

Improving acceptability of nudges: Learning from attitudes towards opt-in and opt-out policies

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Abstract

Policy makers should understand people's attitudes towards opt-out nudges to smoothly promote and implement the policies. Our research compares people's perceptions of opt-in and three improved versions of opt-out (transparency, emphasis on the low-cost opt-out option, education) in pro-social and pro-self policy domains, e.g., organ donation ($N=610$), carbon emission offset ($N=613$), and retirement saving ($N=602$). We found that people acknowledged more practical and societal benefits of opt-out than opt-in in organ donation and retirement saving but less so in carbon emission offset. Improved opt-out policies failed to address ethical concerns and most emotional discomfort concerns in organ donation whereas opt-out transparency and emphasis on low-cost opt-out were more successful than education at addressing concerns in retirement saving and carbon emission offset. Nonetheless, transparency and education may raise consciousness of policies' aims. The results suggest that 1) acceptability of opt-out approaches may be more difficult to enhance in some domains than others; 2) policy makers should ensure the public understands that opt-out is a convenient choice and may consider combining all forms of improvement to increase people's acceptance of opt-out nudges.

Keywords: nudges, opt-in, opt-out, policy, attitudes, organ donation, retirement saving, carbon emission offset

1 Introduction

Nudges are behavioral policy interventions that could alter “people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid” (Thaler & Sunstein, 2008). Nudges have helped policy makers design numerous policies to achieve their aims (Allcott, 2011; Araña & León, 2013; Halpern, 2016; Johnson & Goldstein, 2003; Johnson et al., 2012). However, controversy arises as to whether it is moral to influence people's decisions in this way. Studies have demonstrated variances in approval rates of various nudges — ranging from 20% to near 90% — in different populations. Opt-out nudges, which use defaults, have drawn a considerable number of objections (e.g., Hagman, Andersson, Västfjäll & Tinghög, 2015; Jung & Mellers, 2016; Reisch & Sunstein, 2016; Sunstein, 2015a).

Our research addresses acceptability challenges in promoting the opt-out approach. To our surprise, despite the impression that opt-out nudges are problematic, little empirical evidence shows why people think so and how people perceive the opt-out approach compared to the currently-

used opt-in approach. While the opt-out approach changes people's behaviors and brings societal and personal benefits (e.g., Benartzi et al., 2017; Chapman, Li, Colby & Yoon, 2010; Cronqvist & Thaler, 2004; Everett, Caviola, Kahane, Savulescu & Faber, 2015; Johnson & Goldstein, 2003; Johnson, Hershey, Meszaros & Kunreuther, 1993; Madrian & Shea, 2001), it is equally important to understand the costs that might incur. Since public opinions often influence policies (Burstein, 2003), anticipating people's reactions to them is an important challenge. A crucial precondition for policies using opt-out nudges is acceptance by their intended populations. Otherwise, people could hinder the establishment and effectiveness of policies. Furthermore, new policies that are likely to trigger public objections may receive less support from policy makers (Reisch & Sunstein, 2016), even though they are beneficial to citizens. Hagman (2018) presented a simple model of behavioral changes of nudges — although nudges can change behaviors directly, acceptance plays an important role in justification and successful implementation of nudges. Therefore, we aimed to compare people's perceptions of the current opt-in approach and various improved opt-out approaches to determine effective ways to pitch an opt-out policy to the public and to ensure a smooth policy switch.

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1.1 Attitudes toward Opt-out Nudges and Insights for Potential Improvement

An opt-out nudge involves setting the desirable option, from the policy makers' perspective, as the default, and thus more people end up with that option. People have numerous concerns about using opt-out nudges. For instance, are they manipulative? Are they able to maintain freedom of choice? The opt-out nudges' approval varies between populations and policies. Swedish and American people showed moderate support for using the opt-out procedure in organ donation (63.3% and 42.9% respectively), and in carbon emission offset (60.7% and 45.7% respectively). However, the majority of participants also found these opt-out policies intrusive to individual freedom (78.9% of Swedish and 86.7% of American for organ donation, 70.1% and 85.7% for carbon emission offset) (Hagman et al., 2015). Jung and Mellers (2016) found limited support for opt-out approaches in Americans. Specifically, 54% of participants supported using the opt-out approach in retirement saving, but only 33% supported using it in organ donation. Reisch and Sunstein (2016) reported Europeans' (Italian, British, French, German, Hungarian, and Danish) attitudes towards default rules. About 67.7% of Europeans supported using default rules to conserve energy and 61.5% for organ donation, but only 36% for carbon emission offset. Sunstein (2015a) found that around 70% of Americans approved of opt-out policies in retirement savings and organ donation, but out of twelve unpopular nudges, seven include using the opt-out approach.

Contents, aims, and specific approaches of a policy play a part in people's evaluation of opt-out nudges. First, attitudes towards nudges are often inseparable from people's original preference in the subject matter. As Sunstein (2015a) described, people object to nudges that violate their interests or values. Tannenbaum, Fox and Rogers (2017) found that people tended to favor an opt-out policy when the default represented their political values. Attitudes towards nudges are also influenced by policy aims (Sunstein, 2015a), e.g., to increase social welfare, to increase personal well-being, or to increase business profits. Furthermore, research has found that people are more likely to accept pro-self nudges, e.g., automatic enrollment in pension plans, than pro-social nudges, e.g., automatic enrollment in organ donation programs (Hagman et al., 2015). In addition, research has found that people tend to accept nudges that involve conscious reflection and thinking (System 2 nudges) rather than those that automatically shifted people's intuition (System 1 nudges) (Felsen et al., 2013; Sunstein, 2016). In Felsen et al. (2013), participants indicated that decisions made consciously were more authentic than those swayed by implicit means. This study suggests that people do not like being manipulated in an unconscious way and prefer to have the information for deliberation and receive explicit recommendations.

Researchers have been aware of people's common objections, such as manipulation and threat to autonomy and freedom of choice. The subsequent question is how to enhance acceptability of opt-out approaches, in particular for social-welfare issues, because the opt-out approach could be a valuable solution to the free rider problem of public goods (Bhargava & Loewenstein, 2015). In response to ethical concerns, Sunstein (2015b) emphasized that the nudges were designed to retain impressions of freedom of choice at a low cost and that government officials must make them transparent and take responsibilities for launching these policies. These arguments provide guidelines for enhancing acceptability of opt-out nudges. When using the opt-out approach, policy makers should explicate their intention, the availability of the option to opt-out, and the expected consequences of using it (Hansen & Jespersen, 2013; Sunstein, 2015b). Sunstein, Reisch & Kaiser (2018) found that trust in public institutions was positively correlated with approval of nudges, a finding that further highlights the need to develop and communicate nudges transparently. Although studies have shown that disclosure of intended effect and opportunity to revise choices did not reduce the default effect (Loewenstein, Bryce, Hagmann & Rajpal, 2015; Steffel, Williams & Pogacar, 2016), whether transparency and emphasis on the option to opt-out can increase policy acceptance have not been empirically tested. Furthermore, as people prefer System 2 nudges, it is reasonable to expect that providing relevant information about the substantive topic and making people feel informed may increase acceptability of opt-out approaches.

1.2 Current Experiments

We aimed to compare the relative attractiveness of opt-out policies to the conventional opt-in approach and to determine whether any of them (transparency, emphasis on the low-cost opt-out option, and education) would yield similar acceptability to that of opt-in. We hypothesized that opt-out policies with those features would be perceived as equally appealing as opt-in policies, because transparency, emphasis on the low-cost opt-out option, and education provide people information regarding the policies and the subject matter and thus appease people's worries.

We selected three representative policy scenarios: organ donation, carbon emission offset, and retirement saving, to determine whether our hypothesis would hold across different policy domains. We note that each scenario has its unique characteristics regarding its beneficiaries and initial form of sacrifice. As real-life policies often entail specific attributes and aims, it is important to examine diverse policies. The organ donation and carbon emission offset policies are considered pro-social, because they benefit the society as a whole at the expense of individuals (bodily parts and money). The organ donation policy encourages people to register as

organ donors, whose organ(s) can be donated after death to save other people's lives. The carbon emission offset policy encourages travelers to pay a fee to offset carbon emission caused by flights. The retirement saving policy is mainly pro-self, which involves taking money from the present for the good of one's future self. It encourages people to enroll in retirement-saving plans to spend less now and save for retirement (Hagman et al., 2015).

2 Method

2.1 Participants, Procedure, and Materials

The participants were U.S. Amazon Mechanical Turk workers, with at least 90% approval ratings, and were paid 50 cents upon completion. Each study contained one scenario policy and a between-subject design (4 conditions). G*Power analysis showed that at least a total of 104 participants would be required for each study for an effect size (η^2) of 0.1 to be detected (80% chance) with significance at the 5% level (Faul, Erdfelder, Lang & Buchner, 2007).

The organ donation and carbon emission offset vignettes were adopted from Hagman et al. (2015), and we constructed the retirement saving vignette. In all three domains, the policies aim to enroll more people in the programs for the betterment of the societal and individual welfare. There were four conditions for each scenario: opt-in, opt-out with transparency (opt-out transparency), opt-out with emphasis on the low-cost opt-out option (opt-out low-cost), and opt-out with education (opt-out education). The opt-in condition depicts a policy form in which people are assumed not willing to participate in a certain program unless they actively register, whereas the opt-out conditions present a policy form that assumes enrollment unless people choose to unenroll. The opt-out transparency condition explains the goal and intended effect of the policy and makes clear that people have the freedom to opt-out easily. The opt-out low-cost condition tells people that they can opt-out easily. The opt-out education condition advertises the need for participation in these programs and informs people about the subject matter. (See Appendix A for details.)

Each participant was randomly assigned to one of the four conditions. After participants read the given policy scenario, they were asked to report their attitudes towards our perception measures on a 6-point scale (forced response), where 1–5 indicates their opinions and 6 allows them to choose “I don't know/refuse to answer.” The 5-point Likert Scale took one of the following three types of anchors depending on the outcome measure: 1) 1=Very (negative-valence adjective), 2=Somewhat (negative-valence adjective), 3=Neutral (neither negative-valence adjective nor positive-valence adjective), 4=Somewhat (positive-valence adjective), 5=Very (positive-valence adjective); 2) 1=Not at all, 2=A little, 3=Somewhat, 4=Quite a bit, 5=Very much; and 3) 1=None,

2=A little, 3=Some, 4=Quite a bit; 5=A lot. The outcome measures were developed based on our qualitative pilot study, which analyzed people's free responses on what they found appealing and unappealing about these three opt-out policies. In this article, we focused on people's attitudes on the measures from major themes found in the qualitative study. Each study¹ included the following items², measuring people's perception of policy influence on oneself and on the society.

Perception of policy influence on oneself includes the following items:

1. Ethicality

- Indicate how ethical you think this approach is.
- Indicate how deceptive and manipulative you think this approach is.
- Indicate how much autonomy you feel using this approach.
- Indicate how much you think this approach restricts your individual freedom of choice.
- Indicate how much coercion you feel participating in this approach.

2. Expected experiences for choosing not to enroll (imagine you are a person who does not wish to enroll).

- Indicate how much work you expect it would require for you to tell the authority that you do not want to become enrolled using this approach.
- Using this approach, when you attempt to avoid getting enrolled, to what degree would you expect to experience the following? Evaluation apprehension, the fear that other people will judge you unfavorably; Discomfort due to going against what the policy makers recommend; Discomfort due to going against what most other people agree to do; Guilt/embarrassment that you are unwilling to contribute to society's /one's own welfare; Uneasiness because of the government's/company's intervention.

3. Indicate the extent to which your enrollment using this approach reflects your willingness to become enrolled.

4. Indicate how much negative emotion you think you would feel after enrolling using this approach.

5. Indicate how much personal benefit you think you would feel after enrolling using this approach.

6. Overall Evaluation

¹The experiments also piloted measures of minor themes and possible mechanisms to explain people's attitudes to inform future studies, but those measures are beyond the scope of this paper.

²In the experiments, the items were tailored for each condition and scenario. For example, “this approach” was specified as “this opt-out approach to organ donation” in opt-out conditions of Study 1.

- Indicate how acceptable you think this approach is.
- Indicate how much you approve or disapprove this approach.

Perception of policy influence on the society includes the following items:

1. Practicality

- Indicate how feasible you think this approach is.
- Indicate how effective you think this approach is.
- Indicate how efficient you think this approach is.

2. Indicate how much you agree that encouraging organ donation/retirement saving/carbon emission offset is the right thing for the government/company to do.

3. Indicate how much societal benefit you think this approach would produce.

3 Study 1: Organ Donation

Organ donation is one of the first domains to demonstrate the effect of opt-out for increasing organ donation, which has received many controversies. We sought to determine whether any of the opt-out policy forms could achieve the same level of acceptability as the opt-in approach, suggesting potential for implementing the opt-out approach instead of the opt-in approach.

3.1 Participants

610 participants from Amazon Mechanical Turk (Mturk) (334 females, 273 males, 3 other, $Mage = 37.75$) completed the survey.

3.2 Results

“I don’t know/refuse to answer” response were treated as missing data (2.40% of total responses). We reported results as follows.³Statistics of means and standard errors are presented in Table 1. In addition, some comparisons across scenarios are illustrated in figures in Appendix B.

Perception of Policy Influence on Self. Participants rated opt-out and opt-in approaches on five ethicality measures. The means on overall ethicality perception and perceived autonomy of opt-out approaches are clearly lower than those of opt-in. The means on perception of deception and manipulation, restriction of freedom of choice, and coercion are clearly higher for opt-out approaches than for the opt-in approach.

³Mean differences greater than approximately .40 were significant at the 5% level.

Participants were also asked to rate anticipated experiences resulting from choosing not to become an organ donor. The means on “how much work you expect it would require for you to tell the authority that you do not want to become enrolled using this approach” of opt-out approaches are much higher than that of opt-in. In addition, the means on anticipated evaluation apprehension and uneasiness due to government’s intervention are much higher for opt-out approaches than for the opt-in approach. As for discomfort going against the policy makers’ recommendations and discomfort going against what most other people do, the means of opt-out transparency and education are higher than that of opt-in, whereas that of opt-out low-cost is similar to opt-in. Moreover, the mean on guilt for not contributing to social welfare is clearly higher for opt-out transparency than for the opt-in approach.

Furthermore, participants reported the extent to which their enrollment using this approach reflected their willingness to become enrolled. The means of opt-out approaches are much lower than that of opt-in. Participants also reported negative emotion they thought they would feel after enrolling using this approach. The means of opt-out approaches are clearly higher than that of opt-in. The means on anticipated personal benefit of opt-out education and low-cost are lower than that of opt-in. It is also clear that the means on acceptability and approval of opt-out approaches are lower than those of opt-in.

Perception of Policy Influence on Society. Participants rated opt-out and opt-in approaches on anticipated feasibility, effectiveness, efficiency, and societal benefit as well as government’s intention. The means on anticipated feasibility are lower for opt-out approaches than for the opt-in approach, while the means on anticipated effectiveness and efficiency are higher for opt-out approaches than for the opt-in approach. Furthermore, we asked participants to indicate how much they agreed that encouraging organ donation was the right thing for the government to do. The mean of opt-out low-cost is much lower than that of opt-in. In addition, the means on anticipated societal benefit are higher for opt-out transparency and low-cost than for the opt-in approach.

4 Study 2: Carbon Emission Offset

In this study, we aimed to investigate people’s perceptions of opt-in and opt-out approaches in the carbon emission offset policy domain.

4.1 Participants

613 thirteen Mturk workers (339 females, 267 males, 7 other, $Mage = 37.37$) participated in the study.

TABLE 1: Means and SEs for Study 1: Organ Donation.

Measure	Opt-in M (SE)	Opt-out Transparency M (SE)	Opt-out Low-cost M (SE)	Opt-out Education M (SE)	Likert Scale Range
Ethicality					
Ethical	4.23 (.09)	3.12 (.12)	2.89 (.11)	2.96 (.11)	1=Very unethical, 5=Very ethical
Deceptive and Manipulative	1.93 (.09)	3.33 (.12)	3.44 (.11)	3.56 (.10)	1=Very honest, 5=Very deceptive and manipulative
Autonomy	3.93 (.10)	3.07 (.10)	2.83 (.11)	2.90 (.11)	1=None, 5=A lot
Restriction of Freedom of Choice	1.54 (.09)	2.87 (.13)	3.09 (.12)	2.97 (.11)	1=None, 5=A lot
Coercion	1.68 (.08)	3.01 (.13)	3.16 (.11)	3.09 (.11)	1=None, 5=A lot
Expected Experiences if choosing not to enroll					
Difficulty Telling the Authority (how much work it requires)	1.79 (.09)	3.09 (.09)	3.10 (.09)	3.01 (.09)	1=None, 5=A lot
Evaluation Apprehension	2.01 (.09)	2.84 (.12)	2.55 (.11)	2.70 (.12)	1=Not at all, 5=Very much
Discomfort against Policy Makers	1.90 (.10)	2.38 (.11)	2.26 (.11)	2.55 (.11)	1=Not at all, 5=Very much
Discomfort against Majority	2.15 (.10)	2.65 (.12)	2.52 (.11)	2.66 (.12)	1=Not at all, 5=Very much
Guilt	2.43 (.11)	2.88 (.12)	2.68 (.12)	2.74 (.11)	1=Not at all, 5=Very much
Uneasiness due to Authority Intervention	1.95 (.10)	3.32 (.12)	3.09 (.12)	3.11 (.12)	1=Not at all, 5=Very much
Reflection of Own Willingness	3.83 (.11)	2.90 (.12)	2.84 (.11)	2.85 (.12)	1=Not at all, 5= Very much
Negative Emotion	1.69 (.09)	2.56 (.13)	2.68 (.13)	2.52 (.12)	1=None, 5=A lot
Personal Benefit	3.09 (.12)	2.75 (.12)	2.56 (.11)	2.65 (.12)	1=None, 5=A lot
Overall Evaluation					
Acceptable	4.27 (.08)	3.38 (.13)	3.20 (.12)	3.20 (.12)	1=Very unacceptable, 5=Very acceptable
Approval	4.11 (.10)	3.30 (.13)	3.03 (.12)	3.13 (.12)	1=Strongly disapprove, 5=Strongly approve
Practicality					
Feasible	4.21 (.08)	3.80 (.11)	3.61 (.10)	3.82 (.10)	1=Very infeasible, 5=Very feasible
Effective	3.39 (.10)	4.33 (.08)	4.15 (.09)	4.18 (.09)	1=Very ineffective, 5=Very effective
Efficient	3.38 (.10)	4.32 (.08)	4.12 (.10)	4.18 (.09)	1=Very inefficient, 5=Very efficient
Government's Intention	4.07 (.09)	3.92 (.10)	3.63 (.11)	3.85 (.11)	1=Strongly disagree, 5=Strongly agree
Societal Benefit	3.35 (.10)	3.86 (.10)	3.75 (.10)	3.68 (.10)	1=None, 5=A lot

TABLE 2: Means and SEs for Study 2: Carbon Emission Offset.

Measure	Opt-in M (SE)	Opt-out Transparency M (SE)	Opt-out Low-cost M (SE)	Opt-out Education M (SE)	Likert Scale Range
Ethicality					
Ethical	3.63 (.10)	3.26 (.11)	3.33 (.10)	3.22 (.10)	1=Very unethical, 5=Very ethical
Deceptive and Manipulative	2.91 (.11)	3.59 (.10)	3.44 (.10)	3.66 (.09)	1=Very honest, 5=Very deceptive and manipulative
Autonomy	3.36 (.11)	3.04 (.11)	3.08 (.10)	2.69 (.10)	1=None, 5=A lot
Restriction of Freedom of Choice	2.10 (.11)	2.45 (.11)	2.51 (.12)	2.77 (.11)	1=None, 5=A lot
Coercion	2.62 (.11)	3.16 (.11)	3.05 (.10)	3.12 (.11)	1=None, 5=A lot
Expected Experiences if choosing not to enroll					
Difficulty Telling the Authority (how much work it requires)	2.52 (.11)	2.85 (.10)	2.88 (.10)	3.16 (.10)	1=None, 5=A lot
Evaluation Apprehension	2.44 (.10)	2.41 (.11)	2.42 (.11)	2.65 (.11)	1=Not at all, 5=Very much
Discomfort against Policy Makers	2.31 (.10)	2.21 (.11)	2.14 (.10)	2.42 (.11)	1=Not at all, 5=Very much
Discomfort against Majority	2.40 (.11)	2.19 (.10)	2.38 (.11)	2.57 (.10)	1=Not at all, 5=Very much
Guilt	2.55 (.11)	2.49 (.11)	2.66 (.12)	2.80 (.11)	1=Not at all, 5=Very much
Uneasiness due to Authority Intervention	2.47 (.11)	2.68 (.12)	2.64 (.12)	2.93 (.11)	1=Not at all, 5=Very much
Reflection of Own Willingness	3.26 (.11)	2.95 (.10)	2.90 (.10)	2.64 (.11)	1=Not at all, 5= Very much
Negative Emotion	2.37 (.12)	2.79 (.12)	2.66 (.12)	2.83 (.11)	1=None, 5=A lot
Personal Benefit	2.51 (.11)	2.46 (.10)	2.45 (.10)	2.28 (.11)	1=None, 5=A lot
Overall Evaluation					
Acceptable	3.44 (.11)	3.30 (.11)	3.25 (.11)	3.09 (.11)	1=Very unacceptable, 5=Very acceptable
Approval	3.32 (.11)	3.16 (.11)	3.15 (.11)	3.00 (.11)	1=Strongly disapprove, 5=Strongly approve
Practicality					
Feasible	3.26 (.11)	3.53 (.10)	3.37 (.11)	3.40 (.10)	1=Very infeasible, 5=Very feasible
Effective	2.77 (.10)	3.19 (.10)	2.97 (.10)	2.90 (.10)	1=Very ineffective, 5=Very effective
Efficient	2.85 (.11)	3.01 (.10)	3.06 (.09)	3.21 (.10)	1=Very inefficient, 5=Very efficient
Government's Intention	3.32 (.11)	3.64 (.11)	3.44 (.11)	3.31 (.11)	1=Strongly disagree, 5=Strongly agree
Societal Benefit	2.89 (.10)	2.92 (.10)	2.75 (.10)	2.76 (.10)	1=None, 5=A lot

4.2 Results

“I don’t know/refuse to answer” responses were treated as missing data (2.56% of total responses). We reported results in the sections below.⁴ Statistics of means and standard errors are presented in Table 2. Some comparisons across scenarios are illustrated in figures in Appendix B.

Perception of Policy Influence on Self. In terms of overall ethicality, the mean of opt-out education is clearly lower than that of opt-in. The means on perception of deception and manipulation and coercion are clearly higher for opt-out approaches than for the opt-in approach. The mean on perceived autonomy of opt-out education is much lower than that of opt-in. The mean on restriction of freedom of choice is higher for opt-out low-cost and opt-out education than for the opt-in approach.

Participants rated anticipated experiences resulting from choosing not to pay the fee. In terms of “how much work you expect it would require for you to tell the authority that you do not want to become enrolled using this approach,” the mean of opt-out education is much higher than that of opt-in. The means are similar for opt-out and opt-in approaches on anticipated evaluation apprehension, discomfort against the policy makers’ recommendation, discomfort against the majority, and guilt for not willing to compensate for carbon emission. However, for uneasiness due to the government’s intervention, the mean of opt-out education is clearly higher than that of opt-in.

Furthermore, participants reported the extent to which their enrollment using this approach reflected their willingness to become enrolled. The mean of opt-out education is clearly lower than that of opt-in. Participants also indicated anticipated negative emotion after enrolling using this approach. The means of opt-out transparency and education are higher than that of opt-in. The means on perceived personal benefit, acceptability, and approval are similar for opt-out and opt-in approaches.

Perception of Policy Influence on Society. As for practicality of these approaches, the means on perception of feasibility, efficiency, government intention, and societal benefit are similar for opt-out and opt-in approaches. However, the mean on effectiveness of opt-out transparency is clearly higher than that of opt-in.

5 Study 3: Retirement Saving

The goal of Study 3 was to examine people’s attitudes towards opt-in and opt-out approaches in the personal retirement saving domain.

⁴Mean differences greater than approximately .40 were significant at the 5% level.

5.1 Participants

602 Mturk workers (338 females, 261 males, 2 other, $M_{age} = 34.86$) completed the study.

5.2 Results

We treated “I don’t know/refuse to answer” responses as missing data (2.59% of total responses). We reported results as follows.⁵ Statistics of means and standard errors are presented in Table 3. Some comparisons across scenarios are illustrated in figures in Appendix B.

Perception of Policy Influence on Self. The means on overall ethicality perception are similar for opt-out and opt-in approaches. Nonetheless, there are some differences in various subdimensions. The means on perceived coercion are higher for opt-out approaches than for the opt-in approach. The means on perceived autonomy are lower and the means on restriction of freedom of choice are higher for opt-out transparency and education than for the opt-in approach. For deception and manipulation, the mean of opt-out education is much higher than that of opt-in.

Participants rated anticipated experiences resulting from choosing not to enroll in the company’s designated retirement saving plan. The means are higher for opt-out approaches than for the opt-in approach on “how much work you expect it would require for you to tell the authority that you do not want to become enrolled using this approach.” The means are similar for opt-out and opt-in approaches on evaluation apprehension, discomfort against the company’s recommendation, discomfort against the majority, and embarrassment of not willing to save. Nonetheless, the mean on uneasiness due to company’s intervention is much higher for opt-out education than for the opt-in approach.

Moreover, we asked participants to indicate the extent to which their enrollment using this approach reflected their willingness to become enrolled. The mean of opt-out transparency is much lower than that of opt-in. We also asked how much negative emotion they thought they would feel after enrolling using this approach. The mean of opt-out education is much higher than that of opt-in. The means on perception of personal benefit are similar for opt-out and opt-in approaches. As for perceived acceptability and approval of the policy approach, the means are similar for opt-out and opt-in approaches.

Perception of Policy Influence on Society. The means on perception of feasibility and government intention are similar for opt-out and opt-in approaches. However, the means on anticipated effectiveness and efficiency are clearly higher for opt-out approaches than for the opt-in approach. The means on perceived societal benefit are much higher for opt-out transparency and education than for the opt-in approach.

⁵Mean differences greater than approximately .40 were significant at the 5% level.

TABLE 3: Means and SEs for Study 3: Retirement saving.

Measure	Opt-in M (SE)	Opt-out Transparency M (SE)	Opt-out Low-cost M (SE)	Opt-out Education M (SE)	Likert Scale Range
Ethicality					
Ethical	3.68 (.10)	3.63 (.09)	3.79 (.10)	3.58 (.09)	1=Very unethical, 5=Very ethical
Deceptive and Manipulative	2.59 (.10)	2.79 (.10)	2.73 (.10)	3.05 (.09)	1=Very honest, 5=Very deceptive and manipulative
Autonomy	3.52 (.10)	3.00 (.10)	3.29 (.11)	2.91 (.10)	1=None, 5=A lot
Restriction of Freedom of Choice	2.03 (.11)	2.45 (.11)	2.40 (.11)	2.68 (.11)	1=None, 5=A lot
Coercion	2.15 (.11)	2.77 (.10)	2.58 (.11)	2.80 (.10)	1=None, 5=A lot
Expected Experiences if choosing not to enroll					
Difficulty Telling the Authority (how much work it requires)	2.02 (.09)	2.67 (.08)	2.59 (.08)	2.70 (.08)	1=None, 5=A lot
Evaluation Apprehension	2.04 (.11)	2.25 (.10)	2.12 (.10)	2.26 (.11)	1=Not at all, 5=Very much
Discomfort against Policy Makers	2.08 (.10)	2.43 (.11)	2.24 (.10)	2.31 (.10)	1=Not at all, 5=Very much
Discomfort against Majority	2.04 (.10)	2.31 (.10)	2.14 (.10)	2.34 (.11)	1=Not at all, 5=Very much
Guilt	2.25 (.11)	2.49 (.11)	2.38 (.11)	2.42 (.12)	1=Not at all, 5=Very much
Uneasiness due to Authority Intervention	2.06 (.11)	2.41 (.11)	2.27 (.11)	2.57 (.11)	1=Not at all, 5=Very much
Reflection of Own Willingness	3.55 (.11)	3.10 (.10)	3.31 (.11)	3.19 (.11)	1=Not at all, 5= Very
Negative Emotion	1.91 (.10)	2.19 (.11)	2.31 (.11)	2.37 (.11)	1=None, 5=A lot
Personal Benefit	3.49 (.10)	3.56 (.09)	3.31 (.11)	3.60 (.09)	1=None, 5=A lot
Overall Evaluation					
Acceptable	3.97 (.09)	3.95 (.09)	3.84 (.09)	3.77 (.09)	1=Very unacceptable, 5=Very acceptable
Approval	3.52 (.10)	3.78 (.09)	3.82 (.10)	3.65 (.10)	1=Strongly disapprove, 5=Strongly approve
Practicality					
Feasible	4.02 (.09)	4.11 (.09)	4.14 (.09)	4.21 (.08)	1=Very infeasible, 5=Very feasible
Effective	3.41 (.10)	4.34 (.07)	4.32 (.08)	4.33 (.07)	1=Very ineffective, 5=Very effective
Efficient	3.49 (.10)	4.24 (.09)	4.10 (.09)	4.30 (.08)	1=Very inefficient, 5=Very efficient
Company's intention	4.10 (.08)	4.14 (.08)	4.16 (.09)	4.35 (.07)	1=Strongly disagree, 5=Strongly agree
Societal Benefit	3.36 (.10)	3.76 (.08)	3.57 (.10)	3.80 (.09)	1=None, 5=A lot

6 Discussion

Our study is among the first to comprehensively quantify people's attitudes towards opt-in and opt-out approaches and empirically test whether the improved opt-out policies have the potential to achieve the same level of acceptability as that of opt-in in organ donation, carbon emission offset, and retirement saving policies. The opt-in approach was always at least as appealing as the opt-out on measures of perception of policy on one's self. However, as each type of improvement has strengths and weaknesses, no single type of improvement was capable of addressing all the concerns towards opt-out, suggesting potential acceptability challenges if policy makers reform the current opt-in policy as opt-out. Nonetheless, it is important to note that the mean ratings, which were often at the middle point of the 5-point Likert Scale, showed that people were not averse to opt-out policies, although they favored opt-in policies. On the other hand, people tended to praise practical and societal benefits of the opt-out policies and understand policy makers' good intentions. These findings are consistent with past research that showed people do not overwhelmingly object to nudges, despite some negative attitudes (Davidai & Shafir, 2018; Sunstein, 2017). In addition, the findings agree with the nudge acceptance model that acceptability of nudges consists of multiple constructs, including goal of the policy, technique (opt-out) used in the policy, beneficiaries (self or society), alternative technique (opt-in), and ethicality perception (Hagman, 2018).

Organ donation opt-out policies received the most objections among three scenarios. People recognized that opt-out policies possessed advantages, such as efficiency, effectiveness, and societal benefit, compared to opt-in. With transparency and education, people acknowledged the benign policy intention of increasing the number of organ donors. However, they still favored the opt-in approach on ethicality, acceptability, and feasibility measures even when the opt-out policy emphasized transparency, freedom of choice, and education about the subject matter. More prominently than the other two domains, people felt strong discomfort and guilt from social norm pressure under the opt-out approaches, especially with transparency and education. This finding illustrates that the default used in opt-out approaches could imply policy makers' recommendation and the majority's choice (McKenzie, Liersch & Finkelstein, 2006) and that emphasizing the policy aim and need for organ donation (transparency and education) may aid understanding of government's intention but also create mixed feelings towards donating organs to help the society. We also noticed that two opt-out approaches (low-cost and education) yielded less perceived personal benefit compared to opt-in, showing that people may feel strongly that being an organ donor by default conflicts with their personal interest. These results suggest that attitude change for the organ donation policy is challenging and that these three forms of improvement were

not able to address exact concerns that prevent people from endorsing the opt-out approach to organ donation.

The carbon emission offset policy (opt-in) does not appear appealing to people in the first place. Improved opt-out policies yielded similar attitudes on ethics and discomfort measures in the carbon emission offset domain, but were not considered more efficient or more societally-beneficial than opt-in. People still found opt-out policies more deceptive, manipulative, and coercive than opt-in. Unlike the results in the organ donation experiment, people did not consider opt-in and opt-out approaches to produce different levels of personal benefit and they equally appreciated government's intention across conditions. Reisch and Sunstein (2016) show that neither Americans nor Europeans like their possessions, such as body parts and money, to be taken away without their explicit consent. Our findings suggest that there may be more reactance to opt-out approaches when the policy involves body parts than money. Moreover, for the carbon emission offset experiment, educating people about how carbon emission offset works was shown to be less effective at addressing concerns about overall ethicality, autonomy, freedom of choice, difficulty telling the authority to opt-out, uneasiness due to government's intervention, and authenticity of choice, than the other two opt-out approaches that explain how the policy and opt-out work. This finding demonstrates that education may lead to reactance and people's concerns about opt-out approaches likely come from a lack of understanding or reassurance of how opt-out works. Merely educating people about the substantive topic may be insufficient for the public to comprehend and accept the opt-out approach.

Improved opt-out approaches to the retirement saving yielded comparable level of acceptability to the opt-in approach and maintained their superior expected effectiveness and efficiency to those of opt-in. People expected personal benefit and appreciated the company's intention similarly across policies. This is consistent with the literature that demonstrates people view using an opt-out approach to retirement saving more acceptable than to organ donation and carbon emission offset (Jung & Mellers, 2016). Even though retirement saving involve taking away one's monetary possessions, the money is used directly for maximizing private welfare later for oneself instead of collective welfare. Nonetheless, people still anticipated more coercion and more difficulty telling the authority to opt-out using opt-out than opt-in. Interestingly, opt-out approaches with transparency and education made people conscious that retirement saving was also a social issue. In addition, similar to results of the carbon emission offset study, educating people about retirement saving plans was shown to be less successful at addressing concerns about ethicality (deception, autonomy, restriction of freedom of choice), negative emotion, and uneasiness due to company's intervention than informing them about goals of the policy and ways to opt-out. The opt-out

approach that only emphasized the convenience of opting out is the most successful at enhancing acceptance towards the policy.

It is important to acknowledge limitations of the study and some caution is required to interpret the results. First, some statistical significant differences that are defined by p-values less than .05 clearly have very small effect sizes to have any practical significance. When applying these results to real-world situations, policy makers need to consider magnitudes of these effects to determine their policy relevance. Second, as there are a variety of opt-out nudges that possess different characteristics, the findings of these three policy domains may not be generalized to other policy domains. Policy makers should closely examine the particular policy at hand to decide whether our results have meaningful implications for that policy. Third, these results are descriptive of people's attitudes. There may be other factors that could influence or explain people's evaluation of opt-in and opt-out approaches. For example, it is possible that acceptability and approval of a policy depends on its perceived risks and benefits or one's expertise and experiences with the topic and opt-out approaches in general. Future research could investigate these factors to explain people's perception of opt-in and opt-out approaches and to inform why some enhancements of the opt-out approach better increase acceptance. Fourth, it is important to note that the participants are Americans, who are used to making an affirmative decision to opt in (either through an opt-in policy or required choice) for the policies included in the study. The status quo may have contributed to less acceptance of the opt-out approach. If the opt-out approach were the status-quo, it may be more acceptable.

Our research provides some evidence that opt-out approaches that emphasize transparency, freedom of choice, and education could become equally attractive as the opt-in approach in organ donation, carbon emission offset, and retirement saving. Each type of improvement — transparency, emphasis the option to opt-out, education — addresses some dimensions of people's concerns, although some concerns, such as those regarding coercion, may be difficult to reduce. Explaining what the opt-out approach is and how people can conveniently opt-out could be effective at helping people navigate the new policies and reducing moral concerns and unpleasant feelings whereas providing information on the policy goal and topic may increase people's awareness of why enrollment is needed. In summary, it is crucial to make sure that people understand that they are able to opt-out easily for increasing acceptance of the opt-out form and to provide some knowledge on the topic and policy goal for increasing people's understanding of the policy. Based on past studies, information disclosure about the opt-out effect and subject matter would not undermine the policy's effectiveness (Bruns, Kantorowicz-Reznichenko, Klement, Luistro Jonsson & Rahali, 2016; Kroese, Marchiori & de Ridder, 2016; Loewenstein et al., 2015; Steffel et al., 2016).

Hence, we recommend including transparency, emphasis on low-cost opt-out option, and education in describing the policy to the citizens in order to mitigate the public's reaction to policy reforms. However, it remains to be tested whether combining these three components will fully increase acceptability of the opt-out approach and make it as acceptable as the opt-in approach in these three as well as other domains.

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Appendix A: Policy scenarios

Study 1: Organ donation

Opt-in: Suppose you live in a state where you can make an active choice and register as an organ donor with the appropriate authority. If no choice is registered, then you are assumed to be unwilling to donate in the event of a fatal accident (the so-called Opt-In approach).

Opt-out + Transparency: Suppose you live in a state where you are automatically enrolled as an organ donor unless otherwise specified. If no choice is registered, then you are assumed to be willing to donate in the event of a fatal accident (the so-called Opt-Out approach). The state government publicly explains the goal and behavioral consequences of this Opt-Out approach to its citizens. The aim is to increase organ donation to help patients in need, and based on research, the Opt-Out approach is expected to increase the number of organ donors. The state government also makes it clear that anyone who does not want to donate has the right to opt out by submitting a formal request to the Opting-out Registry online.

Opt-out + Emphasis on Low-Cost Opt-Out Option: Suppose you live in a state where you are automatically enrolled as an organ donor unless otherwise specified. If no choice is registered, then you are assumed to be willing to donate in the event of a fatal accident (the so-called Opt-Out approach). The state government makes it clear that anyone who does not want to donate has the right to opt out by submitting a formal request to the Opting-out Registry online.

Opt-out + Education: Suppose you live in a state where you are automatically enrolled as an organ donor unless otherwise specified. If no choice is registered, then you are assumed to be willing to donate in the event of a fatal accident (the so-called Opt-Out approach). The state government also advertises the need for organ donation and educates its citizens about the entire organ donation procedure.

Study 2: Carbon emission offset

Opt-in: Suppose you live in a country, e.g., the U.S., where, when booking flight tickets, you can make an active choice and choose pay a climate compensation fee, which goes to projects to reduce emissions of carbon dioxide to the corresponding level of the emission caused by your flight. If no choice is registered, you are assumed to be unwilling to pay the fee (the so-called Opt-In approach).

Opt-out + Transparency: Suppose you live in a country, e.g., the U.S., where, when booking flight tickets, your final airfare includes a climate compensation fee, which goes to projects to reduce emissions of carbon dioxide to the corresponding level of the emission caused by your flight. If no choice is registered, you are assumed to be willing to pay the fee (the so-called Opt-Out approach). The state government publicly explains the goal and behavioral consequence of this Opt-Out approach to its citizens. The aim is to collect more funds to help the climate, and based on research, the Opt-Out approach is expected to increase the number of travelers who pay this fee. The government also makes it clear that anyone who does not want to pay this fee has the right to opt out by subtracting the fee before finalizing the flight tickets.

Opt-out + Emphasis on Low-Cost Opt-Out Option: Suppose you live in a country, e.g., the U.S., where, when booking flight tickets, your final airfare includes a climate compensation fee, which goes to projects to reduce emissions of carbon dioxide to the corresponding level of the emission caused by your flight. If no choice is registered, you are assumed to be willing to pay the fee (the so-called Opt-Out approach). The government makes it clear that anyone who does not want to pay this fee has the right to opt out by subtracting the fee before finalizing the flight tickets.

Opt-out + Education: Suppose you live in a country, e.g., the U.S., where, when booking flight tickets, your final airfare includes a climate compensation fee, which goes to projects

to reduce emissions of carbon dioxide to the corresponding level of the emission caused by your flight. If no choice is registered, you are assumed to be willing to pay the fee (the so-called Opt-Out approach). The government also advertises the need for compensating for the damage to the climate and educates its citizens about the projects to reduce emissions of carbon dioxide.

Study 3: Retirement saving

Opt-in: Suppose you work for a company where you, as an employee, can make an active choice and choose to enroll in your company's designated retirement saving plan. If no choice is registered, then you are assumed to be unwilling to participate in the designated retirement saving plan (the so-called Opt-In approach).

Opt-out + Transparency: Suppose you work for a company where you, as an employee, are automatically enrolled in your company's designated retirement saving plan unless otherwise specified. If no choice is registered, then you are assumed to be willing to participate in the designated retirement saving plan (the so-called Opt-Out approach). Your company publicly explains the goal and behavioral consequences of this Opt-Out approach to its employees. The aim is to increase participation in the retirement saving plan to help employees better finance their future, and based on research, the Opt-Out approach is expected to increase enrollment in the retirement saving plan. Your company also makes it clear that anyone who does not want to enroll in the designated retirement saving plan has the right to opt out by submitting the Opt-Out form to the company.

Opt-out + Emphasis on Low-Cost Opt-Out Option: Suppose you work for a company where you, as an employee, are automatically enrolled in your company's designated retirement saving plan unless otherwise specified. If no choice is registered, then you are assumed to be willing to participate in the designated retirement saving plan (the so-called Opt-Out approach). Your company makes it clear that anyone who does not want to enroll in the designated retirement saving plan has the right to opt out by submitting the Opt-Out form to the company.

Opt-out + Education: Suppose you work for a company where you, as an employee, are automatically enrolled in your company's designated retirement saving plan unless otherwise specified. If no choice is registered, then you are assumed to be willing to participate in the designated retirement saving plan (the so-called Opt-Out approach). Your company also advertises the importance of retirement saving and educates its employees about the benefits and costs of the designated retirement saving plan.

Appendix B: Comparisons across Scenarios



