



Nudged by the Public: Social Influence Affects Citizens' Judgments on Policy Performance

Yixin Liu and Chengxin Xu

EasyChair preprints are intended for rapid dissemination of research results and are integrated with the rest of EasyChair.

June 9, 2019

Nudged by the Public: Social Influence Affects Citizens' Judgments on Policy Performance

Yixin Liu

Askew School of Public Administration
Florida State University
yl17g@my.fsu.edu

Chengxin Xu

School of Public Affairs and Administration
Rutgers University
chengxin.xu@rutgers.edu

Public Management Research Conference 2019

Abstract

Performance of policy implementation is an important source of information for citizens to evaluate the policy outcome and to hold government accountable. However, given increasing amounts of information disclosure and exchange by social networks, people's evaluation and attitudes of public policies might be affected by a social influence rather than the performance information. In this study, we design a survey experiment ($N = 366$) to investigate whether social influence effect will influence people's attitude toward a certain policy, given the performance information available. Our findings support our hypotheses that social influence affect citizens' policy performance perception, but it does not affect their policy support attitudes. Moreover, social influence among different social groups are not the same. These evidences suggest that citizens are not only using performance information to judge policy, and their performance perception process are much complicated than we previously assume.

Key words: social influence, group identity, performance information, survey experiment

Introduction

Public performance information is an important tool for citizens to evaluate government activities, measure productivity of public services, and hold governments accountable (James, 2017; James & Moseley, 2014; Walker, Lee, James, & Ho, 2018; Yang & Hsieh, 2017). Performance information openness is helpful for encouraging democratic dialogues between citizens and governments, building trust between both sides, and facilitating coproduction (Grimmelikhuijsen & Klijn, 2015; Olsen, 2015; Riccucci, Norma, Ryzin, Gregg G Van, Li, 2015). It is also beneficial for public management scholars and practitioners to collect different public attitudes among diverse citizen groups to improve policy implementation in the future. Before predicting the way the policy performance can result in various public opinions, it is important to understand whether performance information provides accurate evidence that allows citizens to understand and support a policy. To address this problem, it is valuable to investigate the possible factors that can shape citizens' perceptions of government performance information.

Abundant of quantitative performance information are available for citizens from multidimensions such as government website, social media, and other online channels. Citizens perception of performance information is not simply based on the impersonal numbers but anchored by information framing, information source, and even social effects (Andersen & Hjortskov, 2016; Marvel, 2016; Olsen, 2015, 2017). Overwhelmed by voices and opinions in the social media, social effects might influence people's evaluations of, and attitudes about, policies rather than the performance information itself. Cooper, Kelly and Weaver (2001) characterized attitude formation according to the social influence theory: people learn and imitate others' actions to form their own opinions, which reduces cognitive effort and ensures compliance with social norms. More specifically, people have inclination to adjust their attitudes or behaviors from their social groups.

Group identity is a well-tested mechanism in social science literature to promote people's collaborative behaviors (Chen & Li, 2005). It is also prevalently used in representative bureaucracy literature by public administration scholars (Riccucci, van Ryzin, & Jackson, 2018; Riccucci, van Ryzin, & Lavena, 2014). These researches assume that people may adjust their decisions when they identify their ingroup status. Group can be identified by various ways in public agenda discussions, such as race, gender, income, ideology, and occupation. However, most of studies focus on one group

and see its influence toward people's decision-making. To extend the theoretical understanding of group identity and its influence toward public affair cognition, we propose a dynamic model of social influence in groups to see how it affect citizens' public performance evaluation.

The current study has conducted a between and within subject design survey experiment to address: 1) can ingroup members actions (informational social influence (ISI)) or attitude (normative social influence (NSI)) affect citizens' perception toward public programs' performances? 2) when facing different public programs' performances, do citizen switch their group identity to evaluate information? We use two policy scenarios (a medical policy: expanded access of experimental drug (EA) and an environmental regulation program: renewable portfolio standard (RPS)) as our vignettes. We randomly separate our participants into three groups (ISI group, NSI group, and placebo group) for each policy scenario and examine the social group effects toward citizens' policy assessments. Consistent with each policy feature, we use race for EA scenario and income for RPS as group identifiers, and we let all participants view both policy scenarios in random order to measure whether group identities can be transited with contexts.

Findings from our experiment suggest: 1) both ISI and NSI significantly affect people's evaluation of public program performances; 2) social influence about public performance do not change people's policy attitudes; 3) group identity is dynamic, and more complex than we assume to. Our results make contributions for public administration scholars to further understand how citizens make sense of performance information in a more comprehensive picture. In the following section, we demonstrate performance information literature in public administration. Then we describe social influence and group identity theories. Finally, we explain our experimental design and present our results and conclusions.

Literature Review

Making Sense of Performance Information

Policies' performance information appears now in the tide of social media, as the government increasingly is using online channels to communicate with the public. Mostly, this information expresses by table, graph, numbers, rankings, and other metrics. Performance information helps citizens to understand government activities and hold the government

accountable. Recently, a strand of experimental studies examines the relationship between public performance and citizens' perception on government's activities. Within performance information contexts, studies have produced many explanations on how different contexts, frames, and sources of performance information affect citizens satisfaction toward governments (James & van Ryzin, 2017; Marvel, 2016; Olsen, 2017; Walker et al., 2018).

Different information framings affect citizens public performance understanding. Most scholars suggest the importance of the quantitative expression of performance information. One of the predominate models is expectancy disconfirmation (Andersen & Hjortskov, 2016). It suggests that individuals' perception of performance information is shaped by the anchored expectation. Moreover, performance perception is affected by reference points and negativity bias (James & Moseley, 2014; Moynihan, 2016; Olsen, 2015). Whether performance information provide target and actual performance comparison adjusts people's judgement. And reference points may trigger negativity bias to make bad performance much salient than good performance in citizens' minds (Olsen, 2015, 2017).

Furthermore, citizens can get public performance from many sources, such as social network, government website, non-profit organizations, and research institutes. People easy to have preconceived understanding of public performance by its source (Walker et al., 2018). Information from independent public audit institutes have higher credibility than government self-reports to citizens. Sector difference between private and public also have effects on adjusting people's judgement on performance information (Marvel, 2016). People presuppose public sector with poor efficiency and flexibility than private companies. In addition, political affiliation also can prime people's performance evaluation. Performance data reporting from Democrat or Republican associations can strongly affect citizens' attitudes (Bisgaard, 2019).

Motivational reasoning literature suggest that citizens are not evaluating public performance only by the information per se (James & van Ryzin, 2017; Taber & Lodge 2006). People motivationally perceive information by other outside factors. However, what and how external factors impact on citizens' perceptions of performance information is theoretical unknown. People do not make judgment on a public program that only based on its performance information. Therefore, it is inaccurate to simplify individuals' perceptions of performance information by isolating them from other social factors. Citizens are receiving overwhelming information from

multiple sources. Then how do other sources of information interact with the performance information? And how does the information intersection affect individuals' judgment of a policy? In the next section, we use the social influence theory in groups to answer these questions and cover the gap between performance information and outside social factors in the experimental approach.

Theory: Social Influence in Groups

Others' voices and actions influence our judgments and attitudes in two ways. We draw lessons from action outcomes as the informational social influence and are aware of pressure when others' actions become a social norm. Specifically, ISI explains the process of accepting information from others that conforms to reality, while NSI describes individuals' pressure on others to gain their positive expectations by moral approval (Deutsch & Gerard, 1955). Both types of influence result in imitation behaviors, but in different ways.

Social influence is mostly triggered by group identity. Ingroup members' actions and attitudes are more reliable sources for humans to make judgements than outgroup members (Levine & Tindale, n.d.). If individuals have difficulty to assess a public program performance, they may search other information than the performance per se as evidences to support their judgements. For instance, Hispanic parents may not assess an education program by its overall student exam performance but by its Hispanic students' program participation rate (ISI) or other Hispanic parents' evaluation (NSI). Females may not evaluate a healthcare program performance by its overall effectiveness but by its female application rate (ISI) or other females' attitudes toward this program (NSI). In both examples, social influence in groups can be critical to form judgments, even though this information is not relevant to public performance information.

1. Group Identity

Before demonstrating social influence on citizens' public performance perception, we should disentangle the complexity of social identity. Group identity theory was created by (Flament, Bundy, Billig, & Tajfel, 1971). The core argument of this approach is to point out the formation of social groups and psychological difference between ingroup and outgroup. Three major steps make group influence on decision-making: categorization, identification, and comparison (Chen & Li,

2005; Flament et al., 1971). First, human society categorizes every citizen with multiple labels, such as race, gender, age, education, and occupation. Our social experiences train us to familiar with social categorization by practices, such as filling a form for driver license or submit a college fellowship application. We need to provide our social group information repeatedly. Thus, it is easy and quick for individuals to put themselves into basic demographic groups. Next step we associate ourselves into groups and identify who are ingroup and who are outgroup. We identify ourselves by participating in social issues such as equity problem, environmental protection, or healthcare policy. Through discussions in social networks, we clarify who have similar appeals as ourselves and who are quite different than our propositions. Finally, we compare behaviors or attitudes between ingroup and outgroup. We motivationally have favorable bias toward ingroup.

Group identity affect human behaviors by adjusting their decision-making focus. Before priming into groups, people judge public program performance by its outcome data. If individuals have associated themselves in groups, they may move their attention from public performance information to group behaviors comparison. Under this mindset, individuals no longer perceive a public program from performance information but social influence in groups. The role of performance information in decision-making is weakened.

2. Informational Social Influence

Once a group identity has been confirmed, individuals use it to reduce the risk of uncertainty (Gerber & Rogers, 2009; Paryavi, Bohnet, & van Geen, 2019). People seek information from others' actions as references to confirm reality (Cooper, Kelly, & Weaver, 2001). For example, legislators rely on other governments' policy outcomes to predict the consequences of a policy with which they have little experience (Berry & Berry, 1990). Indeed, legislators do not randomly learn policy implications from others, they strategically refer other jurisdictions that common partisanship. From this perspective, partisanship is the group identifier for legislators when they are making policy decisions. And this group identity motivates legislators to adopt similar policies as other ingroup members.

Public performance is often too complex for average people to understanding. When facing a public program, citizens may not fully understand its numerical outcomes by technical reasons, but they are more sensitive to see whether their ingroup members are joining this program. If more ingroup members are applying or using a public program, people may assume this program is

beneficial to them regarding they have similar demands as their ingroup members. Therefore, ingroup members' action becomes a critical reference for people to make decisions under uncertainty.

H1_a: When performance information is available, citizens rate a public program more positively if they have been informed that that many their ingroup members are using this public program.

H1_b: When performance information is available, citizens support a public program more strongly if they have been informed that many their ingroup members are using this public program.

3. Normative Social Influence

Rather than gathering evidence in group, normative pressures also shape humans' attitudes. Normative social influence leads individuals to consider appropriate, moral, and injunctive norms in the process of forming attitudes (McDonald & Crandall, 2015; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008). Social norms are rules and standards that lead individuals to behave similarly. Norms sometimes lead people to make judgments that are consistent with the majority opinion in group, even if these judgments contradict the observable facts (Iyengar, van den Bulte, & Lee, 2015; McDonald & Crandall, 2015).

Therefore, different motivations affect informational and normative social influences: informational social influence depends on a desire to reduce uncertainty, while normative social influence relies on the desire for approval in group (Levine & Tindale, n.d.). Thus, normative social influence applies the logic of appropriateness, not that of consequence. People will support a public program to acquire normative approval from their own social groups. Even if the neutral performance information cannot explain the program's success, people may still maintain positive attitudes toward the policy because of peer pressure considerations. In some circumstances, the question, "What should be done?" is more important than the public performance in people's minds (McDonald & Crandall, 2015; van der Linden, 2015). If one's fellow group members present positive attitudes toward a public program, one may maintain a positive attitude toward the program. When ingroup attitude information of a public program triggers citizens' group identity, their performance perception is not simply based on the performance information per se but adjusted by ingroup injunctive norms.

H2_a: When performance information is available, citizens rate a public program more positively if they have been informed that many their ingroup members favor this public program.

H2_b: When performance information is available, citizens support a public program more strongly if they have been informed that many their ingroup members favor this public program.

4. Dynamics of Groups

Social influence in group is critical to understand how citizens make sense of performance information, and this influence can be dynamic. Granovetter (1985) raised argument about social groups and social embeddedness. He points out that individuals do not either deeply embed in social groups as Marxism or behave as homo economics that ignore social groups at all (Granovetter, 1985). As alternative, humans shallowly embed in multiple social groups, and their embeddedness is dynamic. Based on different issues, social relations or environments, individuals consciously or unconsciously switch their groups to make judgements (Rand et al., 2009).

Seeing mutiple policy performance information, group identities transit with context. Individuals may aware of their multiple social identities but able to not engage them simultaneously (Brewer, 1999). For example, race and social class (income) are two basic group identity in our society. In a medical policy discussion about health benefit fairness between majority and minority ethnic groups, citizens' group identity of race would be aroused, but their social class identity is irrelevant. On the contrary, individuals would identify their social class group by a conversation about energy saving strategy gap between low-income and high-income communities. In this issue, race is not salient concern. When one identity engages, ingroup membership of that identity arouse social comparison, other group identities are irrelevant. If social issue discussion moves to another context, the associate identity is aroused, and previous group identity fades out (Brewer, 1999).

Social scientists have examined group transition in vary ways. (Brewer, 1999) has applied this theory to explain social identity change in Hongkong before and after return to China. (Rand et al., 2009) have conducted a series field detector games with Democratic voters in the 2008 primary election period. Through observed participants' behavior change before and after Hillary Clinton engaged, Rand and his colleagues have found that female Democratic voters switch their group identity from candidate support to gender. More recently, (Sandberg, 2018) find that

Olympic referees transit their group identity from gender to nationality when reviewing different athletics' performances. Psychology and economic literature provide us evidences that group identity is dynamic and can be altered by contexts. Therefore, we assume that individuals would engage flexible group identities to evaluate different public performance information.

H3: Policy context change cause citizens to correspondingly switch their group identity.

Experimental Design

Vignette¹

To examine our research questions and the above hypotheses, we adapt two public programs and their performance information as our vignette in the survey. Programs we use are Expanded Access Program (EA) and Renewable Portfolio Standard (RPS). Both programs are debatable among different groups in current American society. Our experiment intervenes ISI and NSI for both policy scenarios to see whether individuals adjust their program performance judgement and policy support by social influence in groups. In addition, through evaluating both policies, individuals' group transition is observed.

A. Expanded Access Program (EA)

Since 1970s, the U.S. Food and Drug Administration (FDA) has allowed patients to apply investigational new drugs if there is no comparable treatments or therapy to cure patients' serious conditions (FDA, 2018). EA aims to create double benefits for both medicine developers and patients. It not only provides richer clinic trials for doctors but also increase opportunity to save life-threaten patients. However, this program brings very controversial debates among American citizens. EA supporters claim that lifes matters and the government should not kill them by administrative burden. EA opponents argue that this program triggers drug abuse and may lead to unexpected consequences. In addition, Pew Center report (2015) shows that blacks and whites have very different views about EA, so this policy has been debating among different ethnic groups.

EA provides a good policy example for us to test the relationship between social influence in group and citizens' public performance perception. In our vignette, we present both positive and

¹ Detailed information for each vignette is in Appendix 2.

negative performance information as a neutral description of the program. After seeing this information, we randomly assign participants to read either a placebo information, an ISI information (different EA application number between white and black patients), or an NSI information (different EA performance perception between white and black)². After this randomized treatment information showed, we ask participants their EA performance judgement and EA policy support.

B. Renewable Portfolio Standard (RPS)

RPS is another debatable policy for environmental protection. It is a federal recommended regulation program, which require a specified portion of utility selling comes from renewable energy sources (SEIA, 2019). RPS targets to reduce traditional energy use and carbon emission. RPS is a double-edged sword. It increases green job employments for local community but also rise household utility bills. Moreover, discussion about RPS include the energy consumption inequity between high- and low-income families. Although RPS provide more employments for low-income communities, they should not suffer from the same utility bill rate as high-income communities (IPS, 2017).

Base on this policy scenario, we present both positive (job increase) and negative (higher utility rate) as our neutral performance information. After reading this information, participants are randomly assigned to read either a placebo information, an ISI information (different adoption rate between high- and low-income communities), or an NSI information (different RPS performance perception between high- and low-income communities)³. As same as the EA vignette, we follow by asking participants' RPS performance perception and policy attitude.

Participants and Data Collection

Subjects in this experiment were recruited in May 2019 through Amazon Mechanical Turk (MTurk: $N=366$, 57.53% female). The survey experiment adopted a between/within-subjects design and was delivered through Qualtrics. After reading survey introduction, participants were

² ISI information is adapted from 2015 Pew Center Report: <https://www.pewresearch.org/fact-tank/2015/03/03/opinions-on-expanding-access-to-experimental-drugs-differ-by-race-income/>.

NSI and placebo group information are hypothetical. So, we include debriefing section at the end of our survey.

³ ISI, NSI, and placebo group information are all hypothetical. So, we include a debriefing section at the end of survey.

randomly assigned their order to read both EA and RPS scenarios. The random order design avoids that two policies' information may endogenously affect each other. Also, this random order provides a within-subject design to test group identity transition. After participants have been assigned to policy scenarios, they did three warm up questions for each policy⁴. Then, we randomly assigned participants to read three treatment vignettes (placebo/ISI/NSI). After treatment vignettes, we generated dependent variables by asking participants to rate the policy performance (from very low to very high) and favor/dislike (from totally dislike to totally favor) the policy in 7-point Likert scale⁵. Finally, we collected their general demographic information such as race, gender, education level, income, and location. Detailed survey questionnaire is supplemental in Appendix 3.

Group Categorization

Our interventions are not focus on general population, because social influence in groups do not arouse outgroup membership. Therefore, we only captured white and black participants in analysis for EA scenario and categorize people into low- and high-income groups for RPS. Table 1 demonstrate distribution of each subgroup and sample sizes for both policy scenarios.

Table 1. Race and Income Subgroups ($N = 366$)

Group	Sample
Race	
White	255 (69.67%)
Black	44 (12.02%)
Hispanic	30 (8.20%)
Asian	23 (6.28%)
Other	14 (3.83%)
Income	
< \$25,000	75 (20.49%)
\$25,000 – \$34,999	51 (13.93%)
\$34,999 – \$49,999	53 (14.48%)
\$49,999 – \$74,999	79 (21.58%)
\$74,999 – \$99,999	54 (14.75%)
\$99,999 – \$149,999	38 (10.38%)
>\$150,000	16 (4.37%)

For analysis purpose, we include black and white as race groups. In addition, we categorized low-income from “< \$25,000” to “\$34,999 – \$49,999” and high-income from

⁴ For EA, warm up questions are about social equity and their healthcare condition, these questions are adapted from Kaiser Family Foundation *Race, Ethnicity & Medical Care Survey 1999*. For RPS, warm up questions are about their environmental protection willingness and household energy expenditure, these questions are adapted from *University of Michigan Energy Survey 2014*. Detailed information of warm up questions can be seen in Appendix 3.

⁵ Detailed information about dependent variable questions is in Appendix 3.

“\$74,999 – \$99,999” to “>\$150,000”. The following Table 2 is a sample summary for each treatment group.

Table 2. Random Assignment

Treatments	EA (N = 255 Whites)	EA (N = 44 Blacks)	RPS (N = 179 Low-income)	RPS (N = 108 High-income)
Placebo	70	16	62	36
ISI	94	15	60	36
NSI	91	13	57	36

We use one-way ANOVA strategy to test our randomization. Table 3 shows that the treatment randomization is successful across all groups. None group has any significant difference from others, which means our randomization is successful.

Table 3. ANOVA Randomization Test

	df	F
Difference in Gender		
EA in Whites	2	0.46
EA in Blacks	2	0.27
RPS in Low-income	2	1.49
RPS in High-income	2	0.25
Difference in Education		
EA in Whites	2	1.11
EA in Blacks	2	1.43
RPS in Low-income	2	1.57
RPS in High-income	2	0.79

Note: *p<0.1, **p<0.05, ***p<0.01.

Manipulation Check

One shared challenge of randomized controlled trials with human subjects is treatment noncompliance, which indicates that subjects fail to accept or follow the randomized treatments designed (Jilke & Van Ryzin, 2017). The treatment noncompliance problem has two consequences. First, the treatment presented is not randomized as intended, such that it is potentially endogenous to the outcome variable, which threatens internal validity. Second, because of the treatment noncompliance problem, the average treatment effect might be underestimated in a conventional analysis. Thus, we inserted manipulation check (MC) questions after dependent variable questions⁶. Using this technique, we can detect participants who had not received treatments (Table 4). The

⁶ Please read the Appendix 3 to get detailed information about manipulation check questions.

full experimental procedure is in Appendix 1. In next section, we explain the main findings from our full sample by each subgroup and provide robust analysis with MC data.

Table 4. Manipulation Check

	EA ($N = 366$)	RPS ($N = 366$)
MC Pass	192 (52.46%)	182 (49.73%)

Empirical Findings

Before we present experimental evidence in groups, we begin by testing treatment effects to the full sample. This procedure helps us to detect if treatment information makes any effect without group identification. After the full sample analysis, we analyze causal inferences in subgroups from EA and RPS scenarios. Finally, we follow (Angrist, 2006) and (Grimmelikhuijsen & Klijn, 2015) and use the instrumental variable (IV) strategy as a robustness check and to obtain a more accurate estimation of the treatment effect.

Table 5. Full Sample t-Test

	t	df	Mean Difference (2-tail)	95% Confidence Interval Lower	Upper
<i>DV: Performance Perception</i>					
<i>EA</i>					
Placebo – ISI	- 0.92	239	- 0.17 (0.18)	- 0.53	0.19
Placebo – NSI	- 0.90	234	- 0.15 (0.17)	- 0.48	0.18
<i>RPS</i>					
Placebo – ISI	0.40	237	0.06 (0.15)	- 0.24	0.37
Placebo – NSI	1.61	249	0.25 (0.15)	- 0.06	0.55
<i>DV: Policy Support</i>					
<i>EA</i>					
Placebo – ISI	- 0.18	238	- 0.03 (0.18)	- 0.39	0.32
Placebo – NSI	0.71	234	- 0.15 (0.17)	- 0.48	0.18
<i>RPS</i>					
Placebo – ISI	1.17	235	0.23 (0.20)	- 0.16	0.62
Placebo – NSI	1.75	248	0.33 (0.19) *	- 0.04	0.70

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are reported in parentheses.

Table 5 present the t-test comparison without associating subjects by group identities. We do not detect any convincing effect in our full sample, but participants expressed slightly dislike RPS when they learned this program is favored by low-income communities. This result meets with our expectation, because our treatments targeted to examine heterogenous effect between each subgroup but not the population. After cancelling out effects between groups, the treatments should not affect the population in general. Next step, we present our main findings in each corresponding subgroup.

Main Results

The results (Table 6 and 7; Figure 1) suggest that social influence about program performance in groups affect people's perception on performance but does not affect their policy support attitude⁷. Moreover, social influence is very complicated across different groups.

Table 6. Social Influence on EA (Sample: Whites and Blacks)

	t	df	Mean Difference (2-tail)	95% Confidence Interval	
				Lower	Upper
<i>Whites Group</i>					
<i>DV: Performance Perception</i>					
Placebo – ISI	- 2.05	162	- 0.44 (0.21) **	- 0.86	- 0.02
Placebo – NSI	- 1.90	159	- 0.37 (0.19) *	- 0.75	0.14
<i>DV: Policy Support</i>					
Placebo – ISI	- 0.50	162	- 0.12 (0.23)	- 0.57	0.34
Placebo – NSI	0.26	159	0.06 (0.23)	- 0.39	0.52
<i>Blacks Group</i>					
<i>DV: Performance Perception</i>					
Placebo – ISI	0.27	29	0.15 (0.56)	- 1.00	1.31
Placebo – NSI	0.64	27	0.38 (0.59)	- 0.84	1.60
<i>DV: Policy Support</i>					
Placebo – ISI	-1.57	29	- 0.73 (0.46)	- 1.67	0.22
Placebo – NSI	-0.30	27	- 0.14 (0.46)	- 1.09	0.81

Note: *p<0.1, **p<0.05, ***p<0.01. Standard errors are reported in parentheses.

Table 7. Social Influence on RPS (Sample: Low- and High-income)

	t	df	Mean Difference (2-tail)	95% Confidence Interval	
				Lower	Upper
<i>Low-income Group</i>					
<i>DV: Performance Perception</i>					
Placebo – ISI	0.58	120	0.13 (0.23)	- 0.33	0.59
Placebo – NSI	1.28	117	0.31 (0.24)	- 0.17	0.79
<i>DV: Policy Support</i>					
Placebo – ISI	0.68	120	0.18 (0.27)	- 0.35	0.71
Placebo – NSI	1.47	117	0.43 (0.29)	- 0.15	1.01
<i>High-income Group</i>					
<i>DV: Performance Perception</i>					
Placebo – ISI	0.57	70	0.17 (0.29)	- 0.41	0.75
Placebo – NSI	0.71	69	- 0.15 (0.17)	- 0.48	0.18
<i>DV: Policy Support</i>					
Placebo – ISI	0.68	70	0.19 (0.28)	- 0.37	0.76
Placebo – NSI	1.19	70	0.39 (0.33)	- 0.26	1.04

Note: *p<0.1, **p<0.05, ***p<0.01. Standard errors are reported in parentheses.

⁷ Appendix 4 presents additional visualized results for the RPS scenario.

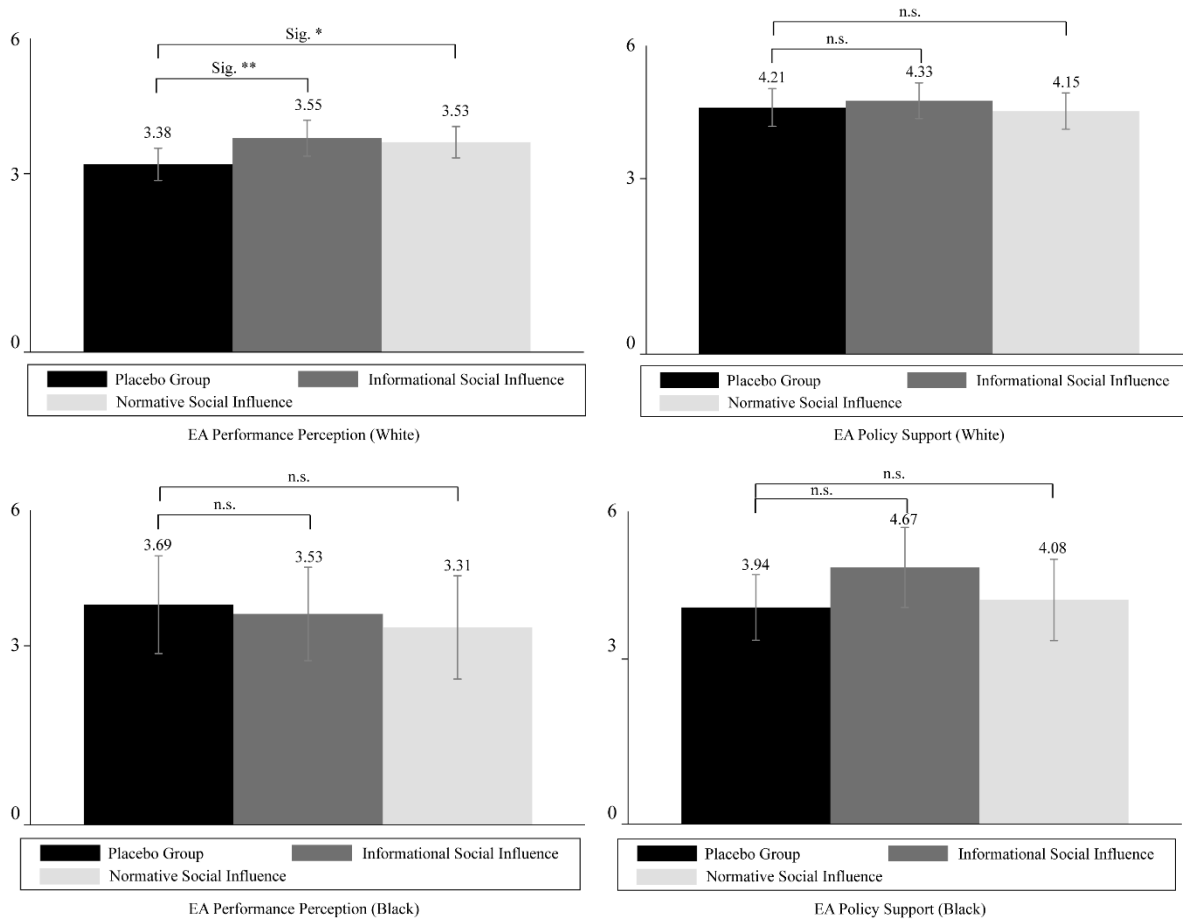


Figure 1. Effects of Social Influence Treatments on EA Performance Perception/Policy Support. *Note:* Spikes show 95% confidence intervals.

Overall, social influence in ethnic group has significant effects on citizens’ perception on EA performance information. However, we have not found any significant effect from income on RPS performance information. Moreover, other ingroup members’ behaviors or opinions on a public program performance would not change individuals’ policy attitude toward this program. White participants have given higher rating to EA performance (p value < 0.05) when seeing most of EA program applicants are whites. They have also given higher rating to EA performance because knowing most of whites favor this policy performance (p value < 0.1). Although we do not see any significance on our black participants, we have observed them showing a negative perception pattern on performance when ISI/NSI information is available. The insignificant results of the black sample may due with the small sample size ($N = 44$). If we increase our sample, we should gain a much stronger statistical power.

In contrast, income is not a strong group identifier as race. We do not find any systematical effects in either low- or high-income groups with RPS performance information, which imply that individuals may not associate their income levels with our treatment information. In fact, even if participants finished the first two steps of group influence generation (categorization and identification), they still may not start social comparison. It means that low-income individuals may not agree on other low-income people's behaviors. On the other hand, high-income individuals may trigger sympathy when seeing low-income communities' behaviors. Another possibility of this result is from the smaller size that we have not attained enough statistical power in RPS analysis. Social influence remains as a black box in this case. There are several alternative explanations for the results we got. However, we observe the complexity between different groups by race and income, which is valuable for the public administration community to further understand how citizens make sense of public performance information under a more complex information environment. To robust our finding, we include MC as the instrument to predict our citizen's public performance perception in the next section.

Robust Analysis

Table 8. 2SLS Regression for Social Influence on EA Performance Perception (Sample: 164 Whites)

	Stage I: Treatment Condition → ISI Reported	Stage II: ISI Reported → Performance Perception
ISI Reported		0.54 (0.26) **
ISI Delivered	0.81 (0.05) ***	
Constant	0.07 (0.04) **	3.12 ***
F-stat	298.20 ***	4.18 **
R ²	0.65	0.02

Note: *p<0.1, **p<0.05, ***p<0.01. Standard errors are reported in parentheses.

Table 9. 2SLS Regression for Social Influence on EA Performance Perception (Sample: 161 Whites)

	Stage I: Treatment Condition → NSI Reported	Stage II: NSI Reported → Performance Perception
NSI Reported		0.47 (0.25) *
NSI Delivered	0.78 (0.05) ***	
Constant	0.09 (0.04) **	3.12 ***
F-stat	242.16 ***	3.61 *
R ²	0.60	0.02

Note: *p<0.1, **p<0.05, ***p<0.01. Standard errors are reported in parentheses.

We used the IV strategy as a robustness check of our main findings, as the survey items for the MC suggest a potential treatment noncompliance problem. Specifically, in stage one, we use the result of the randomization intended as IV that is exogenous to the outcome variable to predict

the factor presented (ISI/NSI). Then, in stage two, we regress the outcome variable on these predicted variables. Following the IV strategy, the potential endogeneity between the treatment presented and the outcome variable attributable to treatment noncompliance can be addressed. Table 8 and 9 reports the results of the 2SLS models in the EA scenario. We did not test any insignificant main results with IV strategy, because it is impossible for this technique to reverse any our main finding and create a new significance. IV strategy would only examine the robustness of significance. In summary, results of 2SLS models consistent with our t-tests, which convince our hypotheses $H1_a$ and $H2_a$.

Conclusion

Group identities affect citizens' performance perception in different ways. The current study has detected that individuals' public performance perception may be affected by their ethnic group identities but not by their social class. This evidence suggests that social influence in group is a very complicated process. Beyond that, our study has a theoretical contribution to performance information literature. External factors like group identity affect citizens' performance judgement. Compared to performance information, ingroup fellows' behaviors and attitudes are more subjective references for individual decision-making. Our further study should focus on interacting social influence treatments with performance information theories (e.g. reference point, expectation disconfirmation). Our research goal is to investigate a method to bring people back from group reasoning to rational consideration when they are facing performance information.

Finally, we can practice several methodological improvements for our further study. First, rather than income, we can use gender or ideology as the group identifier. Second, we should improve our sampling technique to recruit more comparable sample size between each subgroup. An option is to recruit subgroup participants separately on different online platform. In addition, we may use conjoint experimental design to put multiple groups information together and see which group identifier has stronger effect toward a policy issue.

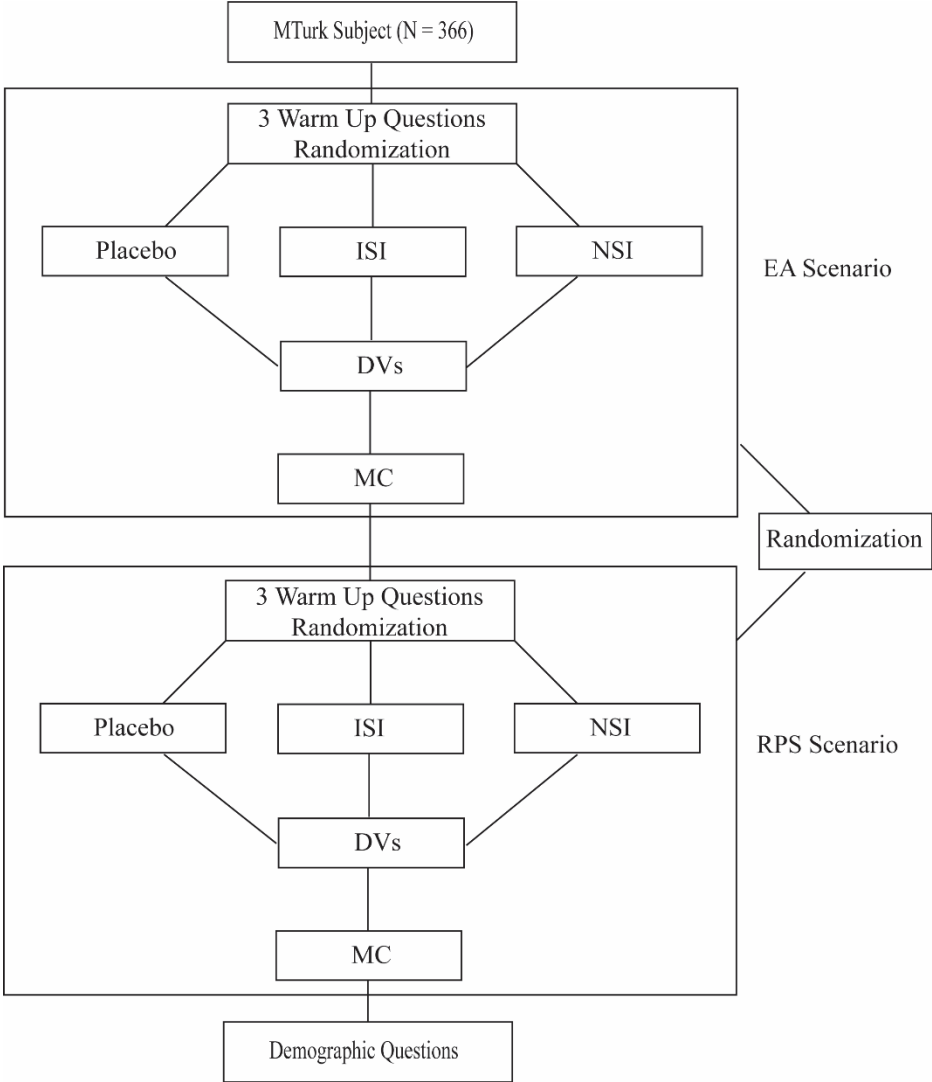
References

- Andersen, S. C., & Hjortskov, M. (2016). Cognitive Biases in Performance Evaluations. *Journal of Public Administration Research and Theory*, 26(4).
<https://doi.org/10.1093/jopart/muv036>
- Angrist, J. D. (2006). Instrumental variables methods in experimental criminological research: What, why and how. *Journal of Experimental Criminology*, 2(1).
<https://doi.org/10.1007/s11292-005-5126-x>
- Berry, F. S., & Berry, W. D. (1990). State lottery adoptions as policy innovations: An event history analysis. *American political science review*, 84(2), 395-415.
- Bisgaard, M. (2019). How Getting the Facts Right Can Fuel Partisan-Motivated Reasoning. *American Journal of Political Science*, 00(0). <https://doi.org/10.1111/ajps.12432>
- Brewer, M. B. (1999). Multiple Identities and Identity Transition: Implications for Hong Kong. *International Journal of Intercultural Relations*, (2).
- Chen, Y., & Li, X. (2005). Group identity and social preferences. *The American Economic Review*, 2005.
- Cooper, J., Kelly, K. A., & Weaver, K. (2001). Attitudes, norms, and social groups. *Blackwell handbook of social psychology: Group processes*, 259-282.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influence upon individual judgement. *Journal of Abnormal and Social Psychology*, 51.
- Flament, C., Bundy, R. P., Billig, M. G., & Tajfel, H. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, 1(2).
<https://doi.org/10.1002/ejsp.2420010202>
- Gerber, A., & Rogers, T. (2009). *Descriptive Social Norms and Motivation to Vote: Everybody's Voting and so Should You*.
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness Mark Granovetter. *American Journal of Sociology*, 91(3).
- Grimmelikhuijsen, S., & Klijn, A. (2015). The effects of judicial transparency on public trust: Evidence from a field experiment. *Public Administration*, 93(4).
<https://doi.org/10.1111/padm.12149>
- Institute for Policy Studies (2017). How States Can Boost Renewables, with Benefits for All. Retrieved from: <https://ips-dc.org/wp-content/uploads/2017/04/RPS-Report.pdf>
- Iyengar, R., van den Bulte, C., & Lee, J. Y. (2015). Social Contagion in New Product Trial and Repeat. *Marketing Science*, 34(3).
- James, O. (2017). *Laboratory Experiments Performance Measures and Democracy : Laboratory Experiments*. 21(3).

- James, O., & Moseley, A. (2014). DOES PERFORMANCE INFORMATION ABOUT PUBLIC SERVICES AFFECT CITIZENS' PERCEPTIONS, SATISFACTION, AND VOICE BEHAVIOUR? FIELD EXPERIMENTS WITH ABSOLUTE AND RELATIVE PERFORMANCE INFORMATION. *Public Administration*, 92(2), 493-511.
- James, O., & van Ryzin, G. G. (2017). Motivated reasoning about public performance: An experimental study of how citizens judge the affordable care act. *Journal of Public Administration Research and Theory*, 27(1). <https://doi.org/10.1093/jopart/muw049>
- Jilke, S., & Van Ryzin, G. G. (2017). Survey Experiments for Public Management Research. In O. James, S. Jilke, & G. G. Van Ryzin (Eds.), *Experiments in Public Management Research: Challenges and Opportunities*. Cambridge: Cambridge University Press.
- Levine, J., & Tindale, S. (n.d.). *Social influence in Groups*.
- Marvel, J. D. (2016). Unconscious Bias in Citizens Evaluations of Public Sector Performance. *Journal of Public Administration Research and Theory*, 26(1). <https://doi.org/10.1093/jopart/muu053>
- McDonald, R. I., & Crandall, C. S. (2015). Social norms and social influence. *Current Opinion in Behavioral Sciences*, 3. <https://doi.org/10.1016/j.cobeha.2015.04.006>
- Moynihan, D. P. (2016). Uncovering the circumstances of performance information use findings from an experiment. *Public Performance and Management Review*, 39(1). <https://doi.org/10.1080/15309576.2016.1071160>
- Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality and Social Psychology Bulletin*, 34(7). <https://doi.org/10.1177/0146167208316691>
- Olsen, A. (2015). Citizen (Dis)satisfaction: An Experimental Equivalence Framing Study. *Public Administration Review*, 75(3). <https://doi.org/10.1111/puar.12337>
- Olsen, A. (2017). Compared to what? How social and historical reference points affect citizens' performance evaluations. *Journal of Public Administration Research and Theory*, 27(4). <https://doi.org/10.1093/jopart/mux023>
- Paryavi, M., Bohnet, I., & van Geen, A. (2019). Descriptive Norms and Gender Diversity: Reactance from Men. *Journal of Behavioral Public Administration*, 2(1). <https://doi.org/10.30636/jbpa.21.51>
- Pew Center (2015). Opinions on expanding access to experimental drugs differ by race, income. Retrieved from: <https://www.pewresearch.org/fact-tank/2015/03/03/opinions-on-expanding-access-to-experimental-drugs-differ-by-race-income/>
- Solar Energy Industries Association (2019). Renewable Portfolio Standard. Retrieved from: <https://www.seia.org/initiatives/renewable-energy-standards>

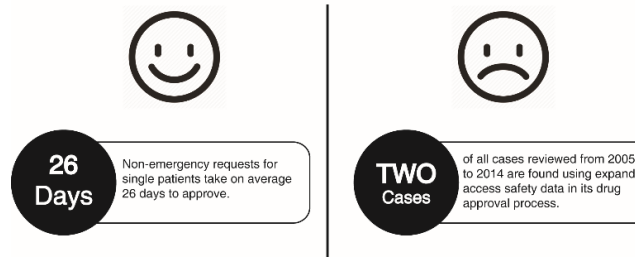
- Rand, D. G., Pfeiffer, T., Dreber, A., Sheketoff, R. W., Wernerfelt, N. C., & Benkler, Y. (2009). Dynamic remodeling of in-group bias during the 2008 presidential election. *Proceedings of the National Academy of Sciences*, 106(15). <https://doi.org/10.1073/pnas.0811552106>
- Riccucci, N. M., van Ryzin, G. G., & Jackson, K. (2018). Representative Bureaucracy, Race, and Policing: A Survey Experiment. *Journal of Public Administration Research and Theory*, 28(4). <https://doi.org/10.1093/jopart/muy023>
- Riccucci, N. M., van Ryzin, G. G., & Lavena, C. F. (2014). Representative bureaucracy in policing: Does it increase perceived legitimacy? *Journal of Public Administration Research and Theory*, 24(3). <https://doi.org/10.1093/jopart/muu006>
- Riccucci, Norma, Ryzin, Gregg G Van, Li, H. (2015). *Representative Bureacracy and the Willingness to Coproduce: An Experimental Study*. 76. <https://doi.org/10.1111/puar.12401>. Representative
- Sandberg, A. (2018). Competing Identities: A Field Study of In-group Bias Among Professional Evaluators. *Economic Journal*, 128(613). <https://doi.org/10.1111/eoj.12513>
- Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, 50(3), 755-769.
- U.S. Food And Drug Administration (2018). Expanded Access Program Report. Retrieved from: <https://www.fda.gov/media/119971/download>
- van der Linden, S. (2015). Exploring Beliefs About Bottled Water and Intentions to Reduce Consumption: The Dual-Effect of Social Norm Activation and Persuasive Information. *Environment and Behavior*, 47(5). <https://doi.org/10.1177/0013916513515239>
- Walker, R. M., Lee, M. J., James, O., & Ho, S. M. Y. (2018). Analyzing the Complexity of Performance Information Use: Experiments with Stakeholders to Disaggregate Dimensions of Performance, Data Sources, and Data Types. *Public Administration Review*, 78(6). <https://doi.org/10.1111/puar.12920>
- Yang, K., & Hsieh, J. Y. (2017). *Managerial Effectiveness of Government Performance Measurement : Testing a Middle- Range Model*. 67(5).

Appendix 1. Experimental Procedure



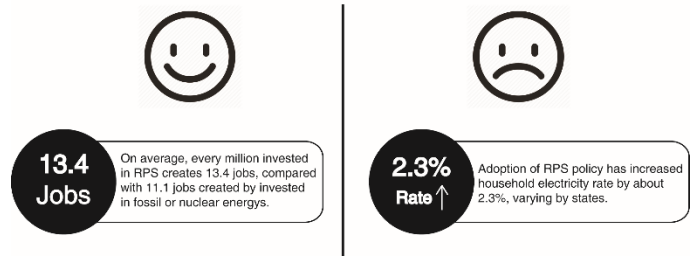
Appendix 2. Vignettes

How does EA perform?



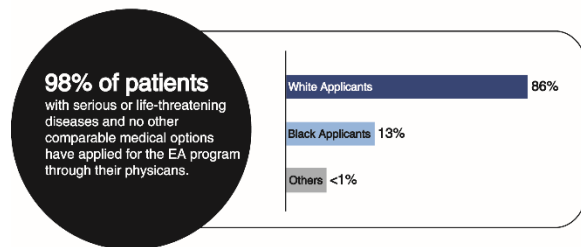
EA Performance Information

How does RPS perform?



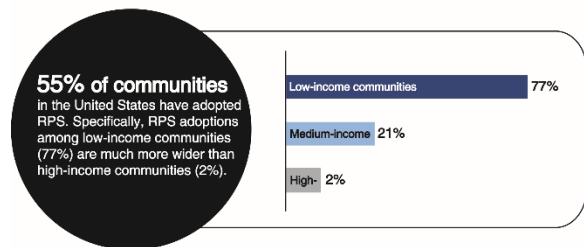
RPS Performance Information

Who is using EA?



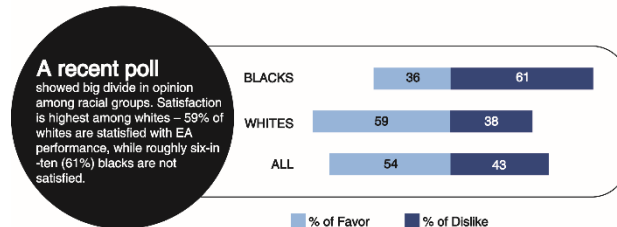
EA ISI Treatment Group

Who is using RPS?



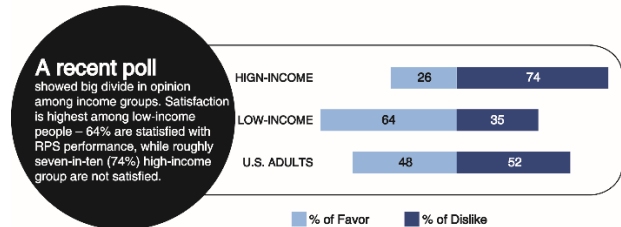
RPS ISI Treatment Group

EA Performance in Citizen's Eyes



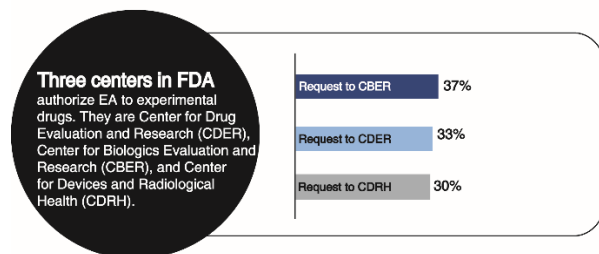
EA NSI Treatment Group

RPS Performance in Citizen's Eyes



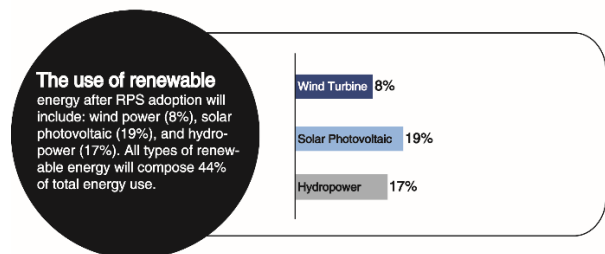
RPS NSI Treatment Group

Who authorized EA application?



EA Placebo Group

Energy use after RPS Adoption



RPS Placebo Group

Appendix 3. Survey Questionnaire

Warm Up Questions For EA

Please tell me if you think racism a major problem facing our country, a minor problem or not a problem at all.

- Don't know
- Not a Problem at all
- Minor Problem
- Major Problem

How would you rate the overall quality of our health care system?

- Don't know
- Terrible
- Poor
- Average
- Good
- Excellent

Thinking about people like yourself, is having difficulty getting care because of your race or ethnic background a major problem?

- Don't know
- Not a problem
- Minor problem
- Major problem

Warm Up Questions for RPS

Now thinking about the last time you (or someone else in your household) paid a household energy bill of any kind, how much did that bill cost you?

How often do you reduce the energy you use for your home for cost reasons?

- Most of the time
- About half the time
- Sometimes
- Never

How much do you personally worry about the environmental impact of energy?

- A great deal
- A lot
- A moderate amount
- A little
- None at all

Dependent Variables

EA:

How would you rate the performance of Expanded Access Program in FDA? Check only one that applies:

- Very low
- Somehow low
- Slightly low
- Medium
- Slightly high
- Somehow high
- Very high

To what extent do you favor/dislike EA program by FDA? Check only one that applies:

- Totally dislike
- Somehow dislike
- Slightly dislike
- Neither like nor dislike
- Slightly favor
- Somehow favor
- Totally favor

RPS:

How would you rate the performance of RPS regulation? Check only one that applies:

- Very low
- Somehow low
- Slightly low
- Medium
- Slightly high
- Somehow high
- Very high

To what extent do you favor/dislike adopting RPS in your community? Check only one that applies:

- Totally dislike
- Somehow dislike
- Slightly dislike
- Neither like nor dislike
- Slightly favor
- Somehow favor
- Totally favor

Manipulation Check

EA:

From the information you just read, how does the public (based on the poll) evaluate the performance of EA?

- Most of white patients favor the performance of EA.
- Most of black patients favor the performance of EA.
- There is no big difference between white and black patients' opinions of EA performance.
- No this part of information

From the information you just read, how many applicants have applied for the EA program?

- Most of applicants are white.
- Most of applicants are black.
- No this part of information

RPS:

From the information you just read, how does the public (based on the poll) evaluate the performance of RPS?

- Most of low-income citizens favor the performance of RPS.
- Most of high-income citizens favor the performance of RPS.
- No this part of information

From the information you just read, how many communities have adopted RPS?

- Most of low-income communities have adopted.
- Most of high-income communities have adopted.
- No this part of information

Appendix 4. Additional Analysis: Effects of Social Influence Treatments on RPS Performance Perception/Policy Support (Note: Spikes show 95% confidence intervals)

