



Surfacing the Submerged State with Operational Transparency in Government Services

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As Americans' trust in government nears historic lows, frustration with government performance approaches record highs. One explanation for this trend is that citizens may be unaware of both the services provided by government and the impact of those services on their lives. In an experiment, Boston-area residents interacted with a website that visualizes both service requests submitted by the public (e.g., potholes and broken streetlamps) and efforts by the City of Boston to address them. Some participants observed a count of new, open, and recently closed service requests, while others viewed these requests visualized on an interactive map that included details and images of the work being performed. Residents who experienced this “operational transparency” in government services – seeing the work that government is doing – expressed more positive attitudes toward government and greater support for maintaining or expanding the scale of government programs. The effect of transparency on support for government programs was equivalent to a roughly 20% decline in conservatism on a political ideology scale. We further demonstrate that positive attitudes about government partially mediate the relationship between operational transparency and support for maintaining and expanding government programs. While transparency is customarily trained on elected officials as a means of ethical oversight, our research documents the benefits of increased transparency into the delivery of government services.

“If you are successful, somebody along the line gave you some help... Somebody helped to create this unbelievable American system that we have that allowed you to thrive. Somebody invested in roads and bridges. If you’ve got a business, you didn’t build that. Somebody else made that happen...” Barack Obama, July 2012

According to the Pew Research Center for the People and the Press, Americans’ trust in government is near historic lows and frustration with government performance is approaching record highs (Dimock, Doherty, & Kohut, 2013). While debates rage about how effective government is in providing basic services – with many clamoring for privatization of services ranging from health care to fire departments – one explanation for these trends in public opinion is that, independent of effectiveness, many voters may be unaware that government provides any services at all. We present the results of an intervention targeted toward increasing citizens’ awareness of the many services that government provides; we show that in some circumstances, providing greater “operational transparency” into government’s efforts to address citizens’ needs improves attitudes toward government.

Transparency and Public Opinion

Government transparency in the United States is primarily trained on elected officials, and is used as a means of oversight to help solve the classical principal-agent problem (Prat, 2006). For example, on President Obama’s first day in office, he issued a memorandum that directed executive departments and agencies to “harness new technologies to put information about their operations and decisions online and readily available to the public” (Obama, 2009). However, despite efforts to promote transparency at the top, far less of an emphasis has been placed on transparency at the

bottom – on the actual, nuts-and-bolts delivery of government services. In the absence of such transparency, the extant literature suggests that constituent awareness of and appreciation for the services government provides may suffer.

Indeed, political theory suggests that policy designs that make government efforts more visible elevate citizens' awareness of those efforts, while those that obscure such efforts leave citizens oblivious to the government's role (Pierson, 1993). Consistent with this view, research suggests that Americans are surprisingly unaware of the services provided by government. In one recent survey of Americans, the majority reported having never used a government social program; yet when asked whether they had used any of twenty-one distinct government programs, the vast majority reported using one or more (Koch & Mettler, 2012). This discrepancy arises in part because government programs are often delivered by individuals and corporations, such that the beneficiaries of these programs do not attribute them to the government – a phenomenon dubbed the “submerged state” (Mettler, 2010; 2011).

Moreover, even when citizens are aware that the government is engaged in service delivery, their opportunities to observe it in action may be somewhat limited. Research in service operations shows that when service delivery is obscured from customers' view, providers must be particularly diligent in promoting awareness of the value created by those “hidden” services (Neely, Mcfarlane, & Visnjic, 2011). Yet government services frequently fall under the category of quasi-manufacturing, in that they entail virtually no face-to-face customer contact (Chase, 1981). For example, residential mail delivery and trash collection often occurs during working hours, when

homeowners may be away. Traffic is typically rerouted around major construction projects, and temporary work zones are generally cordoned off from pedestrians.

When service instead occurs in the presence of stakeholders, they are able to observe aspects of the service delivery process; research demonstrates that such “operational transparency” can improve perceptions of the service being provided. For example, merely observing that time has been devoted to the delivery of a service can increase ratings of outcome quality (Chinander & Schweitzer, 2003; Kruger, Wirtz, Van Boven, & Altermatt, 2004). The more the process is perceived to be effortful, the higher the level of satisfaction reported by customers (Mohr & Bitner, 1995); feelings of reciprocity and gratitude show similar increases (Morales, 2005). Finally, the perception that a firm assumes higher costs – as when exerting more effort – leads customers to view higher prices as less unfair (Kahneman, Knetsch, & Thaler, 1986).

Importantly, research suggests that customers need not be co-located with service providers for the benefits of transparency to emerge. For example, when travel and online dating websites provide a visual representation of the search effort being exerted on a customer’s behalf, customers report higher perceptions of service value, increased satisfaction, and increased loyalty (Buell & Norton, 2011). We explore whether introducing this type of operational transparency into government services – literally, attempting to reveal to citizens some of the many services provided by government – can improve perceptions of government.

Overview of the Experiment

We present the results of an experiment in which Boston-area residents interacted with a website that visualizes the service requests submitted by members of the public and the City's efforts to address them. Participants in a "blind" no-transparency condition observed a simple count of new, open, and recently closed service requests; participants in two "transparency" conditions encountered these requests visualized on an interactive map, with details and images of the work being performed. We also examine an important boundary condition: participants in the "partial transparency" condition saw the government doing a relatively efficient job of meeting service requests, while those in the "full transparency" condition saw evidence that the government might be falling behind on meeting the public's requests. We assess whether seeing the work of government – fixing potholes, repairing streetlamps, removing graffiti, collecting garbage – leads citizens to express more positive attitudes toward the government and increased support for maintaining and expanding the scale of government programs.

Method

Participants. Participants ($N=125$, $M_{age}=23.1$, 52.8% male) were Boston-area residents who completed the experiment in the Harvard Business School Computer Laboratory for Experimental Research as a part of a series of unrelated experiments in exchange for \$25.00.¹

Design. We collaborated with Code for America (www.codeforamerica.org), which had recently developed an online 311 application called "The Daily Brief." By logging onto the Daily Brief website (dailybrief.311labs.org), citizens are able to view

service requests submitted to their local government by themselves and others in their communities.

We used the version of the website that was localized to display actual service requests submitted from the Boston area. Requests for service had been submitted to the Boston city government through the Citizen's Connect cell phone application, available for download from cityofboston.gov. These submissions included a photo of the neighborhood issue, a title, a description, and an approximate address (verified by the cell phone's GPS). Service requests varied in nature, identifying neighborhood issues such as potholes, damaged signs, and graffiti. For example, user-submitted descriptions at the time of this study included: "broken playground equipment needs a bolt"; "annual enormous pothole at the end of the Westbound exit ramp, left lane"; and "graffiti on Allied Waste dumpster" (see Figure 1 for a sample service request).

The Daily Brief website retrieved these service requests on a daily basis through the City of Boston's Open311 API, and overlaid them onto a map, with pushpins graphically representing the location of each issue (Figure 2). By clicking on each pin, users could see the title, photo, address, and description of the corresponding issue, along with a timestamp indicating when it was submitted to the City, and the period of time that had elapsed since submission. Pushpins were color coded based on the status of each request. Requests that were "opened yesterday," were represented with orange pins ($M=31.4$), requests that were "closed yesterday," were represented with blue pins ($M=31.2$), and the remaining "open" requests were represented with red pins ($M=7,652.5$). In addition, a tally summarizing the total number of requests that were open, opened yesterday, and closed yesterday was displayed at the bottom of the screen.

Conditions. Participants viewed one of three randomly-assigned versions of the Daily Brief Boston website. Participants in the “blind” condition ($n=38$) saw a version of the website without any pushpins, merely viewing the tally of service requests in each category. Remaining participants were assigned to one of two transparency conditions. Participants in the “partial transparency” condition ($n=44$) saw the same website as participants in the blind condition, but with the addition of orange and blue pins representing recently opened and closed requests. Finally, participants in the “full transparency” condition ($n=43$) saw the same website as participants in the partial transparency condition, but with the inclusion of red pins representing open service requests (see Figure 2 for sample screenshots of all conditions).

Dependent measures. After exposing participants to one of the conditions described above, we assessed participants’ attitudes about government using questions from the Pew Research Center for the People and the Press Trust in Government Survey. To facilitate our analysis, we reverse coded negatively-worded items and standardized each variable by calculating z-scores for each response. We also present mean responses for untransformed items in Table 1.

Exploratory factor analysis of the standardized variables revealed nine questions with factor loading coefficients exceeding 0.55 that measured participants’ attitudes toward government, such as: *All in all, would you say the government is having a positive or negative effect on the way things are going in this country today? Overall, would you say the agencies and departments of the government are doing an excellent, good, only fair, or a poor job? What comes closer to your view: criticism of the government is often justified, or government often does a better job than it is given credit for?* (see Table 1 for

a complete list.) When items have different frequency distributions, extant literature advocates more stringent thresholds for assessing the practical significance of standardized factor loadings, with 0.55 suggested as a “good” choice (Comrey & Lee, 1992; Tabachnick & Fidell, 2007); our results are substantively similar if we use thresholds between 0.45 and 0.60.

Factor analysis revealed two additional questions that exceeded the factor loading threshold criteria for a different dimension, capturing participants’ preferences for the scale of government: *Which would you rather have: bigger government, more services, or smaller government, fewer services? Where on the following scale would you put yourself: government programs should be cut back, to government programs should be maintained?*

Using the questions identified above, we created composite measures of *attitudes toward government* ($\alpha=0.83$) and preferences for the *scale of government* ($\alpha=0.74$), which serve as our focal dependent measures.

Control variables. Given that responses on these dependent measures are likely correlated with individuals’ political ideology, we assessed participants’ political orientation, which we use as a control variable in our analyses. We also control for gender, age, income, whether the participant is a member of a racial minority, and level of education (see Table 2 for the wording of these items). Finally, we control for the number of active service issues present on the site at the time of the participant’s interaction, as well as the amount of time each participant spent browsing the Daily Brief website.

Results

We separately modeled attitudes toward government and support for the scale of government programs, Y_i , as a function of the participant being randomly assigned to one of the two transparency conditions (partial or full) instead of the blind condition, $TRANS_i$, the incremental effect of full transparency, $FULL_i$, and a vector of controls, X_i , as described above:

$$Y_i = f(\beta_0 + \beta_1 TRANS_i + \beta_2 FULL_i + \beta_3 X_i + \epsilon_i) \quad (1)$$

We estimate each model using OLS regression with robust standard errors. In Table 3, Columns (1-2) demonstrate that in the absence and presence of controls respectively, there is no difference in attitudes toward government between participants in the blind and full transparency conditions (coefficients < 0.063 ; $ps > 0.68$; two-tailed). Importantly and as predicted, Column (3) shows that participants in the partial transparency condition expressed more positive attitudes toward government than participants in the blind condition (coefficient = 0.288; $p < 0.05$; two-tailed). When controls are introduced in Column (4), the difference between the blind and partial transparency conditions intensifies (coefficient = 0.325; $p < 0.05$; two-tailed), and a marginal difference emerges between the partial and full transparency conditions (coefficient = -0.257; $p < 0.10$; two-tailed). These results suggest that showing what the government *is* doing (the partial transparency condition) does in fact improve citizen attitudes toward government; showing what it *is not* doing (the full transparency

condition) may not – though we note that full transparency does not decrease attitudes below the baseline “blind” condition. This pattern of results, in which participants observing partial transparency generally view government more favorably than participants in the blind and full transparency conditions, persisted on average across individual items (see Table 1).

Results were similar for participants’ assessments of the appropriate scale of government (Figure 3). In Table 3, Columns (5-6) show that there is no difference in preferences for the scale of government between the blind and full transparency conditions, irrespective of controls (coefficients < 0.197 ; $ps > 0.30$; two-tailed). However, Column (7) shows that scale preferences for participants in the partial transparency condition were marginally higher than those of participants in the blind condition (coefficient = 0.375 ; $p < 0.10$; two-tailed). These differences intensify in Column (8) with the introduction of controls (coefficient = 0.358 ; $p < 0.05$; two-tailed), while scale preferences do not differ between the full and partial transparency conditions (coefficient = -0.149 ; $p = 0.31$; two-tailed).

Interestingly, a comparison in Column (8) of the magnitude of the coefficients for transparency (coefficient = 0.358 ; $p < 0.05$; two-tailed) and conservatism, which is assessed on a 5-point scale (coefficient = -0.357 ; $p < 0.01$; two-tailed), reveals that controlling for other factors, participants who observed partial transparency exhibited a rise in preferences for the scale of government over participants in the blind condition that is roughly equivalent to a 20% decline in conservatism.

To what extent did more favorable attitudes toward government brought about by increased transparency lead to greater support for maintenance or expansion of

government programs? To answer this question, we conducted a causal mediation analysis (Hicks & Tingley, 2011; Imai, Keele, & Tingley, 2010). We found that the average causal mediation effect, the change in preferences for government scale that was due to the transparency-induced change in attitudes toward government, was 0.102 (confidence interval: 0.013, 0.233). This effect accounted for 28.12% of the total effect of transparency on scale preferences, as demonstrated in Column (9).

Discussion

We find that increasing the operational transparency of government services – showing citizens the work in which government is engaging on their behalf – engenders positive attitudes toward government and greater support for maintaining or expanding the scale of government programs. While transparency in government is traditionally trained on policymakers as a means of ethical oversight, our findings highlight the value of transparency in the execution phase – while services are being delivered to the public.

Our results also make several theoretical contributions to research exploring operational transparency. Prior research has shown, for example, that providing an ex-post account of the inputs dedicated to the delivery of a service improves outcome perceptions (Chinander & Schweitzer, 2003), but to our knowledge, ours is the first experiment to demonstrate that asynchronous operational transparency can improve organizational perceptions. Additionally, while perceptions of effort have been shown to have generally positive effects on evaluations (Morales, 2005), the extant work on operational transparency has only documented the benefits of transparency for the direct recipient of the transparent process (i.e., the person who may have reported the pothole).

Our results also suggest that operational transparency may be used to improve sentiment more generally (i.e., the public at large). Finally, our research highlights a novel and critical boundary condition for operational transparency. Our experimental design enables us to separately evaluate the effect of showing what the organization is doing from what the organization could be doing, but is not. When operational transparency reveals the work that government is doing, it improves attitudes toward government and increases preferences for government scale. When transparency reveals the growing queue of tasks the government has not yet accomplished, the intervention is no more helpful on these dimensions than not being transparent at all – though we again note that full transparency does not cause attitudes to become more negative than no transparency.

Our results are particularly timely in light of recent technological and organizational developments that may accelerate the trend toward government operational transparency. The evolution of Open311 standards and the increasing prevalence of APIs that connect public data to developers are reducing the technical barriers to adopting operational transparency, coupled with the emergence of both public and private sector organizations tasked with deepening civic engagement (such as the Boston Mayor’s Office of New Urban Mechanics and Code for America, with which we partnered for this research), offer increasing opportunities to make the work of government more available – and viscerally so – to citizens.

