

## **Liberal and Conservative Values: What We Can Learn From Congressional Tweets**

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*Past research using self-report questionnaires administered to ordinary citizens demonstrates that value priorities differ as a function of one's political ideology, but it is unclear whether this conclusion applies to political elites, who are presumably seeking to appeal to very broad constituencies. We used quantitative methods of textual analysis to investigate value-laden language in a collection of 577,555 messages sent from the public Twitter accounts of over 400 members of the U.S. Congress between 2012 and 2014. Consistent with theoretical expectations, we observed that Republican and conservative legislators stressed values of tradition, conformity, and national security (as well as self-direction), whereas Democratic and liberal legislators stressed values of benevolence, universalism, hedonism, and social/economic security (as well as achievement). Implications for the large-scale observational study of political psychology are explored.*

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“We hang on to our values, even if they seem at times tarnished and worn; even if, as a nation and in our own lives, we have betrayed them more often than we care to remember. What else is there to guide us?”

(Barack Obama, 2006, *The Audacity of Hope*)

In the fall of 2013, the Democratic and Republican members of Congress failed to agree on a budget for the United States of America. Consequently, for the first 16 days of October 2013, 800,000 federal employees were furloughed, all national parks were closed, and 1.3 million employees were required to work without knowing when they would receive their next paycheck. Citizens expressed bewilderment about the intransigence and incompetence of their elected representatives. At the same time, members of Congress used their bully pulpits to blame the other party for failure to compromise. Events such as routine gridlock and threats of governmental shutdowns raise questions about whether there may be underlying psychological—as well as political—differences between liberals and conservatives that impede their ability to work together (see also Krochik & Jost, 2011).

A great many studies of ordinary citizens suggest that there are consistent and robust left-right ideological differences in personality, cognitive style, personal values, and neurocognitive structure and function (e.g., Amodio, Jost, Master, & Yee, 2007; Caprara, Schwartz, Capanna, Vecchione, & Barbaranelli, 2006; Carney, Jost, Gosling, & Potter, 2008; Gerber, Huber, Doherty, Dowling, & Ha, 2010; Hibbing, Smith, & Alford, 2014; Jost, Glaser, Kruglanski, & Sulloway, 2003; Kanai, Freiden, Firth, & Rees, 2011; Piurko, Schwartz, & Davidov, 2011; Tetlock, 1984). Results reveal that those on the political left tend to prioritize *equality* and *social justice* and are relatively open to new experiences and cognitive complexity. In comparison, those on the political right tend to prioritize *tradition* and *social order*, to exhibit a more persistent, sometimes rigid cognitive style, and to be more sensitive to uncertainty and threat (Jost, 2006). To wield a metaphor popularized by Max Weber, there are important “elective affinities” between psychological needs, values, and interests and political goals (Jost, Federico, & Napier, 2009). Because those on the left are motivated—in the manner of liberals like John Stuart Mill or socialists like Karl Marx—to bring about greater social, economic, and political equality, they have often pushed for social change rather than the maintenance of the status quo. Those on the right have followed Edmund Burke and others who opposed the French Revolution, among other radical developments, in seeking to preserve tradition, and this has led them to slow the pace of change and to defend existing hierarchical arrangements as desirable and just.

Personal values are indispensable when it comes to explaining elective affinities between the psychological characteristics of individuals and the ideological outcomes pursued by social groups, including political parties (Caprara et al., 2006; Feldman, 2003; Jost, Basevich, Dickson, & Noorbaloohi, 2016). In part, this is because human values function as *motivational guides* (Higgins, 2007), as the opening quotation from President Barack Obama attests. It is also because the general or abstract nature of values—understood as “desirable modes of conduct” and “desirable end-states of existence” (Rokeach, 1973, p. 7)—makes them especially easy (and important) to share with potentially like-minded others through communication and other modes of cultural transmission.

The most established scientific taxonomy for the study of human values is that of Shalom Schwartz (2012), who has proposed a “circumplex” model in which certain clusters of values (such as benevolence, self-direction, and universalism) are motivationally congruent, although they stand in an antagonistic relationship with other clusters of values (such as security, conformity, and tradition). Because it emphasizes the conflicting nature of opposing values, Schwartz’s formulation is especially useful for investigating the relationship between psychological characteristics and ideological outcomes. Consistent with the notion that leftists prioritize equality over tradition, whereas rightists prioritize tradition over equality (Jost et al., 2003, 2009, 2016), large-scale surveys conducted throughout North America and Western Europe demonstrate that a leftist orientation is typically associated with the prioritization of “self-transcendence” values such as benevolence and universalism as well as “openness to change” values such as stimulation, hedonism, and self-direction. By contrast, a rightist orientation is typically associated with “conservation” values such as tradition, conformity, security, as well as “self-enhancement” values of power and achievement (Caprara et al., 2006; Jost et al., 2016; Piurko et al., 2011).

Because researchers rarely, if ever, enjoy direct access to political elites as research participants, there are very few comparable studies of the personal values (and other psychological characteristics)

of federal legislators. As a result, it is far from clear whether the same individual differences that characterize liberal versus conservative voters also apply to their elected representatives. In addition to having limited access to elites, researchers contend with the fact that political elites operate within institutional constraints and communicate with the aid of a staff comprised of multiple individuals. For the most part, political psychologists must content themselves with investigating the characteristics of political leaders “from a distance”—by analyzing the contents of public speeches and other forms of text (e.g., Tetlock, 1984; Winter, 2005). Previous attempts to characterize value-laden aspects of the speeches of liberal and conservative politicians yielded few ideological differences, possibly because these studies relied considerably (but not exclusively) on relatively scripted forms of speech (e.g., Graham, Haidt, & Nosek, 2009; Neiman, Gonzalez, Wilkinson, Smith, & Hibbing, 2016a, 2016b).

In this article, we investigate ideological differences in the expression of values among political elites engaged in relatively informal modes of political communication. More specifically, we conducted a study of social media usage, analyzing a corpus of over 500,000 Twitter messages sent from the accounts of members of Congress between 2012 and 2014. Because nearly every member of Congress uses this social media platform to communicate with constituents, Twitter provides new research opportunities to glean insights about the thoughts, feelings, and behaviors of political elites. We focused our analysis on the frequency of words pertaining to the 10 values identified by Schwartz (2012) because (1) it is presently the most popular taxonomy for the scientific study of personal values (Brosch & Sander, 2013), and (2) left-right ideological differences in the prioritization of these values have been very well-established in self-report studies using large, nationally representative samples (Caprara et al., 2006; Piurko et al., 2011).

Many members of Congress employ publicists or staff members who communicate on their behalf. In this respect, data garnered from social media sources may resemble the text of speeches analyzed in prior research (Tetlock, 1984; Winter, 2005). At the same time, it is important to keep in mind that legislators interview and hire people to speak for them who will accurately reflect their perspective and their values. The job of the communications aide is to represent what the member of Congress would like to project, not what the aide thinks or feels as an individual. Prior work suggests that speeches written by staff members may be used to draw valid inferences about the personality characteristics of political leaders (e.g., Ramey, Klingler, & Hollibaugh, 2017). Likewise, our method assumes that social media messages tend to reflect both the ideological orientation and value priorities that the legislator wishes to signal publicly in communicating with his or her constituents. To leverage computer-based methods of text analysis, we adapted research methods pioneered by Jamie Pennebaker and colleagues.

In particular, Tausczik and Pennebaker (2010) developed the Linguistic Inquiry Word Count (LIWC) as a tool to measure individual differences in how people communicate thoughts and feelings through verbal means. LIWC employs frequency percentages to gauge individuals’ preferences concerning specific “function” words (e.g., pronouns) as well as “content” words that are chosen to convey semantic information. The computer program allows for the creation of custom dictionaries that incorporate sets of words that are of theoretical interest; the output yields proportional frequencies of words included in one or more custom dictionaries. We created our own customized dictionaries for the 10 values derived from Schwartz’s (2012) circumplex model, using a thesaurus to generate synonyms, and then incorporated these dictionaries in analyses using LIWC.

Based on prior theory pertaining to ideological differences in value endorsement and self-report studies involving ordinary citizens, we hypothesized that tweets emanating from Democrats and relatively liberal (vs. conservative) members of Congress would include a higher proportion of words pertaining to the values of benevolence, universalism, hedonism, stimulation, and self-direction. By contrast, we hypothesized that tweets emanating from Republicans and relatively conservative (vs. liberal) members of Congress would include a higher proportion of words pertaining to the values of security, conformity, tradition, power, and achievement (Caprara et al., 2006; Jost et al., 2016; Piurko et al., 2011).

## Method

### *Materials and Procedure*

*Data set.* We investigated our hypotheses using messages sent from the public Twitter accounts of members of the 112<sup>th</sup> and 113<sup>th</sup> U.S. Congresses. More specifically, we extracted Congressional tweets posted between December 20, 2012 and June 20, 2014 from a sample of 466 members of Congress (96 Senators, 370 Representatives; 46% Democratic, 53% Republican, .4% Independent). Our initial collection consisted of 577,555 tweets by federal legislators, each of whom averaged 1,239 tweets during this time period.

*Personal values.* Using methods that were similar to those of Graham et al. (2009) and Neiman et al. (2016a, 2016b), we developed customized LIWC dictionaries to calculate the proportions of words pertaining to each of the 10 personal values described in Schwartz's (2012) taxonomy, namely: self-direction, stimulation, hedonism, achievement, power, security, tradition, conformity, benevolence, and universalism. For each value, we first engaged in an expansive phase: We used two thesauruses to derive a large collection of synonyms for each of the values. Then, we conducted a contractive phase in which we removed any synonyms that had multiple meanings or that seemed too remote from the meaning of the original value.

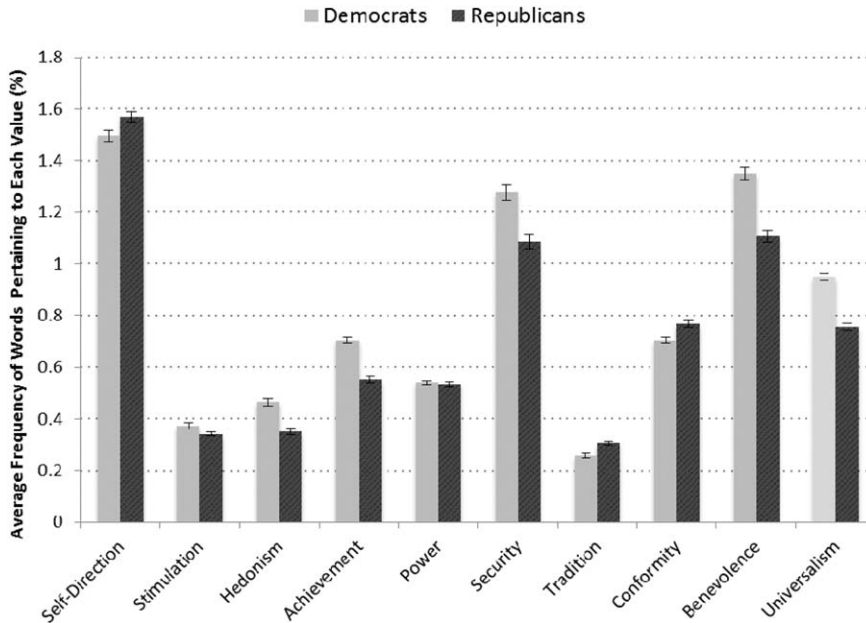
Because we expected that language used on social media might differ from other kinds of speech, we also extracted the top 2,500 words used in Congressional tweets and asked two independent raters to indicate whether each word pertained to one or more of the 10 values (and, if so, which one[s]). This method also helped to insure that there were enough words in every category to conduct meaningful statistical analyses. If both raters agreed that a given word was related to the same value, it was added to our custom dictionary. Initial conflicts were discussed by raters in an effort to resolve them through consensual means; remaining conflicts were resolved by a third party (see Appendix A for a list of words that were added through this procedure).

To ensure that the terms from Twitter that we added were semantically related to the original lists of synonyms, we computed correlations for each of the 10 values between legislators' scores using the "bare bones" dictionary and those using the more comprehensive dictionaries. Correlations ranged from .487 (*self-direction*) to .917 (*security*), and in all cases they were statistically significant at  $p < .0001$ . These results suggest that our decision to incorporate additional words that were popular on Twitter to enlarge the dictionaries was methodologically justified and empirically useful. Final versions of all customized dictionaries are included in Appendix B.

After inputting the custom-value dictionaries using LIWC software, we ran the LIWC text-analysis program on the corpus of tweets. For each custom dictionary, LIWC calculated the sum of the frequencies of each word included in the legislators' tweets and then divided the sum by the total number of words in each Congressional member's tweets to provide a word frequency percentage. This is the standard method of calculating word frequencies in LIWC, although it should be noted that Neiman et al. (2016a) used a different type of denominator than we would choose (see Neiman et al., 2016b). For each legislator, we computed 10 (nonoverlapping) frequency percentage scores—one for each of the values identified by Schwartz (2012).

*Political partisanship and ideology.* Using public records, we determined whether each member of Congress belonged to the Democratic or Republican Party and included a binary categorical variable for partisanship in the data set. Data from one Independent in Congress was omitted for analyses involving partisanship—but not ideology.

To estimate legislator political ideology in a continuous manner, we used the "gold standard" in political science, namely Poole and Rosenthal's (2007) NOMINATE scores, which summarize aggregate voting patterns of every member of Congress. NOMINATE, which is an acronym for Nominal Three-Step Estimation, refers to a multidimensional scaling technique developed to analyze roll-call



**Figure 1.** Word frequencies pertaining to 10 personal values used by Democratic and Republican legislators. The height of each bar indicates the average proportion (pct.) of words in a given legislator's corpus of tweets that are associated with each of the 10 values. Error bars indicate one standard error above and below the mean. For effect sizes based on these comparisons, see Table 1.

voting; as such, it produces ideological point estimates that are at least in principle independent of partisanship. Extensive research has determined that Congressional voting patterns can be accounted for in terms of two dimensions: (1) one that closely approximates the liberal-conservative spectrum with respect to economic agenda items (NOMINATE 1), and (2) a second dimension that tracks highly salient topical issues taken up by Congress, which vary over time (NOMINATE 2). We used NOMINATE 1 scores to operationalize legislator ideology. Scores were available for only 401 federal legislators (96 Senators, 305 Representatives),<sup>1</sup> so analyses involving legislator ideology are based on a smaller sample than those involving partisanship.

*Analytic strategy.* To begin with, we conducted a series of independent sample *t*-tests to compare Democratic versus Republican legislators' proportional use of words pertaining to each of the 10 values. Next, we inspected correlations between legislator ideology (operationalized as a continuous variable in terms of NOMINATE 1 scores) and the use of words related to each of the 10 values. Finally, we constructed a linear regression model to analyze multivariate relations between the expression of values and legislator ideology.

## Results

In Figure 1, we compare the relative word frequencies exhibited by Democratic and Republican legislators pertaining to each of the 10 values identified by Schwartz (2012). The 10 words that were most commonly used by Democrats and Republicans from each of the categories are listed in Appendix C. In all cases except one (power), the effect of partisanship was highly significant (see Table 1). Consistent with theoretical expectations (and past research involving ordinary citizens), we observed

<sup>1</sup> See <http://www.voteview.com/dwnomin.htm>

**Table 1.** Differences in Value Expression Between Democratic and Republican Legislators

	Partisanship	Mean % Word Count	<i>t</i> -value	Confidence Interval (Lower)	Confidence Interval (Upper)	Effect Size (Cohen's <i>d</i> )
Self-Direction	Republican	1.569	2.631**	-.129	-.018	0.245
	Democratic	1.495				
Stimulation	Republican	.341	2.332*	.004	.058	0.215
	Democratic	.373				
Hedonism	Republican	.466	6.378***	.079	.150	0.592
	Democratic	.351				
Achievement	Republican	.552	8.011***	.115	.190	0.745
	Democratic	.704				
Power	Republican	.540	.469	-.020	.033	0.044
	Democratic	.534				
Security	Republican	1.083	4.703***	.115	.273	0.437
	Democratic	1.275				
Tradition	Republican	.306	4.529***	-.071	-.028	0.423
	Democratic	.257				
Conformity	Republican	.766	3.328**	-.096	-.025	0.312
	Democratic	.706				
Benevolence	Republican	1.107	7.343***	.177	.307	0.683
	Democratic	1.348				
Universalism	Republican	.756	9.439***	.153	.234	0.874
	Democratic	.949				

Note. Democrats:  $N = 215$ , Republicans:  $N = 249$ . \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

that Republican legislators used words related to *tradition* ( $t [462] = 4.529$ ,  $p < .001$ , Cohen's  $d = .423$ ) and *conformity* ( $t [462] = 3.328$ ,  $p = .001$ ,  $d = .312$ ) at rates that were significantly higher than Democratic legislators. Republicans also used more language than Democrats pertaining to *self-direction* ( $t [462] = 2.631$ ,  $p = .009$ ,  $d = .245$ ), which was somewhat unexpected. Democrats and Republicans tended to use the same self-direction words, with only one exception—"freedom" was on the list of words most commonly used by Republicans but not Democrats (see Appendix C).

As hypothesized, Democrats used a higher proportion of words pertaining to *benevolence* ( $t [462] = 7.343$ ,  $p < .001$ ,  $d = .683$ ), *universalism* ( $t [462] = 9.439$ ,  $p < .001$ ,  $d = .874$ ), *stimulation* ( $t [462] = 2.332$ ,  $p = .02$ ,  $d = .215$ ), and *hedonism* ( $t [462] = 6.378$ ,  $p < .001$ ,  $d = .592$ ), in comparison with Republicans. Democrats also used more words pertaining to *achievement* ( $t [462] = 8.011$ ,  $p < .001$ ,  $d = .745$ ), which may be explained by the possibility that they were touting the legislative accomplishments of the Obama administration—using words such as "congratulations," "improve," "progress," "development," and "success" (see Appendix C).

Most surprisingly, we found that Democrats were more likely than Republicans to use words related to *security* ( $t [462] = 4.703$ ,  $p < .001$ ,  $d = .437$ ) over this two-year period. This result may be attributable to the possibility that Democrats communicated more often than Republicans about issues of social and economic security. To investigate this possibility, we conducted a bigram analysis in which we compared two-word combinations pertaining to security. In Appendix D, which lists all bigrams used by Democratic and Republican legislators more than 20 times, it is clear that Democrats were more than twice as likely as Republicans to tweet about "social security," and Democrats were also more likely to tweet about economic, financial, middle-class, and retirement security. By contrast, Republicans were more likely than Democrats to tweet about national, homeland, and border security.

In Table 2, we have listed means and correlations among variables. Results are highly consistent with those obtained for political partisanship (see Figure 1). With respect to correlations between legislator ideology (treated as a continuous variable) and each of the 10 values, eight of the correlations are significant. Political conservatism was positively associated with the use of words pertaining to

**Table 2.** Descriptive Statistics, Including Correlations Between Legislator Ideology and Value Expression

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
<i>N</i> = 401												
1. Ideology	.09	.47	—									
2. Self-Direction	1.53	.30	.13*	—								
3. Stimulation	.36	.15	-.13*	-.05	—							
4. Hedonism	.40	.20	-.29***	-.24***	.07	—						
5. Achievement	.62	.22	-.36***	-.17***	.22***	.49***	—					
6. Power	.54	.14	-.09	.16**	.19***	.00	.17***	—				
7. Security	1.17	.45	-.29***	.11*	.14**	-.08	.14**	.42***	—			
8. Tradition	.28	.12	.19***	-.08†	-.02	0.23***	.08	.15**	-0.02	—		
9. Conformity	.74	.20	.08	.15**	0.13**	.16**	.10*	.29***	.17	.15**	—	
10. Benevolence	1.22	.37	-.36***	-.03	-.01	.48***	.35***	-.03	0.01	.08	.24***	—
11. Universalism	.84	.24	-.41***	.15**	.18***	.03	.13**	.20***	0.32***	-.17***	.09	.02

*Note.* Ideology (operationalized as a continuous variable in terms of NOMINATE 1 scores) is coded so that higher numbers indicate a more conservative voting record in Congress. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

*tradition* ( $r [399] = .19, p < .001$ ) and *self-direction* ( $r [399] = .13, p < .05$ ). Liberalism, on the other hand, was associated with the use of words pertaining to *benevolence* ( $r [399] = -.36, p < .001$ ), *universalism* ( $r [399] = -.41, p < .001$ ), *stimulation* ( $r [399] = -.13, p < .05$ ), *hedonism* ( $r [399] = -.29, p < .001$ ), *achievement* ( $r [399] = -.36, p < .001$ ), and *security* ( $r [399] = -.29, p < .001$ ). Somewhat surprisingly in light of prior research, there were no effects of legislator ideology with respect to the values of *power* or *conformity*.

In Table 3, we summarize the results of a multiple regression analysis in which the expression of values was used to predict legislator ideology. The purpose of this analysis was not to test a causal model; we do not assume, in other words, that the expression of values exerts a *causal* effect on legislator ideology. Rather, we were interested in associations between each type of value (adjusting for the other values) and political ideology. The expression of values pertaining to *tradition* ( $\beta = .179, b = .714, SE = .162, p < .001$ ), *conformity* ( $\beta = .208, b = .517, SE = .106, p < .001$ ), and *self-direction* ( $\beta = .113, b = .171, SE = .063, p = .007$ ) were all associated with conservative ideology. By contrast, the expression of values pertaining to *benevolence* ( $\beta = -.269, b = -.374, SE = .065, p < .001$ ), *universalism* ( $\beta = -.307, b = -.625, SE = .085, p < .001$ ), *hedonism* ( $\beta = -.139, b = -.088, SE = .126, p = .006$ ), *achievement* ( $\beta = -.126, b = -.269, SE = .103, p = .01$ ), and *security* ( $\beta = -.187, b = -.093, SE = .049, p < .001$ ) were associated with liberal ideology. In the multiple regression model, neither *stimulation* ( $\beta = -.027, b = -.088, SE = .128, p = .491$ ) nor

**Table 3.** Multiple Regression Model in Which Value Expressions Were Used to Predict Legislator Ideology

	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>t</i> -value	<i>p</i> -value
Self-Direction	.841	.063	.113	2.71	.007
Stimulation	.171	.128	-.027	-.69	.491
Hedonism	-.088	.126	-.139	-2.76	.006
Achievement	-.349	.103	-.126	-2.61	.010
Power	-.269	.149	-.029	-.63	.531
Security	-.093	.049	-.187	-4.19	< .001
Tradition	.714	.162	.179	4.40	< .001
Conformity	.517	.106	.208	4.89	< .001
Benevolence	-.374	.065	-.269	-5.79	< .001
Universalism	-.625	.085	-.307	-7.33	< .001

*Note.* Ideology (operationalized as a continuous variable in terms of NOMINATE 1 scores) was coded so that higher values indicated more conservative voting records in Congress.  $R^2 = .432, N = 401$ .

power ( $\beta = -.029$ ,  $b = -.093$ ,  $SE = .149$ ,  $p = .531$ ) accounted for unique variance in ideology. Taken in conjunction, the 10 values explained 43.2% of the variance in legislator ideology,  $R^2 = .432$ ,  $F(10, 400) = 29.696$ ,  $p < .001$ .

## Discussion

Past research using self-report methods to investigate the value priorities of ordinary citizens reveals clear ideological differences. Those on the political right tend to value tradition, conformity, security, power, and achievement, whereas those on the left tend to value benevolence, universalism, stimulation, hedonism, and self-direction (Caprara et al., 2006; Feldman, 2003; Jost et al., 2016; Piurko et al., 2011). We found, using a large sample of social media messages sent on behalf of members of the U.S. Congress, that some—but not all—of these same ideological differences in value priorities emerged in the context of political communication.

Specifically, we observed that Republican and conservative legislators stressed values of tradition, conformity, and national security (as well as self-direction), whereas Democratic and liberal legislators stressed values of benevolence, universalism, hedonism, and social/economic security (as well as achievement). Although the effect sizes (in terms of Cohen's  $d$ ) for two of these comparisons would be considered "small" (conformity and self-direction), for others they would be classified as "moderate" (tradition, security, and hedonism) or "large" (benevolence, universalism, and achievement). These results add to a growing body of evidence documenting the existence of "elective affinities" between psychological characteristics (including personality traits, needs, and motives) and left-right ideological outcomes (Jost et al., 2009).

At the same time, there are clear limitations of our study. Although LIWC enables researchers to use computer-based methods to objectively code linguistic patterns in extremely large corpuses of text (Tausczik & Pennebaker, 2010), such a method strips the text of its original context, which may (in some cases) negate the importance of a given value. Thus, we were able to estimate the relative frequencies of words pertaining to specific values, but we were unable to determine whether those values were being referenced critically or ironically—or were invoked only with respect to certain topics of discussion. Future research would do well to focus in on the ways in which members of Congress successfully—and unsuccessfully—utilize specific value-laden language as a tool of political persuasion (cf. Feinberg & Willer, 2015).

On the assumption that members of Congress will continue to use Twitter (and other social media platforms) to communicate with constituents, longitudinal studies may prove especially useful in determining whether ideological differences in value expression are relatively stable over time or shift readily in response to current events. For example, we would expect to see increases in the use of security-related words during periods of intense international conflict or terrorist incidents, such as the Paris attacks in November of 2015, as well as increases in the use of words pertaining to universalism during periods of civil rights activism. Such changes in language usage may well be more pronounced for leaders of political parties that are regarded as "owning" specific political issues (such as terrorism or civil rights legislation)—or for leaders who are attempting to compensate for perceived weaknesses in a specific domain.

Time-series analyses investigating the effects of exogenous shocks on linguistic behavior would be especially useful, from both theoretical and methodological points of view. For example, longitudinal studies would enable researchers to take into account idiosyncratic differences in word usage at the level of individual politicians while observing changes that are attributable to a specific historical event. Such focused explorations may well produce larger ideological differences than those observed in the present study (and in prior research).



Our study of Congressional Twitter accounts points the way toward new ways of conducting political psychology “from a distance.” Quantitative methods of analyzing text as data are useful not only for determining whether conclusions based on research involving ordinary citizens are applicable to the understanding of political elites; they may also help us to understand the process of communication whereby ideological and other political objectives are achieved (or at least undertaken). The dictionaries we have developed and made available in Appendix B can be used in subsequent text-based research to further explore hypotheses pertaining to Schwartz’s (2012) circumplex model of human values.

Finally, in addition to serving basic research purposes, the techniques that we and others have embraced may be used to design effective communication strategies for political campaigns. For instance, it would be easy enough to modify the techniques we have described to determine whether there are certain linguistic patterns that are associated with successful (vs. unsuccessful) political campaigns, taking into account the fact that candidates and parties possess distinctive constituencies, both demographically and ideologically speaking.

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### Appendix A: Words Appearing Frequently in Congressional Tweets That Were Classified as Value-Laden (and added to the dictionaries)

Word	Frequency	Value
1. help	7432	benevolence
2. thank	6844	benevolence
3. happy	6478	hedonism
4. vote	5774	self-direction
5. care	5561	benevolence
6. discuss	5480	self-direction
7. congrats	4800	achievement
8. law	4111	conformity
9. service	4110	benevolence
10. honor	3917	conformity
11. military	3905	security
12. honored	3603	conformity
13. right	3596	universalism
14. bipartisan	3559	universalism
15. protect	3491	security

(Continued)

## Appendix A (Continued)

Word	Frequency	Value
16. voted	3451	self-direction
17. security	2980	security
18. energy	2978	stimulation
19. glad	2691	hedonism
20. agree	2610	conformity
21. thoughts	2570	self-direction
22. congratulations	2535	achievement
23. enjoyed	2532	hedonism
24. fight	2470	security
25. better	2407	achievement
26. everyone	2359	universalism
27. leaders	2281	power
28. prayers	2253	tradition
29. questions	2249	self-direction
30. rights	2239	universalism
31. friend	2231	benevolence
32. victims	2107	benevolence
33. action	2077	stimulation
34. gun	1977	security
35. safe	1967	security
36. think	1965	self-direction
37. fair	1962	universalism
38. award	1952	achievement
39. free	1934	self-direction
40. create	1893	self-direction
41. making	1863	self-direction
42. violence	1857	security
43. share	1843	benevolence
44. freedom	1780	self-direction
45. pleased	1776	hedonism
46. discussing	1757	self-direction
47. change	1680	stimulation
48. top	1666	power
49. well	1665	achievement
50. discussion	1659	self-direction
51. opportunity	1611	stimulation
52. friends	1599	benevolence
53. safety	1574	security
54. war	1543	security
55. assault	1508	security
56. won	1478	achievement
57. celebrate	1460	hedonism
58. voting	1447	self-direction
59. equal	1444	universalism
60. research	1427	self-direction
61. sexual	1424	hedonism
62. strong	1423	power
63. win	1383	achievement
64. fighting	1370	security
65. supporting	1334	conformity
66. serve	1326	benevolence
67. defense	1272	security

(Continued)

## Appendix A (Continued)

Word	Frequency	Value
68. helping	1268	benevolence
69. power	1256	power
70. justice	1246	universalism
71. force	1245	power
72. own	1239	power
73. votes	1218	self-direction
74. decision	1171	self-direction
75. excited	1163	stimulation
76. debate	1151	self-direction
77. love	1108	benevolence
78. save	1090	security
79. improve	1077	achievement
80. celebrating	1052	hedonism
81. leader	1052	power
82. protecting	1034	security
83. crisis	1030	security
84. question	1002	self-direction
85. control	1000	power
86. heroes	951	power
87. discussed	924	self-direction
88. assistance	908	benevolence
89. climate	905	universalism
90. equality	904	universalism
91. rules	880	conformity
92. lead	879	power
93. brave	879	stimulation
94. accountability	868	self-direction
95. honoring	866	conformity
96. conversation	863	self-direction
97. united	859	universalism
98. laws	858	conformity
99. serving	846	benevolence
100. #equalpay	846	universalism
101. troops	838	security
102. beautiful	828	hedonism
103. sacrifice	827	benevolence
104. abuse	814	security
105. attack	813	security
106. development	808	achievement
107. giving	807	benevolence
108. regulations	791	conformity
109. relief	787	benevolence
110. pleasure	787	hedonism
111. progress	786	achievement
112. innovation	779	stimulation
113. solution	762	achievement
114. build	759	self-direction
115. army	752	security
116. protection	748	security
117. #memorialday	742	tradition
118. rule	733	conformity
119. union	732	universalism

(Continued)

## Appendix A (Continued)

Word	Frequency	Value
120. medal	724	achievement
121. helped	720	benevolence
122. success	719	achievement
123. cancer	715	security
124. enforcement	714	power
125. poverty	713	universalism
126. gave	703	benevolence
127. grateful	691	benevolence
128. global	686	universalism
129. god	685	tradition
130. peace	683	universalism
131. winning	680	achievement
132. leading	673	power
133. disaster	652	security
134. risk	649	stimulation
135. accountable	643	self-direction
136. investigation	640	self-direction
137. order	637	conformity
138. strengthen	637	power
139. creating	636	self-direction
140. following	635	conformity
141. fun	635	hedonism
142. helps	634	benevolence
143. fairness	630	universalism
144. restore	617	tradition
145. christmas	613	tradition
146. choice	611	self-direction
147. loved	606	benevolence
148. led	604	power
149. enjoy	602	hedonism
150. emergency	601	security
151. chief	600	power
152. flag	599	tradition
153. combat	598	security
154. victory	595	achievement
155. king	587	power
156. armed	586	security
157. sharing	579	benevolence
158. balance	578	universalism
159. agreement	569	conformity
160. truth	568	universalism
161. election	557	self-direction
162. poll	550	self-direction
163. recognize	547	power
164. grand	546	power
165. weapons	541	security
166. creation	541	self-direction
167. secure	535	security
168. democracy	531	self-direction
169. challenges	530	stimulation
170. challenge	527	stimulation
171. winner	524	achievement

(Continued)

## Appendix A (Continued)

Word	Frequency	Value
172. balanced	521	universalism
173. volunteers	520	benevolence
174. threat	513	security
175. hero	512	power
176. ideas	506	self-direction
177. supports	504	conformity
178. liberty	504	self-direction
179. compromise	500	conformity
180. transparency	499	universalism
181. heritage	493	tradition
182. champion	491	achievement
183. forces	490	power
184. courage	486	stimulation
185. celebration	485	hedonism
186. participate	479	self-direction
187. judiciary	477	conformity
188. fought	476	security
189. guard	476	security
190. holiday	475	tradition
191. praying	474	tradition
192. mandate	472	conformity
193. demand	472	power
194. kind	462	benevolence
195. supreme	462	power
196. illegal	456	conformity
197. attacks	456	security
198. advocates	446	self-direction
199. church	445	tradition
200. consider	444	self-direction
201. faith	443	tradition
202. inspiring	442	stimulation
203. thankful	438	benevolence
204. idea	436	self-direction
205. participating	427	self-direction
206. volunteer	426	benevolence
207. thrilled	423	stimulation
208. guns	420	security
209. actions	418	stimulation
210. navy	416	security
211. soldiers	414	security
212. greatest	413	achievement
213. excellent	412	achievement
214. executive	412	power
215. created	412	self-direction
216. defend	408	security
217. #fairshot	408	universalism
218. legal	405	conformity
219. protections	403	security
220. independence	399	self-direction
221. shooting	398	security
222. religious	392	tradition
223. powerful	375	power

(Continued)

## Appendix A (Continued)

Word	Frequency	Value
224. advocate	375	self-direction
225. authority	374	conformity
226. recognized	371	power
227. games	370	hedonism
228. firefighters	370	security
229. terrorist	369	security
230. stronger	368	power
231. duty	366	conformity
232. expansion	366	power
233. productive	365	achievement
234. outstanding	361	achievement
235. participated	358	self-direction
236. respect	353	tradition
237. sanctions	347	security
238. championship	343	achievement
239. successful	339	achievement
240. protects	339	security
241. approval	328	conformity
242. #equality	328	universalism
243. #womensucceed	328	universalism
244. negotiate	325	self-direction
245. improving	324	achievement
246. questioning	324	self-direction
247. winners	322	achievement
248. creates	320	self-direction
249. dangerous	318	security
250. succeed	314	achievement
251. preserve	314	conformity
252. goal	309	achievement
253. inspired	307	stimulation
254. awarded	306	achievement
255. ruling	306	conformity
256. disease	306	security
257. coalition	306	universalism
258. blessed	304	tradition
259. choose	303	self-direction
260. planning	303	self-direction
261. surveillance	301	security
262. enjoying	300	hedonism
263. usarmy	299	security
264. management	297	power
265. thought	297	self-direction
266. festival	294	hedonism
267. easter	293	tradition
268. voter	292	self-direction
269. recognition	291	achievement
270. saved	291	security
271. perfect	289	achievement
272. thinking	288	self-direction
273. governor	287	power
274. statue	287	tradition
275. lawmakers	285	conformity

(Continued)

## Appendix A (Continued)

Word	Frequency	Value
276. environmental	282	universalism
277. pray	280	tradition
278. investigate	279	self-direction
279. advantage	269	power
280. advocacy	268	self-direction
281. choices	266	self-direction
282. terrorists	265	security
283. exciting	264	stimulation
284. threats	261	security
285. #paycheckfairness	259	universalism
286. harm	252	security
287. #marriageequality	250	universalism
288. command	249	conformity
289. strength	248	power
290. authorization	247	power
291. terrorism	247	security
292. elections	247	self-direction
293. impressive	245	achievement
294. negotiations	245	self-direction
295. killing	244	security
296. assist	243	benevolence
297. agreed	243	conformity
298. strengthening	243	power
299. harmful	243	security
300. encouraging	243	stimulation
301. storms	242	security
302. #equalpayday	241	universalism
303. inspiration	239	stimulation
304. injured	238	security
305. explain	238	self-direction
306. affordability	238	universalism
307. christian	231	tradition
308. discusses	230	self-direction
309. complete	228	achievement
310. pain	228	security
311. medals	227	achievement
312. independent	227	self-direction
313. innovative	227	stimulation
314. sacrifices	226	benevolence
315. friendly	224	benevolence
316. homeland	223	security
317. jewish	223	tradition
318. wins	221	achievement
319. thanksgiving	221	tradition
320. achieve	218	achievement
321. arms	218	security
322. vulnerable	217	security
323. vision	217	stimulation
324. defending	216	security
325. hurricane	215	security
326. tornado	215	security



## Appendix B: Final Versions of LIWC Dictionaries Used to Estimate Values

**Self-Direction:** ability, abide, accountability, accountable, actualize, actualized, actualized, actualizes, actualizing, advocacy, advocate, advocated, advocates, advocating, analytical, analyze, analyzed, analyzes, analyzing, ask, autonomy, build, builds, built, choice, choices, choose, choosing, chose, compose, composed, composes, composing, consider, considered, considering, considers, construct, constructed, constructing, constructs, conversation, conversations, converse, conversed, converses, conversing, create, created, creates, creating, creation, creative, curious, debate, debated, debates, debating, decide, decided, decides, deciding, decision, decisions, democracies, democracy, design, designed, designing, designs, devise, devised, devises, devising, discover, discuss, discussed, discusses, discussing, discussion, elect, elected, electing, election, elections, elects, establish, established, establishes, establishing, examine, examined, examines, examining, explain, explained, explaining, explains, explore, explored, explores, exploring, formulate, formulated, formulates, formulating, freedom, idea, ideas, independence, independent, individualistic, initiate, initiates, initiating, initiated, innovate, innovated, innovates, innovating, innovative, inquire, inquired, inquires, inquiring, inquisitive, inspect, inspected, inspecting, inspects, invent, invented, inventing, invents, investigate, investigated, investigates, investigating, investigative, liberties, liberty, made, make, makes, making, negotiation, negotiate, negotiated, negotiates, negotiating, negotiations, opportunities, opportunity, participate, participated, participates, participating, plan, planned, planning, plans, poll, polled, polling, polls, preference, preferences, probe, probed, probes, probing, produce, produced, produces, producing, question, questioned, questioning, questions, research, researched, researches, researching, scrutinize, scrutinized, scrutinizing, scrutinizes, search, searched, searches, searching, seek, seeking, seeks, self-control, self-determination, self-reliant, self-rule, self-sufficient, self-support, sought, sovereign, test, tested, testing, tests, think, thinking, thinks, thought, thoughts, vote, voted, voter, voters, votes, voting.

**Stimulation:** action, actions, active, activity, adventure, adventures, adventuresome, alive, animate, animated, bold, brave, buzz, challenge, challenged, challenges, challenging, change, commotion, confront, confronted, confronting, confronts, courage, courageous, dare, dared, dares, daring, defied, defies, defy, defying, diverse, diversity, elation, encouragement, encouraging, energetic, energy, excitation, excite, excited, excitement, excites, exciting, exertive, fearless, fresh, freshness, grit, gritty, gut, gutsy, innovate, innovated, innovates, innovating, innovation, inspiration, inspire, inspired, inspires, inspiring, invigorate, invigoration, lively, movement, movements, nervey, novel, novelty, opportunity, outdare, outgoing, provocation, provoke, refreshment, risk, risked, risking, risks, spirited, spontaneous, sport, sports, stimulate, stimulated, stimulates, stimulating, stimulation, stimuli, stimulus, thrill, thrilled, thrilling, variation, varieties, variety, vision, zest.

**Hedonism:** amusement, aroused, arousing, ate, avarice, beautiful, celebrate, celebrated, celebrates, celebrating, celebration, contentment, covet, coveted, coveting, covets, dance, danced, dances, dancing, debauchery, decadent, delight, desire, desired, desires, desiring, drink, drinking, drinks, drunk, eat, eating, eats, enjoy, enjoyed, enjoyment, enjoys, entertain, entertained, entertaining, entertainment, entertains, euphoria, euphoric, fancy, feast, festival, fun, game, games, glad, gladness, gluttony, gratification, gratified, gratifies, gratify, gratifying, greed, greedy, happy, hungry, indulge, joy, longing, lust, luxuries, luxury, meal, meals, pleased, pleases, pleasing, pleasure, pleased, pleasures, pleasuring, pretty, ravenous, recreation, recreational, satisfaction, satisfied, satisfies, satisfy, satisfying, savor, savored, savoring, savors, self-indulgent, sensually, sensuous, sexually, titillate, titillated, titillates, titillating, titillation, turn-on, vacation, vacationed, vacationing, vacations.

**Achievement:** accomplish, accomplished, accomplishes, accomplishing, accomplishment, achieve, achieved, achievement, achieves, achieving, advance, advanced, advances, advancing, ambition, ambitions, ambitious, attain, attained, attaining, attainment, attains, beat, beating, beats, benefit, best, brainy, bright, brilliant, capabilities, capability, capable, champion, championed, champions,

championship, competence, competent, complete, completed, completes, completing, completion, congrats, congratulations, develop, developed, developing, development, develops, diploma, efficient, excel, excelled, excellent, excelling, excels, finish, finished, finishes, finishing, fruition, fulfillment, gain, gained, gaining, gains, goal, goals, graduate, graduated, graduates, graduating, graduation, greatest, growth, impress, impressed, impresses, impressing, impressive, improve, improved, improvement, improvements, improves, improving, influence, influenced, influencing, influential, intelligent, medal, medals, objective, objectives, outstanding, overcame, overcome, overcomes, overcoming, perfect, perfection, prevail, prevailed, prevailing, prevails, productive, proficient, progress, progressed, progresses, progressing, progressive, prosperity, prosperous, qualification, qualifications, qualified, qualifies, qualify, qualifying, raise, recognition, reward, rise, rises, rose, solution, succeeding, succeed, succeeded, succeeds, success, successes, successful, successfully, triumph, triumphant, triumphed, triumphs, victories, victories, victorious, victory, well, win, winner, winners, winning, wins, won.

**Power:** administer, administered, administering, administers, administration, advantage, advantages, aggression, aggressive, attack, attacked, attacking, attacks, authorities, authority, authorization, authorize, authorized, authorizes, authorizing, boss, bosses, captain, captains, chief, chieftain, command, commanded, commanding, commands, control, controlling, controlled, controls, demand, demanded, demanding, demands, dictate, dictated, dictates, dictating, dictator, dictators, director, directors, dominance, dominant, dominate, dominated, dominates, dominating, domination, dominion, dominions, enforce, enforced, enforcement, enforces, enforcing, execute, executed, executes, executing, expansion, force, forced, forces, forcing, govern, governed, governing, governor, governors, governs, grand, head, heads, hero, heroes, intimidate, intimidated, intimidates, intimidating, intimidation, king, kings, lead, leader, leaders, leading, leads, led, manage, managed, management, manages, managing, oversaw, oversee, overseeing, oversees, overseeing, oversees, power, powerful, powerhouse, predominant, prestige, prestigious, prominence, recognize, recognized, recognizes, recognizing, reign, reigned, reigning, reigns, resourceful, rich, status, strength, strengthen, strengthened, strengthening, strengthens, strengths, strong, stronger, superior, supervise, supervises, supervision, supervisor, supervisors, supreme, supremacy, top, wealth, wealthy.

**Security:** abuse, abused, abuses, abusing, armed, armies, arms, army, artillery, assault, assaulted, assaulting, assaults, asylum, barricade, barricaded, barricades, barricading, bastion, battle, battled, battles, battling, bomb, bombs, border, bordered, bordering, borders, clean, cleaned, cleaning, cleans, combat, combatant, combated, combating, combats, crime, criminal, criminals, crisis, custody, dangerous, defend, defended, defending, defends, defense, destruction, disaster, disasters, disease, diseases, disorder, drone, drones, drug, drugs, emergencies, emergency, enemies, enemy, fight, fighting, fights, firearm, firearms, firefighter, firefighters, foreboding, fort, fortified, fortifies, fortify, fortifying, fortress, fortresses, forts, fought, guard, guarded, guarding, guards, gun, gunned, gunning, guns, harmony, hazard, health, healthy, homeland, hurricane, hurricanes, immunity, injure, injured, injures, injuries, injuring, injurious, injury, kill, killed, killing, killings, kills, militant, militaries, military, navy, pain, peril, perilous, prison, prisoner, prisoners, prisons, protect, protected, protecting, protection, protections, protects, refuge, refugees, safe, safeguard, safekeeping, safeness, safety, salvation, sanction, sanctions, sanctuaries, sanctuary, save, saved, saves, saving, secure, secured, secures, securing, security, shelter, sheltered, sheltering, shelters, shield, shielded, shielding, shields, shoot, shooting, shoots, shot, shots, soldier, soldiers, stability, stable, storm, storms, surveil, surveillance, surveilling, surveils, terror, terrorism, terrorist, terrorists, terrorize, terrorizes, terrorizing, threat, threats, tornado, tornadoes, troops, troops, usarmy, violence, war, wars, weapon, weapons.

**Tradition:** attitude, attitudes, belief, beliefs, birthright, blessed, catholic, christian, christmas, church, churches, communion, consuetude, creed, creeds, culture, cultures, custom, customs, devote, devoted, devotes, devoting, devotion, devout, easter, endowment, estate, estates, ethnic, faith, faiths,

flag, flags, folklore, fourthofjuly, fraternal, fraternities, fraternity, god, habit, habits, heritage, holiday, holidays, independence, inherit, inheritance, inherited, inheriting, inherits, jew, jewish, judaism, legend, memorialday, muslim, myth, myths, observance, observant, patriot, patriots, pietism, piety, pious, practice, pray, prayed, prayer, prayers, praying, prays, procedure, propriety, religion, religiosity, religious, respect, respected, respecting, respects, restore, restored, restores, restoring, reverence, ritual, rituals, saint, saints, sect, sectarian, sect, sectarion, sects, statue, statues, superstition, symbol, symbols, tradition, traditional, wisdom, preserve, preserves, preserving.

**Conformity:** abide, abided, abides, abiding, accommodate, accommodated, accommodates, accommodating, accommodation, accommodations, acquiesce, acquiesced, acquiescence, acquiesces, acquiescing, adhere, adhered, adherence, adheres, adhering, agree, agreed, agreeing, agreement, agrees, approval, assent, assented, assenting, assents, attune, attuned, attunes, attuning, command, commanded, commanding, commands, compliance, complied, complies, comply, complying, compromise, compromised, compromises, compromising, concur, concurred, concurring, concurs, conform, conformed, conforming, conformity, conforms, conventionality, discipline, disciplined, disciplines, disciplining, duties, duty, embrace, embraced, embraces, embracing, fit, fits, fitting, follow, followed, followers, following, follows, group, groups, harmonize, harmonized, harmonizes, harmonizing, heed, honor, honored, honoring, honors, illegal, judiciary, law, lawmaker, law-makers, laws, legal, mandate, mandated, mandates, mandating, norm, norms, obedience, obey, obeyed, obeying, obeys, order, ordered, ordering, orders, polite, politeness, reconcile, reconciled, reconciles, reconciling, regulated, regulates, regulating, regulations, restrain, restrained, restraining, restrains, restraint, restraints, rule, ruled, rules, ruling, self-discipline, statute, statutes, submission, submit, submits, submitted, support, supported, supporting, supports, uniformity, yield, yielded, yielding, yields.

**Benevolence:** allegiance, altruism, altruist, altruistic, amity, assist, assistance, assisted, assisting, assists, belong, belonged, belonging, belongs, benevolence, care, cared, cares, caring, charitable, charity, compassion, donate, donated, donates, donating, donation, empathy, forgave, forgive, forgives, forgiving, friend, friendly, friends, friendship, gave, generosity, generous, gift, gifts, give, giving, help, helped, helpful, helping, helps, honest, humane, humanitarian, humanitarianism, humanity, kind, kindhearted, kindness, love, loved, loves, loving, loyal, loyalty, obligation, obligations, philanthropic, philanthropies, philanthropy, pitied, pities, pity, pitying, provide, provided, provides, providing, relief, responsible, sacrifice, sacrificed, sacrifices, sacrificing, served, serves, service, serving, share, shared, shares, sharing, sympathetic, sympathy, thank, thankful, thanks, victim, victims, volunteer, volunteered, volunteering, volunteer.

**Universalism:** #equality, #equalpay, #equalpayday, #fairshot, #marriageequality, #paycheckfairness, #womensucceed, accept, acceptance, accepted, accepting, accepts, accepting, accepts, afford, affordability, affording, affords, all-inclusive, balance, balanced, balances, balancing, bipartisan, broadminded, clemency, climate, coalition, diplomacy, diplomat, diplomats, discriminate, discriminates, discriminating, discrimination, diverse, diversity, egalitarian, environment, environment, environmental, equal, equality, equitability, equity, even, evenness, everyone, fair, fairness, global, integrity, interfaith, international, intersectionalism, just, justice, justness, multinational, oppress, oppressed, oppressing, oppression, peace, poverty, right, rights, tolerance, transparency, truth, ubiquitous, unfair, union, united, unitednation, universal, universalism, welfare.

**Appendix C: Ten Most Commonly Used Words From Each Value Dictionary as a Function of Political Partisanship**

Self-Direction		Stimulation	
Democrats	Republicans	Democrats	Republicans
vote	vote	energy	energy
make	discuss	action	action
discuss	plan	change	stimulus
plan	voted	excited	opportunity
voted	make	opportunity	change
thoughts	thoughts	innovation	excited
create	questions	brave	brave
made	discussing	risk	challenge
voting	create	thrilled	innovation
questions	freedom	challenge	challenges

Hedonism		Achievement	
Democrats	Republicans	Democrats	Republicans
happy	happy	congratulations	congratulations
glad	enjoyed	best	best
pleased	glad	well	growth
celebrate	pleased	win	well
enjoyed	game	improve	win
celebrating	celebrate	growth	raise
game	pleasure	progress	solution
beautiful	beautiful	raise	victory
pleasure	celebrating	development	finished
fun	enjoy	success	improve

Power		Security	
Democrats	Republicans	Democrats	Republicans
leaders	administration	health	health
strong	leaders	protect	military
top	top	military	security
power	power	security	protect
force	control	fight	war
leader	force	violence	protection
lead	strong	gun	defense
strengthen	attack	war	fight
king	heroes	safe	safe
control	leader	safety	troops

Tradition		Conformity	
Democrats	Republicans	Democrats	Republicans
prayers	prayers	support	support
holiday	god	honor	law
restore	christmas	law	honor
heritage	flag	honored	honored
church	restore	agree	agree
christmas	holiday	follow	follow

(Continued)

## Appendix C (Continued)

Tradition		Conformity	
Democrats	Republicans	Democrats	Republicans
preserve	religious	supporting	regulations
flag	prayer	group	group
jewish	praying	honoring	rules
respect	faith	rules	rule
Benevolence		Universalism	
Democrats	Republicans	Democrats	Republicans
thanks	thanks	just	just
help	thank	united	united
thank	help	right	right
care	care	bipartisan	bipartisan
service	service	rights	everyone
victims	friends	everyone	fair
friend	share	fair	environmental
friends	friend	equal	rights
share	give	equality	even
give	victims	justice	union

**Appendix D: Bigrams Involving Security That Appeared More Than 20 Times in the Messages of Democratic and Republican Legislators**

Democratic Legislators		Republican Legislators	
Bigram	Count	Bigram	Count
social security	786	national security	597
national security	311	homeland security	405
homeland security	144	border security	370
and security	132	social security	361
economic security	91	energy security	213
border security	72	and security	79
cyber security	68	the security	61
energy security	61	natl security	57
natl security	55	cyber security	46
retirement security	39	of security	35
the security	34	on security	34
food security	31	visa security	25
financial security	28	data security	21
our security	26		
middle-class security	25		
econ security	21		