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E-petition popularity: Do linguistic and semantic factors matter?

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ABSTRACT

E-petitioning technology platforms elicit the participation of citizens in the policy-making process but at the same time create large volumes of unstructured textual data that are difficult to analyze. Fortunately, computational tools can assist policy analysts in uncovering latent patterns from these large textual datasets. This study uses such computational tools to explore e-petitions, viewing them as persuasive texts with linguistic and semantic features that may be related to the popularity of petitions, as indexed by the number of signatures they attract. Using We the People website data, we analyzed linguistic features, such as extremity and repetition, and semantic features, such as named entities and topics, to determine whether and to what extent they are related to petition popularity. The results show that each block of variables independently explains statistically significant variation in signature accumulation, and that 1) language extremity is persistently and negatively associated with petition popularity, 2) petitions with many names tend not to become popular, and 3) petition popularity is associated with petitions that include topics familiar to the public or about important social events. We believe explorations along these lines will yield useful strategies to address the wicked problem of too much text data and to facilitate the enhancement of public participation in policy-making.

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1. Introduction

In proposing the idea of a “wicked problem,” policy scholars have introduced a class of problems with unusually challenging characteristics. Wicked problems are inherently difficult to formulate, encompass conflicting values within the public and among decision makers, and present implications that ramify throughout complex systems (Churchman, 1967). Part of what makes such problems so formidable, as Rittel and Webber (1973) have explained, is that, unlike the problems of mathematics and other traditional sciences, wicked problems are infused with processes of interpretation and value frameworks (Rittel & Webber, 1973). Unfortunately, in contemporary society, wicked problems seem to have become more the norm than the exception.

In response, some policy scholars have suggested that wicked problems are particularly appropriate for incorporating citizen participation into the policy making process. Fischer (1993), for example, has proposed citizen involvement in addressing wicked problems in order to focus on local knowledge, textual assessments, and interpretations of citizens rather than the “top-down” perspectives of policy analysts; he suggests that such methods may give rise to a process of participatory

policy analysis as “one of the tools of the discipline” (p.183). Raisio (2010) has argued that participation in democratic deliberative processes can be used to generate, evaluate, and prioritize policy proposals for wicked problems because citizen involvement forges a “collective mind” that incorporates participants’ creative responses and initiatives as well as mutual empathy in the process of creating commitment to the public good.

1.1. Technology platforms and citizen inputs

In contrast to deliberative strategies, new information and communication technologies have made it possible for hundreds, thousands, and even millions of people to express their views about issues and policy options they deem interesting and viable; there are many social media venues in which citizens discuss policy of all kinds. However, it has been quite difficult to use citizens’ unstructured online discourse to ascertain topics and options they suggest in these countless venues.

Recently, government-sponsored electronic petitioning systems have made it possible for citizens to enter into the policy-making process by proposing their own topics for policy consideration along with particular options that are deemed advantageous. Such systems make it possible for individuals to express their views on issue topics of their choosing and in their own voices, since petition initiation is in

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principle unmediated by surveys, mass media, or political party. Response to the US e-petitioning system “We the People,” launched in September 2011, has been enthusiastic with over 19 million users initiating over 400,000 petitions (not all of which reach the White House website, see below) that have attracted over 27 million signatures (The White House, 2015).

Guaranteed by the First Amendment in the Bill of Rights, petitioning was used by Americans prior to the development of mass media to call the attention of government leaders to unresolved problems, unpopular policies, and instances of misconduct and incompetence (Newton, 2002). Today, the capabilities of e-petitioning platforms make it possible to view petitions initiated and signed through We the People, and other national e-petitioning systems, as a genre of policy expression that emanates directly from citizens and that can also register popular support for proposed courses of action through signature accumulation for particular petitions. The inevitable challenge for policy analysts who might wish to use this citizen input is how to generate value from the volumes of textual information now offered through e-petitioning. E-petitioning has the potential to function as an e-government technology for direct participation in policy making if we could determine how to make sense of and use the text generated by e-petitioning to derive information about citizens' policy preferences.

From the perspective of policy-making, e-petitions may be viewed as examples of texts that seek to persuasively advocate proposals for policy change. E-petitioning platforms invite users to express their thoughts about what they would like the government to do, as well as provide a rationale for doing so. In We the People (WtP), for example, authors are prompted to create a title for their petition, with a sentence that begins: “WE PETITION THE OBAMA ADMINISTRATION TO...” and an instruction to complete the sentence in a maximum of 120 characters. Then authors are asked to enter a description for their petition (maximum of 800 characters), with text of the author's choosing. Authors are subsequently encouraged to contact their social networks to solicit the first 150 signatures for their petition. Upon registering 150 signatures, the petition appears on the White House website for We the People (<https://petitions.whitehouse.gov/>) where others may discover and sign it as well.

Petitions with signature levels that exceed a threshold, now set at 100,000 signatures over 30 days, are promised a response by the Obama Administration; in 2015, the Administration has pledged that responses will be issued within 60 days of having achieved that threshold. In some cases, these responses have referred to actions undertaken by the Administration that have been directly attributed to requests made in the petitions. Even without such action, it seems likely that petitioners would view the possibility of a direct response from the US Executive Branch to be highly motivating, encouraging them to seek petition signatures from other supporters. The prospect of initiating a petition that may be consequential in wielding impact on decision makers in the Executive Branch, either by changing action or influencing thinking, would seem to be highly attractive to petitioners, motivating them to find ways to increase the popularity of their petition, given that popularity is key to achieving such an outcome. One method for influencing whether or not a signature takes place is by making textual choices that enhance the persuasive impact of a petition.

The research reported below sought to determine the independent contributions of linguistic and semantic factors in explaining the popularity of e-petitions. Our overall research question asked whether, and to what extent, a number of linguistic and semantic factors are related to the popularity of e-petitions. The results show that each block of variables contributed statistically significant portions of variation in signature accumulation, and further that 1) language extremity is persistently and negatively correlated with petition popularity, 2) petitions with many names tend to be unpopular, and 3) petitions that include familiar topics to the public or are related to important social events tend to be popular. Below we present the research that supports

our choices of linguistic and semantic textual features, describe our analytic methods, and explain and reflect upon the results of our analysis.

2. Linguistic and semantic features of text

Given the nature of e-petitioning, we expect that authors of e-petitions make textual choices that are designed to enhance the likelihood that others will agree with them and so indicate by signing the petition. However, to the best of our knowledge, no e-petition studies have addressed the impact of textual patterns on online campaigns. Instead, we found multiple Twitter studies that have investigated the impact of textual patterns on retweets and other indexes of tweet influence. Thus, we refer to these Twitter studies, as well as communication studies of persuasion, to support our expectations about the impact of linguistic and semantic features on petition popularity.

2.1. Linguistic characteristics of persuasive text

2.1.1. Intensity and extremity

A long history of research has explored the effects of language choices on persuasion under the expectation that intense or extreme language makes a message more persuasive and increases its potential for acceptance, a suggestion that seemed relevant in the case of e-petitions, which are textual efforts to secure support for proposals for change. Past research focused on language intensity, that is, choices that indicated degree and distance from a position of neutrality. However, operationalization of language intensity has varied greatly across studies and theories that attempt to explain their effectiveness (see e.g., Bradac, Bowers, & Courtright, 1979; Bradac et al., 1979).

Hamilton and Stewart (1993) proposed an information processing theory of language intensity effects on attitude change that distinguishes between the emotionality of language choices and the specificity of language choices. They argued that more emotional language should be more interesting to receivers, thus enhancing their attention to a message and willingness to give it thoughtful consideration (that is, to “process” it). However, they suggested that such language may also highlight the extent to which the position expressed in a message disagrees with receivers' own positions. Building on this perspective, Craig and Blankenship (2011) focused on the relationship between linguistic extremity and message processing. They found that a message that included four pretested markers of extremity (the use of “much more,” “extremely,” “very”, and “wonderful”) increased participants' “processing” of that message, enhancing their sensitivity to argument quality, and increasing their willingness to sign a related petition, when linguistic extremity markers were accompanied by strong, rather than weak, arguments.

2.1.2. Urgency

Another approach to language intensity focuses on the use of greater specificity, that is nouns, verbs, and adjectives, which, according to Hamilton and Stewart (1993), present more information about qualities of an object and elicit more vivid images, enhancing the emotional impact of a message and improving its accessibility. Operationalization of specificity varies on the basis of the topics of messages included in past research. Given our interest in petitioning, we focused on language that defined the petition topic as urgent in some way, that is, as important, compelling, or demanding, and that suggested the need for fast, immediate, or prompt action. This is consistent with recommendations found in most standard persuasion texts (see, e.g., Osborn, Osborn, Osborn, & Turner, 2014) to include in persuasive messages a call for action or the need to commit to taking a first step in addressing a problem.

There have been no attempts to explore the effects of extremity or urgency in support of e-petitions, and indeed few attempts to explore the effects of language intensity, broadly construed, in any online environments. Andersen and Blackburn (2004) found that messages with greater language intensity were successful in increasing response rates

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