1   Moral Foundations of U.S. Political News Organizations

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11   Abstract

12   The media ecosystem has grown, and political opinions have diverged such that there are

13   competing conceptions of objective truth. Commentators often point to political biases in

14   news coverage as a catalyst for this political divide. The Moral Foundations Dictionary

15   (MFD) facilitates identification of ideological leanings in text through frequency of the

16   occurrence of certain words. Through web scraping, the researchers extracted articles from

17   popular news sources' websites, calculated MFD word frequencies, and identified words'

18   respective valences. This process attempts to uncover news outlets' positive or negative

19   endorsements of certain moral dimensions concomitant with a particular ideology. In

20   Experiment 1, the researchers gathered poltical articles from four sources. They were unable

21   to reveal significant differences in moral or political endorsements, but they solidified the

22   method to be employed in further research. In Experiment 2, the researchers expanded their

23   number of sources to 10 and analyzed articles that pertain to two specific topics: the 2018

24   confirmation hearings of U.S. Supreme Court Justice Brett Kavanaugh and the partial U.S.

25   Goverment Shutdown of 2018-2019. Once again, no significant differences in moral or

26   political endorsements were found.

27   *Keywords:* politics, morality, psycholinguistics

Moral Foundations of U.S. Political News Organizations

In the United States, today's media landscape affords consumers a multitude of options for obtaining political news. Since the advent of cable news networks and the World Wide Web in the last decades of the twentieth century, consumers have gained access to an ever-expanding menagerie of news sources, many of which can be called up via a simple click, touch, or swipe. Concurrent with this growth in available news sources, concerns regarding political bias in news reporting have entered public consciousness. For example, commentators argue that networks including Fox News Channel and MSNBC communicate political news from a conservative and liberal slant, respectively. These purported biases have been a cause for concern given the potential for incomplete or inaccurate news reporting potentially resulting from these biases. Given the inherently moral nature of many political arguments and positions, bias in news reporting might manifest as differing moral appeals. Specifically, the use of differing moral language in political articles might be an indicator of political bias in news media.

Morality and ethics have been of interest to thinkers, academics, and philosophers since antiquity. Starting chiefly in the twentieth century, a scientific approach to humans' understanding of morality emerged under the domain of psychology. Theories attempting to explain the development and application of people's moral intuitions built the foundation for the subfield of moral psychology. As the field developed, however, considerable debate has taken place regarding operational definitions of "morality." Concerns regarding operationalization remain an issue in the field in the twenty-first century as researchers attempt to infer moral and political leanings from text and speech.

Moral Foundations Theory

As a discipline, modern moral psychology started in the late 1960s with Lawrence Kohlberg (Haidt & Graham, 2007). Kohlberg's research popularized his theory of the development of moral reasoning. This theory establishes the steps of moral reasoning through which humans proceed as their cognitive structures assume higher levels of sophistication and nuance (Kohlberg & Hersh, 1977). Kohlberg borrowed from Jean Piaget's stages of cognitive development in which children progress from the sensorimotor through to the formal operations stage. Similarly, Kohlberg found people typically start with a "pre-conventional" understanding of morality during infancy in which children understand "right" and "wrong" purely in terms of how they interact with resultant experiences of rewards and punishment. Typically, people progress through several steps until they reach a "post-conventional" ethics. People who have reached the post-conventional stage are said to be able to weigh competing abstractions and reason their way to a conclusion that promotes justice based upon their "self-chosen ethical principles" (Kohlberg & Hersh, 1977). From Kohlberg's perspective, issues of justice and fairness comprise the foundation of morality (Haidt & Graham, 2007). This view persisted until it encountered criticism in the early 1980s.

Kohlberg's conception of morality faced major scrutiny from psychologist Carol Gilligan. In 1982, Gilligan criticized Kohlberg's theory on the grounds that it focused solely on the moral concerns of men, and that it ignored those of women (Haidt & Graham, 2007). Gilligan drew attention to purported differences in the ways men and women are taught to relate to self and others. She offered a historic argument contending women have traditionally filled roles related to caring and nurturing. She pushes back against Kohlberg's assumption that moral development replaces "rule of brute force," as enforced by men, with the justice-based "rule of law." According to Gilligan, this assumption implies women are less morally developed, owing to their absence both in masculine displays of violence as well as in enforcement of the law (Gilligan, 1982). Gilligan argues for the existence of a distinct,

76 but equal development process that women and girls must undergo in order to develop their

77 moral selves. Stark differences in the ways women are traditionally taught to interact with

78 their social world cause them to develop ethical systems based upon their non-aggressive

79 relationships with others. Gilligan thus asserted morality was built upon an alternative

80 moral foundation: caring (Gilligan, 1982). This debate between competing conceptions of

81 morality did not resolve until Gilligan and Kohlberg conceded the existence of two moral

82 foundations: justice and caring (Haidt & Graham, 2007). While this new direction in moral

83 psychology appeared to represent a more inclusive outlook on the construct, these novel

84 ideas would soon be challenged on the grounds of its apparent western-centric outlook.

85   Jonathan Haidt and Jesse Graham formulated Moral Foundations Theory as a method

86 by which to capture the entirety of humans' moral domain (Haidt & Graham, 2007). The

87 researchers argued older theories of moral psychology were focused primarily on issues of

88 justice, fairness, and caring - individually focused foundations of morality that align with the

89 beliefs of political liberals (Haidt & Graham, 2007). In other words, moral psychology

90 ignored the valid moral foundations of conservatives. Moral Foundations Theory (MFT)

91 holds that people's moral domain can be mapped by quantifying their endorsement of five

92 moral foundations: *harm/care*, *fairness/reciprocity*, *ingroup/loyalty*, *authority/respect*, and

93 *purity/sanctity* (Haidt & Graham, 2007).

94   In their brief overview of the history of moral psychology, Graham, Haidt, and Nosek

95 (2009) explained Shweder, Much, Mahapatra, and Park's objections to moral psychology as it

96 stood in the late 1980s. Their criticism centered on the fact moral psychology concerned

97 itself with issues regarding justice and individuals' rights. Such a system, they argued, did

98 not account for moral concerns outside of the western world (Graham et al., 2009).

99 Individually focused concerns can be grouped under an overarching "ethic of autonomy,"

100 which was thought to be one of three ethics upon which humans base moral decisions. The

101 other two ethics were the "ethic of community" (comprising one's duty to their family, tribe,

etc.), and the "ethic of divinity" - representing one's duty not to defile their God-given body and soul (Graham et al., 2009). In the 2000s, Haidt and Graham (2007) took this line of reasoning further in their assertion that moral psychology favored certain political ideologies over others.

Haidt and Graham settled on these specific foundations after the completion of a literature survey of research in anthropology and evolutionary psychology (Graham et al., 2011). The researchers attempted to locate virtues and morals corresponding to "evolutionary thinking." For instance, the researchers cited Mauss' work on reciprocal gift-giving, which informed the establishment of the *fairness/reciprocity* foundation. Additionally, evolutionary literature on disgust and its correlation to human behavior regarding food and sex informed the *purity/sanctity* foundation (Graham et al., 2011). The researchers identified the five "top candidates" for the foundations of human cultures' morality (Graham et al., 2011).

The first two foundations (*harm/care* and *fairness/reciprocity*) are termed the "individualizing foundations," as they are centered on the concerns of individuals rather than groups. *harm/care* represents an endorsement of compassion and kindness, while opposing cruelty and harm. *Fairness/reciprocity* represents concerns centered on guaranteeing individual rights as well as justice and equality among all people. The other three foundations (*ingroup/loyalty*, *authority/respect*, and *purity/sanctity*) are the "binding" foundations, owing to their focus on group-related concerns, rather than those of individuals. *Ingroup/loyalty* represents endorsements of patriotism and heroism and discourages nonconformity and dissent. *Authority/respect* represents an endorsement of social hierarchies and traditions while denigrating disobedience. Finally, *purity/sanctity* represents concerns regarding chastity and piety, while discouraging vices and indulgences, including lust, avarice, and gluttony (Haidt & Graham, 2007). Liberals tend to endorse the individualizing foundations more than conservatives. Conservatives, on the other hand, tend to endorse the

128 binding foundations more than liberals. It should be noted, however, conservatives also tend

129 to endorse all five foundations equally, implying they base moral judgments on all

130 foundations (Graham et al., 2009).

131   Moral Foundations Theory has received criticism on the grounds that its assumptions

132 regarding moral intuitions have little empirical basis. Suhler and Churchland (2011) list

133 several potential weaknesses of MFT that they argue might threaten the theory's validity.

134 First, the authors challenge Haidt and Graham (2007)'s claims the moral intuitions

135 represented by MFT are innate and modular. Suhler and Churchland (2011) claim that

136 advances in biological sciences (embryology and microbiology, specifically) make it more

137 difficult for researchers to claim any one trait is either innate or learned through experience.

138 Rather, behaviors likely result from interactions between genetics and experience (Suhler &

139 Churchland, 2011). According to the authors, without solid data supporting the innateness

140 of moral foundations, Haidt and Graham have little from which to make such a claim.

141 Similarly, Haidt and Graham (2007) rely on evidence authored by evolutionary psychologists

142 to make a "strong modularity claim" (Suhler & Churchland, 2011). However, as with

143 innateness, there is little neurobiological evidence to support modularity.

144   Suhler and Churchland (2011) also criticized the content and taxonomy of the five

145 foundations. The authors criticize Haidt and Graham (2007)'s omissions of additional

146 foundations, including *industry* and *modesty*, claiming these concepts are moralized in many

147 societies worldwide. Likewise, the authors question whether or not the foundations are

148 sufficiently distinct as to stand as their own foundation. For example, Suhler and

149 Churchland (2011) posit that *ingroup/loyalty* is merely a group-focused version of *harm/care*.

150 Work by Graham et al. (2011) might serve to rebut this criticism, as the researchers found

151 their original five-factor structure seemed to best fit the data when validating the Moral

152 Foundations Questionnaire. Finally, Suhler and Churchland (2011) point out that particular

153 concepts related to a foundation, including "anger" in *fairness/reciprocity* and "deception" in

ingroup/loyalty, could be ascribed to any of the other foundations as well. In other words, it becomes difficult to recognize a particular concept as indicative of any one foundation when, in theory, they could be applied to all five (Haidt & Graham, 2007; Suhler & Churchland, 2011).

These criticisms of Moral Foundations Theory are valid and should be taken into consideration when conducting research with instruments derived from MFT. The current authors argue these criticisms are especially valid when considered alongside questions regarding the Moral Foundations Dictionary they state herein. However, there exists compelling evidence regarding the validity of Moral Foundations Theory, albeit regarding its application solely through the Moral Foundations Questionnaire. This evidence is discussed within a brief explanation of the Moral Foundations Questionnaire and its relationship to the Moral Foundations Dictionary.

Moral Foundations Dictionary

In order to capture language's role in moral and political reasoning, Graham et al. (2009) formulated the Moral Foundations Dictionary (MFD) in order to capture moral reasoning and justification as used in speech and text. The MFD is composed of 259 words, with around 50 words assigned to each of the five foundations. The researchers created a preliminary list of words that they believed would be associated with the five foundations. Then, using the Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, & Frances, 2007) computer program, they analyzed transcripts of liberal and conservative Christian sermons in order to obtain frequencies of the occurrence of words from the researchers' initial list. The researchers manually checked the results from LIWC in order to make sure the results make sense given the contexts and rhetorical devices used in the sermons, as word frequency analysis ignores sentence context. The researchers offered the following example from a Unitarian sermon as a demonstration of ambiguous statements requiring human

verification: "Don't let some self-interested ecclesiastical or government authority tell you what to believe, but read the Bible with your own eyes and open your heart directly to Jesus" (Graham et al., 2009). This sentence added to the *authority/respect* total in LIWC's analysis, but it appears to suggest that one should reject authority in this context. The researchers eliminated this sentence from the *authority/respect* raw count on account of this discrepancy between the use of authority-related words and the speaker's clear intentions (Graham et al., 2009).

Similar to previous research on Moral Foundations Theory, liberal ministers used *harm*, *fairness*, and *ingroup* words more often than conservative ministers. Conversely, conservative ministers used *authority* and *purity* words more often than liberal ministers. However, conservative ministers did not use *ingroup/loyalty* words more than liberals. Rather, liberal ministers used words pertaining to *ingroup/loyalty*, but in contexts that promote rebellion and independence - causes *opposite* to positive endorsements of that foundation (Graham et al., 2009).

To this point, most text analysis utilizing the Moral Foundations Dictionary operationalizes endorsement of any one of the foundations as percent occurrence of words in a given text from the foundation's respective word list. As such, most analyses assume that zero percent occurrence is indicative of no endorsement, while any non-zero percent occurrence indicates endorsement of the foundation. This operational definition may not be sufficient in describing the true nature of the writer or speaker's endorsement of one of the sets of moral intuitions. A quick glance at the MFD words for *harm/care* reveals the presence of words that are more closely associated with universally accepted conceptions of *harm* over *care* and vice-versa (Graham et al., 2009). For example, the word "cruel" has relatively negative connotations compared to "benefit." For the *harm/care* foundation, it is conceivable that use of the word "cruel" might indicate a greater attentional focus of the idea of *harm* rather than *care*.

For *harm/care*, the definition of the foundation, as well as its name, clearly distinguishes between two somewhat opposite sides of an attentional continuum, with *harm* on the negative end and *care* on the positive side. In other words, the entries in the MFD for *harm/care* have somewhat clear positive and negative valences. The same pattern can be seen in the MFD entries for the other four foundations. *Purity/sanctity* features words that likely have a negative valence to most observers, including "disease" and "trash," along with more positive words, including "right" and "sacred" (Graham et al., 2009). These dichotomies, however, bring up other questions regarding the definition and names of the other four foundations apart from *harm/care*: *fairness/reciprocity*, *ingroup/loyalty*, *authority/respect*, and *purity/sanctity*. The latter four foundations have names that are harder to understand as a valence continuum, as the concepts in the names are more similar, even to the point of being virtually synonymous in the case of *fairness/reciprocity*.

When considering the issue of positive versus negative valence in MFD words, the question of how texts are analyzed vis-a-vis the MFD remains. How can raw percentage of MFD word occurrence capture the valence and focus of the writer or speaker? If 2% of a politician's speech features positive words (i.e., "benefit" and "defend") from the MFD *harm/care* list, how can researchers be sure the level and nature of the speaker's "endorsement" of the foundation equals that of another politician whose speech contained negatively connoted MFD words from the *harm/care* list? They would have equal endorsements as far as the numbers are concerned, but the words used and focus given are on opposite sides of the *harm/care* spectrum.

This issue is compounded by the fact the Moral Foundations Questionnaire (MFQ) and its subscales assume endorsement lies on a continuum. The MFQ, which was developed subsequent to the MFD, measures individuals' endorsements of each of the foundations using a six-point scale (Graham et al., 2011). The questionnaire is made up of judgment items and relevance items. Judgment items are phrased such that the respondent signals their

agreement or disagreement with straightforward statements. An example of such a statement reads: "It can never be right to kill another human being" (Graham et al., 2011). Relevance items gauge the respondent's opinion regarding the importance of foundation-related concerns. For example, the respondent is directed to rate how important the following situation is to their sense of morals: "whether or not someone did something disgusting." This example measures the relevance of the *purity/sanctity* foundations. Each foundation has a judgment and relevance subscale, totaling 10 subscales for the MFQ (Graham et al., 2011).

The Moral Foundations Questionnaire has been validated by multiple researchers. Likewise, its five-factor structure has been demonstrated to fit data in multiple countries (Davies, Sibley, & Liu, 2014; Graham et al., 2011). In their article introducing the 30-item MFQ, Graham et al. (2011) conducted an exploratory factor analysis (EFA) and found that a five-factor model fit the data better than a one, two, or three-factor model. Davies et al. (2014) conducted a confirmatory factor analysis (CFA) of the MFQ with a sample from New Zealand and likewise found the five-factor model provided the best fit. While Davies et al. (2014) concede the US and New Zealand share many similarities as Western nations, which could raise questions regarding the validity of the MFQ in non-Western nations. However, there are striking differences between the two countries, including the lack of a two-party political system in New Zealand, that provide grounds for claiming the MFQ generalizes beyond the United States. Furthermore, Graham et al. (2011) claim to find a "reasonable" degree of generalizability for the MFQ across participants from many different regions in the world. These two bodies of work also provide the best available evidence that the five moral foundations are sufficiently distinct from one another, though broader criticisms of MFT raised by Suhler and Churchland (2011) should still be taken into account in studies involving the theory.

The aforementioned ambiguity of the Moral Foundations Dictionary as an instrument becomes clearer upon closer examination of the items in the Moral Foundations

Questionnaire. One item under the *fairness/reciprocity* judgment subscale reads, "Justice is

the most important requirement for a society" (Graham et al., 2011). The survey respondent

must select a number on a scale from 1 to 6 indicating responses spanning "strongly

disagree" at 1 to "strongly agree" at 6. While the scales in the MFQ do not represent true

valence as it pertains to individual words, it does allow for a greater degree of specificity in

terms of an individual's endorsement of a particular moral foundation. When a respondent

selects a 4 for the aforementioned MFQ statement, they clearly are indicating they "slightly

agree" with the statement (Graham et al., 2011). This specificity is not present in most

analyses involving the MFD and percent occurrence, unless they also take into account the

valence of the words used in the text or speech of interest.

Valence

Borrowing from Osgood's work in the 1950s, Bradley and Lang (1999) recognized

valence as one of three related dimensions comprising emotion when developing their

Affective Norms for English Words (ANEW). As mentioned before, "valence," the first

dimension, denotes the pleasantness of a given word. "Arousal," the second dimension,

describes the stimulating nature of a word. Lastly, "dominance" or "control" describes the

extent to which a word makes one feel in or out of control (Bradley & Lang, 1999). The

researchers developed ANEW by presenting participants with a list of 100-150 words and

asking for them to rate the word on all three dimensions using the Self-Assessment Mannikin

(SAM), which allows ratings along either a nine-point scale when using traditional paper

instruments or a twenty-point scale when using a computerized version.

Participants saw the stimulus word and responded on each scale. The valence scale

featured a smiling figure at one end (representing pleasantness) and a frowning figure at the

other end (for unpleasantness). The arousal scale had a "wide-eyed" figure at one end with a

sleepy figure at the other, representing stimulating and unstimulating respectively. Finally,

282   the dominance scale featured a large figure, indicating the highest degree of control, at one

283   end and a small figure, indicating a lack of control, at the other end (Bradley & Lang, 1999).

284   The end result of this procedure yielded affective norms along the three dimensions for 1,040

285   English words (Bradley & Lang, 1999). ANEW represented an important first step in

286   establishing affective norms for large numbers of English words. However, later researchers

287   found the 1,040-word list to be limiting for a language consisting of thousands of words.

288   Warriner, Kuperman, and Brysbaert (2013) exponentially lengthened the list of words

289   with affective norms to 13,915 English lemmas, the base forms of words without inflection

290   (i.e., "watch" rather than "watched" and "watching"). The researchers recognized the

291   importance of affective norms in several areas of study, including emotion, language

292   processing, and memory (Warriner et al., 2013). They argue the list of words included in

293   ANEW is sufficient for small-scale factorial research designs, but the list is "prohibitively

294   small" for larger-scale "megastudies" that are common in psycholinguistic research today

295   (Warriner et al., 2013).

296   In order to source a large number of lemmas for affective ratings, the researchers drew

297   from several validated sources. These include the 30,000 lemmas with age-of-acquisition

298   (average age at which a particular word is learned) ratings gathered by Kuperman,

299   Stadthagen-Gonzalez, and Brysbaert (2012) as well as the content lemmas from the

300   SUBTLEX-US corpus consisting of subtitles from various forms of visual media (New,

301   Brysbaert, Veronis, & Pallier, 2007). This data collection resulted in the final list of 13,915

302   lemmas. Lists of 346-350 words were presented to participants recruited through the

303   Amazon Mechanical Turk subject pool. Participants rated the words along one of the three

304   dimensions, unlike the ANEW project in which participants rated each word along all three

305   dimensions at once. The researchers used a nine-point scale similar to the one used by

306   Bradley and Lang (1999) when collecting ratings for ANEW (Warriner et al., 2013).

307   The researchers noted several points of interest upon observing ratings. First, they

308 found that valence and dominance ratings had a negative skew, indicating more words

309 elicited feelings of happiness and control than their respective opposites. Also, when

310 examining the relationship between valence and arousal ratings, the researchers found a

311 U-shaped relationship. This U-shape indicates words with high degrees of positivity and

312 negativity elicited higher arousal (Warriner et al., 2013). These observations along with the

313 now-greatly expanded list of affective norms has been applied to several lines of inquiry in

314 psycholinguistics.

315   Warriner and Kuperman (2015) utilized the new affective norms list in order to

316 investigate the validity of the Pollyanna hypothesis, or the prevalence of a generally

317 optimistic outlook in humans as reflected in language. The researchers were able to conclude

318 the existence of a greater number of positive-valence English words in the list of 13,915

319 lemmas. Additionally, after observing token frequency in a number of text corpora, including

320 SUBTLEX-US, the Corpus for Contemporary American English (COCA), the British

321 National Corpus (BNC), Touchstone Applied Science Associates, Inc. Corpus (TASA), and

322 the corpus used for the Hyperspace Analogue to Language model (HAL), the researchers

323 found that words with positive valence were also used more frequently (Warriner &

324 Kuperman, 2015). While the researchers concede the possibility of an acquiescence bias in

325 ratings as a possible explanation for the observed positivity bias, this investigation represents

326 one application of the Warriner et al. (2013) list in emotional studies.

327   In addition to applications in emotion research, the Warriner et al. (2013) norms have

328 been utilized in cognitive research as well. One cognition-based study investigates the

329 relationship between emotion and response latencies in word recognition. Kuperman, Estes,

330 Brysbaert, and Warriner (2014) sought to use these new norms to fill in the knowledge gaps

331 regarding variance in word recognition. The researchers drew several conclusions regarding

332 emotion and word recognition (specifically in naming and lexical decision tasks - two

333 cognitive processing tasks wherein a participant has to read aloud or judge a word for its

lexicality). First, Kuperman et al. (2014) found slower decision-making and reading times in negative-valence words, faster times in neutral words, and even faster times in words with positive valence. The researchers also concluded that words causing higher arousal tend to have slower decision times than less-arousing words. They found valence had a stronger effect on recognition than arousal (both effects were independent, not interactive). They found an interaction between emotion and word frequency such that valence and arousal are more effective on lower frequency words than high frequency words. Finally, Kuperman et al. (2014) found a greater effect of valence and arousal on response latency for lexical decision tasks than for naming tasks (Kuperman et al., 2014). This research serves as further evidence that the Warriner et al. (2013) list can be used for research inquiries both within and without the field of psycholinguistics.

In the present studies, the researchers used the Warriner et al. (2013) list in order to denote the valence of the words appearing in the news articles scraped from the internet. Valence was considered as another independent variable and its relationship with the words comprising the Moral Foundations Dictionary were of chief interest to the researchers. The valence was used as a means to determine whether individual words in the MFD represented more positive aspects of their respective foundation or if they denoted a more negative aspect of the foundation. Specifically, valences were used to weight the MFD words by their relative degree of positivity or negativity. Incorporating word valence into a study involving the MFD is meant to alleviate some of the issues regarding the aforementioned ambiguity regarding the words in the Moral Foundations Dictionary.

News Media and Politics

Research into politics, language, and media has illuminated the complex relationships between all three. Any politically-oriented discussion of word occurrence as an implication of moral or political position assumes that language and ideology are intrinsically linked.

Deborah Cameron (2006) points out the expressive nature of ideological beliefs and how that expression is conveyed through language, thus implying a connection between ideology and language. She goes on to criticize the notion that language is either the "pre-existing raw material" used to shape ideologies or the "post-hoc vehicle" for their propagation. Rather, the structure of language itself is shaped by ideology and social processes even when it is used to explain or express ideologies (Cameron, 2006). Owing to the fact the Moral Foundations Dictionary was developed in order to assess the moral, which includes the ideological, orientation of discourse, its purported ability to assess parts of the structure of language (vocabulary) for ideological lean is of chief interest to the researchers in the present study.

The use of language both to express and further an ideological goal has been documented in the techniques employed by candidates for political office in the U.S., Druckman, Jacobs, and Ostermeier (2004) considered political "issues" as communication that attempts to persuade constituents to vote for the candidates based on their strengths in matters of public policy. According to the researchers, "image" priming describes techniques deployed in order to sway votes based on favorable aspects of the candidate's behavior and personality (Druckman et al., 2004). The researchers investigated political issue and image priming on the part of candidates as implied by the disproportionate attention candidates paid to particular issues over others. The researchers found numerous examples of issue and image priming during the 1972 re-election campaign of Richard Nixon.

They linked the Nixon administration's awareness of the issues for which the president had public support to the issues he should emphasize (and prime) during the campaign. Likewise the researchers found evidence that Nixon's team was aware of negative evaluations of his warmth and trustworthiness, and thus took steps to prime his purportedly positive qualities, including strength and competence (Druckman et al., 2004). The researchers also cited research from Iyengar and Kinder (1987) suggesting the news media affected perceptions of President Jimmy Carter's competence by emphasizing (e.g., priming) issues

related to energy, defense, and the economy. This focus implies news media may contribute
to Americans' perception of politicians based on where the media places emphasis.

There is a potential caveat regarding the validity of Druckman et al. (2004)'s findings:
reproductions of several studies purporting to demonstrate social priming effects have failed
to replicate the original results. Pashler, Coburn, and Harris (2012) point out the distinction
between perceptual and social (or goal) priming both in their operational definitions as well
as their replicability. Perceptual priming often works through the inducement of a certain
response from a related prime, as in, for example, semantic priming. Social (or goal) priming
encompasses phenomena by which people exhibit complex behavioral changes subsequent to
exposure to a prime. Pashler et al. (2012) point out well-known studies investigating social
priming, including the use of elderly-related primes to induce slower walking speeds in
participants. Studies investigating perceptual priming have been "directly replicated in
hundreds of labs" (Pashler et al., 2012). This replication rate does not appear to be the case
for social priming, as argued by Pashler et al. (2012).

Pashler et al. (2012) noticed the unusually large effect size values (Cohen's d) reported
by researchers studying social priming effects. The researchers reproduced two studies from
Williams and Bargh (2008) The first study attempted to prime participants by having them
plot points on a Cartesian grid. The independent variable was priming condition and
contained three levels: short, middle, and long distance. Those instructed to plot points
further apart were hypothesized to express a higher degree of psychological distance
regarding their family. The second study used the same priming conditions, but hypothesized
that greater distance between points would prime participants to estimate fewer calories in
unhealthy foods than those who were primed with shorter distances between points. Pashler
et al. (2012) concluded those two studies from Williams and Bargh (2008) held little validity
while also casting doubt on the prevalence of social priming effects themselves, based on the
inability of other researchers to replicate previously reported effects in this area.

⁴¹¹   While these concerns regarding the replication of social priming studies are valid and

⁴¹²   deserve further investigation, Druckman et al. (2004) does not purport to demonstrate a

⁴¹³   widespread effect of social priming on the American electorate. In other words, this research

⁴¹⁴   makes no claim to empirically supported priming effects. Rather, Druckman et al. (2004)

⁴¹⁵   chronicle the efforts on the part of the Nixon Administration to prop up the president's

⁴¹⁶   supposed strengths while downplaying his weaknesses. These tactics were deployed through

⁴¹⁷   the careful use of language in order to achieve the administration's political goals. As such,

⁴¹⁸   Druckman et al. (2004)'s research on Nixon serves as an example of language's potential

⁴¹⁹   utility in the propagation of desirable political opinions. The researcher's investigation of

⁴²⁰   news media's focus on specific issues during the Carter Administration likewise provide an

⁴²¹   example of language as a potential conduit for the transfer of politically biased information.

⁴²²   The idea that even 1970s news media could contain political biases is of particular interest to

⁴²³   the current study, which investigates similar phenomena in contemporary news media.

⁴²⁴   Other research into news media suggests certain media outlets, at least indirectly, may

⁴²⁵   have an effect on the voting records of representatives in Congress (Clinton & Enamorado,

⁴²⁶   2014). Specifically, the researchers identified a pattern of declining support for President Bill

⁴²⁷   Clinton's policies chiefly among Republicans in the House of Representatives after the Fox

⁴²⁸   News Channel began broadcasting on cable and satellite systems in their respective districts.

⁴²⁹   As Fox News was, at the time of its launch in 1996, the only outwardly ideological national

⁴³⁰   news network, the researchers were able to track its spread across the country and observe

⁴³¹   voting records of members of Congress both before and after Fox News' arrival. The

⁴³²   researchers concluded that members of Congress, excluding those newly elected at the time

⁴³³   of Fox News Channel's emergence, attempted to anticipate resultant conservative-leaning

⁴³⁴   shifts among their constituents by bolstering their conservative voting record before the next

⁴³⁵   election (Clinton & Enamorado, 2014).

⁴³⁶   Therefore, the current study sought to combine both methods related questions and

extension/replication of previous moral foundation results found for liberal and conservative sources. First, the MFD was combined with previous research by the current authors (see below) and weighted by valence to create weighted percentages to better specify endorsement. Second, these weighted percentages were examined for their differences in across liberal and conservative news sources.

Experiment 1

Method

For Experiment 1, the researchers approached the study with the intention to answer a method question. That is, this portion of the current research was conducted in order to solidify the best method by which to analyze political news text under the Moral Foundations Theory framework while also alleviating some of the aforementioned valence problem observed in the Moral Foundations Dictionary. The researchers hypothesized the news sources generally perceived as liberal leaning (*NPR* and *The New York Times*) would contain MFD words and valences indicating endorsements of the individualizing moral foundations (*harm/care* and *fairness/reciprocity*). Additionally, the researchers hypothesized the two sources generally perceived to be conservative leaning (*Fox News* and *Breitbart*) would feature MFD words and valences indicating equal endorsement of all five foundations. Owing to the lack of a need for human participants, the researchers did not petition Missouri State University's Institutional Review Board, as no such approval was needed to conduct this study.

Sources

Political articles were collected from the websites of four notable U.S. news sources, a process known as web scraping. The sources were *The New York Times*, *National Public*

₄₆₀ *Radio (NPR)*, *Fox News*, and *Breitbart.* They were selected for their widespread recognition

₄₆₁ and the fact political partisans have strong preferences for some sources over others. The

₄₆₂ researchers determined the political lean of each source by referencing Mitchell, Matsa,

₄₆₃ Gottfried, and Kiley (2014)'s article demonstrating the self-reported ideological consistency

₄₆₄ represented by the consumers of several news sources. In general, *The New York Times* and

₄₆₅ *NPR* are preferred by consumers reporting a liberal bias or lean. In contrast, *Fox News* and

₄₆₆ *Breitbart* are believed to have a conservative bias or lean. Mitchell et al. (2014)'s article

₄₆₇ presented political ideology as a scale ranging from "consistently liberal" to "consistently

₄₆₈ conservative." In between these extremes lie more moderate positions, including "mostly

₄₆₉ liberal," "mixed," and "mostly conservative." Owing to the lower number of sources analyzed

₄₇₀ herein, the researchers elected to categorize the sources as either "liberal" and "conservative"

₄₇₁ in order to form a basis for comparison.

₄₇₂　　　Political articles in particular were identified and subsequently scraped by including

₄₇₃ the specific URL directing to each source's political content in the *R* script. For example,

₄₇₄ rather than scrape from nytimes.com, which would return undesired results (non-political

₄₇₅ features, reviews, etc.), we instead included nytimes.com/section/politics so that more or less

₄₇₆ exclusively political content was obtained. All code for this manuscript can be found at

₄₇₇ https://osf.io/5kpj7/, and the scripts are provided inline with this manuscript written with

₄₇₈ the *papaja* library (Aust & Barth, 2017).

₄₇₉　　　Identification of the sources' political URLs presented a problem for two of the sources

₄₈₀ owing to complications with how their particular sites were structured. While in the

₄₈₁ multi-week process of scraping articles, we noticed word counts for *NPR* and *Fox News* were

₄₈₂ not growing at a similar pace as those from *The New York Times* and *Breitbart.* Upon

₄₈₃ investigation, we found another, more robust URL for political content from NPR: their

₄₈₄ politics content "archive." The page structure on NPR's website was such that only a limited

₄₈₅ selection of articles is displayed to the user at a given time. Scraping both the archive and

the normal politics page ensured we were obtaining most (if not all) new articles as they

were published. We later ran a process in order to exclude any duplicate articles. *Fox News*

presented a similar issue. We discovered *Fox News* utilized six URLs in addition to the

regular politics page. These URLs led to pages containing content pertaining the U.S.

Executive Branch, Senate, House of Representatives, Judicial Branch, foreign policy, and

elections. Once again, duplicates were subsequently eliminated from any analyses.

Materials

Using the *rvest* library in the statistical package *R*, we pulled body text for individual

articles from each of the aforementioned sources (identified using CSS language) and

compiled them into a dataset (Wickham, 2016). Using this dataset, we identified word count

and average word count per source. This process was run once daily starting in February

2018 until March 2018. Starting in mid-March 2018, the process was run twice daily - once

in the morning and again in the evening. Data collection was terminated once 250,000 words

per source was collected in April 2018.

Data analysis

Once data collection ended, the text was scanned using the *ngram* package in *R*

(Schmidt, Gonzalez-Cabrera, & Tomasello, 2017). This package includes a word count

function, which was used to remove articles that came through as blank text, as well as to

eliminate text picked up from the Disqus commenting system used by certain websites. At

this point, duplicate articles were discarded.

The article text was processed using the *tm* and *ngram* packages in *R* in order to

render the text in lowercase, remove punctuation, and fix spacing issues (Feinerer & Hornik,

2017). The individual words were then reduced to their stems (i.e., *abused* was stemmed to

509 *abus*). The same procedure was applied to the MFD words and the words in the Warriner et

510 al. (2013) dataset. Using the Warriner et al. (2013) dictionary, the words making up each of

511 the five foundations in the MFD were matched to their respective valence value.

512 Concurrent research by Jordan, Buchanan, and Padfield (2019) is assessing the validity

513 of both the Moral Foundations Questionnaire and the Moral Foundations Dictionary through

514 a multi-trait multi-method analysis of the two instruments using multiple samples. The

515 instruments and foundation areas are being analyzed against one another, in order to test

516 reliability, as well as against the Congressional Record in order to test predictive validity for

517 political orientation. The researchers were able to identify a number of potential new words

518 that, if added to the MFD, could comprise a dictionary with greater validity, and less

519 likelihood of zero percent texts, as this often occurs with the current MFD. Those results

520 have informed this analysis, and their updated findings may change the underlying dictionary

521 used in this analysis (albeit, we do not expect any changes in the results presented below).

522 The source article words were compiled into a dataset where they were matched up

523 with their counterparts in the MFD along with their valence and a percentage of their

524 occurrence. Therefore, for each article, the percentage of the number of *harm/care* words

525 occurring in the articles were calculated, and this process was repeated for each of the

526 foundations. Words' percent occurrence were multiplied by their z-scored valence. Valences

527 were z-scored in order to eliminate any ambiguity regarding the direction of the valence.

528 Positive values indicate positive valence, and negative values indicate negative valence.

529 Words were categorized in accordance to their MFD affiliation, creating a weighted sum for

530 each moral foundation.

Results

Descriptive Statistics

The researchers calculated descriptive statistics for each news source in order to understand any and all fundamental linguistic differences in the sources' use of English. Statistics calculated included average z-scored valence of the unique words per article, number of articles per source, total number of words per source, average number of tokens (words) per article in each source, average number of types (unique words) per article in each source, and mean readability level per source. Readability statistics were calculated using the Flesch-Kincaid Grade Level Readability formula (Kincaid, Fishburne, Robert P., Richard L., & Brad S., 1975). Readability is calculated using a formula where the total number of syllables, words, and sentences in a given passage are determinants of its difficulty. The obtained value is intended to match up with the grade level at which one should be able to comfortably read the passage (Kincaid et al., 1975). For example, a text with a readability score of 11 should be easily read by a high school junior.

As seen in Table 1, the sources are similar in some aspects yet different in others. Valence appears to be slightly positive across all sources. The large standard deviations seem to indicate little to no presence of a difference in valence. *The New York Times* published the greatest number of articles as well as total words. *Breitbart* featured the lowest number of articles, and *NPR* the lowest number of total words from all articles. Per individual article, however, *Breitbart* appears to feature the highest average number of words as well as unique words. Once again the standard deviations call into question any apparent differences between sources. Finally, *Fox News* appears to be the most readable source on average, while *The New York Times* is the least readable. This result might be attributable to the greater number of tokens in the average *New York Times* article compared to *Fox News*. As before, the standard deviations for readability hamper one's ability to draw solid conclusions

556 regarding differences in the sources' use of language.

Inferential Statistics

558   To analyze if news sources adhered to differences in word use based on their target
559 audience, we utilized a multilevel model (MLM) to analyze the data. MLM is a regression
560 technique that allows one to control for the repeated measurement and nested structured of
561 the data, which creates correlated error (Gelman, 2006). Using the *nlme* library in *R*
562 (Pinheiro, Bates, Debroy, Sarkar, & Team, 2017), each foundation's weighted percentage was
563 predicated here by the political lean of the news source, using the individual news sources as
564 a random intercept to control for the structure of the data.

565   The multilevel model did not indicate the presence of any significant or practical effect
566 of political lean for any of the five moral foundations. The strongest effect size was observed
567 for the *authority/respect* foundation, but the effect was in the opposite direction from what
568 was originally hypothesized - liberal sources tended to use more *authority/respect* words than
569 did conservative sources. Descriptive and test statistics, *p*-values and effect sizes (Cohen's *d*)
570 can be found in Table 2. To interpret the weighted scores, one can examine the mean and
571 standard deviations for each. A zero score for the mean, with a non-zero standard deviation,
572 would indicate a perfect balance of positive and negative words in each category, likely
573 representing a neutral tone when all words are considered. Negative percentages would
574 indicate more representation of the negative words in the MFD area, while positive
575 percentages indicate an endorsement of the positive words in a MFD. Therefore, we suggest
576 using the sign of the mean score to determine the directionality of the endorsement for the
577 MFD (positive, neutral, negative), and the standard deviation to ensure that a zero score is
578 not zero endorsement (i.e., a SD of zero indicates no words were used). Based on the
579 weighted percent values for the five foundations, the researchers observed that MFD words
580 seem to make up a small portion of the article text. Furthermore, the observed percentages

and means appear to indicate a generally positive endorsement of all five foundations across both liberal and conservative sources.

Discussion

The results obtained in Experiment 1 did not confirm the hypothesis. The researchers found little compelling evidence of an effect of partisan lean on MFD endorsement. The strongest effect found was for the *authority/respect* foundation owing to the fact its Cohen's *d* value was greater than the other four foundations. However, the effect was in the opposite direction of that which was hypothesized. Specifically, the results indicated that liberal leaning sources demonstrated higher positivity regarding that foundation than conservatives. This result is contrary not only to the research hypothesis for Experiment 1 but also to previous findings in Moral Foundations Theory research. It should be noted, however, the effect size was small and the relationship was not found to be statistically significant.

Upon speculation, the researchers identified one possible reason for why the results were unable to confirm the hypothesis. The selection of the broad and amorphous topic of "political news" may have led to the scraping of large numbers of articles with little to no moral-centric content. Rather, many articles may have been, for example, simple reporting on congressional procedures that would leave little room for the use of moral language here, let alone words from the Moral Foundations Dictionary. In short, the range of topics covered in Experiment 1 was likely too broad. The possibility exists that a tighter focus on one political issue or event, especially one that (on the surface) has a stronger relationship with morality might be more illuminating for research in moral language in news media.

Owing to the exploratory nature of Experiment 1, the researchers were afforded the opportunity to consider changes to the method to be utilized in Experiment 2. Generally speaking, the researchers believe their methodology to be sound. Web scraping methods and

text processing remain viable methods for collecting large amounts of text and subsequently rendering that text in a form suitable for data analysis. Experiment 1 also demonstrated a method by which to address inherent problems in the Moral Foundations Dictionary relating to valence. The solution provided in Experiment 1 appears to provide insights into the MFD words where none previously existed. Finally, calculating weighted percentages and sums for each moral foundation provides an easily interpreted summary of MFD word positivity and occurrence.

While the methodology used in Experiment 1 features many strengths, there are aspects which could be strengthened for future studies. The researchers identified two such changes that were subsequently employed in Experiment 2. First, the researchers elected to include more news sources for web scraping and analysis in addition to the four used in Experiment 1. Second, the researchers chose to focus their data collection efforts exclusively on one event in U.S. politics: the nomination and confirmation of Justice Brett Kavanaugh to the U.S. Supreme Court. In Experiment 2, the researchers sought to confirm the usefulness and validity of the method as well as test a similar hypothesis as Experiment 1.

Experiment 2

Kavanaugh Supreme Court Hearing

In the wake of Justice Anthony Kennedy's retirement from the Supreme Court of the United States, President Donald Trump nominated Brett Kavanaugh as the new Associate Justice. Kavanaugh was previously on the U.S. Court of Appeals for the District of Columbia. The Senate Judiciary Committee began his confirmation hearing on September 4, 2018 (US Government, 2018a). Following allegations of sexual assault by high school classmate Dr. Christine Blasey Ford, the committee postponed its vote on whether or not to open the confirmation to the entire Senate.

₆₂₉ On September 27, the committee questioned Dr. Ford before commencing a second

₆₃₀ round of questioning for Judge Kavanaugh (US Government, 2018b). During the intervening

₆₃₁ weeks between hearings, two more women came forward with two separate allegations of

₆₃₂ sexual assault on the part of Kavanaugh. According to Nielsen reports, more than 20 million

₆₃₃ people watched the September 27 proceedings on television (O'Connell, 2018). This figure

₆₃₄ does not take into account viewers who watched online, nor does it account for viewers

₆₃₅ outside the United States. On September 28, the Senate Judiciary Committee voted to send

₆₃₆ the nomination to the Senate floor. Senator Jeff Flake of Arizona, however, lobbied for a

₆₃₇ week-long FBI investigation on Kavanaugh and the allegations facing him, which the

₆₃₈ committee, and later the President, approved. The investigation concluded with no

₆₃₉ significant findings. The Senate voted 50-48 to approve Kavanaugh's appointment on

₆₄₀ October 6, 2018 (US Government, 2018c).

₆₄₁ The Kavanaugh nomination, confirmation hearing, and eventual swearing-in, as well as

₆₄₂ the news media's coverage of all three events, feature many dimensions that likely differ

₆₄₃ depending on one's morals. The issue might be exacerbated given the presence of

₆₄₄ questionable sexual behaviors at the center of many concerns. On one side of the debate,

₆₄₅ Kavanaugh's Supreme Court tenure presents a prime opportunity to bring morality back into

₆₄₆ interpretation of the Constitution. Kavanaugh's confirmation creates a conservative

₆₄₇ stronghold among the justices on the court. Commentators have noted this might help

₆₄₈ advance a judicial agenda that backpedals certain rights previously upheld by the Supreme

₆₄₉ Court, including abortion and gay marriage - social issues challenged by their opponents at

₆₅₀ least partially on moral grounds. Concerns around abortion might be related either to

₆₅₁ *harm/care* or *purity/sanctity*. On the other side of the debate, the assault allegations have

₆₅₂ energized Kavanaugh's opponents to advocate for his rejection from the court owing to

₆₅₃ misdeeds resulting from Kavanaugh's own alleged lack of morals. Likewise, arguments could

₆₅₄ be made that relate concerns regarding sexual violence to *harm/care* or *fairness/reciprocity*.

₆₅₅ Additionally, the moral duty of the Senate as the upper chamber in the U.S. legislature has

656   been scrutinized in public discourse with respect to its handling of the assault allegations

657   vis-a-vis Kavanaugh's confirmation.

658   **U.S. Government Shutdown of 2018-2019**

659   The U.S. Federal Government partially shut down on December 22, 2018. The

660   government reopened on January 25, 2019 upon the passage of an appropriations bill by

661   both houses of Congress (Axelrod, 2019). The shutdown stemmed from a disagreement

662   between President Donald Trump and Congress over funding for the president's proposed

663   U.S.-Mexico border wall. President Trump demanded $5.7 billion dollars in the new budget

664   to be appropriated for the wall, which Congress did not provide in its budget (Peoples &

665   Swanson, 2019). Owing to the lack of funding, the government began a partial shutdown,

666   causing "around 800,000" federal employees to be either furloughed or compelled to work

667   without pay (Axelrod, 2019).

668   The government shutdown ended 35 days later when Congress passed a continuing

669   resolution to fund the government for three weeks while further negotiations regarding the

670   budget would take place. President Trump signed the bill, ending the longest government

671   shutdown in U.S. history (Axelrod, 2019). Many political commentators cite the mounting

672   pressure on Trump and Congress stemming from significant costs both to unpaid American

673   workers and the economy as a whole (Kheel & Mitchell, 2019). Perhaps owing to the

674   financial pressures experienced by thousands of federal employees and their families as a

675   result of a political quarrel, President Trump saw his approval rating fall as the shutdown

676   progressed (Peoples & Swanson, 2019). While the shutdown and its associated burdens were

677   unpopular, the issues discussed concurrent to the shutdown offer the potential for more

678   divergent opinions.

679   As mentioned before, the shutdown started as a result of an impasse regarding funding

for the border wall. Since the wall was proposed during the 2016 presidential campaign, the issue has taken on a moral dimension. As an example, Shaun Casey, the director of Georgetown University's Berkely Center for Religion, Peace and World Affairs, cites diverging opinions stemming from theological concerns (Martin, 2019). Some supporters, citing certain passages from the Bible, believe construction of the wall is part of a divinely ordained process handed down by God. Opponents, on the other hand, have cited other parts of the Bible extolling the significance of exiled peoples, especially the Hebrew people (Martin, 2019). This example potentially ties into the five moral foundations. Theological concerns regarding the border wall might invoke *authority/respect* as well as *purity/sanctity*. In addition to these two foundations, the involvement of foreign countries and their citizens' migration into the U.S. could also elicit moral concerns related to *ingroup/outgroup*.

Owing to the wealth of moral opinions regarding the border wall and its association with the 2018-2019 government shutdown, the researchers decided to add the government shutdown as a news event to analyze under the auspices of Moral Foundations Theory. In addition to articles related to the Kavanaugh confirmation hearing, the researchers scraped articles related to the government shutdown in order to analyze their content for valence and moral alignment.

Method

In contrast to Experiment 1, the researchers approached Experiment 2 with the intention to confirm the method employed was valid for the analysis of the scraped text as well as for any inferences drawn from the analyses. For Experiment 2, the researchers hypothesized that news sources perceived as liberal will exhibit positive endorsements of the individualizing moral foundations (*harm/care* and *fairness/reciprocity*) in their articles reporting on both the Kavanaugh confirmation hearing as well as the 2018-2019 government shutdown. News sources perceived as conservative are hypothesized to positively endorse all

705 five foundations equally in their coverage of the Kavanaugh hearing and the government

706 shutdown. The researchers tested the hypothesis by analyzing the content scraped from news

707 sources' web pages spanning the two weeks before (September 13, 2018) and two weeks after

708 (October 11, 2018) Kavanaugh's confirmation hearing, owing to its prominence in the news.

709 Likewise, the researchers analyzed content spanning two weeks before the start of the

710 government shutdown (December 8, 2018) to two weeks following the end of the shutdown

711 (February 8, 2019). The content will be analyzed for valence and moral alignment under

712 Moral Foundations Theory. Once again, no human participants were needed for this study,

713 so no Institutional Review Board approval was necessary.

714 **Sources**

715   Articles pertaining to the Brett Kavanaugh Supreme Court confirmation hearing and

716 the 2018-2019 U.S. Government shutdown were scraped from the websites of 10 U.S. news

717 sources. As in Experiment 1, these sources were selected owing to their favorability among

718 political partisans according to Mitchell et al. (2014). The sources favored by the highest

719 proportion of consistent liberals were *The New York Times*, *National Public Radio (NPR)*,

720 *Slate*, *Huffington Post*, and *Politico* (Mitchell et al., 2014). The sources favored by the

721 highest proportion of consistent conservatives included *Fox News*, *Breitbart*, *The Rush*

722 *Limbaugh Show*, *The Blaze*, and *Sean Hannity*. Political articles referencing Brett

723 Kavanaugh's nomination process were identified and subsequently scraped by including the

724 URL for each source's coverage of the nomination in the *R* script. All code for this

725 manuscript can be found at https://osf.io/5kpj7/, and the scripts, again written with the

726 *papaja* library in *R*, are provided inline with this manuscript (Aust & Barth, 2017).

Materials

Using the *rvest* library in the statistical package *R*, we pulled body text for individual articles from each of the aforementioned 10 news sources (identified using CSS language). We compiled the articles into a dataset (Wickham, 2016). Using this dataset, we identified word count and average word count per source. This process was run for articles pertaining to Kavanaugh's nomination that were published between September 13, 2018 and October 11, 2018 inclusive. This date range was selected in reference to the widely-publicized and viewed nomination hearing on September 27, 2018. We set the start date at September 13 (two weeks before the hearing) and the end date at October 11 (two weeks after the hearing) so that we could capture a large amount of data (roughly one month) during which Kavanaugh's nomination was at its peak saturation in news coverage.

The same process was followed for scraping articles related to the partial U.S. Government shutdown of 2018-2019. The articles scraped were published between December 8, 2018 and February 8, 2019 inclusive. Once again, the researchers elected to scrape articles published two weeks before and after the event in question in order to capitalize on the shutdown's saturation in American news media.

Data analysis

As in Experiment 1, the text was scanned with *ngram*. Again, blank articles, text from the Disqus system, and duplicate articles were removed (Schmidt et al., 2017). The text was processed and stemmed in order to convert to a usable form for further analysis (Feinerer & Hornik, 2017). Words were subsequently matched with their valences from Warriner et al. (2013). Depending on the results of Jordan et al. (2019)'s multi-trait multi-method analysis of the MFD and the Moral Foundations Questionnaire, alternative forms of the Moral Foundations Dictionary with additional words may be imported instead of the original

751 dictionary.

752 Using the *tm* and *ngram* packages in *R*, the researchers processed the text in order to

753 convert it to lowercase, fix spacing anomalies, and remove punctuation (Feinerer & Hornik,

754 2017). Each individual word was reduced to its stem (i.e., *diseased* was stemmed to *diseas*).

755 Once again, the same procedure was applied to the MFD words and the words in the

756 Warriner et al. (2013) dataset. Using the Warriner et al. (2013) dictionary, the words in the

757 MFD were assigned their respective valence. The researchers obtained the words' percent

758 occurrence in the text. Percents were multiplied by *z*-scored valence and categorized into

759 their proper MFD category.

760 <div align="center">**Results**</div>

761 **Descriptive Statistics**

762 The researchers calculated descriptive statistics for each news source per topic in order

763 to reveal the presence (if any) of linguistic differences in the sources' use of language. As in

764 Experiment 1, statistics calculated include *z*-scored valence, number of articles per source,

765 total words per source, mean tokens per article in each source, mean types per article in each

766 source, and mean readability level (using the Flesch-Kincaid Grade Level Readability

767 formula) per source (Kincaid et al., 1975).

768 Table 3 displays the descriptive statistics for sources' writing on the Kavanaugh

769 confirmation hearing. The sources were similar in most basic linguistic aspects, except for

770 number of articles. For example, *Sean hannity* appears to have published only 27 articles

771 while *Breitbart* published 757 articles on this topic. Valence was found to be slightly positive

772 across all sources. *Fox News* produced the most total words with the most tokens on average.

773 *Politico* featured the highest number of types on average. *Rush Limbaugh* was the most

774 readable source on average by grade level while *Slate* was the least readable. The large

standard deviations for these statistics, however, preclude conclusions regarding differences

in the sources' use of language.

Table 4 displays descriptive statistics for articles about the partial government

shutdown. Like the Kavanaugh hearing, the sources were similar in average valence (slightly

positive). Once again, there was variation in the number of articles published by each source

on this topic. *Sean Hannity*, *Rush Limbaugh*, and *The Blaze* published fewer than 100

articles while *Fox News* published 1,013 articles. *Fox News* again featured the most total

words and mean tokens. *Politico* had the most types on average. For this topic, *Fox News*

was the most readable while *Slate* was the least readable. For each statistic, the excessively

high standard deviations render any assertions regarding linguistic differences inconclusive

on a descriptive level.

Inferential Statistics

To analyze if news sources adhered to differences in word use based on their target

audience, the researchers utilized a multilevel model (MLM) to analyze if news sources

leveraged different vocabularies based on target audience. The researchers used the *nlme*

library in *R* (Pinheiro et al., 2017). Each foundation's weighted percentage was predicted by

the source's political lean, using the individual source as a random intercept to control for the

nested data structure. Two separate MLMs were constructed from datasets compiled for each

topic of interest: the Kavanaugh hearing and the partial government shutdown of 2018-2019.

For the Kavanaugh topic, the multilevel model indicated the presence of a statistically

significant effect for *harm/care*, but the practical effect denoted by Cohen's *d* was found to be

small. There were no other significant or practical effects of political lean for any of the other

four moral foundations. The effect for *harm/care* was in the hypothesized direction with

liberal sources tending to use more positively *harm/care* words than conservative sources.

Descriptive and test statistics, *p*-values and effect sizes (Cohen's *d*) can be found in Table 5.

For news articles about the partial U.S. Federal Government Shutdown of 2018-2019, there were no significant or practical effects of political lean for the moral foundations. A small-to-medium effect size was observed for *authority/respect*. The effect was in the predicted direction as well, as conservative sources tended to offer more positive endorsements of the foundation than liberal sources. This effect was similar to Experiment 1 in which the largest effect size was observed for *authority/respect*. As noted before, the effect found in Experiment 1 was in the opposite direction as what was hypothesized. Thus, it is difficult to draw comparisons between the two studies despite the similar pattern for effect size. Owing to a lack of similar effects for either Experiment 1 or the Kavanaugh topic, there is doubt as to whether or not a practical or generalized effect exists for *authority/respect*.

Based on the weighted percent values for the five foundations applied to both topics, MFD words seem to make up little of the article text. A similar pattern was observed for the results in Experiment 1. As in Experiment 1, the percentages and means seem to indicate a generally positive endorsement of all five moral foundations across both political leanings.

Discussion

The results obtained in Experiment 2 did not confirm either of the hypotheses. The researchers found little compelling evidence of an effect of partisan lean on MFD endorsement. The only significant effect was found for *harm/care* in the Kavanaugh confirmation hearing dataset. While the effect was in the hypothesized direction (higher positive endorsement for liberal sources), the effect size was small. While there were no significant effects found for the government shutdown topic, a small-to-medium effect size was calculated for the *authority/respect* foundation. Once again, the effect was in the hypothesized direction with conservative sources providing higher positive endorsements of

823 the foundation relative to liberal sources.

824   Both of these effects are consistent with both the research hypotheses as well as

825 previous findings in Moral Foundations Theory scholarship. It should be noted these effects

826 were found in isolation, and similar patterns were not found across the other studies. These

827 findings undermine any inferences of political bias stemming from the content of news articles.

828 The results obtained for Experiment 2 call into question the Moral Foundations Dictionary's

829 efficacy as a tool for establishing differences between political news sources by partisan lean.

Conclusions

831   Within the theoretical framework of Moral Foundations Theory (Haidt & Graham,

832 2007), the researchers attempted to devise a method leveraging the Moral Foundations

833 Dictionary (Graham et al., 2009) in order to quantify political bias stemming from content

834 published by several prominent American news sources. The researchers downloaded news

835 article text from the web, processed the text, matched it with the Moral Foundations

836 Dictionary words, and calculated average valence for words in each article. To analyze the

837 data, the researchers constructed multi-level models for each foundation in which weighted

838 percentages were predicted by each source's political lean. Individual source was held as a

839 random intercept to control for correlated error. This process was undertaken once in

840 Experiment 1 for general political news and twice in Experiment 2 using articles pertaining

841 to two specific topics in American news: Brett Kavanaugh's confirmation to the Supreme

842 Court and the most recent (as of this writing) partial U.S. Government shutdown from

843 December 2018 to January 2019.

844   In Experiment 1, the researchers analyzed general political news articles from four

845 prominent U.S. news sources: *The New York Times*, *NPR*, *Fox News*, and *Breitbart*. They

846 hypothesized *The New York Times* and *NPR* would endorse moral foundations

representative of liberal political views and that *Fox News* and *Breitbart* would endorse

foundations indicative of conservative views. The researchers assigned a political lean (liberal

or conservative) to the sources based upon consumer preferences established by Mitchell et

al. (2014). After collecting the articles through web scraping, processing the article text,

calculating percent occurrence of MFD words, and weighting that value by valence, the

researchers constructed the MLM. The results obtained were not significant in any statistical

or practical sense. There was a small effect found for the *authority/respect* foundation

according to Cohen's *d*, but the effect suggested endorsement for that foundation opposite to

what was hypothesized. The researchers viewed these results as an opportunity to alter their

method for use in Experiment 2.

In Experiment 2, the researchers adjusted their method in order to increase their

potential ability to quantify political leanings in U.S. news sources. First, the researchers

expanded the number of news sources from which articles were collected. They added *Slate*,

Politico, and *Huffington Post* to the list of liberal sources and *The Blaze*, *Rush Limbaugh*,

and *Sean Hannity* to the conservative sources. Once again, political bias groups were

assigned based on Mitchell et al. (2014)'s findings. Second, they elected to collect articles

and compile datasets pertaining to two specific topics in U.S. news: the Kavanaugh hearing

and the government shutdown. These topics were chosen due to their relevance to multiple

moral foundations. Other than those two alterations, the same method (scraping, processing,

weighting, and multi-level modelling) was employed for Experiment 2.

For articles pertaining to the Kavanaugh hearing, there was a statistically significant

effect for *harm/care*, but the effect size was modest. No other statistically or practically

significant effects were found for the Kavanaugh topic. Likewise, there were no statistically

or practically significant effects revealed for the government shutdown topic. However, there

was a small-to-medium effect size for *authority/respect*. The fact these patterns do not

appear in any of the other studies undertaken herein decreases the researchers' ability to

draw any valuable conclusions regarding the MFD's ability to reveal political bias in American news media.

The results obtained in both experiments, while not confirmatory, provide several avenues for future investigation. Twice confronted with the failure to uncover differences in news media's political content, the researchers were unable to confirm the existence of an effect of political lean on American news writing under the auspices of Moral Foundations Theory. This does not, however, rule out the possibility that news media is biased. As Mitchell et al. (2014) has demonstrated, self-reported political partisans are drawn to separate sources, but the present research was unable to offer any content-based explanations of this phenomenon. Even when attenuating the scraping criteria to collect text concerning (what the researchers believed to be) morally resonant topics, the method failed to detect differences in MFD word use by prominent news sources. The researchers' focus, therefore, turns toward the limitations of the method, especially the chosen theoretical framework, under which the present research was conducted.

Despite the fact the results regarding political bias were inconclusive, the researchers still retain confidence in the overall structure of the methodology established in the current study. Specifically, the procedure for scraping text from the web, processing, stemming, and weighting the scores with valence seems to represent a solid method for preparing a high quantity of text passages for data analysis. The researchers implemented valence as an indicator of the directionality of endorsement due to the inherent ambiguity of simply calculating MFD word percent occurrence. This method served both to augment the face validity of the MFD by incorporating valence (thus reducing ambiguity) and to generate a score that is easy to understand and analyze.

Thus, the researchers' attention turned to the instrument used to detect differences. In the present study, the researchers utilized the Moral Foundations Dictionary, a metric developed from Moral Foundations Theory (Graham et al., 2009). Based upon the results

obtained, it might be necessary to investigate alternative instruments that might better elucidate the differences of interest. Likewise, other theoretical perspectives may be better equipped to explain political differences in discourse.

Tools such as these could be developed through the Linguistic Inquiry and Word Count program (LIWC) (Pennebaker et al., 2007). As stated before, the Moral Foundations Dictionary was established through an analysis of Christian sermons performed mostly with LIWC as well as some human-enforced corrections due to context (Graham et al., 2009). This approach was grounded in Moral Foundations Theory, a clear framework within which the authors developed the MFD. The original authors of the MFD established sound psychometric properties for the tool, implying its validity in several applications. For this reason, the researchers elected to utilize the MFD as their primary instrument.

Other instruments could theoretically be developed through a LIWC analysis, including those that would be useful for analyzing political discourse. Researchers could obtain percent occurrence scores for words appearing in certain LIWC categories, which could then be weighted with valence scores from Warriner et al. (2013). The researchers will consider other applications of the LIWC in future studies aiming to analyze political content. James Pennebaker (2007), one of the creators of LIWC, has suggested the program could be applied to analyses of cognitive, social, and emotional states. Furthermore, there is some evidence LIWC can be used to detect deception, but the reliability of the program's accuracy in this regard (67%) calls this assertion into question (Pennebaker, 2011). Despite the promising extent of LIWC's abilities, without a firm theoretical foundation for such analyses, any such applications of LIWC would face serious questions as to their relevance, validity, and generalizability. Nevertheless, LIWC analyses may represent a path to further research into political differences in news media as well as theory formation.

There is, however, another theoretical framework that could prove useful when applied to the method established in the present research. Relational Frame Theory originates in

925   applied behavior analysis, but there exists recent scholarship that demonstrates its potential

926   usefulness in the political realm. Relational Frame Theory (RFT) holds that stimuli,

927   including speech and discourse, elicit responses in terms of relationships to other stimuli,

928   even when the stimuli do not otherwise appear to be related (Blackledge, 2014). For example,

929   an individual's equivalent fear response to a venomous snake as well as a wooded area said to

930   "contain snakes" represents "mutual entailment." That is, the fear response is an effect of

931   both the snake and environment stimuli, which cause the fear response. "Combinatorial

932   entailment" can be represented by a fear response elicited by a novel stimulus whose

933   relationship to a well-known stimulus elicits a certain response (Blackledge, 2014). In the

934   snake example, if another stimulus (Stimulus A), were said to be "worse than" the snake, the

935   relationship between A and the snake would elicit a more severe fear response to Stimulus A.

936   RFT utilizes a set of "families" describing the nature of these relationships. Such families

937   include "coordinative," establishing similarities between stimuli, and "distinctive," implying

938   fundamental differences between stimuli (Belisle, Paliliunas, Dixon, & Tarbox, 2018). These

939   families can be used to analyze networks of relational frames in discourse.

940   　　　　Belisle et al. (2018) conducted a text analysis (using a computer algorithm) of several

941   speeches made by four recent U.S. presidents under Relational Frame Theory. These

942   speeches, representing prominent examples of political discourse, were found to differ in their

943   use of relational frames. For example, speeches by Donald Trump were found to contain

944   more distinctive frames than other presidents, while Barack Obama utilized more

945   coordinative frames than his counterparts (Belisle et al., 2018). At first glance, the

946   differences appear to fall along party lines, though other factors may be involved as well. In

947   any case, this research appears to indicate that RFT might be useful for analyzing political

948   news content similar to the method employed in the current study.

949   　　　　Another apparent strength of RFT is its demonstrated effectiveness in the analysis of

950   political discourse. Unlike the development of the Moral Foundations Dictionary, this

application of RFT was performed on public facing political discourse that might be more similar to news articles than the Christian sermons upon which the MFD was compiled. Additionally, there would likely be greater overlap between the speeches analyzed in Belisle et al. (2018)'s work and political news, as the media often quotes speeches by the president. Furthermore, the types or "families" of relational frames could be used as the individual constructs much like the moral foundations in the present research. In order to conform with the method established for this study, their occurrence would need to be scored, probably as a percent. This would allow for an intuitive approach to weighting by z-scored valence if needed.

While Relational Frame Theory appears to represent a viable option for further research into political news analysis, there are some drawbacks. First, RFT by itself does not purport to elucidate political differences in discourse, and its applications to political research are not yet well established. In other words, RFT represents one method by which to analyze political text, but with the caveat that the categories are not known to represent patterns of political ideology. One of the main strengths of Moral Foundations Theory in the eyes of the researchers was that it was a theory designed to investigate not only moral differences but also political differences. While the results obtained herein may weaken assumptions regarding the MFD's capabilities with political text, Moral Foundations Theory has been repeatedly established as a strong framework for detecting political differences along moral lines.

In order to seriously consider RFT as a viable framework for this type of analysis, the researchers would like to be able to draw on further confirmatory evidence of the theory's utility in political discourse analysis. Specifically, analyses of more individuals than the four presidents addressed by Belisle et al. (2018) would be needed to further demonstrate RFT's applicability in this field. Also, though presidential speeches may be more similar to news articles than sermons, they are still a distinct form of discourse with different goals and

audiences than news outlets. RFT's reliability across these forms appears to remain untested as of this writing. These potential shortcomings are testable and might be overcome through more research. As such, RFT's potential as a useful framework for political discourse analysis should not be discounted.

The researchers aimed to utilize the Moral Foundations Dictionary and valence in the analysis of political news articles to determine whether or not bias was present. In Experiment 1, they tested general political news from four U.S. news sources - two liberal and two conservative. They were unable to find any significant evidence of political bias in that analysis. After adjusting the method to include more sources and specific topics for articles, including the Kavanaugh hearing and the government shutdown, the researchers were once again unable to uncover differences in MFD word use between conservative and liberal news sources. The results in the current study seem to demonstrate the MFD's weaknesses in applications to political discourse. MFD words simply might not appear often enough in news articles to register as endorsement for any particular moral foundation over the others. In future research, this weakness could be addressed through further alterations to the method, including alternative analyses using computer programs including LIWC, or through a different theoretical perspective such as Relational Frame Theory.

Never before has news media and discourse represented such fertile ground for psychological research. The plethora of options for news sources has created not only an abundance of choice but also vast quantities of text data. Along with this recent increase in the amount of text information, there is now an obligation on the part of researchers to devise proper methods for analyzing that text. Solid methodologies must be constructed and periodically improved to keep pace with evolving technologies. Likewise, a strong theoretical foundation is paramount to making sense of the current and future media ecosystem. Therefore, it is incumbent upon social scientists to continue investigating the information consumed by millions of Americans every day so that insights into the nature and

₁₀₀₃ consequences of political discourse can be more completely understood.

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Table 1

Experiment 1 - Descriptive Statistics by Source

Source	M_V	SD_V	$N_{Article}$	N_{Words}	M_T	SD_T	M_{Ty}	SD_{Ty}	M_{FK}	SD_{FK}
NPR	0.28	0.23	695	302977	435.94	642.63	191.96	192.29	13.80	3.93
New York Times	0.30	0.13	406	452579	1,114.73	511.86	454.27	154.58	16.32	3.29
Breitbart	0.29	0.18	1437	722022	502.45	347.90	243.36	120.76	18.42	8.01
Fox News	0.29	0.17	503	296779	590.02	528.60	283.57	189.00	16.92	7.16

Note. Readability statistics were calculated using the Flesch-Kincaid Grade Level readability formula. V = Valence, T = Tokens or total words, Ty = Types or unique words, FK = Flesch-Kincaid

Table 2

Foundation	M_C	SD_C	M_L	SD_L	t	p	d
Harm/Care	0.50	2.21	0.49	2.21	-0.21	.850	0.01
Fairness/Reciprocity	1.13	1.38	1.11	1.38	-0.42	.715	0.02
Ingroup/Loyalty	1.28	1.63	1.34	1.63	0.30	.789	-0.04
Authority/Respect	0.72	1.62	1.06	1.62	3.17	.087	-0.20
Purity/Sanctity	1.11	1.48	1.27	1.48	2.37	.141	-0.09

Note. For mean and standard deviation values, 'C' and 'L' refer to 'conservative' and 'liberal,' respectively

Table 3

Kavanaugh - Descriptive Statistics by Source

Source	M_V	SD_V	$N_{Article}$	N_{Words}	M_T	SD_T	M_{Ty}	SD_{Ty}	M_{FK}	SD_{FK}
Huffington Post	0.27	0.12	552	359046	650.45	462.21	283.07	129.23	10.79	1.91
NPR	0.22	0.25	366	108605	296.73	499.10	128.12	172.51	12.49	3.62
New York Times	0.33	0.13	653	723569	1,108.07	570.31	461.26	174.20	10.56	2.10
Politico	0.32	0.10	689	1069292	1,551.95	1,045.47	614.66	358.68	12.09	2.60
Slate	0.29	0.12	272	229896	845.21	612.22	332.42	168.17	12.35	2.47
The Blaze	0.25	0.13	277	128097	462.44	149.66	210.52	53.14	10.83	1.87
Breitbart	0.30	0.13	757	375848	496.50	609.91	230.03	153.62	11.01	2.12
Fox News	0.29	0.11	646	1304048	2,018.65	2,709.77	534.47	404.21	9.70	1.85
Sean Hannity	0.31	0.11	27	5926	219.48	145.98	121.04	57.26	11.88	2.37
Rush Limbaugh	0.38	0.13	172	267067	1,552.72	1,258.51	419.00	225.80	9.42	9.26

Note. Readability statistics were calculated using the Flesch-Kincaid Grade Level readability formula.

V = Valence, T = Tokens or total words, Ty = Types or unique words, FK = Flesch-Kincaid

Table 4

Government Shutdown - Descriptive Statistics by Source

Source	M_V	SD_V	$N_{Article}$	N_{Words}	M_T	SD_T	M_{Ty}	SD_{Ty}	M_{FK}	SD_{FK}
Huffington Post	0.30	0.13	432	242220	560.69	425.52	258.27	130.54	10.67	1.83
NPR	0.23	0.22	434	151114	348.19	457.34	155.53	171.30	11.19	3.15
New York Times	0.33	0.13	751	831184	1,106.77	506.92	471.80	174.88	11.28	2.19
Politico	0.29	0.10	222	349499	1,574.32	875.63	638.32	313.34	11.28	1.23
Slate	0.30	0.12	117	85254	728.67	464.34	301.71	138.74	11.86	2.51
The Blaze	0.26	0.13	98	38983	397.79	102.10	185.66	41.93	10.68	1.85
Breitbart	0.34	0.15	309	102886	332.96	238.70	168.31	81.59	10.71	2.05
Fox News	0.35	0.13	1013	2799217	2,763.29	3,405.44	637.30	494.00	9.34	1.91
Sean Hannity	0.29	0.14	63	10311	163.67	33.59	95.13	16.59	13.41	4.79
Rush Limbaugh	0.37	0.12	78	152630	1,956.79	1,544.14	482.79	252.79	9.76	7.60

Note. Readability statistics were calculated using the Flesch-Kincaid Grade Level readability formula.

V = Valence, T = Tokens or total words, Ty = Types or unique words, FK = Flesch-Kincaid

Table 5

Foundation	M_C	SD_C	M_L	SD_L	t	p	d
Harm/Care	0.39	1.35	0.66	1.35	2.89	.020	-0.19
Fairness/Reciprocity	1.26	1.27	1.06	1.27	-1.58	.154	0.16
Ingroup/Loyalty	1.15	1.22	1.06	1.22	-0.63	.549	0.07
Authority/Respect	0.85	0.99	0.75	0.99	-0.93	.380	0.10
Purity/Sanctity	0.90	1.28	1.06	1.28	0.88	.406	-0.11

Note. For mean and standard deviation values, 'C' and 'L' refer to 'conservative' and 'liberal,' respectively

Table 6

Foundation	M_C	SD_C	M_L	SD_L	t	p	d
Harm/Care	0.91	1.27	1.01	1.27	1.68	.132	-0.07
Fairness/Reciprocity	1.22	1.05	0.91	1.05	-0.76	.468	0.27
Ingroup/Loyalty	1.38	1.16	1.11	1.16	-0.48	.644	0.21
Authority/Respect	0.87	1.24	0.36	1.24	-1.38	.203	0.37
Purity/Sanctity	1.29	1.13	0.99	1.13	0.03	.979	0.22

Note. For mean and standard deviation values, 'C' and 'L' refer to 'conservative' and 'liberal,' respectively