Has the Rise of Spoken-Word Mass Media Transformed Modern Congressional Speech?

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Abstract

What is to blame for the decline in congressional compromise? Is it a rise in polarization, or is there more to the story? In this paper, I argue that a growing lack of compromise in Congress is due to a surge in emotionality and resulting disconnect in speech: when one party is especially negative, the other is especially positive. I posit the claim that this increasing divergence was precipitated by the rise of spoken-word mass media (radio and television), in which emotionality is rewarded. Working with a dataset consisting of every floor speech from 1873 to 2017, I utilize sentiment analysis to determine the level of emotionality in each year's Congress. As a result of my analysis, I find significance at my expected breakpoints.

I. Introduction

Back in 2005, Barack Obama was "seeing purple" (Newsweek Staff 2017). In a cover story for *Newsweek*, Obama was painted as a figure who might help the country "get beyond blue vs. red" and instead meet somewhere in the middle. Obama echoed this refrain in his 2008 victory speech, saying his victory proved that America has "never been a collection of red states and blue states; [rather] we are, and always will be, the United States of America" (NPR 2008). Yet, America faces the charge of being "more divided than ever" (Abeshouse 2019; Associated Press 2016), with each Congress re-earning Harry Truman's famous title of a "do nothing Congress" (Raju 2013; Blake 2016; Washington Post 2019).

What is to blame for the widening divide and increasing lack of compromise between the two major parties in Congress? Typically, the answer is polarization: Republicans are increasingly more conservative and Democrats are increasingly more liberal. Sessions even twenty years ago still enjoyed some level of ideological overlap, while recent Congresses have none. This broadening gap is seen as inducing a perpetual state of near-gridlock in the legislative branch—a fact bemoaned by popular commentators and scholars alike (Binder 2003; Binder 2015). The corresponding decline in productivity raises particular concerns for the functioning of democracy in a nation where the tyranny of the majority is checked only by some level of compromise.

However, there may be more to the story of decreasing communication and understanding than just political polarization. I theorize that beyond simple ideological differences, the two parties have also experienced a divergence in sentiment, as well. I predict that over time, each party has leaned further into different kinds of speech,

demarcated by both emotions and sentiment (positivity or negativity). Rather than expecting that each party has taken on a particular affect which is increasingly divergent over time, I believe that the two parties mirror each other. That is, when Democrats are especially negative, Republicans are especially positive, and vice versa. This ensures that at any given time, the two parties are speaking differently or past one another.

At this point, a question of endogeneity arises: if parties are farther away from each other politically, might this also spark greater sentiment divergence? We might expect that the more the parties disagree with one another, the stronger their expressions of dislike or distrust become from opposite angles. However, I posit a different claim. Specifically, I expect that several exogenous shocks related to the rise of mass media will provide the key to explaining the growth of divergence over time. I argue that the rise of radio in the early twentieth century, the expansion of television ownership in the 1950's, and the eventual advent of C-SPAN broadcasts of congressional floor proceedings in 1979 will all serve as cut points for a wider gap between the parties. Rather than being associated with partisan realignment or the more recent partisan polarization, I expect that sentiment and emotional divergence comes with increasing public access to the words of elected officials. Knowing that their words might be broadcast or consumed by larger and larger audiences, I predict that members of Congress have systematically increased the emotionality and sentiment of their words until we reached the point we are at today. Then, it is in combining this rise of emotionality with partisanship, that we end up with the flip-flopping sentiment divergence mentioned above.

Finally, I also predict that speech has generally taken on more negative emotions and a more negative sentiment over time. Just as journalists trying to generate profit publish more negative stories, members of Congress hoping to gain more airtime coverage will do the same. With the growth in the power and spotlight on the presidency, Congress must work to compete with the attention paid to their counterpart government branch.

In order to test my theory, I will use a database of floor speeches culled from the *Congressional Record* (Gentzkow et al. 2018). This dataset contains "all text spoken on the floor" from the 43rd to the 114th Congress (1873 to 2017). I will use sentiment analysis to chart the use of emotion during this almost 150-year span, determining if these spoken-word mass media breakpoints exist, as well as if there is greater emotional divergence with greater partisanship.

II. Extant Literature

Written & Spoken Language

In answering my question—has the rise of spoken-word mass media created greater emotional divergence in Congress—we must first understand how written and spoken word speech are understood by scholars. As quoted by Kravitz, "spoken utterances tend to indicate both what is said and how it is to be taken, written ones tend to specify only the former" (2009). Thus, we might infer that in order to make the same point in writing as in speech, an individual must devote more words to ensure that their idea is properly understood. While my thesis argues that there has been a rise in negative emotions in congressional speech, this idea might point to the opposite;

rather than emotionality increasing, we might expect a decrease as legislators know that their words will be heard rather than read and thus require less explication.

What is clear, though, is the way in which spoken word complicates an individual's message. Rather than just their words making an impression, for a viewer the speaker's gestures, facial expressions, and general appearance all play a role (Higdon 2007). For a listener, the speaker's tonality determines how they understand meaning (Petrushin 2000). As Hart et al. (2013) explain, tone is what impacts perception. Indeed, content determines what we know about an individual, but tone is what dictates how we digest and understand that information. Thus, as legislators pursue reelection, they might shift their tone to increase their persuasiveness, to gain more airtime, or to otherwise appeal to their constituents.

With so much importance placed on tone, we might then expect that my analysis will not detect changes in transcribed congressional speech. However, because tone is something which is perceived—that it, it is subjective in nature—lawmakers might reasonably seek to prevent misunderstanding by using their words to change their meaning, rather than only their tone. Thus, I believe that we should expect to see changes in the type of congressional speech used.

Negativity, the Media, & Congress

Finally, it is crucial to understand the role of negativity in the media. I make the argument that with the rise of spoken word media, negativity and general emotionality has increased. This claim is based primarily on the nature of spoken word media compared to the written word. Particularly, the type of speech that radio and television

encourage that newspapers do not. While I will discuss this further in my "Theory" section, I want to turn now to the work of other researchers in examining the role of negativity in the media.

As Brader explains, emotions are "relevance detectors," over which we have little control. Our emotions serve to indicate if we should pay attention to our surroundings and what our next move should be in the political context and beyond. According to Brader, messages which signal fear tell us to monitor our surroundings and reassess our beliefs (2006). That is, appeals made with negative emotions will set off alarm bells in the mind of the listener, telling them to play closer attention to the message being conveyed. Borrowing terms from social psychology, we would expect members of the *ingroup* (the party in power) to be less apt to set off this alarm bell. More than the *outgroup* (the minority party), the ingroup should be content with the status quo (Dasgupta 2004). Therefore, in examining speech, we should expect the minority party to use negative speech with greater frequency.

In general, this alarm bell is especially important with the rise of new media and the constantly shrinking sound bite (Patterson 1994). Unlike in newspapers, a subscription product which is already paid for and possessed, radio and television can be turned off at any moment. With a need to keep advertisers through high ratings, both mediums necessitate attention-grabbing statements by their anchors and guests. Especially with an expanding media market and increasing competition, spoken word media has generated increasingly negative broadcasts with a focus on the salacious (Kalb 1998).

At this point, we might assume that greater coverage predicts a higher likelihood of reelection—if our current president's trajectory is any indication. If, as Mayhew posits, legislators are "single-minded seekers of reelection" (2004), then they must surely be seeking greater media exposure. Bending to the reality of negative content attracting more listeners and viewers and thus earning that legislator more airtime, we should thus expect members of Congress to have gradually become more negative in their speech to members of the media. Indeed, without the advent of radio, then television, then C-SPAN, floor speeches would be largely inaccessible. However, since any constituent at any moment can now turn on their television and watch their legislator speak, or perhaps catch a blurb on their local nightly news, the words spoken on the floor now carry an increasing impact. In addition, as floor speeches take place on a neutral ground, they are more likely to exist as repeatable and broadcast-able to the broader public than content facilitated by a particular outlet.

III. Theory

Having addressed many of my key concepts in my literature review, I now pause to explicitly lay out my theory. Having observed the phenomenon of gridlock and disagreement currently present in the United States Congress, I argue there is more at play than increasing polarization of political partisanship. Instead, I posit that the rise of spoken-word media has created incentives for legislators to change their speech. This change takes the form of both greater emotionality and increased negativity. Combined with the growing gap in partisanship, I expect Republicans and Democrats to diverge in their expressions of emotion; that is, when one party is particularly negative, the other

is particularly positive. Together, I believe that these forces have contributed to greater discord in Congress, rather than ideological divergence alone.

In unpacking my theory, I will start by explaining my assumptions regarding the difference between written and oral speech. I assume that since written arguments can be slowly read and reread, they can be carefully thought through by the consumer and thus can possess more complex language. Conversely, since verbal arguments are quickly delivered and moved on from, they must be easy to understand the first time and lack a certain level of complexity. I will argue that in order to make up for the lack of complexity in the level of persuasiveness, emotion must be injected.

In addition, due to the greater intimacy of the spoken word, I assume that different types of appeals can be made. Legislators can speak as if they are talking directly to their constituents instead of to the country at large. As in person-to-person conversations, this creates more space for emotional appeals and grants emotion greater power.

Turning now to the media portion of my theory, I will assume that due to the concerns of broadcasters about both drawing and keeping an audience, media personnel tend to want to utilize only the most compelling speech. Therefore, it is likely legislators who are the most persuasive and/or emotional whose words will be used. Thus, in order to garner themselves more exposure, legislators utilize more emotional language. With each evolution of the media, from radio to television to broadcasting directly from the floor of Congress, sentiment and emotion were capable of achieving more—and thus were used more.

In addition, knowing that their words might be broadcast or consumed by larger and larger audiences, I predict that members of Congress have systematically become more negative in their sentiment and emotion. While each shift created more incentives for tailoring speech for audio consumption, it also increased accessibility of legislative speech. This led to legislators watching their words more carefully. Due to a fear of being perceived as weak or not standing up for their constituents, they stopped playing as nicely with the other side. Since their expression has already taken the turn towards emotionality, this is manifested in the emotions used.

Finally, just as journalists trend towards more negative speech in order to gain more air time, members of Congress used more negative speech to increase their coverage. As the branch of many, legislators must use more negative speech in order to grow their own individual spotlight.

Lastly, I expect interplay between greater political polarization in Congress and this emotionality phenomenon. Rather than both parties trending purely towards negativity and greater emotionality (with no definition of sign), I expect that as one party expresses negativity, the other expresses positivity. In particular, in accordance with ingroup-outgroup theories, I predict that the party in power in a particular chamber will express positivity, while the party out of power will express negativity. Thus, over time we will expect to see a growing gap between how each party expresses themselves, vacillating in tone between the two parties.

As a result of my theory, I formulate the following hypotheses.

Hypothesis 1: Congressional speech has grown increasingly emotion-laden due to the rise of spoken word media and corresponding demands. Thus, I expect three

breakpoints: at the widespread adoption of radio and of television, and the introduction of cameras onto the floor of Congress.

Hypothesis 2: Congressional speech is more negative today than in the past due to the rise of spoken word media and corresponding demands. I expect three breakpoints here, as well, just as in Hypothesis 1.

Hypothesis 3: When one of the political parties is especially negative, the other is especially positive. The minority party will be the party expressing negative sentiment, while the majority party will express positive sentiment.

Now, I turn to my data and measurement.

IV. Data & Measurement

In order to obtain the level of both positive and negative emotions and sentiments in congressional floor speeches, I will use an operation known as sentiment analysis. Sentiment analysis of texts has been used by researchers for some time now. Although it has progressed and developed, there still remain some limitations. For instance, Yu et al. (2008) found that while sentiment analysis works quite well on adjective-heavy pieces, it is not as effective on writings in which nouns carry the task of conveying sentiment. Yu et al. place congressional debate in the latter category, as noun-centered speech. However, it is important to note that they do not say that sentiment analysis fails in cases like these, simply that it is less effective. Second, it should also be pointed out that their paper was published in 2008, while the dictionary utilized for this study was developed in 2013. Thus, we might expect new developments (and perhaps a different assessment) if they were writing today, instead.

In the case of the dictionary I am using—the NRC Word-Emotion Association Lexicon (Saif et al. 2013)—researchers used Amazon's Mechanical Turk to determine word categorization placement for a multitude of words. Participants quickly assigned words to different emotions as they appeared on their screens online. The emotions in this case are anger, disgust, fear, sadness, anticipation, joy, surprise, and trust, while the sentiments are negative and positive. Words can be double categorized; for example, they can fall under both joy and positive.

After having collected sufficient data on both the associated emotion for a word, Saif et al. created a dictionary. This dictionary can then be matched with a text—a technique laid out by Yu et al. (2008, 2014)—to get a count of words attributed to a particular emotion in that set of writing. In this case, I also divide each count by that session's total word count of emotional speech to standardize the scores. Thus, a session which contains particularly verbose members will not have higher scores than one which does not.¹

Sentiment analysis is the best tool for understanding my data as it allows me to create a measure of the level of emotionality in congressional speeches over time (responding to Hypothesis 1), as well as the level of negativity (responding to Hypothesis 2). With both of these pieces, I will be able to respond to Hypothesis 3.

As previously mentioned, I expect three breakpoints in my data. The first is the widespread adoption of radios into American homes. I believe it is important to

¹ Additionally, if I break scores down to the individual level, dividing each members' emotion or sentiment counts by their own word counts, then examining someone like the Speaker of the House, who is required to speak with great frequency, will not be different than looking at the behavior of someone without such formal duties.

distinguish between the mere invention of radios and their pervasive use. Without widespread use of radios by a majority of American households, legislators would have no incentive to get on the air and therefore change their speech patterns. Thus, the first breakpoint is set in 1935, during the 74th Congress (Smith 2014). The second breakpoint occurs in 1955, or the 84th Congress, when more than half of Americans had televisions in their homes (Stephens). Finally, the third breakpoint comes when C-SPAN began broadcasting the proceedings on the floor of Congress. This occurred in 1979, in the 96th Congress (Mann et al. 2016).

I will use linear regression to test my hypotheses. The dependent variable for my first model is the *proportion of emotionally-classified speech* in a given session out of the total speech. The independent variables are dummy variables created for *time period zero*, or the era prior to radio, the time period after the advent of *radio*, the era after the rise of *television*, and the time period after the introduction of *C-SPAN* cameras. This will serve as a test of Hypothesis 1.

proportion of total emotional words $= \alpha + time \ period \ zero * \beta_1 + radio * \beta_2 + television * \beta_3$ $+ CSPAN * \beta_4$

My second model is similar to my first, but with a different dependent variable. In this case, to test Hypothesis 2, my dependent variable is the *proportion of negative-classified speech* in a given session. The independent variables are the same: each dummy variable for the four specified time periods.

proportion of negative words

 $= \alpha + time \ period \ zero * \beta_1 + radio * \beta_2 + television * \beta_3$ $+ CSPAN * \beta_4$

Finally, my third and fourth models, testing my third hypothesis, will introduce new independent and dependent variables. In this case, while the dependent variables are *proportion of negative words* and *proportion of positive words*, the independent variable is an indicator for *majority party control*. Each model be executed four times, twice for the Republicans in the House and Senate, and twice for the Democrats in the House and Senate.

proportion of negative words = α + majority party control * β_1 proportion of positive words = α + majority party control * β_1

V. Results

Starting off with some summary graphics, it may be interesting to know if Republicans or Democrats use certain kinds of speech more than the opposing party. To the layman's eye, in the graphics below, the answer appears to be no. Rather, we see similar proportions among the two parties for each specific emotion over time, with even some mimicking of trend lines over time. In addition, we do not observe much movement within the proportion each emotion tends to occupy. Each emotion appears to stay



within a proportion range of 0.1 to 0.2 in the over seventy sessions captured here.

Negative Emotions Over Time For Democratic Members 0.10 Proportion of Total Words Anger Disgust Fear Negative Sadness 0.05 80 Session Number 50 60 70 90 100 110 Negative Emotions Over Time For Republican Members 0.10 Proportion of Total Words Anger Disgust Fear Negative Sadness 0.05 50 60 70 80 Session Number 90 100 110

However, according to my first model, testing Hypothesis 1, there is a statistically significant relationship between each time period and the proportion of emotional speech (Table 1). This relationship is in the direction my hypothesis suggests, with growth over time, but is not clearly linear.

Time Period	Dependent variable:
	Proportion of Emotional Speech
Radio	0.003*
	(0.0012)
Television	0.012**
	(0.0012)
C-SPAN	0.013**
	(0.0019)
Intercept	0.007**
	(0.0006)
Observations	72
R ²	0.768
Adjusted R ²	0.758

Table 1: Proportion of Total Emotion-Laden Speech

Note: * p<0.01; **p<0.001

A similar result is observed from my second model. There is a statistically significant relationship between each time period and the proportion of negative

speech. However, the association is in the opposite direction of what my hypothesis predicts. Rather, there appears to be less negative speech predicted, proportionally, given each time period. The results can be seen in Table 2.

Time Period	Dependent variable:
	Proportion of Negative Speech
Radio	-0.007**
	(0.0006)
Television	-0.012**
	(0.0011)
C-SPAN	-0.008**
	(0.0009)
Intercept	0.126
	(0.0006)
Observations	72
R ²	0.717
Adjusted R ²	0.705

Table 2: Proportion of Total Negative Speech

Note: * p<0.01; **p<0.001

In testing my third hypothesis—that members of the minority party will use more negative speech, while members of the majority will use more positive speech—I find opposing results for each party. In the case of Republicans, in both the Senate (Table 3.1 in the Appendix) and the House of Representatives (Table 3.2), I find no change in speech. That is, when Republicans are in the majority in either chamber, their proportion of negative speech does not change by a significant amount. Thus, their behavior cannot be used to either credit or discredit my third hypothesis. For the Democrats, on the other hand, my model indicates that once in the majority, Democrats use less negative speech (Table 3.3 and 3.4). This decrease in the proportion of negative speech is significant.

Turning now to positive speech, a similar trend appears. When in the majority, Democrats use more positive speech (Table 4.3 and 4.4 in Appendix). Republicans, on the other hand, appear to make no statistically significant positive change to their speech when in the majority (Table 4.1 and 4.2). These results provide support to my third hypothesis with Democrats, but seemingly contradict my hypothesis with Republicans.

VI. Conclusion

In conclusion, it appears that my three time periods are somewhat predictive of the level of emotionality contained in their contemporary congressional speeches. While the coefficients are in the predicted direction for my first hypothesis, correlating greater emotionality with each media breakpoint, the same cannot be said of my second hypothesis. Rather, while each time period is associated with a differing level of negativity in congressional speech, the time periods actually predict less negative speech. In addition, this relationship is non-linear, with no clear progression over time. Thus, I find evidence for my first hypothesis, but not my second.

I find some support for my third hypothesis—that members of the majority party use more positive speech, while legislators in the minority party use higher levels of negative speech—among Democrats, but not among Republicans. As an observation, Democrats have enjoyed 7 more sessions in the Senate and 22 more sessions in the House in the majority than Republicans. Perhaps with less time in power, Republicans feel lower levels of stability in the role of majoritarian party, and thus are not secure in altering their speech upon winning the majority. On the other side, perhaps Democrats feel the sting of losing power much more acutely, drastically shifting their speech when in the minority as a result.

Looking forward, a limitation of my study lies in the nature of my data. Rather than being analyzed in the nature in which it was first presented, all of my speech has been transcribed. As Petrushin (2000) demonstrated in their study, there are a plethora of connotations a single statement may have depending on its delivery.² Thus, my textonly analysis cannot possibly capture all of the emotion conveyed by legislators' speeches. Furthering this point, a study by Dietrich et al. (2019) posits that emotional intensity is best measured by changes in pitch. With only the transcribed versions of each member's speech, one might argue the levels of both emotion and negativity I measure during each session are not accurate. Future research might try to expand upon the spoken-word collection created by Dietrich et al. by seeking out other sources of recorded congressional speech.

² In this particular study, researchers asked participants to utter the phrase "I'm getting married next week" with the emotions of "happiness, anger, sadness, fear, and normal (unemotional) state" (Petrushin 2000).

In addition, an implicit implication of my theory which is not tested here is that expressions of emotionality and negativity by legislators are rewarded. To prove this implication electorally, the reelection rates of members who use greater levels of negative emotionality would need to be higher than those that do not. On the media side, a measurement of rebooking rates to radio and television programs could be considered, as well. Together, these factors could be used to test whether members of Congress who use more emotional or negative speech are given electoral gains.

In conclusion, there still remains much to be understood about the role of congressional speech in the divided Congress we see today. While I found some support for media breakpoints as an impetus for changing speech, there does not appear to be a broader negative shift over time. In addition, it appears that each party alters their speech differently upon assuming power, rather than there existing a uniform change.

VII. Appendix

Party Control	Dependent variable:
	Proportion of Negative Speech
Majority Party	0.001
	(0.0013)
Intercept	0.119**
	(0.0009)
Observations	72
R ²	0.001
Adjusted R ²	-0.004

Table 3.1: Proportion of Total Negative Speech – Republican Senate

Note: * p<0.01; **p<0.001

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Table 3.2: Pro	portion of Tol	al Negative Sp	eech – Republ	ican House

Party Control	Dependent variable:
	Proportion of Negative Speech
Majority Party	0.000
	(0.0013)
Intercept	0.1199**
	(0.0008)
Observations	72
R ²	0.002
Adjusted R ²	-0.012

Note: * p<0.01; **p<0.001

Party Control	Dependent variable:
	Proportion of Negative Speech
Majority Party	-0.008**
	(0.0013)
Intercept	0.125**
	(0.0009)
Observations	72
R ²	0.334
Adjusted R ²	0.325

Table 3.3: Proportion of Total Negative Speech – Democratic Senate

Note: * p<0.01; **p<0.001

Table 3.4: Proportion of Total Negative Speech – Democratic House

Party Control	Dependent variable:
	Proportion of Negative Speech
Majority Party	-0.007**
	(0.001)
Intercept	0.125**
	(0.0011)
Observations	72
R ²	0.228
Adjusted R ²	0.217

Party Control	Dependent variable:
	Proportion of Positive Speech
Majority Party	0.005
	(0.0021)
Intercept	0.267**
	(0.0015)
Observations	72
R ²	0.078
Adjusted R ²	0.065

Table 4.1: Proportion of Total Positive Speech – Republican Senate

Note: * p<0.01; **p<0.001

Party Control	Dependent variable:
	Proportion of Positive Speech
Majority Party	-0.004
	(0.0022)
Intercept	0.266*
	(0.0014)
Observations	72
R ²	0.046
Adjusted R ²	0.033

Note: * p<0.01; **p<0.001

Party Control	Dependent variable:
	Proportion of Positive Speech
Majority Party	0.013**
	(0.0021)
Intercept	0.256**
	(0.001)
Observations	72
R ²	0.341
Adjusted R ²	0.331

Table 4.3: Proportion of Total Positive Speech – Democratic Senate

Note: * p<0.01; **p<0.001

Table 4.4: Proportion of Total Positive S	Speech – Democratic House
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Majority Party	Dependent variable:
	Proportion of Positive Speech
Majority Party	0.012**
	(0.0022)
Intercept	0.256**
	(0.0017)
Observations	72
R ²	0.287
Adjusted R ²	0.276

Note: * p<0.01; **p<0.001

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