



Cognitive load and issue engagement in congressional discourse

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Abstract

Like all human actors, politicians possess limited cognitive capacity. In ordinary interactions, this limitation discourages political decision-makers from addressing high-dimensional policy problems unless incentivized to do so by exogenous “focusing events.” Public policy researchers have documented this pattern extensively, and have argued that cognitive constraints help explain the “stick–slip” dynamics that characterize macro-level policymaking. However, data and measurement limitations have prevented these studies from examining individual-level information processing patterns.

In this paper, I develop a text-based approach designed to measure diversity of attention at an individual level, which I apply to an original dataset of Congressional hearing transcripts surrounding the 2008–2009 Financial Crisis. I find that individual speakers engaged with a more diverse set of topics during the crisis than before its onset, and became more focused as the crisis subsided.

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1. Introduction

In decision-making scenarios, a key challenge human actors face is the problem of managing *issue dimensionality*. When deciding on consequential matters, actors grapple with a dizzying array of information. For a concrete example, consider national-level economic policy. Even straightforward changes to macroeconomic regulations (e.g. capital requirements for banks) force Congress to address a wide variety of downstream effects, including inflation, unemployment, business debt pricing, and homeownership.

Usually, cognitive limitations prevent individuals from considering all aspects of a particular issue (Jones, 1999; Simon, 1985). Political institutions follow this same pattern. Like the individuals that compose them, legislative bodies like the American Congress can only focus on a few ideas at once, leaving policy in most areas to languish

until a crisis point is reached. Researchers have argued that these cognitive constraints explain the disproportionate allocation of attention that characterizes high-level policy-making, in which attention to individual issues languishes for long periods that are “punctuated” by brief spikes of increased interest and engagement (e.g. Baumgartner & Jones, 2010; Jones & Baumgartner, 2005, 2012).

The attention allocation pattern described above is well-documented at the aggregate level, but few existing studies have examined information processing patterns among individual decision-makers. This disconnect is troubling; since many of the existing explanations for aggregate-level policymaking patterns are based on individual-level cognitive phenomena, providing evidence for the presence of these effects is a critical analytic step. Moreover, the lack of focus on individual-level patterns leaves important questions regarding individual-level allocation of attention unanswered. In particular, how does expertise or familiarity with a problem area affect an individual’s willingness to

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raise a broad set of problem aspects? And, are particular types of actors more willing to raise a broad set of issue dimensions than others?

In this paper, I propose a text-based measurement approach designed to address these questions. In recent decades, institutions like the US Congress have made individual-level text data (e.g. hearing transcripts) increasingly available. As I argue, topic models and other unsupervised dimensionality reduction tools are well-suited for detecting changes in allocation of attention. I outline an approach based on these methods, and apply this approach to examine patterns in conversation dimensionality in the US Congress from 2004 to 2011. Overall, I find that dimensionality of Congressional discourse spiked among all sub-groups by approximately 15% around the onset of the 2008–2009 Financial Crisis. Moreover, I find that dimensionality varied in predictable ways throughout the dataset, with experts and leadership members engaging more deeply with relevant policy problems than other speakers.

2. Issue engagement and “Cognitive Load

2.1. The politics of problem dimensionality

In the broader decision-making literature, an important theme for many studies is the notion of *cognitive constraints*. As Simon (1985, 1996) argues, individual behavior in decision-making settings can be best described as intendedly rational. Though human actors usually attempt to pursue goal-directed, utility-maximizing patterns of behavior, their ability to follow these strategies is constrained. In particular, individuals possess limited ability to consider and compare the relevant dimensions of various problems, creating an “oversupply of information” (Workman, Jones, & Jochim, 2009) that decision-makers cannot easily process. As a consequence, when faced with high-dimensional problems individuals resort to cognitive shortcuts, processing problem dimensions serially and relying on third-party signals and other decision-making heuristics (e.g. March, 1994; Jones, 1999; Tversky & Kahneman, 1981).

The difficulties involved with the ingestion of new information can be usefully framed through the concept of “cognitive load.” As defined in the instructional design and problem-solving literatures, the “intrinsic cognitive load” of a particular task refers to “demands on working memory capacity [...] intrinsic to the material being learned” (Paas, Renkl, & Sweller, 2003). Some tasks (e.g. elementary algebra and numerical reasoning) are relatively simple and require little effort to absorb, while others (e.g. calculus and higher-level mathematics) require substantially greater time and attention to master (Sweller, 1994). Though the cognitive load of a particular task is usually presented as an immutable aspect of that task, instructors (or other actors with agenda control) can break concepts into simpler “chunks” (Chase & Simon, 1973) or eliminate

non-germane problem aspects (Sweller, 2010) in order to ease individual-level cognitive demands.

Translated to the political domain, these cognitive phenomena produce an intuitive set of behavioral predictions. Like other human actors, politicians tend to avoid addressing issues that involve a heavy cognitive load. For a concrete example, consider legislative oversight. As McCubbins and Schwartz (1984) famously argue, oversight activity in the US Congress can be (loosely) categorized into two conceptual categories, which they term “police patrol” and “fire alarm”-style activity. In the former case, legislators regularly “patrol” bureaucratic activity, issuing closely-written legislative directives and maintaining constant oversight over a broad set of issue areas. By contrast, under the crisis-based “fire alarm” model, legislators let oversight activity in particular areas languish for long periods until third-party actors (usually, citizens or interest groups) draw attention to particular problems. McCubbins et al. present this behavioral pattern in a classic rational-choice framework, and argue that “fire alarm”-type oversight behavior represents a rational allocation of limited cognitive and financial resources:

When legislators try to write laws with sufficient detail and precision to preclude administrative discretion, they quickly run up against their own cognitive limits: beyond a certain point, human beings just cannot anticipate all the contingencies that might arise. The attempt to legislate for all contingencies can entail unintended (and undesired) consequences (McCubbins & Schwartz, 1984, 175).

While the “rationality” of crisis-based issue management is debatable, fire alarm-type oversight is clearly cognitively appealing. By delegating oversight authority and establishing broad “framework”-style legislation, lawmakers can focus their energy on a narrow set of important or familiar problem areas, and avoid the heavy cognitive load associated with a broad oversight agenda (see also, e.g. Lupia & McCubbins, 1994; McCubbins, 1985; McCubbins, Noll, & Weingast, 1987). When “police patrol”-style oversight is unavoidable, politicians tend to favor routinized, automatic processes which are slow to adjust to changes in external conditions (Baumgartner & Jones, 2010; Jones & Baumgartner, 2005, 2012). As a result, policymaking more generally tends to follow a “stick-slip” pattern, in which legislators and bureaucrats allow policy in particular areas to languish until a crisis point is reached (Baumgartner et al., 2009; Baumgartner & Jones, 2010).

2.2. Shouldering the load: individual-level predictions

Despite the volume of work in this area, an array of important questions remain unanswered. In particular, few existing empirical studies in this literature actually measure and test hypotheses related to individual-level behavior (as opposed to aggregate-level patterns). Largely, this limitation results from data constraints. Since major

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