a partisan outlet's alignment with the political perspective. In the scope of ideological extremity, Wagner and Gruszcynski show a relationship between House of Representative members' levels of extremity and political news coverage (2018). Therefore, future studies should examine whether the language used within the stories differs from the quotes used in the stories from politicians.

Overall, this study suggests that ideological extremity translates to easier-to-read content. Ideological extremity might come from publication ownership, audience pressures, commercial pressures, or other forms of influences, as the Hierarchical Influence Model proposes. If audiences are seeking content that reflects their attitudes and that rejects mainstream journalism, partisan media outlets on both sides of the political spectrum benefit from differentiating themselves both in content substance and content style. Sentence structure, informality, and tone might be one way to achieve that.

One important implication of these results is the extent to which these outlets produce accurate/inaccurate, contextual/non-contextual content, as extreme outlets can produce stories with less nuance and less complexity than the reality of the issue at hand. That context and precision is the key to accuracy in most cases (Dalecki, Lasorsa, and Lewis 2009). The use of simplicity from extreme outlets provides easily digestible information for partisan audiences, which enables narratives that highlight positive in-party dynamics and negative out-party attributes while skipping details and context that require more complicated language.

Notes

1. We removed any stories that went outside the range of our outcome variables. For example, if a story came back with a negative number for the Flesh Reading Ease measure we would remove it from the data set.

2. Because the Ad Fontes measure ranges from -42 to 42, we added 42 to the original measure to create a scale that ranged from 0 (very liberal) to 84 (very conservative). We then squared this recalculated measure instead of using the original measure to get the full range of scores tied to the ideological leanings of the outlets.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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