

Costly Distractions: Focusing on Individual Behavior Undermines Support for Systemic  
Reforms

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21 April, 2023

Author Note

The authors are grateful to Lanysh Zhandalet for excellent research assistance and to Tariq Fancy for sharing unpublished experimental data and providing helpful comments.

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## Abstract

Policy challenges can typically be addressed both through systemic changes (e.g., taxes and mandates) and by encouraging individual behavior change. In this paper, we propose that, while in principle complementary, systemic and individual perspectives can compete for the limited attention of people and policymakers. Thus, directing policies in one of these two ways can distract the public’s attention from the other—an “attentional opportunity cost.” In two pre-registered experiments ( $n = 1,800$ ) covering three high-stakes domains (climate change, retirement savings, and public health), we show that when people learn about policies targeting individual behavior (such as awareness campaigns), they are more likely to themselves propose policies that target individual behavior, and to hold individuals rather than organizational actors responsible for solving the problem, than are people who learned about systemic policies (such as taxes and mandates, Study 1). This shift in attribution of responsibility has behavioral consequences: people exposed to individual interventions are more likely to donate to an organization that educates individuals rather than one seeking to effect systemic reforms (Study 2). Policies targeting individual behavior may, therefore, have the unintended consequence of redirecting attention and attributions of responsibility away from systemic change to individual behavior.

*Keywords:* Behavioral public policy, Nudges, Attention, Responsibility, Attribution

Word count: 4,362

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**Introduction**

The world faces major policy challenges that do not lend themselves to simple solutions. Effectively combating climate change, for example, will require firms to reduce emissions at factories as well as individuals to invest in electric cars (UK Government, 2021). Similarly, poverty in old age cannot be solved solely by individual saving, but requires policies which ensure that employers share in the burden of financially supporting retirees (Hassel, Naczyk, & Wiß, 2019). Increasing the diversity of the workforce may benefit from targeting the unconscious bias of hiring managers via training, but will also depend on public investments that make education accessible to traditionally excluded groups, as well as structural reforms to the hiring process (e.g., Kang & Kaplan, 2019). Even matters of individual health, such as the growing obesity epidemic, are not merely questions of personal choices; healthy eating and exercise improve health, but so would policy interventions such as ending subsidies for high-fructose corn syrup or offering public transit that encourages people to walk (Frieden, 2010; Rose, Khaw, & Marmot, 2008).

The magnitude of these and other policy challenges calls for a multitude of solutions that address both individual behavior and systemic incentives. Individual-level “nudge” interventions to encourage people to change their behavior tend to have relative modest effect sizes (DellaVigna & Linos, 2022; Maier et al., 2022; Mertens, Herberz, Hahnel, & Brosch, 2022). By contrast, systemic changes, such as decarbonizing the power grid and mandating low-carbon technologies has already contributed to dramatic falls in carbon emissions in many countries.

Of course, there is no explicit choice between policies that target individuals *or* that involve systemic change; both can and should be pursued simultaneously. Indeed, if nudging can feasibly be done, but decarbonizing the grid is not easily achievable, one may

reasonably focus one's efforts on what can actually be accomplished. After all, some improvement to the status quo is preferable to total inaction

In this paper, however, we present evidence from two preregistered experiments showing that there is an unanticipated cost to a focus on individual-level change. People exposed to policies targeting individual behavior shift their attention away from organizations and toward individuals as both the solution to, and source of, the problem. They subsequently believe it is less important to implement systemic solutions and are more likely to support causes that target individual behavior.

The possibility of such a redirection of attention is raised in Chater and Loewenstein (2022), who are concerned that behavioral scientists may inadvertently have contributed to shifting attention toward individual behavior (what they refer to as i-frame policies) and away from systemic reforms (s-frame policies). Because the tools developed for improving individual decision-making are not adaptable to promoting systemic reforms, they may inadvertently undermine the chances of these systemic policies being implemented. They outline numerous examples of organizations whose actions are directly linked to adverse policy outcomes funding initiatives designed to assign responsibility to, and identifies solutions as associated with, individual behavior. Responses to their concerns have questioned the strength of empirical evidence documenting such 'crowd-out' (e.g., see Sunstein, 2022).

The most closely related previous research has examined how individual behavior in one domain can affect behavior in another domain (see Truelove, Carrico, Weber, Raimi, & Vandenberg, 2014 for a review in the environmental domain). This research shows, for example, that people who are nudged to conserve water end up using more electricity, increasing total carbon emissions overall (Tiefenbeck, Staake, Roth, & Sachs, 2013). Such "moral licensing" behavior (Merritt, Effron, & Monin, 2010), whereby good actions appear to excuse offsetting behavior elsewhere, appears to be widespread, albeit weak, across

domains (Blanken, van de Ven, & Zeelenberg, 2015).

The most direct evidence for the proposition investigated in this paper comes from research which shows that drawing attention to individual behavior, or to policies that target individual behavior, decreases support for more systemic policies. Werfel (2017), for example, finds that when people are reminded of their energy-saving efforts, they become less likely to support a carbon tax, and conclude that: “The crowding-out effect may have been driven by an increase in the perceived importance of individual actions relative to government regulation” (page 512). Studies conducted by Hagmann, Ho, and Loewenstein (2019) found, in a series of six experiments (including one study with policymakers), that people become less supportive of systemic reforms when they are first asked about their support for a softer nudge. Participant informed of the existence of a nudge that would default people into a renewable energy plan, or into a 401(k) retirement savings plan, became less supportive of implementing a carbon tax or expanding social security, respectively.

We extend this work by examining directly how exposure to policies can shift attention between alternative approaches, and influence (incentivized) behavior when people have influence over how to address a policy problem. The mechanism we propose is that the public has limited attention, and thus that any policy that targets a particular type of solution will make that type of solution more salient. Exposing people to policies targeting individual behavior, according to this logic, will increase their tendency to spontaneously think of, and to support, other solutions targeting individual behavior.

This prediction is closely related to research in political science on the media’s role in agenda-setting (McCombs & Shaw, 1972). This research notes that there are many contemporary policy problems, and that issues which receive more news coverage tend to become more central in public discourse and hence to be more central to people’s political perspectives and actions. We propose that the same logic also applies to coverage of the

source of, and solutions to, a problem: when agenda-setting focuses on individual behavior, such as air travel (and the recent phenomenon of flight shaming, Gössling, Humpe, & Bausch, 2020), this displaces attention and scarce media attention from larger emitters, as well as from systemic causes of, and potential policy solutions to, carbon emissions.

Previous work has highlighted the economic cost-effectiveness of nudges targeting individual behavior (Benartzi et al., 2017). A re-analysis of their data, however, has raised questions suggesting that nudges may not be as cost-effective as thought (Tor & Klick, 2022). In addition, incorporating attentional opportunity costs in the overall equation can also change the cost-benefit calculus to the extent that the small gains from interventions targeting individual behavior reduce the likelihood that systemic reforms are supported and implemented.

While we are unaware of previous research demonstrating such attentional opportunity costs, we observe that corporate strategies have been consistent with a belief in this effect. Coca-Cola and Pepsi Co., for example, have financed an extensive body of health research emphasizing the importance of exercise over caloric consumption (Wood, Ruskin, & Sacks, 2020). It is certainly possible that this reveals a corporate concern for public health, but it is noteworthy that the science they fund targets behavior that is unrelated to the consumption of sugary drinks—their primary business. Indeed, review papers authored by someone disclosing funding from a beverage company are four times more likely than other reviews to find no link between the beverages and weight gain (Bes-Rastrollo, Schulze, Ruiz-Canela, & Martinez-Gonzalez, 2013). This “leanwashing” (Karnani, McFerran, & Mukhopadhyay, 2014) may come at the expense of people’s health: Those who underestimate the importance of diet are more likely to report being obese (Karnani et al., 2014). Similarly, oil companies have launched recycling campaigns in the United States at a time when the public became concerned about the effects of plastic pollution. Even if recycling were effective, which it does not appear to be, surely it would be better to reduce the use of plastics in the first place. The now widespread idea of a

carbon footprint calculator was, likewise, introduced by British Petroleum—and oil companies continue to rely extensively on PR firms to individualize responsibility for carbon emissions (Brulle & Werthman, 2021).

And, as a final example, the movement for sustainable investing is advanced by precisely the industries that stand to profit from selling ESG funds and carbon offsets. This point was noted in an op-ed written by Tariq Fancy (the former chief investment officer for sustainable investing at BlackRock) in which he refers to ESG as a “deadly distraction.”<sup>1</sup> Fancy conducted an experiment in which 3,016 participants from the US and Canada were randomly assigned to a treatment in which they read news headlines about corporate environmental and social initiatives, and a control group that did not see any news headlines. Respondents who saw the headlines were significantly more likely to say corporations, not democratically elected governments, should lead the way in building a more sustainable future than those in a control group not exposed to the headlines (63% vs. 58%,  $\chi^2(1, n = 3,016) = 8.28, p = .004$ ).<sup>2</sup>

In this paper, we present results from two experiments (combined  $n = 1,800$ ) in which participants are presented with, and evaluate, policies that either target individual behavior or that reform systemic incentives. In our first study, we ask participants to propose policies of their own, and find that they are more likely to offer solutions that match the type of intervention they had evaluated, and to attribute responsibility for solving the problem to the source targeted by the initial policies. A second study involving the same experimental treatment shows, further, that individuals are more likely to direct an actual donation to a cause matching the type of solution to which they were first exposed.

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<sup>1</sup> <https://www.theglobeandmail.com/business/commentary/article-sustainable-investing-is-a-deadly-distraction-from-actually-averting/>

<sup>2</sup> We are grateful to Fancy for privately sharing the experimental data with us prior to their publication.

## Study 1

We hypothesize that when people observe interventions targeting individual behavior, as opposed to systemic reforms, their attention is directed toward individuals as a source of the problem. As a result, when asked to spontaneously generate solutions to the problem, they will be more likely to themselves propose solutions targeting individuals. We hypothesized, further, that this may lead people to believe systemic reforms are less important and that government action is less important. This study was preregistered on AsPredicted ([https://aspredicted.org/YRC\\_74H](https://aspredicted.org/YRC_74H)).

## Methods

We recruited 1,200 participants (46% Female,  $M_{Age} = 40.43$ ) from Prolific Academic for a 3 (type of policy problem)  $\times$  2 (individual or systemic prime) between participants experimental design. Participants were randomly assigned to one of three policy problems: climate change, obesity, or insufficient retirement savings. Across all conditions, participants first reported whether they believed a policy problem existed in the United States (yes or no) for the policy domain they were assigned to, then reported how serious they thought the problem is (on a 5-point Likert scale from “not at all” to “extremely”).

Next, participants were presented with three policies tackling the problem they had been assigned to. In the Individual condition, these policies tackled individual behavior. For example, participants assigned to the policy problem “climate change” read that “When looking for vacation destinations, many people choose to fly to far-off destinations. One way people can reduce their carbon emissions is by taking fewer flights and instead traveling more locally.” They then rated how effective they thought it would be to encourage people to engage in this behavior (on a 5-point Likert scale from “not at all effective” to “extremely effective”). In the Systemic condition, the three policies related to taxes and mandates and participants evaluated how effective they thought the policy would

be (on the same scale). For example, one description stated “Electric cars lead to fewer carbon emissions than gas powered vehicles. To phase-out the number of gas-powered vehicles, the government can ban their sale after a specific date.” We present all experimental materials, including descriptions of the policies, in the Supplementary Materials.

Next, we presented participants with an open-ended question about how they believed the problem they had been presented with could best be tackled. We offered a \$10 incentive to the participants who proposed the three most highly rated ideas, as judged by other participants.<sup>3</sup> After submitting their response, participants were introduced to a simple classification for systemic and individual policies (Chater & Loewenstein, 2022). Specifically, we told them that some policies target “individuals, such as providing them with information,” while others are “systemic, such as changes to the tax, legal or other government systems.” We then showed them the policy solution they had written down, and asked them to self-categorize what type of intervention they had proposed. This is our main outcome measure. The responses were “Only or mostly individual interventions,” “A balance of individual and systemic interventions,” and “Only or mostly systemic interventions.” In line with our preregistration, we combined the latter two for our analysis, focusing on whether participants proposed any systemic policies.<sup>4</sup> We hypothesized that there will be more policy solutions self-rated as systemic policies in the Systemic condition (in which participants had been exposed to systemic policies) than the Individual condition.

After they provided the ratings, we asked them how effective they thought the solutions they recommended could be, and how likely they thought it was that the solutions they recommended would be implemented. Participants then reported what kind of policies they believed are most important in tackling the policy problem. They did so by

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<sup>3</sup> We report the ratings from these participants by domain and treatment in Figure A3 in the Supplementary Information.

<sup>4</sup> We report analyses separating out “Only or mostly systemic interventions” in Table A2 in the Supplementary Information.

moving a slider with three labeled points: Individual interventions, a balance of individual & systemic interventions (at the mid-point), and systemic interventions. Their responses were recorded using a numeric score that was not displayed as they were moving the slider, ranging from -50 (individual) to 50 (systemic), with 0 representing a balance of the two. We hypothesized that the score would be higher in the Systemic condition.

We then asked participants who they thought was responsible for addressing their assigned policy problem. They were asked to what extent they agreed with two statements: “It is mainly up to governments to tackle the problem of [obesity / insufficient retirement savings / climate change] through better policies and regulations,” and “It is mainly up to individuals to tackle the problem of [obesity / insufficient retirement savings / climate change] through by making better choices (”strongly disagree” to “strongly agree” on a 7-point Likert scale). Finally, the survey closed with standard demographic questions.

Following our preregistration, we asked a research assistant blind to condition and hypothesis to read all messages to see if they were on topic. 91 messages were excluded for not being on topic. Moreover, we also asked the research assistant to code whether the response was individual, systemic, or a mix of both. The rating agreed with the self-evaluation 57% of the time. This increases to 72% when we combine “only or mostly systemic” and a “mix of both.” We repeat all our analyses using the ratings of the research assistant instead of the participants’ own ratings, and find that all results replicate (Table A2 in the Supplemental Information). We present demographic informations for participants by condition in Table A1.

### **Open Science Statement**

We report all manipulations, measures, and data exclusion in this and the following study. The preregistration reports, screenshots of all experimental materials, and the analysis code to replicate all statistical analyses and figures are available on the Open

Science Framework

([https://osf.io/gwfyp/?view\\_only=b96a46b6264e4a16b5569e2f3be3ef30](https://osf.io/gwfyp/?view_only=b96a46b6264e4a16b5569e2f3be3ef30)).

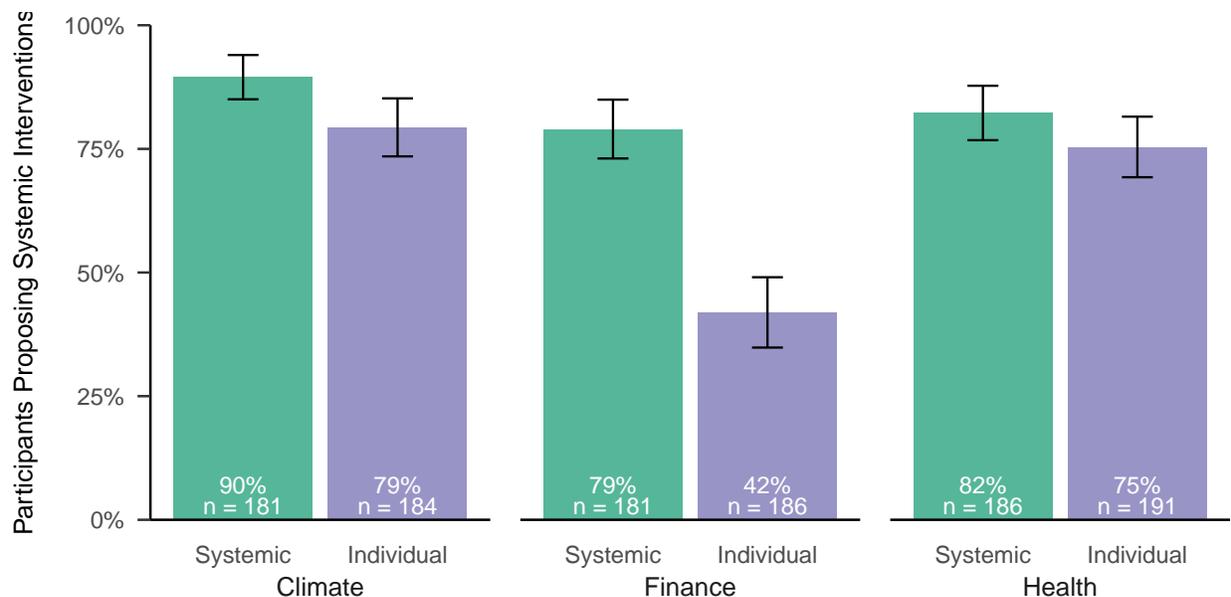
## Results

Nearly all participants thought the three policy problems were in fact problems in the United States specifically (89% for climate change, 95% for insufficient savings in retirement, and 97% for obesity). Participants also thought these were serious problems, rating them an average of 4.00 (Climate), 3.98 (Finance), and 3.92 (Health), respectively, on scales from 1-5. These numbers include those who answered that they did not believe the issue they were presented with was a problem.

Next, we report on our main measure: how participants classified their own open-ended responses proposing solutions to their assigned policy problem (Figure 1). In each domain, participants in the Individual condition were less likely to propose an intervention including systemic reforms. This effect is largest in the Finance domain. Column 1 of Table 1 shows the preregistered OLS regression, in which the outcome measure is “1” if participants categorized their response as “mostly or only systemic” or “a mix of systemic and individual.” We find that participants are 18 percentage points less likely to propose a systemic solution when they first evaluated individual policies. Column 2 shows that this finding is robust to excluding the Finance domain, but the effect becomes smaller.

We report a series of robustness checks in Table A2, showing that our results hold when our outcome measure is “only or mostly systemic interventions” (Columns 1 and 2), when we use the coding of a research assistant who was blind to treatment assignment and hypotheses instead of the participant’s self-evaluation (Columns 3 and 4), when we include all participants (Columns 5 and 6), and when we include only those participants who wrote on-topic and also thought that the policy problem is a real problem in the United States. We report participants’ ratings of the effectiveness of the policies they evaluated as part of

our manipulation, as well as their evaluations of their own policies (effectiveness and how likely they think it is to be implemented in the United States) in Figure A1.



*Figure 1.* Participants in Study 1 are less likely to propose systemic interventions when they first evaluated policies targeting individual behavior. This effect is most pronounced in the Finance domain, but robust to only examining the domains of Climate and Health. Error bars show 95% confidence intervals.

Next, we turn our attention to whom participants hold responsible for addressing the respective policy problem. Participants separately reported how much they agreed or disagreed that the government was responsible for addressing the problem with better policies, and individuals were responsible by engaging in better behavior. We constructed a measure reflecting the difference between the two scores, subtracting individual responsibility from government responsibility. Thus, a score greater than zero implied that participants thought the government (and hence systemic action) is more important.

We see in Figure 2 that the experimental treatment had an impact on the extent to which people think individual behavior can solve a policy problem. Participants overall see climate change as a problem requiring government solutions, whereas saving for retirement and combating obesity are largely seen as problems solved by better behavior. Across all

Table 1

*Share of participants proposing systemic policies, based on their self-evaluation (Column 1). Responsibility for solving the policy problem attributed to the government, relative to the individual (Gov.Responsible - Ind.Responsible, out of two 7-point Likert scales, Column 3). Importance of systemic vs. individual policies in addressing the problem (ranging from +50 for systemic only to -50 for individual only, Column 5). Columns 2, 4, and 6 show the respective analyses with the Finance domain excluded.*

	Systemic Policy Proposed		Government Responsible		Systemic Policy Important	
	(1)	(2)	(3)	(4)	(5)	(6)
Individual Treatment	-0.179*** (0.025)	-0.085** (0.028)	-0.786*** (0.165)	-0.510** (0.190)	-8.135*** (1.498)	-5.022** (1.784)
Finance Domain	-0.241*** (0.031)		-1.657*** (0.203)		-11.790*** (1.844)	
Health Domain	-0.056+ (0.030)	-0.056* (0.028)	-2.511*** (0.202)	-2.512*** (0.190)	-10.497*** (1.832)	-10.505*** (1.784)
Constant	0.934*** (0.025)	0.887*** (0.025)	1.352*** (0.166)	1.213*** (0.166)	20.534*** (1.509)	18.964*** (1.558)
N	1109	742	1109	742	1109	742

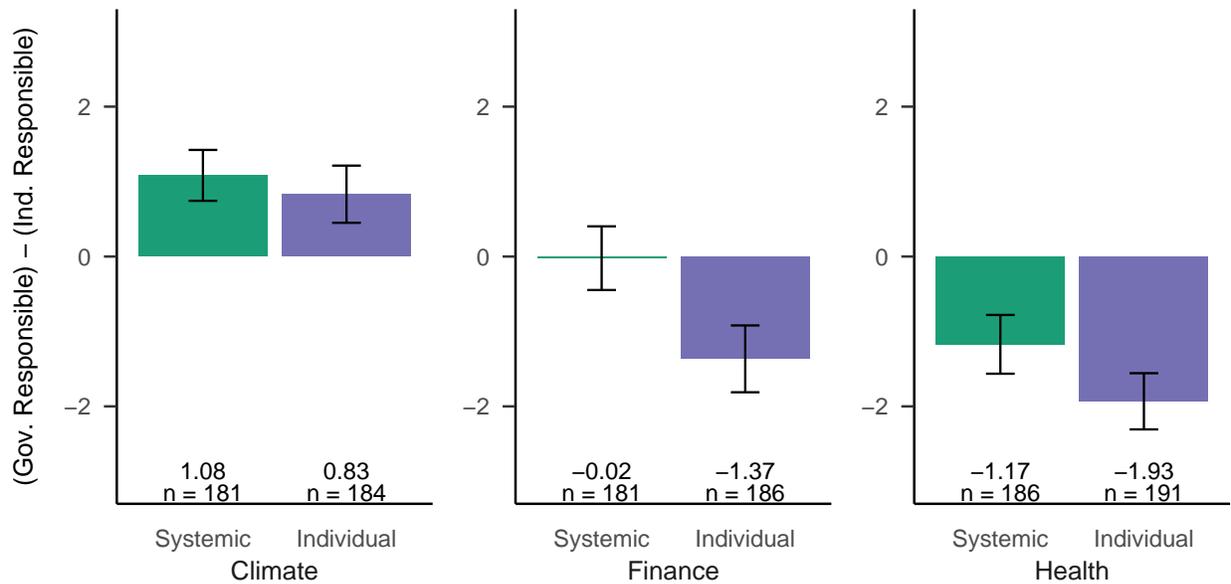
+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

three domains, however, participants who evaluated individual interventions assign more responsibility to individual behavior (Column 3 of Table 1). Again, this finding holds if we exclude the Finance domain (Column 4).

Finally, we examine which type of intervention participants thought would be most important to address the policy problems. We see in Figure 3 that participants thought systemic interventions were generally more important to implement than policies targeting only individual behavior. Again, however, we see that participants in the Individual condition are less likely to report that systemic interventions are important. Column 5 of Table 1 shows this significant decrease, and Column 6 shows that it holds with the Finance domain excluded.

## Study 2

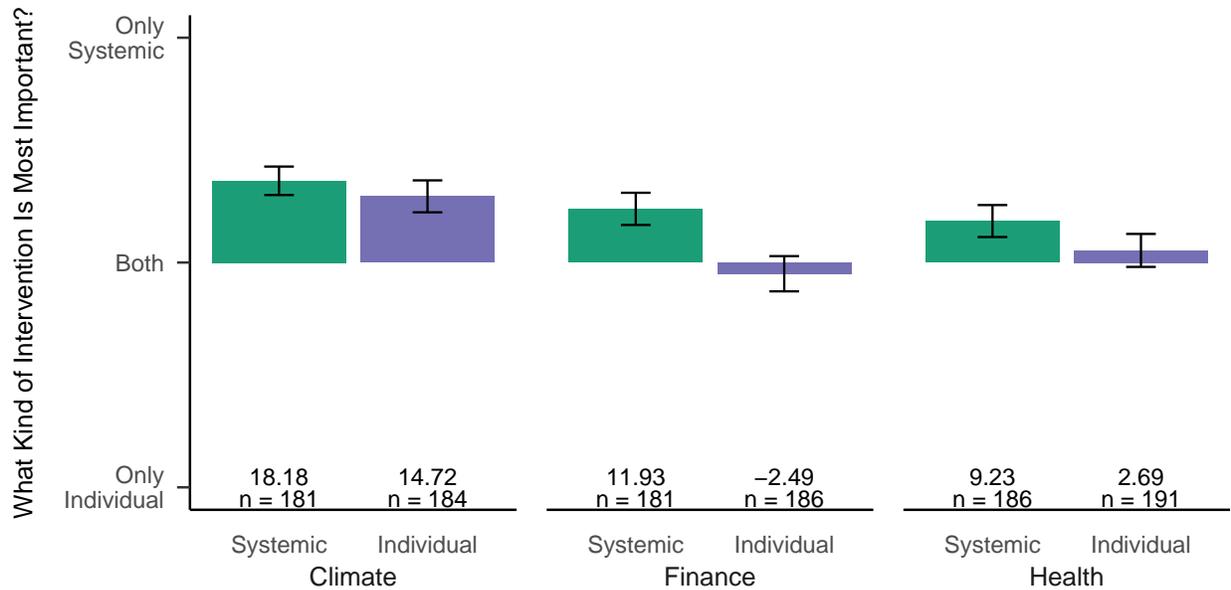
In Study 1, we found that people who began by evaluating Systemic policies (Individual behavior) were subsequently more (less) likely to themselves propose Systemic



*Figure 2.* Participants in Study 1 evaluated the extent to which they thought the Government and Individuals are responsible for solving the respective policy problem. We construct a measure subtracting Individual responsibility from Government responsibility, such that a score greater (less) than zero means the Government (Individuals) are more responsible. We observe that people differ in their views across domains, but in all domains attribute less responsibility to the Government when they first evaluated solutions targeting individual behavior. Error bars show 95% confidence intervals.

solutions. Moreover, we found that the interventions they evaluated also shifted whom they held responsible for solving policies across three important domains. We now examine whether directing attention to Systemic (Individual) interventions also shifts incentivized behavior. Here, we will look at a donation to one of two organizations: one offering financial literacy education and one lobbying for reform of the retirement system.

We focus on the financial domain because people's choice of which organization to donate to is, naturally, the outcome of a two-stage process. We hypothesize that evaluating Systemic (Individual) interventions shifts people's attention to solutions of this type, and that shift, in turn, will affect which organization they support. To be sufficiently powered to pick up effects in the second stage, we focus on financing retirement—the domain in which we observed the strongest first stage effect in Study 1.



*Figure 3.* Participants in Study 1 reported the extent to which they think it is important to pass individual or systemic policies, ranging from -50 (only individual) to +50 (only systemic), with 0 reflecting equal importance of both. Across all domains, participants who evaluated individual policies place less importance on implementing systemic reforms. Error bars show 95% confidence intervals.

## Methods

We recruited 600 participants (49% Female,  $M_{\text{Age}} = 38.33$ ) via Prolific Academic and randomly assigned them to one of two conditions. All participants began by reporting whether they thought insufficient financial preparation for retirement is a problem in the United States (yes/no) and how serious they thought the problem was (not at all to extremely, on a 5-point Likert scale). Following our design from Study 1, participants then evaluated either solutions targeting Individual behavior (e.g., “Many people are unaware of how they are spending money, which can make it difficult to build savings. People can try to save more money by creating a budget and learning how they are spending their income.”) or Systemic policy reforms (e.g., “The government can impose a limit on the fees that can be charged to investment funds in people’s retirement accounts. Lower fees would lead to higher returns for investors.”). For each of the three policies, they reported how effective it would be to encourage people to engage in this behavior (“Individual”

condition) or how effective they thought the policy would be (“Systemic” condition).

Next, we asked participants an open-ended question about what they thought the most effective way is to “reduce debt and increase savings available in retirement.” We modified this prompt slightly from Study 1 to emphasize that the goal is to increase savings (see Supplementary Information). Again, we offered an incentive of \$10 to the three most highly rated solutions, as evaluated by new participants. We report evaluations by condition in the Supplementary Materials (Figure A1).

We then introduced participants to two charities, the first intended to be individualistic in orientation, and the second intended aimed at the policy level. The first, Operation HOPE, was described as “provide[ing] free programs to educate people on how to manage their money and enhance public financial literacy.” The second, the American Retirement Association, “lobbies for a more comprehensive framework of policy to improve and protect the American retirement system.” Participants voted for which organization they would like to receive a \$200 donation. This binary decision is our main outcome measure. We hypothesized that a greater fraction of participants would vote for the American Retirement Association in the Systemic condition. Following the conclusion of the study, we, as promised, made the donation to the winning organization.

Lastly, we introduced participants to the distinction between Individual and Systemic policies and asked them to self-categorize their own response. This allows us to replicate our finding from Study 1. Finally, the survey ended with basic demographic questions. We present demographic informations for participants by condition in Table A3. We preregistered the design, sample size, and hypotheses on AsPredicted ([https://aspredicted.org/CGV\\_JS4](https://aspredicted.org/CGV_JS4)).

## Results

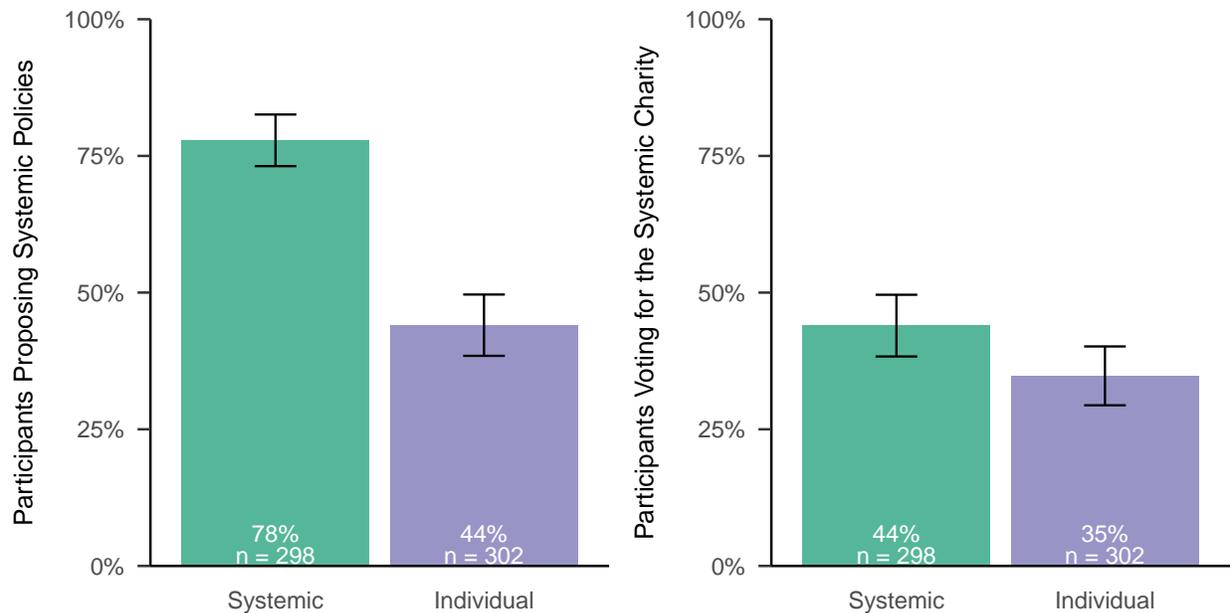
93% of participants thought insufficient financial resources in retirement is a problem in the United States, and on average they rated the seriousness of the problem as 3.90 (on a scale from 1-5). Our following analyses replicate when we limit our sample to participants who answered “Yes” to there being a problem.

We begin by testing whether participants who began by evaluating Systemic policies are more likely to themselves propose solutions targeting Systemic interventions. The left panel of Figure 4 shows that this is indeed the case. 78% of participants in the Systemic condition categorize their response as either containing primarily Systemic interventions, or a mix of Systemic and Individual measures, compared to 44% in the Individual condition ( $t(598) = 9.03, p < .001$ ). This replicates our finding from Study 1.

Next, we examine our new, main, hypothesis. Specifically, we predicted that participants in the Systemic condition would be more likely to vote for the Systemic organization (lobbying for reform of the American retirement system) over the Individual charity (teaching financial literacy). We show the share of participants voting for the Systemic organization in the right panel of Figure 4. As predicted, participants in the Systemic condition were more likely to vote for the Systemic organization than those in the Individual condition (44% and 35%, respectively,  $t(598) = 2.31, p = .021$ ).

## Discussion

Major policy problems likely require a realignment of systemic incentives and regulations, as well as measures aimed at individual behavior change. In practice, systemic reforms have been difficult to implement, in part due to political polarization and in part because concentrated interest groups have lobbied against changes that threaten their profits. This has shifted the focus to individual behavior. The past two decades, in particular, have seen increasing popularity of ‘nudges’: interventions that can influence



*Figure 4.* The share of participants who proposed a solution that includes a Systemic intervention (left panel) and who voted for a contribution to the organization targeting Systemic policy reform (right panel) in Study 2. We replicate the result from Study 1 that participants who are first exposed to Systemic policies are more likely to themselves propose Systemic solutions, compared to those evaluating Individual interventions. This shift in focus has behavioral consequences, leading participants to vote for the Systemic charity as a beneficiary of a contribution. Error bars show 95% confidence intervals.

individual behavior without substantially changing economic incentives (Thaler & Sunstein, 2008). For example, people may be defaulted into green energy plans (Sunstein & Reisch, 2013) or 401(k) contributions (Madrian & Shea, 2001), and restaurants may vary whether they place calorie labels on the left or the right side of the menu (Dallas, Liu, & Ubel, 2019). These interventions have enjoyed tremendous popularity, because they can often be implemented even when opposition to systemic reforms is too large to change economic incentives. Moreover, it has been argued that nudges incur low economic costs, making them extremely cost effective even when the gains are small on an absolute scale (Tor & Klick (2022)).

In this paper, we document an important and so far unacknowledged cost of such interventions targeting individual behavior, first postulated by Chater and Loewenstein (2022). We show that when people learn about interventions that target individual

behavior, they shift their attention away from systemic reforms compared to those who learn about systemic reforms. Across two experiments, we find that this subsequently affects their attitudes and behaviors. Specifically, they become less likely to propose systemic policy reforms, hold governments less responsible for solving the policy problem, and are less likely to support organizations that seek to promote systemic reform.

The findings of this study may not be news to corporate PR specialists. Indeed, as would be expected according to standard political economy considerations (e.g., Stigler, 1971), organizations act in a way that is consistent with a belief in this attentional opportunity cost account. Initiatives that have captured the public's attention, including recycling campaigns and carbon footprint calculators, have been devised by the very organizations that stood to lose from further regulation that might have hurt their bottom line (e.g., bottle bills and carbon taxes, respectively), potentially distracting individual citizens, policymakers, and the wider public debate from systemic changes that are likely to be required to shift substantially away from the status quo.

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Appendix A  
Supplementary Analyses

Table A1  
*Balance Table for Study 1.*

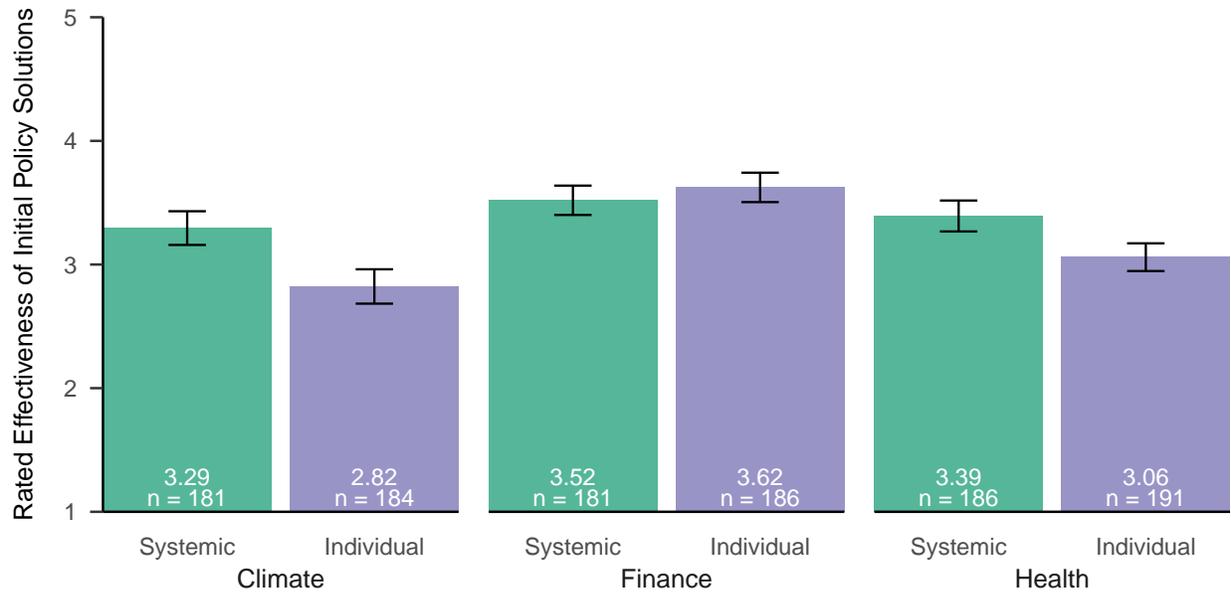
	Systemic:Climate	Individual:Climate	Systemic:Finance	Individual:Finance	Systemic:Health	Individual:Health
n	181	184	181	186	186	191
Gender (%)						
Female	81 (44.8)	90 (48.9)	78 (43.1)	85 (45.7)	84 (45.2)	82 (42.9)
Male	98 (54.1)	91 (49.5)	101 (55.8)	99 (53.2)	97 (52.2)	105 (55.0)
Other	2 ( 1.1)	3 ( 1.6)	2 ( 1.1)	2 ( 1.1)	5 ( 2.7)	4 ( 2.1)
Age (mean (SD))	41.94 (14.43)	40.68 (14.06)	39.97 (13.76)	39.10 (12.58)	40.55 (13.28)	38.70 (12.56)
Race (%)						
Non-Hispanic White	138 (76.2)	141 (76.6)	136 (75.1)	131 (70.4)	136 (73.1)	141 (73.8)
Non-Hispanic Black	14 ( 7.7)	14 ( 7.6)	11 ( 6.1)	19 (10.2)	12 ( 6.5)	15 ( 7.9)
Hispanic	9 ( 5.0)	14 ( 7.6)	13 ( 7.2)	8 ( 4.3)	11 ( 5.9)	12 ( 6.3)
Asian	10 ( 5.5)	13 ( 7.1)	14 ( 7.7)	15 ( 8.1)	10 ( 5.4)	14 ( 7.3)
Other or Mixed	10 ( 5.5)	2 ( 1.1)	7 ( 3.9)	13 ( 7.0)	17 ( 9.1)	9 ( 4.7)
Education (%)						
Less than high school	1 ( 0.6)	2 ( 1.1)	2 ( 1.1)	1 ( 0.5)	2 ( 1.1)	1 ( 0.5)
High school or equivalent	22 (12.2)	26 (14.1)	26 (14.4)	20 (10.8)	22 (11.8)	21 (11.0)
Some college	47 (26.0)	45 (24.5)	48 (26.5)	57 (30.6)	46 (24.7)	46 (24.1)
College	77 (42.5)	78 (42.4)	77 (42.5)	76 (40.9)	88 (47.3)	81 (42.4)
Professional or Master's degree	24 (13.3)	28 (15.2)	24 (13.3)	29 (15.6)	22 (11.8)	40 (20.9)
Doctoral degree	10 ( 5.5)	5 ( 2.7)	4 ( 2.2)	3 ( 1.6)	6 ( 3.2)	2 ( 1.0)
Employment (%)						
Employed full time	109 (63.7)	108 (60.3)	107 (61.8)	108 (60.3)	113 (62.8)	113 (61.4)
Employed part time	24 (14.0)	28 (15.6)	25 (14.5)	28 (15.6)	26 (14.4)	32 (17.4)
Unemployed looking for work	8 ( 4.7)	12 ( 6.7)	9 ( 5.2)	13 ( 7.3)	12 ( 6.7)	10 ( 5.4)
Unemployed not looking for work	6 ( 3.5)	9 ( 5.0)	6 ( 3.5)	9 ( 5.0)	12 ( 6.7)	8 ( 4.3)
Student	10 ( 5.8)	13 ( 7.3)	16 ( 9.2)	10 ( 5.6)	8 ( 4.4)	14 ( 7.6)
Retired	14 ( 8.2)	9 ( 5.0)	10 ( 5.8)	11 ( 6.1)	9 ( 5.0)	7 ( 3.8)
Politics (%)						
Very liberal	41 (22.7)	43 (23.4)	40 (22.1)	38 (20.4)	44 (23.7)	43 (22.5)
Somewhat liberal	45 (24.9)	41 (22.3)	40 (22.1)	46 (24.7)	41 (22.0)	40 (20.9)
Slightly liberal	28 (15.5)	19 (10.3)	23 (12.7)	20 (10.8)	25 (13.4)	34 (17.8)
Neither liberal nor conservative	30 (16.6)	29 (15.8)	31 (17.1)	40 (21.5)	31 (16.7)	27 (14.1)
Slightly conservative	16 ( 8.8)	22 (12.0)	13 ( 7.2)	17 ( 9.1)	17 ( 9.1)	19 ( 9.9)
Somewhat conservative	15 ( 8.3)	23 (12.5)	18 ( 9.9)	14 ( 7.5)	17 ( 9.1)	15 ( 7.9)
Very conservative	6 ( 3.3)	7 ( 3.8)	16 ( 8.8)	11 ( 5.9)	11 ( 5.9)	13 ( 6.8)
Problem = Yes (%)	167 (92.3)	159 (86.4)	167 (92.3)	181 (97.3)	178 (95.7)	189 (99.0)
Serious (mean (SD))	4.12 (0.90)	3.88 (1.10)	3.93 (0.84)	4.03 (0.71)	3.95 (0.77)	3.88 (0.72)

Table A2

*Robustness checks for Study 1. Columns 1 and 2 report the likelihood of self-categorizing responses as "only or mostly systemic interventions," instead of including also a mix of both. Columns 3 and 4 use the ratings provided by a research participant who was blind to treatment and hypothesis instead of the self evaluation of the participant. Columns 5 and 6 report the analyses from the main text with all participants included. Columns 7 and 8 restrict the sample to participants included in the main analysis who also reported that the policy domain was a problem in the United States. Across all specifications, participants in the Individual condition are less likely to report systemic interventions.*

	Only or Mostly Systemic Interventions		RA Ratings		All Participants		Reported Issue is a Problem in US	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individual Treatment	-0.159*** (0.027)	-0.115** (0.035)	-0.229*** (0.029)	-0.143*** (0.036)	-0.178*** (0.024)	-0.078** (0.028)	-0.174*** (0.026)	-0.076** (0.029)
Finance Domain	-0.149*** (0.034)		-0.075* (0.035)		-0.224*** (0.030)		-0.243*** (0.032)	
Health Domain	-0.049 (0.033)	-0.049 (0.035)	0.133*** (0.035)	0.133*** (0.036)	-0.047 (0.030)	-0.047+ (0.028)	-0.057+ (0.032)	-0.054+ (0.029)
Constant	0.464*** (0.028)	0.442*** (0.031)	0.534*** (0.029)	0.491*** (0.031)	0.919*** (0.024)	0.869*** (0.024)	0.931*** (0.026)	0.871*** (0.025)
N	1109	742	1109	742	1200	801	1041	738

+ p < 0.1, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001



*Figure A1.* Participants in Study 1 reported how effective they thought each of the three solutions they evaluated was. Error bars show 95% confidence intervals.

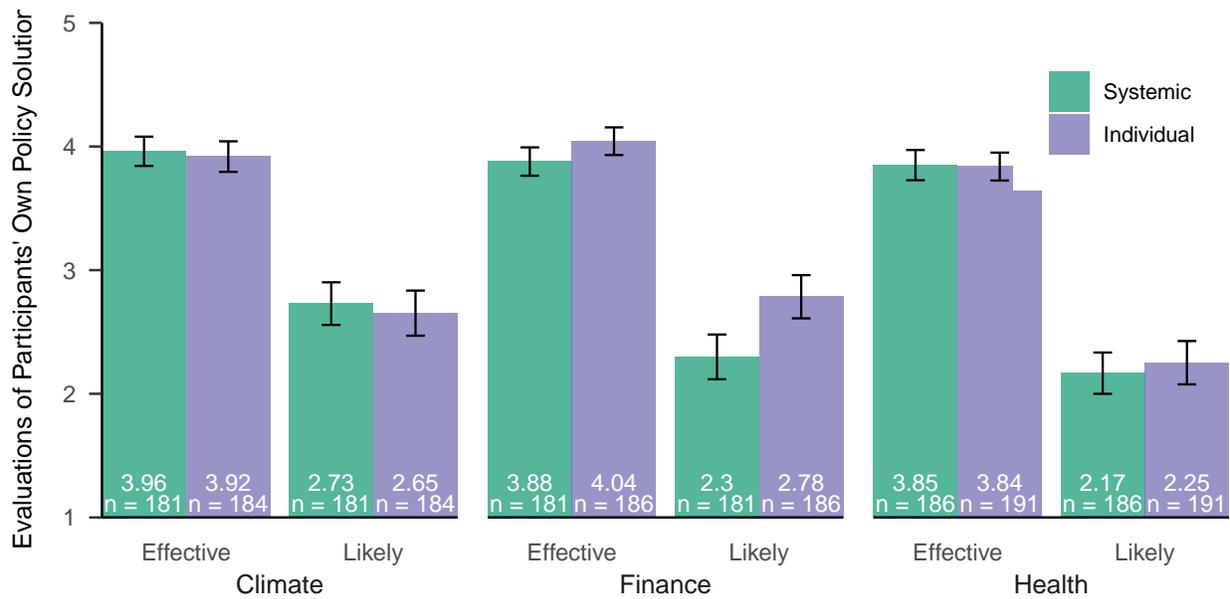


Figure A2. Participants in Study 1 assessed their own proposed solution, reporting how effective they thought it is and how likely they thought it would be implemented in the United States. Error bars show 95% confidence intervals.

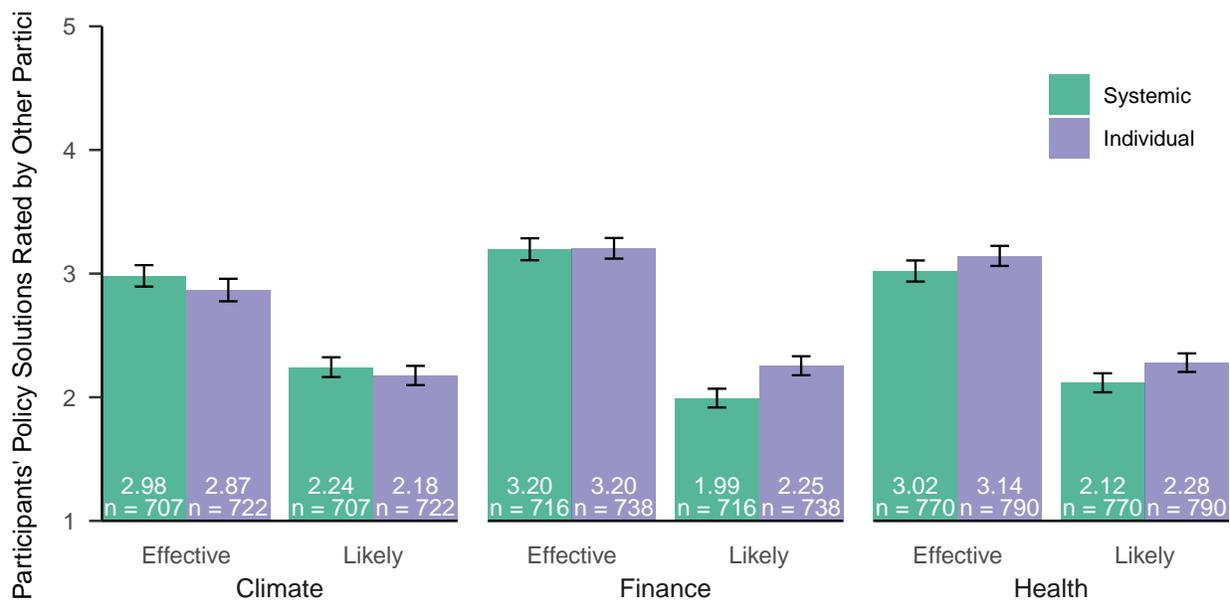


Figure A3. New participants evaluated the open-ended policy solutions provided by Study 1 participants. Error bars show 95% confidence intervals.

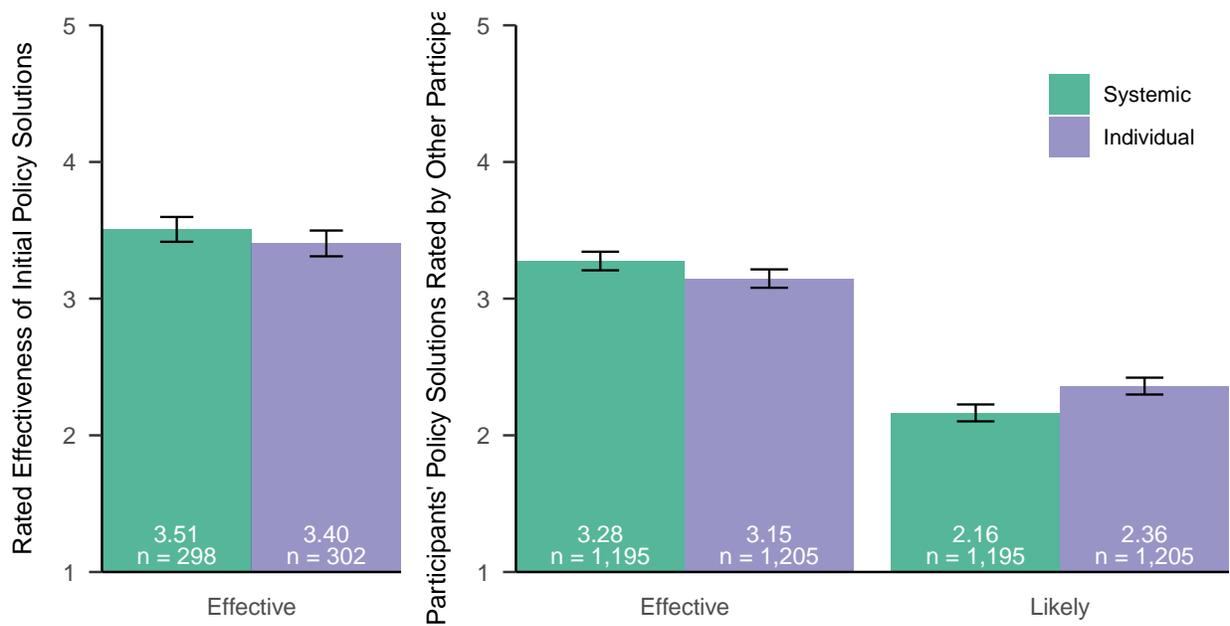


Figure A4. Participants in Study 2 reported how effective they thought each of the three solutions they evaluated was (left panel). Other participants then evaluated their proposals on effectiveness, as well as how likely they thought the solution would be implemented in the United States (right panel). Error bars show 95% confidence intervals.

Table A3  
*Balance Table for Study 2.*

	Systemic	Individual
n	298	302
Gender (%)		
Female	145 (48.7)	148 (49.0)
Male	150 (50.3)	144 (47.7)
Other	3 ( 1.0)	10 ( 3.3)
Age (mean (SD))	37.83 (13.39)	38.82 (14.41)
Race (%)		
Non-Hispanic White	205 (68.8)	209 (69.2)
Non-Hispanic Black	23 ( 7.7)	25 ( 8.3)
Hispanic	21 ( 7.0)	26 ( 8.6)
Asian	30 (10.1)	28 ( 9.3)
Other or Mixed	19 ( 6.4)	14 ( 4.6)
Education (%)		
Less than high school	2 ( 0.7)	2 ( 0.7)
High school or equivalent	44 (14.8)	35 (11.6)
Some college	74 (24.8)	77 (25.5)
College	139 (46.6)	135 (44.7)
Professional or Master's degree	37 (12.4)	47 (15.6)
Doctoral degree	2 ( 0.7)	6 ( 2.0)
Employment (%)		
Employed full time	175 (61.8)	148 (50.7)
Employed part time	42 (14.8)	47 (16.1)
Unemployed looking for work	22 ( 7.8)	34 (11.6)
Unemployed not looking for work	15 ( 5.3)	17 ( 5.8)
Student	15 ( 5.3)	27 ( 9.2)
Retired	14 ( 4.9)	19 ( 6.5)
Politics (%)		
Very liberal	70 (23.5)	76 (25.2)
Somewhat liberal	69 (23.2)	61 (20.2)
Slightly liberal	36 (12.1)	43 (14.2)
Neither liberal nor conservative	50 (16.8)	58 (19.2)
Slightly conservative	28 ( 9.4)	22 ( 7.3)
Somewhat conservative	25 ( 8.4)	38 (12.6)
Very conservative	20 ( 6.7)	4 ( 1.3)
Problem = Yes (%)	274 (91.9)	285 (94.4)
Serious (mean (SD))	3.87 (0.79)	3.93 (0.78)

## Appendix B

### Experimental Materials

#### Materials: Study 1 Climate change domain

**Thank you for participating in this study designed by Carnegie Mellon University researchers to help better understand how people make decisions.**

This study is part of a research study conducted by George Loewenstein at Carnegie Mellon University. The purpose of the research is to understand human judgment and decision making.

**Procedures**

In this study, you will be exposed to stimuli and we will record the judgments and decisions that you will make. We will ask you to make judgments or decisions about things that you believe, and your judgments about what other people believe. For example, you may be exposed to words or pictures, you may be asked to play economic games by yourself or with other people, or to perform motor coordination tasks. In the experiment, you may perform a task alone or together with a person or a computer program.

**Participant Requirements**

Participation in this study is limited to individuals age 18 and older.

**Risks**

The risks and discomfort associated with participation in this study are no greater than those ordinarily encountered in daily life or during mild physical activity, such as when surfing the Internet or watching YouTube.

**Benefits**

There may be no personal benefit from your participation in the study but the knowledge received may be of value to humanity.

**Compensation & Costs**

There will be no cost to you if you participate in this study and you will receive no monetary compensation for your participation.

**Confidentiality**

By participating in this research, you understand and agree that Carnegie Mellon may be required to disclose your consent form, data and other personally identifiable information as required by law, regulation, subpoena or court order. Otherwise, your confidentiality will be maintained in the following manner: The researchers will take the following steps to protect participants' identities during this study: (1) During the study, we will maintain participant e-mail addresses in order to administer the longitudinal aspect of the study. They will be disposed of before any data is analyzed. (2) After the study has concluded, each participant will be assigned a number; (3) The researchers will assign any data collected during the study by number, not by name; (4) Any original recordings or data files will be stored in a secured location accessed only by authorized researchers. (5) IP addresses will be deleted before any data is analyzed.

**Right to Ask Questions & Contact Information**

If you have any questions about this study, you should feel free to ask them by contacting the Principal Investigator now at Dr. George Loewenstein, Professor, Carnegie Mellon University, Social and Decision Sciences, 319C Porter Hall, 5000 Forbes Ave., Pittsburgh, PA 15213, 412-268-6780, gloew@andrew.cmu.edu. If you have questions later, desire additional information, or wish to withdraw your participation please contact the Principle Investigator by mail, phone or e-mail in accordance with the contact information listed above. If you have questions pertaining to your rights as a research participant; or to report objections to this study, you should contact the Research Regulatory Compliance Office at Carnegie Mellon University. Email: irb-review@andrew.cmu.edu. Phone: 412-268-1901 or 412-268-5460. The Carnegie Mellon University Institutional Review Board (IRB) has approved the use of human participants for this study.

**Voluntary Participation**

Your participation in this research is voluntary. You may discontinue participation at any time during the research activity.

*Figure B1.* Study 1: Screen 1.

If you agree to these conditions and would like to proceed, please confirm the following three items then click the button below.

	Yes	No
I am age 18 or older	<input type="radio"/>	<input type="radio"/>
I have read and understand the above information.	<input type="radio"/>	<input type="radio"/>
I want to participate in this research and continue with this study.	<input type="radio"/>	<input type="radio"/>

Please make sure that your Prolific ID is recorded correctly



Figure B2. Study 1: Screen 1.

In this survey we are interested in your attitudes toward climate change and efforts aimed at reducing carbon emissions.



Figure B3. Study 1: Screen 2.

Do you believe climate change due to human activity is a problem in the United States?

<input type="radio"/> No	<input type="radio"/> Yes
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Figure B4. Study 1: Screen 3.

How serious do you think the problem of climate change is for the United States?

<input type="radio"/> Not at all	<input type="radio"/> Slightly	<input type="radio"/> Somewhat	<input type="radio"/> Very	<input type="radio"/> Extremely
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Figure B5. Study 1: Screen 4.

Governments have taken steps to reduce carbon emissions through taxes, regulations, and mandates. On the next screens, we will show you examples of such policies that governments can implement. We are interested in your opinion about them. There are no right or wrong answers.



Figure B6. Study 1: Screen 5. (Systemic condition)

Electric cars lead to fewer carbon emissions than gas powered vehicles. To phase-out the number of gas powered vehicles, the government can ban their sale after a specific date.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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→

Figure B7. Study 1: Screen 6. (Systemic condition)

The government can impose a carbon tax on companies and products based on the amount of emissions they create. The higher costs will make alternatives that create fewer carbon emissions more desirable, leading more companies and people to choose them.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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Figure B8. Study 1: Screen 7. (Systemic condition)

Fossil fuels create carbon emissions when they are burned. The government can discourage the drilling of new oil wells, which will decrease the amount of fossil fuels produced.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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Figure B9. Study 1: Screen 8. (Systemic condition)

Individuals can contribute to reducing carbon emissions by changing their behavior and making different choices. On the next screens, we will show you examples of such behaviors that people can adopt. We are interested in your opinion about them. There are no right or wrong answers.

→

Figure B10. Study 1: Screen 5. (Systemic condition)

When looking for vacation destinations, many people choose to fly to far-off destinations. One way people can reduce their carbon emissions is by taking fewer flights and instead traveling more locally.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------



Figure B11. Study 1: Screen 6. (Systemic condition)

Most households have the choice to pay a small surcharge to receive electricity from renewable sources (such as solar and wind), rather than from highly polluting sources (such as coal). People can reduce their carbon impact by changing their energy plan to receive electricity from renewable sources.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------



Figure B12. Study 1: Screen 7. (Systemic condition)

Meat is one of the least carbon-friendly sources of food, because it takes a lot of calories to raise an animal for slaughter. One way people can reduce their carbon impact is to substantially reduce their meat consumption.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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Figure B13. Study 1: Screen 8. (Systemic condition)

Reducing carbon emissions is a difficult challenge. In this survey, we would like to get your ideas for how to do so!

At the end of the study, we will send your ideas and those of other participants to a panel of judges and ask them to evaluate all ideas. The participants who proposed the 3 most highly rated ideas will receive an additional bonus of \$10.

What do you think is the most effective way to reduce carbon emissions?

Solution proposed by the participant



Figure B14. Study 1: Screen 9.

Researchers have created two categories of interventions. Some policies target individuals, such as providing them with information about the carbon emissions their activities cause or encouraging them to reduce their emissions. Other interventions are more systemic, such as changes to the tax, legal or other government systems. These might include introducing tax incentives for investments in home insulation or mandating emission standards for vehicles.

When you think about your own answer, which type(s) of policy did you recommend?

As a reminder, here is the answer you provided:

Solution proposed by the participant

- Only or mostly individual interventions
- A balance of individual and systemic interventions
- Only or mostly systemic interventions

→

Figure B15. Study 1: Screen 10.

How effective do you think the solution(s) you recommended could actually be?

- Not at all effective
- Slightly effective
- Somewhat effective
- Very effective
- Extremely effective

How likely do you think it is that the type of solution(s) you recommended will be implemented in the United States?

- Not at all likely
- Slightly likely
- Somewhat likely
- Very likely
- Extremely likely

→

Figure B16. Study 1: Screen 11.

Thinking about it now, which kind of policies do you believe are most important in tackling this problem?

Individual interventions      A balance of individual & systemic interventions      Systemic interventions

→

Figure B17. Study 1: Screen 12.

Overall, regarding the main responsibility for addressing the problem of climate change, to what extent do you agree or disagree with the follow statements?

It is mainly up to **governments** to tackle the problem of climate change through **better policies and regulations**.

Strongly disagree	Somewhat disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Somewhat agree	Strongly agree
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It is mainly up to **individuals** to tackle the problem of climate change by making **better choices**.

Strongly disagree	Somewhat disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Somewhat agree	Strongly agree
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[→](#)

Figure B18. Study 1: Screen 13.

**What is your gender?**

Male	Female	Other
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**What is your age?**

**What is your race/ethnicity?**

Asian	Non-Hispanic White
Hispanic	Other or Mixed
Non-Hispanic Black	

**What best describes your current employment status?**

Employed full time	Retired
Employed part time	Student
Unemployed looking for work	Other
Unemployed not looking for work	

**What is the highest level of education you've completed?**

Less than high school	College
High school or equivalent	Professional or Master's degree
Some college	Doctoral degree

**Which of the following best describes your political position?**

Very liberal	Somewhat liberal	Slightly liberal	Neither liberal nor conservative	Slightly conservative	Somewhat conservative	Very conservative
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[→](#)

Figure B19. Study 1: Screen 14.

Thank you again for taking the time to help us with our research!

If your solution is selected as one of the most highly rated ideas by our judges, you will receive a bonus of \$10 via Prolific. We expect to have rated all submissions within the next 14 days.

Do you have any feedback or comments for the researchers? (optional)



*Figure B20.* Study 1: Screen 15.

**Materials: Study 1 Retirement savings domain**

**Thank you for participating in this study designed by Carnegie Mellon University researchers to help better understand how people make decisions.**

This study is part of a research study conducted by George Loewenstein at Carnegie Mellon University. The purpose of the research is to understand human judgment and decision making.

**Procedures**

In this study, you will be exposed to stimuli and we will record the judgments and decisions that you will make. We will ask you to make judgments or decisions about things that you believe, and your judgments about what other people believe. For example, you may be exposed to words or pictures, you may be asked to play economic games by yourself or with other people, or to perform motor coordination tasks. In the experiment, you may perform a task alone or together with a person or a computer program.

**Participant Requirements**

Participation in this study is limited to individuals age 18 and older.

**Risks**

The risks and discomfort associated with participation in this study are no greater than those ordinarily encountered in daily life or during mild physical activity, such as when surfing the Internet or watching YouTube.

**Benefits**

There may be no personal benefit from your participation in the study but the knowledge received may be of value to humanity.

**Compensation & Costs**

There will be no cost to you if you participate in this study and you will receive no monetary compensation for your participation.

**Confidentiality**

By participating in this research, you understand and agree that Carnegie Mellon may be required to disclose your consent form, data and other personally identifiable information as required by law, regulation, subpoena or court order. Otherwise, your confidentiality will be maintained in the following manner: The researchers will take the following steps to protect participants' identities during this study: (1) During the study, we will maintain participant e-mail addresses in order to administer the longitudinal aspect of the study. They will be disposed of before any data is analyzed. (2) After the study has concluded, each participant will be assigned a number; (3) The researchers will assign any data collected during the study by number, not by name; (4) Any original recordings or data files will be stored in a secured location accessed only by authorized researchers. (5) IP addresses will be deleted before any data is analyzed.

**Right to Ask Questions & Contact Information**

If you have any questions about this study, you should feel free to ask them by contacting the Principal Investigator now at Dr. George Loewenstein, Professor, Carnegie Mellon University, Social and Decision Sciences, 319C Porter Hall, 5000 Forbes Ave., Pittsburgh, PA 15213, 412-268-6780, gloew@andrew.cmu.edu. If you have questions later, desire additional information, or wish to withdraw your participation please contact the Principle Investigator by mail, phone or e-mail in accordance with the contact information listed above. If you have questions pertaining to your rights as a research participant; or to report objections to this study, you should contact the Research Regulatory Compliance Office at Carnegie Mellon University. Email: irb-review@andrew.cmu.edu. Phone: 412-268-1901 or 412-268-5460. The Carnegie Mellon University Institutional Review Board (IRB) has approved the use of human participants for this study.

**Voluntary Participation**

Your participation in this research is voluntary. You may discontinue participation at any time during the research activity.

Figure B21. Study 1: Screen 1.

If you agree to these conditions and would like to proceed, please confirm the following three items then click the button below.

	Yes	No
I am age 18 or older	<input type="radio"/>	<input type="radio"/>
I have read and understand the above information.	<input type="radio"/>	<input type="radio"/>
I want to participate in this research and continue with this study.	<input type="radio"/>	<input type="radio"/>

Please make sure that your Prolific ID is recorded correctly



Figure B22. Study 1: Screen 1.

In this survey we are interested in people's attitudes toward promoting good money habits, encouraging saving behavior, and ensuring an adequate income in retirement.



Figure B23. Study 1: Screen 2.

Do you believe insufficient financial preparation for retirement is a problem in the United States?

No
  Yes



Figure B24. Study 1: Screen 3.

How serious do you think the problem of insufficient financial preparation for retirement is for the United States?

Not at all
  Slightly
  Somewhat
  Very
  Extremely



Figure B25. Study 1: Screen 4.

Governments have taken steps to promote people's financial wellbeing through tax breaks, regulations, and mandates. On the next screens, we will show you examples of such policies that governments can implement. We are interested in your opinion about them. There are no right or wrong answers.



Figure B26. Study 1: Screen 5. (Systemic condition)

The government can expand mandatory contributions of employers and employees to social security or employment-connected retirement plans. People would then have more money available in retirement.

How effective do you think this policy would be?

Not at all effective
  Slightly effective
  Somewhat effective
  Very effective
  Extremely effective



Figure B27. Study 1: Screen 6. (Systemic condition)

The government can impose a maximum rate on credit card interest rates. This would allow people to make more progress toward paying off their debts.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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→

Figure B28. Study 1: Screen 7. (Systemic condition)

The government can impose a limit on the fees that can be charged to investment funds in people's retirement accounts. Lower fees would lead to higher returns for investors.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------

→

Figure B29. Study 1: Screen 8. (Systemic condition)

Individuals can improve their financial wellbeing by changing their behavior and making different choices. On the next screens, we will show you examples of such behaviors that people can adopt. We are interested in your opinion about them. There are no right or wrong answers.

→

Figure B30. Study 1: Screen 5. (Systemic condition)

Small expenses that are incurred daily can add up quickly. One way people can reduce their spending is to cut back on expenses such as daily cups of coffee, instead choosing to brew coffee at home.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------

→

Figure B31. Study 1: Screen 6. (Systemic condition)

Many people are unaware of how they are spending money, which can make it difficult to build savings. People can try to save more money by creating a budget and learning how they are spending their income.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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→

Figure B32. Study 1: Screen 7. (Systemic condition)

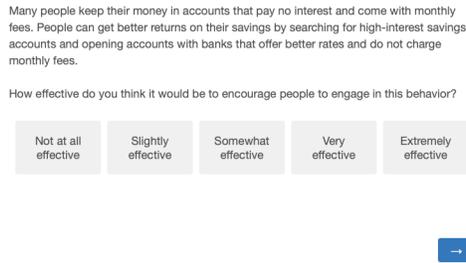


Figure B33. Study 1: Screen 8. (Systemic condition)

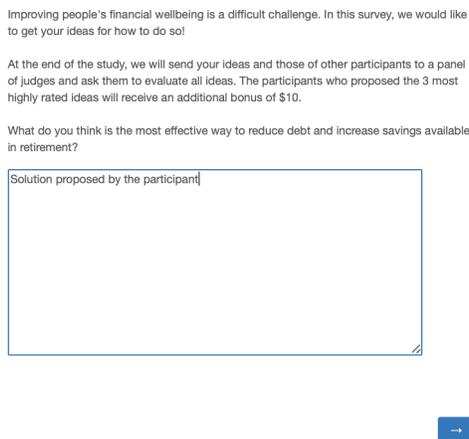


Figure B34. Study 1: Screen 9.

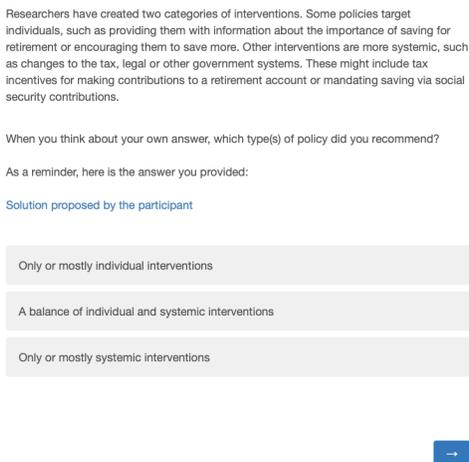


Figure B35. Study 1: Screen 10.

How effective do you think the solution(s) you recommended could actually be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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How likely do you think it is that the type of solution(s) you recommended will be implemented in the United States?

Not at all likely	Slightly likely	Somewhat likely	Very likely	Extremely likely
-------------------	-----------------	-----------------	-------------	------------------

→

Figure B36. Study 1: Screen 11.

Thinking about it now, which kind of policies do you believe are most important in tackling this problem?

Individual interventions      A balance of individual & systemic interventions      Systemic interventions



→

Figure B37. Study 1: Screen 12.

Overall, regarding the main responsibility for addressing the problem of insufficient retirement savings, to what extent do you agree or disagree with the follow statements?

It is mainly up to **governments** to tackle the problem of insufficient retirement savings through **better policies and regulations**.

Strongly disagree	Somewhat disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Somewhat agree	Strongly agree
-------------------	-------------------	-------------------	----------------------------	----------------	----------------	----------------

It is mainly up to **individuals** to tackle the problem of insufficient retirement savings by making **better choices**.

Strongly disagree	Somewhat disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Somewhat agree	Strongly agree
-------------------	-------------------	-------------------	----------------------------	----------------	----------------	----------------

→

Figure B38. Study 1: Screen 13.

**What is your gender?**

Male	Female	Other
------	--------	-------

**What is your age?**

**What is your race/ethnicity?**

Asian	Non-Hispanic White
Hispanic	Other or Mixed
Non-Hispanic Black	

**What best describes your current employment status?**

Employed full time	Retired
Employed part time	Student
Unemployed looking for work	Other
Unemployed not looking for work	

**What is the highest level of education you've completed?**

Less than high school	College
High school or equivalent	Professional or Master's degree
Some college	Doctoral degree

**Which of the following best describes your political position?**

Very liberal	Somewhat liberal	Slightly liberal	Neither liberal nor conservative	Slightly conservative	Somewhat conservative	Very conservative
--------------	------------------	------------------	----------------------------------	-----------------------	-----------------------	-------------------

[→](#)

Figure B39. Study 1: Screen 14.

Thank you again for taking the time to help us with our research!

If your solution is selected as one of the most highly rated ideas by our judges, you will receive a bonus of \$10 via Prolific. We expect to have rated all submissions within the next 14 days.

Do you have any feedback or comments for the researchers? (optional)

[→](#)

Figure B40. Study 1: Screen 15.

## Materials: Study 1 Public health domain

**Thank you for participating in this study designed by Carnegie Mellon University researchers to help better understand how people make decisions.**

This study is part of a research study conducted by George Loewenstein at Carnegie Mellon University. The purpose of the research is to understand human judgment and decision making.

### **Procedures**

In this study, you will be exposed to stimuli and we will record the judgments and decisions that you will make. We will ask you to make judgments or decisions about things that you believe, and your judgments about what other people believe. For example, you may be exposed to words or pictures, you may be asked to play economic games by yourself or with other people, or to perform motor coordination tasks. In the experiment, you may perform a task alone or together with a person or a computer program.

### **Participant Requirements**

Participation in this study is limited to individuals age 18 and older.

### **Risks**

The risks and discomfort associated with participation in this study are no greater than those ordinarily encountered in daily life or during mild physical activity, such as when surfing the Internet or watching YouTube.

### **Benefits**

There may be no personal benefit from your participation in the study but the knowledge received may be of value to humanity.

### **Compensation & Costs**

There will be no cost to you if you participate in this study and you will receive no monetary compensation for your participation.

### **Confidentiality**

By participating in this research, you understand and agree that Carnegie Mellon may be required to disclose your consent form, data and other personally identifiable information as required by law, regulation, subpoena or court order. Otherwise, your confidentiality will be maintained in the following manner: The researchers will take the following steps to protect participants' identities during this study: (1) During the study, we will maintain participant e-mail addresses in order to administer the longitudinal aspect of the study. They will be disposed of before any data is analyzed. (2) After the study has concluded, each participant will be assigned a number; (3) The researchers will assign any data collected during the study by number, not by name; (4) Any original recordings or data files will be stored in a secured location accessed only by authorized researchers. (5) IP addresses will be deleted before any data is analyzed.

### **Right to Ask Questions & Contact Information**

If you have any questions about this study, you should feel free to ask them by contacting the Principal Investigator now at Dr. George Loewenstein, Professor, Carnegie Mellon University, Social and Decision Sciences, 319C Porter Hall, 5000 Forbes Ave., Pittsburgh, PA 15213, 412-268-6780, gloew@andrew.cmu.edu. If you have questions later, desire additional information, or wish to withdraw your participation please contact the Principle Investigator by mail, phone or e-mail in accordance with the contact information listed above. If you have questions pertaining to your rights as a research participant; or to report objections to this study, you should contact the Research Regulatory Compliance Office at Carnegie Mellon University. Email: irb-review@andrew.cmu.edu. Phone: 412-268-1901 or 412-268-5460. The Carnegie Mellon University Institutional Review Board (IRB) has approved the use of human participants for this study.

### **Voluntary Participation**

Your participation in this research is voluntary. You may discontinue participation at any time during the research activity.

*Figure B41.* Study 1: Screen 1.

If you agree to these conditions and would like to proceed, please confirm the following three items then click the button below.

	Yes	No
I am age 18 or older	<input type="radio"/>	<input type="radio"/>
I have read and understand the above information.	<input type="radio"/>	<input type="radio"/>
I want to participate in this research and continue with this study.	<input type="radio"/>	<input type="radio"/>

Please make sure that your Prolific ID is recorded correctly

[→](#)

Figure B42. Study 1: Screen 1.

In this survey we are interested in people's attitudes toward promoting healthy lifestyles and reducing obesity.

[→](#)

Figure B43. Study 1: Screen 2.

Do you believe there is an obesity problem in the United States?

No
  Yes

[→](#)

Figure B44. Study 1: Screen 3.

How serious do you think the problem of obesity is for the United States?

Not at all
  Slightly
  Somewhat
  Very
  Extremely

[→](#)

Figure B45. Study 1: Screen 4.

Governments can improve people's health in a wide range of ways. On the next screens, we will show you examples of such policies that governments can adopt. We are interested in your opinion about them. There are no right or wrong answers.

[→](#)

Figure B46. Study 1: Screen 5. (Systemic condition)

The government can phase out existing subsidies to corn production. These subsidies artificially lower the cost of high fructose corn syrup and many other corn-based ingredients of ultra-processed foods. To aid farmers, saved funds can be shifted in favor of subsidizing production of fruit and vegetables.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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→

Figure B47. Study 1: Screen 6. (Systemic condition)

Public schools can be provided with extra funding for providing students with healthy, tasty, breakfasts and lunches and for expanding physical education as well as recess and after-school recreational opportunities. Local governments can be provided with funds for improving sidewalks and developing bike lanes and other infrastructure that encourages walking and biking.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------

→

Figure B48. Study 1: Screen 7. (Systemic condition)

The government can regulate the use of artificial and unhealthy ingredients in processed foods, similar to how trans fats have been banned since 2018 by the Food and Drug Administration. Regulations on ingredients would lead manufacturers to reformulate their products to make them healthier for consumers.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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Figure B49. Study 1: Screen 8. (Systemic condition)

Certain foods and beverages simply don't belong in a healthy diet. These include sugared drinks and high fat, high sodium ultra-processed snack foods – like Doritos. The items can be easily identified and, with minimal willpower (in part because myriad healthier options exist), be eliminated from a health-conscious consumer's diet

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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→

Figure B50. Study 1: Screen 5. (Systemic condition)

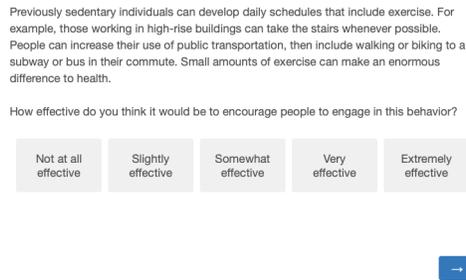


Figure B51. Study 1: Screen 6. (Systemic condition)

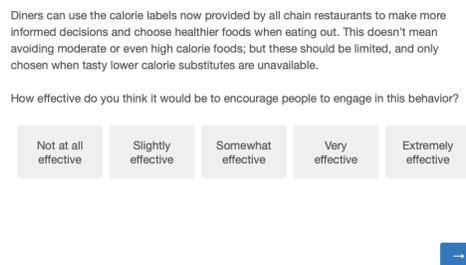


Figure B52. Study 1: Screen 7. (Systemic condition)

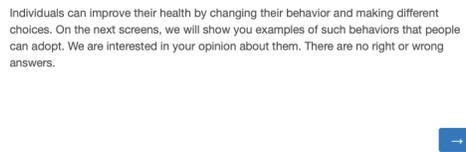


Figure B53. Study 1: Screen 8. (Systemic condition)

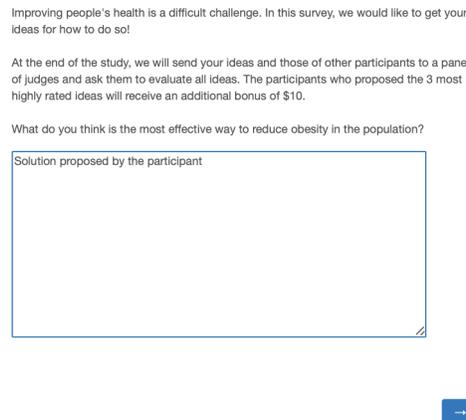


Figure B54. Study 1: Screen 9.

Researchers have created two categories of interventions. Some policies target individuals, such as providing them with information about the nutritional content or encouraging them to engage in healthier behavior. Other interventions are more systemic, such as changes to the tax, legal or other government systems. These might include putting a tax on unhealthy foods or banning the use of high-fructose corn syrup in food products.

When you think about your own answer, which type(s) of policy did you recommend?

As a reminder, here is the answer you provided:

Solution proposed by the participant

Only or mostly individual interventions

A balance of individual and systemic interventions

Only or mostly systemic interventions

→

Figure B55. Study 1: Screen 10.

How effective do you think the solution(s) you recommended could actually be?

Not at all effective   Slightly effective   Somewhat effective   Very effective   Extremely effective

How likely do you think it is that the type of solution(s) you recommended will be implemented in the United States?

Not at all likely   Slightly likely   Somewhat likely   Very likely   Extremely likely

→

Figure B56. Study 1: Screen 11.

Thinking about it now, which kind of policies do you believe are most important in tackling this problem?

Individual interventions   A balance of individual & systemic interventions   Systemic interventions

→

Figure B57. Study 1: Screen 12.

Overall, regarding the main responsibility for addressing the problem of obesity, to what extent do you agree or disagree with the follow statements?

It is mainly up to **governments** to tackle the problem of obesity through **better policies and regulations**.

Strongly disagree	Somewhat disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Somewhat agree	Strongly agree
-------------------	-------------------	-------------------	----------------------------	----------------	----------------	----------------

It is mainly up to **individuals** to tackle the problem of obesity by making **better choices**.

Strongly disagree	Somewhat disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Somewhat agree	Strongly agree
-------------------	-------------------	-------------------	----------------------------	----------------	----------------	----------------

[→](#)

Figure B58. Study 1: Screen 13.

**What is your gender?**

Male	Female	Other
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**What is your age?**

**What is your race/ethnicity?**

Asian	Non-Hispanic White
Hispanic	Other or Mixed
Non-Hispanic Black	

**What best describes your current employment status?**

Employed full time	Retired
Employed part time	Student
Unemployed looking for work	Other
Unemployed not looking for work	

**What is the highest level of education you've completed?**

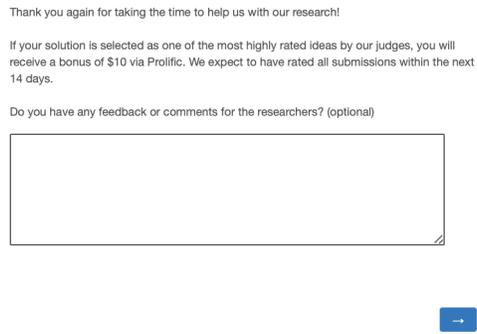
Less than high school	College
High school or equivalent	Professional or Master's degree
Some college	Doctoral degree

**Which of the following best describes your political position?**

Very liberal	Somewhat liberal	Slightly liberal	Neither liberal nor conservative	Slightly conservative	Somewhat conservative	Very conservative
--------------	------------------	------------------	----------------------------------	-----------------------	-----------------------	-------------------

[→](#)

Figure B59. Study 1: Screen 14.



*Figure B60.* Study 1: Screen 15.

**Materials: Study 2**

**Thank you for participating in this study designed by Carnegie Mellon University researchers to help better understand how people make decisions.**

This study is part of a research study conducted by George Loewenstein at Carnegie Mellon University. The purpose of the research is to understand human judgment and decision making.

**Procedures**

In this study, you will be exposed to stimuli and we will record the judgments and decisions that you will make. We will ask you to make judgments or decisions about things that you believe, and your judgments about what other people believe. For example, you may be exposed to words or pictures, you may be asked to play economic games by yourself or with other people, or to perform motor coordination tasks. In the experiment, you may perform a task alone or together with a person or a computer program.

**Participant Requirements**

Participation in this study is limited to individuals age 18 and older.

**Risks**

The risks and discomfort associated with participation in this study are no greater than those ordinarily encountered in daily life or during mild physical activity, such as when surfing the Internet or watching YouTube.

**Benefits**

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**Compensation & Costs**

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**Voluntary Participation**

Your participation in this research is voluntary. You may discontinue participation at any time during the research activity.

Figure B61. Study 2: Screen 1.

If you agree to these conditions and would like to proceed, please confirm the following three items then click the button below.

	Yes	No
I am age 18 or older	<input type="radio"/>	<input type="radio"/>
I have read and understand the above information.	<input type="radio"/>	<input type="radio"/>
I want to participate in this research and continue with this study.	<input type="radio"/>	<input type="radio"/>

Please make sure that your Prolific ID is recorded correctly



Figure B62. Study 2: Screen 1.

In this survey we are interested in people's attitudes toward promoting good money habits, encouraging saving behavior, and ensuring an adequate income in retirement.



Figure B63. Study 2: Screen 2.

Do you believe insufficient financial preparation for retirement is a problem in the United States?

No	Yes
----	-----



Figure B64. Study 2: Screen 3.

How serious do you think the problem of insufficient financial preparation for retirement is for the United States?

Not at all	Slightly	Somewhat	Very	Extremely
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Figure B65. Study 2: Screen 4.

Governments have taken steps to promote people's financial wellbeing through tax breaks, regulations, and mandates. On the next screens, we will show you examples of such policies that governments can implement. We are interested in your opinion about them. There are no right or wrong answers.



Figure B66. Study 2: Screen 5.

The government can expand mandatory contributions of employers and employees to social security or employment-connected retirement plans. People would then have more money available in retirement.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------



Figure B67. Study 2: Screen 6. (Systemic condition)

The government can impose a maximum rate on credit card interest rates. This would allow people to make more progress toward paying off their debts.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------



Figure B68. Study 2: Screen 7. (Systemic condition)

The government can impose a limit on the fees that can be charged to investment funds in people's retirement accounts. Lower fees would lead to higher returns for investors.

How effective do you think this policy would be?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------



Figure B69. Study 2: Screen 8. (Systemic condition)

Individuals can improve their financial wellbeing by changing their behavior and making different choices. On the next screens, we will show you examples of such behaviors that people can adopt. We are interested in your opinion about them. There are no right or wrong answers.



Figure B70. Study 2: Screen 6. (Individual condition)

Small expenses that are incurred daily can add up quickly. One way people can reduce their spending is to cut back on expenses such as daily cups of coffee, instead choosing to brew coffee at home.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
----------------------	--------------------	--------------------	----------------	---------------------



Figure B71. Study 2: Screen 7. (Individual condition)

Many people are unaware of how they are spending money, which can make it difficult to build savings. People can try to save more money by creating a budget and learning how they are spending their income.

How effective do you think it would be to encourage people to engage in this behavior?

Not at all effective	Slightly effective	Somewhat effective	Very effective	Extremely effective
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Figure B72. Study 2: Screen 8. (Individual condition)

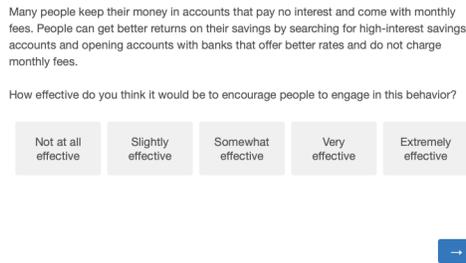


Figure B73. Study 2: Screen 9. (Individual condition)

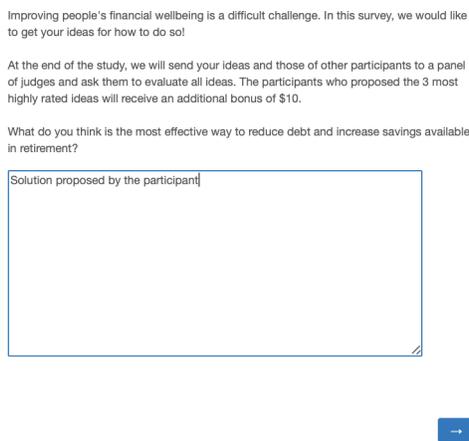


Figure B74. Study 2: Screen 9. (Systemic condition)

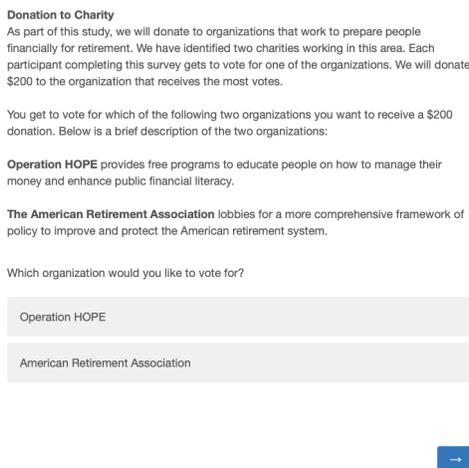


Figure B75. Study 2: Screen 10.

Researchers have created two categories of interventions. Some policies target individuals, such as providing them with information about the importance of saving for retirement or encouraging them to save more. Other interventions are more systemic, such as changes to the tax, legal or other government systems. These might include tax incentives for making contributions to a retirement account or mandating saving via social security contributions.

When you think about your own answer, which type(s) of policy did you recommend?

As a reminder, here is the answer you provided:

Solution proposed by the participant

Only or mostly individual interventions
A balance of individual and systemic interventions
Only or mostly systemic interventions



Figure B76. Study 2: Screen 11.

What is your gender?

Male	Female	Other
------	--------	-------

What is your age?

What is your race/ethnicity?

Asian	Non-Hispanic White
Hispanic	Other or Mixed
Non-Hispanic Black	

What best describes your current employment status?

Employed full time	Retired
Employed part time	Student
Unemployed looking for work	Other
Unemployed not looking for work	

What is the highest level of education you've completed?

Less than high school	College
High school or equivalent	Professional or Master's degree
Some college	Doctoral degree

Which of the following best describes your political position?

Very liberal	Somewhat liberal	Slightly liberal	Neither liberal nor conservative	Slightly conservative	Somewhat conservative	Very conservative
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Figure B77. Study 2: Screen 12.

Thank you again for taking the time to help us with our research!

If your solution is selected as one of the most highly rated ideas by our judges, you will receive a bonus of \$10 via Prolific. We expect to have rated all submissions within the next 14 days.

Do you have any feedback or comments for the researchers? (optional)

→

Figure B78. Study 2: Screen 13.