

Trust in institutions: an experimental study¹

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Trust in public institutions is crucial for compliance with recommended behaviors that minimize negative externalities and improve societal welfare. Previous studies have shown how exposure to polarizing media content and living through a crisis can rapidly erode citizens' trust in public institutions. This study aims to provide novel experimental evidence on the efficacy of light-touch scalable interventions that can rebuild trust in public institutions.

Introduction and Background Literature

Trust in public institutions (PI) is a catalyst for democratic stability and economic advancement (Horváth, 2013). A higher level of trust in institutions can increase citizens' willingness to follow recommended behaviors (Darden and Macis, 2024), which can reduce negative externalities and improve societal welfare. While several studies have shown that trust in institutions can easily erode (Bravo and Stegmann, 2022; Algan et al., 2021), there is no experimental evidence on how trust can be rebuilt and if this leads to changes in behavior. This limitation has been mainly due to the difficulty of finding plausibly exogenous shifters of trust outside of laboratory settings (Durlauf, 2002). Our study aims to fill this gap. We hypothesize that trust in a public institution stems from a person's familiarity with it and that understanding and appreciating its work is an essential precondition for establishing trust. Conversely, a person may be more susceptible to misinformation about an institution when they don't understand its work, reducing the chances that they will appreciate its policies and comply with its recommended behaviors. This vicious cycle may explain the growing polarization of trust in public institutions among partisans, which is further amplified by the consumption of biased media (PEW, 2014). Motivated by this hypothesis, our main research question is the following: can exposure to information about the institution causally lead to higher levels of trust and, in turn, affect behavioral intentions?

In a survey experiment, we randomly vary respondents' exposure to the website of the Environmental Protection Agency (EPA), for which trust is highly polarized according to previous

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surveys. A group of respondents is asked to report the air quality in their area at the time of participating in the study, another group is asked the same question but is offered a link to check the answer on the EPA's website, and a third group is asked a different, more generic, question about EPA and is shown a link to check their answer. This design aims to disentangle whether mere exposure to an institution or information that highlights how an individual benefits from the institution's work, can increase trust. The design builds on a previous study on trust in the CDC during the COVID-19 pandemic, which showed promising results in trust-building and behavior change.

Ultimately this study aims to provide novel causal evidence on the malleability of trust beliefs and their role in encouraging behavioral change that can improve societal welfare.

Experimental Design

We propose to answer this question by means of a survey experiment. The public institution of focus in our study is EPA, the U.S. government agency responsible for implementing regulations to protect the environment. We choose this institution for three reasons: firstly, its policies and programs directly affect Americans' lives, thus the perceived benefits (or costs) of its work are more salient than other public institutions such as, for example, NASA or the National Oceanic and Atmospheric Administration; secondly, greater compliance with EPA's recommended behaviors can have positive welfare implications by reducing negative externalities (e.g., reducing one's carbon footprint); thirdly, recent polls have shown that confidence in EPA (PEW, 2023) and support for its policies (Baumann, et al. 2023), such as setting stricter limits on car emissions to improve air quality, is politically polarized making it a suitable candidate to evaluate if our intervention can reverse the political gap in institutional trust.

In the first survey question, we aim to collect respondents' baseline knowledge of EPA, which we will use as a key covariate in our econometric regressions. In the second question, we will elicit respondents' factual knowledge about the air quality in the area where they live, which is a metric that the EPA tracks and uses to propose policy recommendations that affect every citizen. A random subset (Treatment 1) of respondents will be given the opportunity to consult the EPA's dedicated webpage to check the air quality in their area, although they will not be incentivized to do so, nor will they be compensated for spending more time on the survey. This aims to increase the external validity of the treatment by resembling an everyday life scenario where individuals

might have the opportunity to consult an institutional website, such as via an online ad or a link shared by a peer, but they are free to click on it or not. To check for the accuracy of responses in Treatment 1, we will match survey answers to EPA's administrative records (see the "Additional Data" section below). A third random subset (Treatment 2) of respondents will instead be asked a different question about EPA and be offered the opportunity to consult the institution's website to find the answer. The objective of the treatments is to evaluate whether exposure to any official information about the institution is sufficient for shifting trust beliefs or if information that increases people's appreciation for how the work done by the institution directly benefits them is more effective. While other experimental survey studies measure priors and posteriors (before and after treatment), we don't measure the initial levels of trust to avoid anchoring respondents who may have a tendency for consistency. Further, eliciting trust priors may affect the probability of compliance with treatment due to a political identity salience effect, as respondents might choose to discard information coming from a source that they just declared to not trust in a previous question, affecting the treatment uptake.

This design resembles and complements another ongoing study, in partnership with NORC, where we tracked Americans' trust in the CDC during the COVID-19 pandemic. Respondents in this study were asked to report the number of deaths in their state and the country when they took part in the survey. We experimentally varied exposure to the CDC's website to check the official statistics. Treatment compliance was high, as measured by a hidden timer: treated respondents spent on average 16 more seconds (from a baseline of 60 seconds) answering the questions ($p < 0.01$) and were more likely to correctly report the number of deaths (12 percentage points from a baseline of 31%, $p < 0.01$). This effect was homogenous across respondents regardless of their political ideology, suggesting that motivated beliefs may not hinder treatment uptake, in line with the findings of Garcia-Hombrados et al. (2024). Exposure to the treatment also significantly increased trust in the CDC as measured by a follow-up longitudinal survey three months later. This effect was driven by respondents who consumed mostly Republican-leaning news, reversing the political gap in institutional trust that we documented in the control group. In this study, we will evaluate whether a similar intervention can reverse a comparable Democratic-Republican gap in trust in EPA. To further improve our measurement of treatment compliance, we will complement a hidden timer with a hidden click tracker. Using the results from our first study, we estimated that we would be powered to detect an effect size of 0.0035 for a binary trust outcome with a baseline of 0.48.

In questions three and four, we will measure respondents' perceived competence and politicization of EPA. This is an important distinction since previous studies have shown that institutional distrust may be explained by perceived polarization (Bolsen and Druckman, 2018) as well as by perceived incompetence (Stoop et al., 2021). We will also ask the same questions about the CDC, which we will use as a placebo test. In question five, we will elicit respondents' self-reported willingness to comply with a behavior recommended by the EPA. Given that support for similar policies is polarized by the consumption of biased media (Feldman et al., 2012), in the sixth question, we will collect respondents' media diet, which we will use as covariates as well as for subgroup analyses, in line with our previous study. Having access to a probability sample will improve the reliability and generalizability of our results, especially when providing point estimates of the treatment effects across subgroups of the population based on political ideology and media consumption.

Finally, at the end of the survey, we will provide respondents with EPA's social media links, and prompt them to follow the EPA to stay informed. Indeed, an increase in the likelihood of following the EPA on social media might have long-term consequences given that they will receive more information about the environment and how to protect themselves.

Research questions

We hypothesize that trust in institutions stems from a person's familiarity with the institution and that mere exposure to it can be an important precondition to establishing trust. Conversely, the lack of exposure to institutions can lead to a vicious cycle of information avoidance and mistrust. Our main research question is thus the following: Can reducing the search costs of PI-sourced information lead individuals to consume it, internalize it, and increase trust in PIs, breaking this vicious cycle? Individuals might avoid information even when they can more easily access it (i.e., when the search costs are low), or they might consume the information but not internalize it, thus not changing their trust beliefs.

Our study first explores whether individuals consume PI-sourced information when search costs are lower, even if not incentivized or forced. Secondly, we disentangle whether the type of information provided matters. We disentangle whether the increase in trust we might observe (and observed previously in a similar setting) is due to a familiarity effect developed through

exposure to the institution's website (the mere exposure effect) or to a greater appreciation for the institution's work (coming from the consumption of useful information).

We propose to answer these questions through a survey experiment. We will recruit about 1,600 American respondents from a representative panel of the NORC's AmeriSpeak panel. All respondents will answer an initial question, followed by a randomized question, dividing the sample into three groups: control, treatment A, and treatment B. All subsequent questions will be the same for all respondents (see the questionnaire section below).

Outcome measures and analysis

a. Primary outcomes

Research question: do the treatments...	Measure/Unit	Analysis
Increase the probability that respondents answered the question correctly? (Information internalization)	<p>Correctness of response.</p> <p>We will measure the difference in accuracy between Control and Treatment A by considering whether the AQI index reported falls between a ± 10 interval around the EPA's official figure².</p> <p>For Treatment B there is only one correct answer per respondent.</p>	Logit with a binary outcome (clicked = 1, 0 otherwise) regressed on the categorical treatment variable, with and without controls.
Change trust beliefs in perceived competence of PI? (Trust: competence)	Trust beliefs on a 7 point Likert scale.	We will first run a simple OLS regression, with a dummy flagging whether or not the respondent trusts the institution, with and without controls. We will also run an ordered logit with the outcome expressed as a full-scale and some non-parametric tests, as robustness checks.

²We allow small discrepancies as the index reported at the county and the zip code levels might vary. See “Additional data” section in this PAP. In a series of robustness checks, we will vary the margin of error.

		<p>Then, conditional on having a first stage, we will run a Two-Stage Least Square regression (on the same outcome) instrumenting correctly answering the treatment question with the treatment assignment, with and without controls, as well as the level of air quality in their area as a proxy for demand for public institution's intervention.</p>
Change the belief that an institution is politicized versus independent? (Trust: politicized)	Trust beliefs on a 7 point Likert scale.	<p>We will first run a simple OLS regression, with a dummy flagging whether or not the respondent believes that the institution is politicized, with and without controls. We will also run an ordered logit with the outcome expressed as a full-scale, and some non-parametric tests, as robustness checks.</p> <p>Then, conditional on having a first stage, we will run a Two-Stage Least Square regression (on the same outcome) instrumenting correctly answering the treatment question with the treatment assignment, with and without controls.</p>
Increase individuals' willingness to recommend the EPA to run a study? (Behavioral intention)	Behavioral intention on a 0-100 probability scale.	<p>We will first run an OLS regression, with the behavioral intention score as the dependent variable on the categorical variable for the treatment, with and without controls. Then, conditional on having a first stage, we will run a Two-Stage Least Square regression (on the same outcome)</p>

		instrumenting correctly answering the treatment question with the treatment assignment, with and without controls.
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b. Secondary outcomes

Research question: do the treatment interventions...	Measure/Unit	Analysis
Change the amount of time respondents spend answering the question? (Information consumption)	Total number of seconds (tracked via hidden timer)	OLS regression with the number of seconds spent answering the randomized question as dependent variable regressed on treatment categorical variable, with and without controls.
Increase the likelihood that respondents click on the provided link? (Access to information)	Dummy variable =1 if treated respondents click on link provided	Logit with a binary outcome (clicked = 1, 0 otherwise) regressed on the dummy treatment variables (i.e., we will drop the control group observations), with and without controls.

Increase in willingness to click on any of the social media links provided	Dummy variable = 1 if respondents clicked on any of the links.	Logit with a binary outcome (clicked = 1, 0 otherwise) regressed on the categorical treatment variable, with and without controls.
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Heterogeneity analysis.

In this section we pre-specify the simple heterogeneous treatment effects (HTE), including the rationale for our subgroup and interaction terms analysis. For the HTE, we will adopt the following empirical strategy:

$$Y_i = \alpha + \sum_{\tau=A,B} \beta_{\tau} Treatment_{\tau i} + \sum_{\tau=A,B} \theta_{\tau} Treatment_{\tau i} * Z_i + \gamma Z_i + X_i + u_i \text{ , where:}$$

- Y is each of the five outcomes previously specified - namely: (i) access to information, (ii) information consumption; (iii) information internalization; (iv) trust: competence; (v) trust: politicization; (vi) behavioral intention.
- β_A and β_B are the intention-to-treat (ITT) coefficients indicating the treatment effects of Treatment A and Treatment B.
- γ is the coefficient of the covariate of interest Z (see below)
- θ_A and θ_B are the coefficients of the interaction term between each treatment arm and the covariate of interest Z
- X is a set of controls, and
- u is the error term

In each specification, the covariate of interest Z will be one of the following:

Covariate Z	Measure/Unit
Awareness of EPA	Dummy equal to 1 if the respondent selected EPA among the list of organizations in Question 1 of the

	survey ³ .
Media diet ⁴	Two dummies: one flagging whether respondents consume primarily Democratic-leaning news and one whether they consume primarily Republican-leaning news ⁵ .
Education attainment	Dummy equal to 1 if the respondent has completed college education or above
Perceived benefits	Categorical variable = {1,2,3} indicating if the quality of the air was good, medium, or bad, for each respondent at the time of taking part in the survey.
Age	Categorical variable = {1,2,3} to flag respondents' generation (Baby Boomers, Gen X, Millennials or below)

Placebo: In the post-treatment trust beliefs questions, we will include another public institution - the Internal Revenue Service (i.e., the IRS). This comparison will enable us to evaluate whether respondents differentiate their trust beliefs across institutions, and don't hold negative or positive beliefs in general for all public institutions.

Controls. We will use the following controls: gender, race/ethnicity, age, education, household income, employment status, marital status, # of members in the household, home internet access, census region, political party in power in their state at the time of survey completion, Metropolitan Statistical Area (MSA) status, device type (used to take the survey), religious affiliation. We will analyze the correlation among controls and drop those that are highly correlated to avoid multicollinearity.

³ We will also flag respondents who select all the available options in Q1, as they might select all due to an experimenter demand effect.

⁴ We will replicate this analysis using party affiliation (three categories: Democrat, Republican, and Independent) as a robustness check. We hypothesize stronger effects from media diet interaction analysis because we expect media to be a stronger mediator of information consumption than party affiliation.

⁵ The omitted category is the one of respondents consuming unbiased news or news biased from both sides.

Power Analysis for primary outcomes

Parameters:

- a. Sample sizes: 530 respondents in the treatment A group, 530 respondents in the treatment B group, and 530 in the control group.
- b. Power: 0.8
- c. Significance: 0.05

Tests:

- a. Information internalization. We hypothesize that 20% of the respondents in the control group will correctly answer the AQI question. We perform a two-sample proportions test using a Pearson's chi-squared test. With these parameters, we should be able to detect any difference in correctly answering the question between each treatment and the control above 7%.
- b. Trust: competence. We hypothesize that the control group has a level of trust of 4, with a standard deviation of 2. We perform a two-sample mean test using a t-squared test. With these parameters, we should be able to detect any difference in confidence between each treatment and the control above 0.35 points.
- c. Trust: politicization. We hypothesize that the control group displays a score of 5 on the politicization scale, with a standard deviation of 2. We perform a two-sample mean test using a t-squared test. With these parameters, we should be able to detect any difference in confidence between each treatment and the control above 0.35 points.
- d. Behavioral intention. We hypothesize that the respondents in the control group will be willing to select the EPA to conduct a study with a 50% probability, with a standard deviation of 0.1. We perform a two-sample mean test using a t-squared test. With these parameters, we should be able to detect any difference in confidence between each treatment and the control above 1.7 percentage points.

Additional data

We will obtain information on the air quality at the “sensor” level and the county level directly from the Airnow.com website, through an API. This information is updated hourly. This is the same source as that of the information respondents are given access to in the treatment groups.

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