Decline in prosocial language helps explain public disapproval of the US Congress

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Talking about helping others makes a person seem warm and leads to social approval. This work examines the real world consequences of this basic, social-cognitive phenomenon by examining whether record-low levels of public approval of the US Congress may, in part, be a product of declining use of prosocial language during Congressional debates. A text analysis of all 124 million words spoken in the House of Representatives between 1996 and 2014 found that declining levels of prosocial language strongly predicted public disapproval of Congress 6 mo later. Warm, prosocial language still predicted public approval when removing the effects of societal and global factors (e.g., the September 11 attacks) and Congressional efficacy (e.g., passing bills), suggesting that prosocial language has an independent, direct effect on social approval.

impression formation | US Congress | prosocial language

As recently as 2002, public approval of Congress was reliably over 50% and as high as 84%. In late 2013, though, public approval reached an all-time low, with less than 10% of Americans expressing support (1). What caused this dramatic decline in public approval in just over a decade? One explanation is that the public held Congress responsible for societal and global problems (e.g., a weak economy) (2, 3). A second explanation is that the public disapproves of ineffective governance. For example, public approval of Congress tends to drop when Republicans and Democrats are polarized against one another and when Congress conflicts with the President (4, 5). (Conflict between political parties may constitute good governance within a pluralistic democracy. Nonetheless, the public perceives interparty conflict as poor governance.) We test a third explanation that has less to do with action and more to do with talk (6). We suggest that recent public disapproval partly resulted from the disappearance of warm, prosocial language in Congressional discourse.

Previous experimental research has shown that presenting a warm and prosocial demeanor increases social approval (7). People reveal a wealth of information about their feelings and intentions through verbal communication (8–10). The speaker's underlying motives notwithstanding, talking about helping others makes positive impressions upon an audience (11). We investigated whether this well-documented finding can explain public perceptions of Congress. Specifically, we asked whether the recent rise of public disapproval of Congress is predicted by declining prosocial language of elected representatives.

To measure prosocial language, we computer analyzed all 123,927,807 words spoken in session of the US House of Representatives between 1996 and 2014. Our approach was to look for linguistic markers of prosocial language; we used content analysis software (12) to calculate the proportion of words in the target text that matched entries in a validated dictionary of prosocial words (13). We then compared levels of prosocial language within each month of Congress with their approval ratings by the American public (14) and found a striking match. Fig. 1 shows that levels of prosocial language and the public's approval followed the same trajectory between 1996 and 2014, $r(204) = 0.55$, $P < 0.001$. Notably, the language of both Democrats, $r(204) = 0.53$, $P < 0.001$, and Republicans, $r(204) = 0.54$, $P < 0.001$, predicted the public's approval of Congress.

Public approval peaked in the aftermath of the September 11 attacks, declined over the next 7 y, rose slightly in the wake of the 2008 financial crisis, and then declined again. Prosocial language followed a nearly identical trajectory. In the years spanning 2002 and 2014, a small (19%) decrease in prosocial language ushered in a large (75%) decrease in public approval. The individual words whose use most strongly predicted public approval were the following: gentle, involve, educate, contribute, concerned, give, tolerate, trust, and cooperate.

The correlation between prosocial language and public approval does not necessarily imply that representatives' language caused the public to approve of them. The reverse could be true: The public's approval could cause changes in the topics that representatives raised. If one variable were causing the other, the causal factor would have changed first and the effected factor second. We tested which variable changed first in time by assessing the association between prosocial language in the present and public approval with time lags of up to 50 mo in the past and future (Fig. 2). The distribution of the associations across the time lags nearly perfectly fitted a normal distribution curve, $r(98) = 0.97$, $P < 0.001$. The maximum association between prosocial language and public approval was at +6.7 mo, meaning that what Congress says today best predicts their public approval ratings 29 wk into the future.

Another concern with the present data is the possibility that some exogenous factor (e.g., the September 11 attacks) caused changes in both language and public approval. We reasoned that, if operative, societal and global factors would also have influenced

Significance

Past laboratory research has shown that talking about helping others can make a positive impression upon a listener. We tested whether this basic social-cognitive phenomenon can help explain how governments gain the confidence of the public they serve. A computerized text analysis of the debates of the US Congress over the past 20 y found that the density of prosocial language strongly predicted public approval ratings 6 mo later. These results suggest that both individuals and governments can gain social approval by merely talking about cooperating and about helping others.

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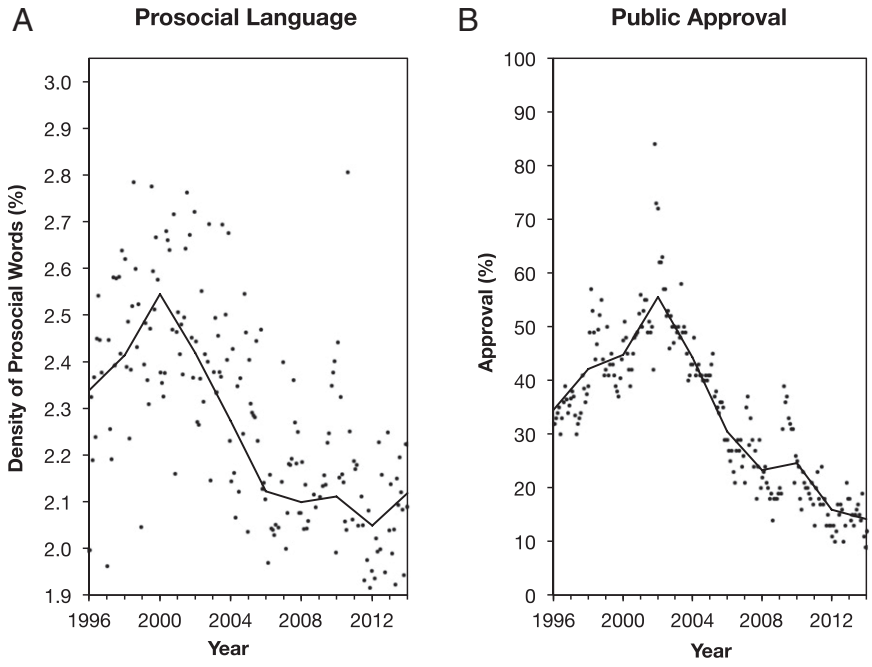

Fig. 1. Prosocial language within the US Congress predicts the public's approval of Congress. (*A*) Prosocial language represents the density of prosocial words in the in-session speeches of members of the US House of Representatives. (*B*) Public approval is Gallup survey data. Individual data points represent monthly scores. Solid lines connect 2-y session means.

the US President's language and/or the economy. Alternatively, dysfunctional governance may cause both politicians' rhetoric to be less civil and the public to disapprove (*SI Text* and Table S1). To test whether prosocial language has an independent, direct effect on the public sentiment, we ran a regression analysis in which we controlled for the effects of both societal/global factors (in the form of the President's prosocial language, US unemployment rate, and US consumer expectations about the economy) and competent governance (in the form of partisan conflict, the number of bills that Congress passed, and Presidential vetoes). Even with these conservative controls, prosocial language within Congress still predicted the public's approval (Table 1). Indeed, warm, prosocial language was the strongest single predictor of public sentiment.

By what mechanism might Congressional rhetoric influence public opinion? One possibility is a direct route. Since 1979, the television station C-SPAN has broadcast Congressional debates to the public, and a large number (47 million) of Americans (the equivalent of 15% of the total population and 57% of the voting population in Congressional elections) watch C-SPAN at least once a week (15). These politically active viewers may hear what representatives say and form impressions, which they may then spread contagiously within their social networks (16, 17).

A second possible mechanism is through the news media. Journalists may watch floor debates of Congress and influence the public through journalistic slant. We tested this hypothesis by sampling and coding the tone of news editorials. Our results suggested that prosocial language in Congress predicted positive media coverage, $r(175) = 0.22$, $P = 0.004$. And positive media coverage predicted public approval, $r(193) = 0.26$, $P < 0.001$. Media coverage explained the link between Congressional language and public approval, $B = 1.82$, 95% confidence interval (CI) = [0.31, 5.04] in a mediation analysis (*SI Text*) (18). In addition to an indirect effect via media coverage, a direct effect of Congressional language on public approval remained, $B = 36.30$, 95% CI = [29.05, 43.55], suggesting that the direct (C-SPAN) and indirect (media) channels may work in tandem to explain how Congressional language influences public opinion.

Laboratory research has established that prosocial language can influence whether an audience thinks highly of a speaker (7). Our findings suggest that this phenomenon generalizes to the real world and can help explain how legislative bodies gain the confidence of the governed.

Methods

US Congress Word Corpus. We downloaded all 123,936,010 words spoken in session of the US House of Representatives from capitolwords.org, from January 1996—when session transcription began—through the end of November 2014. To compare prosocial word density to public approval ratings, we parsed the word corpus by month, with each unit of analysis including all of the words spoken by all members of the House in a particular month. After excluding months in which Congress was out of session or had few (<5,000) words, the sample was $n = 206$ mo. Transcripts averaged 601,591 words (SD = 354,175) in length.

Public Approval of US Congress. Gallup regularly polls the US public regarding whether they "approve or disapprove of the way Congress is handling its job" (14). Data were available for 87% (198) of 227 mo in the study. After collecting these data, we averaged all polls within a given month. Because public approval tends to change gradually, we filled in the missing data by linearly interpolating between the most proximally available data points. Public approval was 33% on average (SD = 15%).

Societal and Global Factors.

President's prosocial language. We downloaded all 411 transcripts of US Presidential news conferences between 1996 and 2014 (2,205,168 words) from presidency.ucsb.edu, computer analyzed each transcript for the density of prosocial words, and averaged the scores of briefings within each of the 180 mo that had news briefings ($M = 2.13\%$, SD = 0.48%).

Unemployment. We downloaded series ID LNS14000000 from the US Bureau of Labor Statistics at data.bls.gov/pdq/SurveyOutputServlet. Unemployment rates are for persons 16 y and older and averaged 6.0% (SD = 1.8%) in the years under study.

Public expectations about the economy. Following past research (5), we operationalized public expectations about the economy as the University of Michigan Index of Consumer Sentiment (ICS). The ICS is an aggregate of five items concerning whether consumers think that (*i*) they are better off financially than they were 1 y ago, (*ii*) they expect to be better off financially 1 y into the future, (*iii*) business will improve over the coming year, (*iv*) the

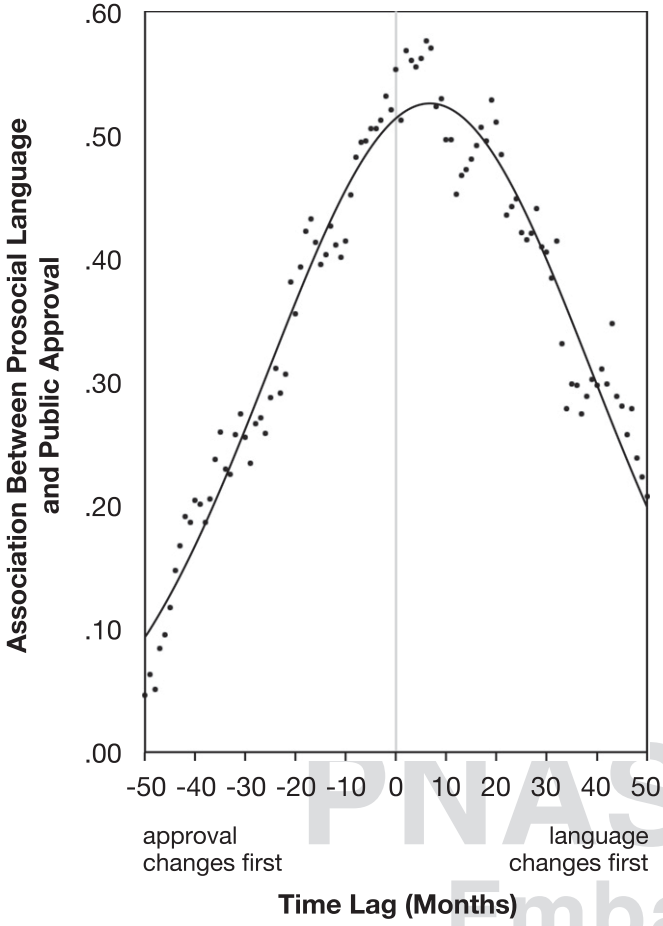

Fig. 2. Time-lagged associations between prosocial language and public approval of the US Congress. How representatives speak today best predicts their public approval ratings 6.7 mo into the future.

country will improve financially over the next 5 y, and (*v*) the present is a good time to buy major household appliances. We downloaded the survey data from www.sca.isr.umich.edu.

Competent Governance.

Partisan conflict in Congress. We downloaded a summary of the roll call in every vote in the US Congress from voteview.com/partycount.htm. Between 1996 and 2014, the House voted on 12,563 bills, which amounted to 55 votes per month on average (SD = 42). We retained the 201 (88%) mo that had 5 or more votes. Following previous research (5), we defined a partisan vote as one in which at least 75% of Republicans voted one way and 75% of Democrats voted the other way. We operationalized partisan conflict within Congress as the proportion of votes in a given month that were partisan (M = 43%, SD = 18%).

Bills passed in the House of Representatives. We downloaded a summary of the roll call in every vote in the US Congress from voteview.com/partycount.htm and operationalized bills passed in the House as the number of bills that received a simple majority. On average, the House passed 38 bills (SD = 27) per month.

Presidential vetoes. We downloaded veto counts from the US Senate website (www.senate.gov/reference/Legislation/Vetoes/vetoCounts.htm). Presidential vetoes were infrequent (1996–2014 total = 39; M = 0.17/mo, SD = 0.50).

Media coverage. We derived a measure of the amount of positive media coverage as the product of the quantity and tone of editorials in a given month.

Quantity. We searched Dow Jones & Company's Factiva database (https://global.factiva.com/) for editorials on the US Congress and recorded the number of articles published each month as a measure of quantity of media. Our search criteria specified the following: (*i*) source, major news and business publications, United States; (*ii*) subject, editorials, not letters, not letters to the editor, not commentaries/opinions; (*iii*) region, United States; and (*iv*) text, "Congress." The most common media outlets were The Pittsburgh Post-Gazette (25%), The Washington Post (20%), The New York Times (13%), The Wall Street Journal (12%), The Denver Post (7%), and USA Today (5%).

Tone. We sorted the search results by relevance and then downloaded the most relevant editorial for each month (196 mo had editorials). Two coders independently read each editorial and judged "how positive or negative the editorial is toward the US Congress" on a 9-point scale anchored at −4 (extremely negative), −2 (somewhat negative), 0 (neutral), 2 (somewhat positive), and 4 (extremely positive). The two judges agreed substantially, $r(194) = 0.65$, $P < 0.001$. We averaged their judgments to form a single metric of media tone. The average editorial had a negative tone, $M = -1.28$, SD = 1.74, $t(194) = -10.27$, $P < 0.001$, $d = -0.74$.

Text Analysis. We content analyzed each text file for the density of prosocial words, using Linguistic Inquiry and Word Count (12). The prosocial words dictionary that we used (13) includes 127 words or word stems that tend to convey content about collective interests and interpersonal harmony. Word stems (e.g., cooperat*) capture all words that begin with the letters leading up the asterisk (e.g., cooperate, cooperative, cooperating). Prosocial word density was 2.26% on average (SD = 0.27%). See *SI Text* for more information.

Items. The dictionary items were as follows: accepting, accommodat*, affect*, agreeable*, aid*, altruis*, appreciat*, approachable, assist*, benefit*, benevolen*, biodivers*, care, caring, charit*, collective*, commun*, compassion*, compliment, concern*, confide, conscien*, conservation*, considerate, contribut*, cooperat*, cope*, coping, courteous*, courtesy, defend*, dependab*, dignity, donat*, earth, ecolog*, education*, egalitar*, empath*, empower*, encourag*, environment*, equal*, ethic*, everybod*, everyone*, facilitat*, fair*, forgiv*, freed*, genero*, gentle*, genuin*, giv*, goodhearted*, greater good, guard*, harmon*, help*, helpful*, honest*, honorable, honourable, hospit*, human*, impartial*, inspiring, integrat*, integrity, interact*, invit*, involv*, justice, kids, kindness, listen*, loyal*, moral*, NGO*, nice*, nonjudgmental, nonprofit*, not-for-profit*, nurtur*, peace*, philanthrop*, prais*, prejud*, protect*, reciproc*, relia*, relied, rely, respectful*, responsib*, responsiv*, righteous*, rights, role model*, selfless*, sensitiv*, serv*, share*, shari*, shield*, sincer*, societ*, solidarit*, support*, sustainab*, sympath*, taught, teach*, team*, tender*, the people, therap*, thoughtful*, tolera*, trust*, tutor*, underst*, universal*, unprejudiced, upright, virtuous*, and volunteer*.

Table 1. Factors associated with increasing public approval of the US Congress

Predictor	Zero-order *r*	Multiple regression *B*	Multiple regression *β*
Societal and global factors			
President's prosocial language	0.30****	4.06	0.15***
Country unemployment	-0.54****	−1.33	-0.16**
Country economic expectations	0.63****	0.17	0.16*
Competent governance			
Partisan conflict in the House	-0.48****	−0.18	-0.21***
Bills passed in the House	-0.12*	−0.06	-0.10*
Presidential vetoes	0.04	−2.40	-0.09
Congressional rhetoric			
Congress' prosocial language	0.55****	21.56	0.35****

Zero-order correlations and a multiple-regression analysis with seven predictors were entered simultaneously. Model $r = 0.74$; *$P < 0.10$, **$P < 0.05$, ***$P < 0.01$, ****$P < 0.001$.

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Q:18

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Supporting Information

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SI Text

Prosocial Words Dictionary.

Development and validation. Previous researchers (1) developed the dictionary following the standard protocols detailed at www.liwc.net/howliwcworks.php#index5. Three researchers collected a large pool of candidate words from existing dictionaries, thesaurus searches, and brainstorming. Next, they reduced the list, using a two-thirds majority-vote rule. Third, they performed multiple psychometric evaluations of the dictionary and found ample support for its content validity. The original dictionary (1) had 146 words. To restrict content to prosocial words for the present analyses, we removed 19 antisocial words from the original dictionary (abus*, bigot*, cruel*, discriminat*, disease*, dishonest*, divers*, harm*, hurt*, injust*, irresponsib*, pollution, poor*, poverty, sacrific*, suffer*, unfair*, violen*, and wound*). Scores from the longer and shorter dictionaries correlate at $r = 0.99$ in this dataset. The long dictionary yielded very similar results to those reported.

Convergence with human judges. LIWC analyses using the dictionary converged with those of human coders, $r = 0.67$ (1).

Responsiveness to situational demands. When asking people to describe goals that involve helping others (vs. ordinary goals), more than three times the prosocial word density emerges, $d > 0.96$ (1). That is, people can change their prosocial word density from ∼1% to ∼4% in response to a simple request to talk about helping others.

News Media Mediation, Additional Analyses. In a follow-up analysis, we statistically remove the effects of the six control variables in Table 1 before testing whether positive media coverage explains the link between Congressional language and public approval. In this analysis, the independent pathway (Congressional language → positive media → public approval) became nonsignificant: $B = 0.43$, 95% CI = [−0.74, 3.09]. Including any single one or combination of four variables (President's prosocial language, country's unemployment, economic expectations, partisan conflict in the House), renders the media pathway nonsignificant. We note several methodological and theoretical issues that render this result ambiguous.

First, we interpret these findings as a product of a somewhat noisy positive media variable. Judges read and coded the valence of 196 editorials written between 1996 and 2014. Over this time span, however, our search turned up ∼29,000 editorials, meaning that the coded dataset captured just 0.7% of the full set. This likely resulted in a noisy media valence variable, which may, in turn, be causing a false negative statistical analysis.

Second, we include this analysis for the sake of thoroughness and transparency. However, we also note that controlling for other factors in the mediation analysis is theoretically questionable.

And third, we note that the direct (C-SPAN viewing) pathway remains a viable and parsimonious explanation for how Congressional language influences public opinion.

Public Approval of Congress, the President, and the Country. We tested whether the language of Congress and that of the President predict approval of Congress, the President, and the direction of the country.

Measures.

Public satisfaction with the United States. Gallup regularly polls the US public with the following question: "In general, are you satisfied or dissatisfied with the way things are going in the United States at this time?" (2). Data were available for 82% (187) of 227 mo in the study. Public satisfaction was 36% on average (SD = 16%). Q:1

Public approval of the President. Gallup regularly polls the US public regarding whether they "approve or disapprove of the way [first & last name] is handling his job as President?" (3). Data were available for 100% (227) of 227 mo in the study. We averaged all polls within a given month. Public approval was 51% on average (SD = 12%). Q:2

Results and Discussion

Approval of Congress, the President, and the country were strongly intercorrelated, rs = 0.78–0.90, Ps < 0.001 (Table S1), meaning that approval of Congress is likely tapping into a more general "government approval" variable. The President's prosocial language predicted his public approval, albeit not significantly, $r(180) = 0.10$, $P = 0.17$, and public satisfaction with the country, $r(145) = 0.29$, $P < 0.001$. Some possible explanation for weaker associations between Presidential language and his approval is that (*i*) fewer Americans listen to news briefings than they do to floor debates of Congress, (*ii*) the public judges the President and Congress using different information, and/or (*iii*) our measure of Presidential language was less reliable than that of Congress (the corpus of Congressional language had 56 times more words in it). Q:3

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Table S1. Correlations among all of the variables under study

	1	2	3	4	5	6	7	8	9	10
1) Congress prosocial language										
2) Public approval of Congress	0.55****									
3) Partisan conflict in the House	-0.42***	-0.48****								
4) Bills passed in the House	0.07	-0.12*	-0.12*							
5) Presidential vetoes	0.06	0.04	-0.12	0.16**						
6) President's prosocial language	0.13	0.30****	–0.13*	-0.03	0.06					
7) President's public approval	0.45****	0.78****	-0.33****	-0.16**	-0.05	0.10				
8) Public satisfaction with country	0.54****	0.90****	-0.45****	-0.20***	0.05	0.29****	0.82****			
9) Country economic expectations	0.50****	0.63****	-0.35****	-0.18***	0.13**	0.23***	0.48****	0.83****		
10) Country unemployment	-0.36****	-0.54****	0.30****	0.14**	-0.22***	-0.31****	-0.14**	-0.61****	-0.75****	
11) Positive media coverage	0.22***	0.26****	-0.09	-0.02	0.11	0.13	0.12†	0.24***	0.26****	-0.30****

*$P < 0.10$, **$P < 0.05$, ***$P < 0.01$, ****$P < 0.001$.

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Q: 2_Please provide page number for quotation “approve or disapprove of the way [first & last name] is handling his job as President?” from ref. 3.

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