

Think about it, and decide: Do active-decision mechanisms increase organ donations?

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Abstract

Evidence suggests that enrollment mechanisms known as active decision (AD) facilitate decision making in contexts such as organ donation or choice of retirement plans, and raise positive outcomes, meaning organ donor registration rates and the amount of savings respectively. We study the effect of AD on the choice to become an organ donor. We conducted two field experiments to test the two channels through which AD is believed to affect outcomes: the stimulation of reflection and the elimination of the tendency to procrastinate by means of a commitment nudge. We find that reflection has a statistically significant negative effect on the decision to become an organ donor and that the commitment nudge reduces putting off the decision, but does not lead to donation rates higher than in the control group. Our results suggest that AD mechanisms as a policy instrument may be far more limited than previously thought.

JEL codes: C93, D64, D78

Keywords: Active decision, nudge, reflection, organ donation, field experiment.

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1 Introduction

Becoming an organ donor or saving in a retirement plan are important decisions not only to an individual herself, but also to others. The willingness to donate one's organs after death can save another person's life, and sufficient retirement savings avoid dependence on social welfare. Yet, on the one hand many individuals are reluctant to make such decisions, while on the other hand the rules governing enrollment mechanisms appear to have important consequences on realized choices (see Thaler and Sunstein, 2003). These observations call attention to how preferences are formed, and why enrollment mechanisms can affect the formation of preferences and decisions.

In this paper, we address these questions in the context of a pro-social decision with two randomized controlled field studies. We test the causal effect of a commonly used enrollment mechanism, active decision (henceforth: AD)¹, on the decision to becoming organ donor.

The standard assumption in economics is that individuals are endowed with well formed and immutable preferences. This is a useful working hypothesis for goods, services or actions that individuals face on a regular basis. But many important applications, including organ donations or choice of retirement plans, do not share this property. With fixed preferences, the type of enrollment mechanism can only matter as far as there are material costs associated with enrollment (for example costs for switching in or out the default). In reality these monetary costs are typically low, but still enrollment mechanisms are strongly correlated with realized choices in the contexts of organ donation, retirement plan, charitable giving etc.

For example, there is evidence that automatic enrollment into a default option with the possibility of opting out strongly induces the selection of the default. Precisely due to individuals' indecisiveness and lack of well formed preferences, the default option becomes "sticky" and has a large effect on individual and societal outcomes. Beshears et al. (2009) show that changes in the default rule, whether individuals are by default enrolled, or by default not enrolled, have dramatic effects on individuals' savings decision. Haggag and Paci (2014) show that default suggestions for tips had strong effects on behavior. In the context of organ donation, Abadie and Gay (2006) identify correlations between enrollment mechanisms and donations using cross country data, while Johnson and Goldstein (2003, 2004) provide evidence of the effect of enrollment mechanisms from a laboratory setting with hypothetical choices even if without real consequences on the status of being or not organ donor.

¹An active decision regime implies no default option and the requirement to make an enrollment choice within a limited time.

One explanation for the power of enrollment mechanisms is in Carroll et al. (2009). They propose a model in which individuals face a deliberation cost if they evaluate options. When individuals have present-biased preferences (see, e.g., Laibson, 1997), defaults can have a large impact on behavior because individuals choose not to decide. A mechanism that forces individuals to decide may then be welfare improving since there is evidence that commitment devices help to overcome self-control problems (see, e.g., Ariely and Wertenbroch, 2002; Ashraf et al., 2006; Kaur et al., 2010) breaking the cycle of procrastination on unpleasant decisions.

Stutzer et al. (2011) extend this idea to the field of social preferences. They argue that individuals with present bias avoid deliberation costs and remain ignorant of the benefits derived from a prosocial activity relative to the private costs, which loom large. As a consequence, according to the authors, individuals too often do not engage in pro-social activities. They find that the commitment nudge increases significantly blood donations for individuals who have not thought about the importance of blood donations.

To design an effective policy in a given domain, for example organ donation, the direction and size of the effect of an enrollment mechanism on individual choices are crucial. In this paper we focus on Active Decision (AD) mechanisms. AD are popular (see, e.g. Chetty et al., 2012) because less paternalistic than defaults. AD nudge individuals to actively select among the options available and do not corral them into one pre-defined option (see Thaler and Sunstein, 2008). However, the effect of AD on outcomes is not clearcut. Some evidence has shown that AD mechanisms are effective at increasing enrollment in retirement saving plans (see Carroll et al., 2009) and registration rates for organ donation (see Johnson and Goldstein, 2003). But other studies are less optimistic and the effectiveness of AD in increasing organ donor registration rates has recently been questioned (see, e.g., Kessler and Roth, 2014b). In a controlled experiment Kessler and Roth (2014a) show that AD did not increase organ donor registration rates above the level of a default condition where individuals were presumed to be non-donors.

This contradictory set of results is difficult to understand, as little is known about the psychological mechanisms behind AD. An active-decision mechanism can affect behavior through two channels: it forces individuals to reflect and form preferences on a complicated choice (reflection) and it limits the tendency to procrastinate by committing the individual to make a decision, often imposing a deadline (commitment) (see, e.g. Carroll et al., 2009).

In our work, we evaluate the effect of AD on organ donor registration rates using two randomized controlled field experiments, denoted as Study 1 and Study 2, in a south-west french

speaking region of Switzerland. Organ donation rates in Switzerland, as in many other countries, are quite low (see, e.g. Swisstransplant, 2013; *United Network for Organ Sharing*, 2014).² The default in Switzerland is not to be an organ donor, thus the country is particularly interesting to study AD mechanisms.

In Study 1, we investigated the causal effect of reflection on the decision to become or not organ donor and on the reasons behind this decision. In the second experiment, Study 2, we mainly looked at the effect of commitment on the same outcomes. More than 1,100 young adults participated in the experiments while taking a mandatory driving course to obtain a driving license. In both studies the outcomes were measured three days after the assignment of treatments. We distributed a blank donor card together with the questionnaires containing the treatment and control conditions and we measured the decision to become or not organ donor by asking if they have signed the donor card.

In the treatment denoted reflection, we asked participants to write down their thoughts about organ donation. We also tested two different ways of stimulating reflection based on the evidence that the order of thoughts in a reflection process—either positive thoughts first, then negative or the reverse—has an impact on choices (see Johnson et al., 2007). As a placebo test, we asked participants to reflect about an unrelated topic, the use of seatbelt, to make sure that writing thoughts *per se* could affect the decision to become organ donor. In the treatment denoted commitment, we tested the effectiveness of a commitment nudge, which consisted in asking individuals to take the decisions to become donor on the spot, after reflection was stimulated.

We found that reflection causally affect the willingness to become organ donor. But contrary to expectations based on existing literature, it does so in the negative way. Reflection significantly reduces registration rates by almost half compared to the control treatment (15% in the control, 7% in treatment reflection). In addition, if any effect, reflection seems to induce individuals to put off a decision rather than confront it.

We also found that commitment had no effect on registration outcomes, although it was effective at reducing reasons adducing procrastination. More precisely, when asked on the spot to choose to become donor or not, the majority of participants (58%) replied positively. But, when asked if they had signed a donor card few days later, only a small fraction (37%) of those who expressed the intention to become donor when nudged by the commitment question,

²Although a large majority view posthumous donation of organs favorably (Besser et al., 2004; Kittur et al., 1991), less than 20% of Swiss carry an organ-donor card (Schulz et al., 2006) compared to around 40% in the US (Morgan and Miller, 2001). More than 1,000 people are currently waiting for an organ transplant in Switzerland and every year about 7 percent of individuals in the wait-list die, much like in other countries (see Swisstransplant, 2013; *United Network for Organ Sharing*, 2014).

reported to have signed the card and have become donor.

Given that different individuals process information and make choices in different ways (see Johnson et al., 2012), we searched for heterogeneous responses to treatments. Several studies examine the motivations that lead an individual to consent to organ donation and, e.g., to carry a donor card in his wallet. Altruism is positively correlated with the willingness to donate organs. Better knowledge about the process of organ donation is also robustly correlated with the willingness to donate organs (see Morgan and Miller, 2001; Morgan et al., 2008b,a). In our data, we found that the negative effect of reflection is stronger for more altruistic individuals and for those who feel more informed about organ donation. Basically, reflection has crowded out intrinsic motivation towards organ donation.

Two theories put forward in the field of experimental psychology offer potential interpretations to our results. We discuss these theories, intuitive cooperation (see Rand et al., 2012) and terror management, in the discussion section. However, further analysis is required to identify the most plausible explanation. Overall, our main contribution to the existing literature on organ donation and AD supports more skeptical results such as Kessler and Roth (2014a). We also show that the results from field or hypothetical laboratory studies lead to different conclusions.

In terms of policy recommendations, we highlight a potential fallacy implicit in sensitization campaigns on the topic of organ donations. Stimulating reflection on organ donation, as it is pursued in many public-information campaigns, can backfire if the policy goal is to increase donation rates, according to our results. Moreover, we find that high procrastination rates persist even after reflection is stimulated. The effect of the commitment nudge proved to be unstable: while many reported the willingness to become donor, only few acted consistently on the decision. This finding calls attention to results elicited in studies where the decision to become donor is only hypothetical. Our results also show, however, that even a non-binding commitment nudge leads individuals to form an opinion regarding a contribution to the public good. Thus, AD mechanisms still hold the normative appeal that they help individuals make up their mind, but this does not necessarily imply higher registration rates, at least for organ donation. In practical terms, our findings have implications for targeting individuals. Highly motivated individuals may best be left to their own devices to reach a decision about contributing.

More generally, our study shows that the way in which AD mechanisms work is complex and still poorly understood. While our findings, in the context of organ donations, are perhaps the most pessimistic, AD mechanisms do not always seem to work (Bronchetti et al., 2013; Kessler and Roth, 2014b) and defaults do not always impact behavior (Altmann et al., 2014). Nudging

individuals to make the right decisions for society may not be so easy it seems. We took a first step towards understanding how the different components of AD mechanisms affect choices, but more research is needed to fully unveil under which conditions these mechanisms work well.

The paper is organized as follow. Section 2 and its subsections describe the experimental setup. An overview of the data collected is presented in Section 3. Results are in Section 4, and the discussion about the results in Section 5. Section 6 concludes.

2 Experimental Setup

We implemented two randomized experiments, denoted as Study 1 and Study 2. Study 1 mainly investigates the effect of reflection and Study 2 the effect of commitment on decisions related to organ donation.

Both studies were conducted in Switzerland, where as already mentioned by default individuals are not organ donor, from September 2012 to June 2013 (over 26 weeks) with young adults attending a course to familiarize with road traffic (henceforth: driving course), mandatory to obtain a driving license. The course consists of four 2-hour classes in a week, from Monday to Thursday. Two surveys were distributed before the beginning of class, the first one on Monday and the second one on Thursday in the same week. The surveys contained questions regarding demographics, personality traits and other questions aimed at measuring knowledge about organ donation but also knowledge about an unrelated topic, the use of seatbelts when driving. In the Monday survey a question explicitly asked if one is an organ donor. This survey was distributed together with an official blank organ donor card.³

Treatment conditions were added in the first survey distributed on Monday and were randomized at the course level. Participants were given around ten minutes to complete the Monday survey. The second survey, distributed on Thursday, was identical for both studies and all participants and contained measures for the outcomes. It only required around five minutes to be completed. Informed consent was obtained from all participants.

2.1 The Outcomes

We collected measures for two outcomes: i) the decision to register as an organ donor and ii) the reasons for this decision, or for not taking any decision. To measure i), we asked to report whether one had signed a donor card to become a donor or not since Monday. To measure

³The official Swiss donor card is an intention card in which the holder can state whether she wants to be a donor or not and it is legally binding.

ii), we asked to provide a free-form explanation for the decision taken or for not taking any decision. We coded all reported reasons into a number of categories summarized in Table 1.

Table 1: Reasons for decision: all categories, by frequency in Study 1 and Study 2.

	Study 1	Study 2
Did not have time to think/do	0.17	0.17
Need to think more	0.09	0.16
Will do it later	0.05	0.04
Not the appropriate moment	0.03	0.02
Not interested to do it	0.03	0.04
No will to do it	0.06	0.05
Strict refusal	0.05	0.08
Referred to issues related to altruism	0.11	0.13
Referred to issues related to death	0.01	0.01
Referred to the uselessness of organs once dead	0.04	0.04
Referred to reciprocity in giving	0.02	0.02
Is unable to donate (i.e. disease)	0.01	0.01
Observations	587	481

As expected, most individuals (more than 30%) motivated the lack of a decision or a negative decision by claiming shortage of time and/or the intention to decide later. We interpret these types of reasons as indication of procrastination. We collapsed the first three categories in Table 1 (“Did not have time to think/do”, “Need to think more”, “Will do it later”) into the more general category of procrastination and constructed a binary procrastination variable. This variable is crucial in the analysis as the reflection and commitment nudges were precisely designed to affect the tendency to procrastinate decisions.

2.2 Treatments

We tested five experimental conditions denoted as reflection, seatbelt, flyer, commitment, positive and negative (POS/NEG). We first describe Study 1 that tested the effect of reflection and information on outcomes i) and ii). Then we illustrate Study 2 that tested the effect of commitment, reflection and of POS/NEG, the last mentioned including two variants of the reflection treatment. The diagrams in Table 2 describe the treatment and control conditions in Study 1 and 2 respectively and the number of participants per condition.

2.3 Study 1: Reflection

In Study 1, the survey distributed on Monday for participants in the reflection treatment contained an additional page with two questions requiring free-form answers. The first question

Table 2: Treatments assignment in Study 1 and 2

(a) Study 1: reflection.					(b) Study 2: commitment.				
	Reflection	Seatbelt	Control	Total		Reflection	POS	NEG	Total
Flyer	85	121	93	299	Commitment	94	62	89	245
No flyer	103	77	108	288	No commitment	62	91	83	236
Total	188	198	201	587	Total	156	153	172	481

Notes: Each cell displays the number of participants.

asked to write down two thoughts about organ donation and to explain each with a sentence. The second question solicited participants to put themselves in the position of someone in need of an organ transplant and to write two thoughts about the decision to accept or refuse an available organ for the transplant. These two questions are our reflection treatment: they aimed at stimulating reflection on organ donation. The control treatment consisted in the survey without the reflection-questions.

In order to exclude that the act of reflecting and writing thoughts *per se* had an effect on the outcomes, for example by irritating or boring participants, we implemented a treatment (denoted seatbelt) similar to reflection, but where we asked to write down two thoughts on the use of seatbelt rather than on organ donation.

Finally, we crossed each condition with an information treatment. Upon returning the first survey, participants in half of the courses received a 8-page informative flyer (treatment flyer) designed by Swisstransplant⁴. We could then compare the effects of reflection alone and reflection with supplementary information. The design of Study 1 is summarized in Table 2, panel (a).

2.4 Study 2: Commitment

In Study 2 we investigate the effect of introducing a commitment nudge on outcomes. The commitment nudge was a question in the Monday survey following the page where reflection was stimulated. The question asked to take on the spot the decision to become or not an organ donor by checking either the box “Yes” or “No”. Less than 10% of participants in the

⁴Swisstransplant is the Swiss national foundation for organ donation and transplantation

commitment treatment let the boxes blank, while more than 58% indicated that they wanted to become donor. All participants in the commitment treatment received the reflection treatment either in the standard form of Study 1, or in one of the variants POS or NEG. The control treatment was the Monday survey without the commitment nudge but with one of the reflection treatments.

The idea of testing the reflection treatment variants denoted POS/NEG is based on some evidence showing that the order of thoughts in a reflection process—either positive thoughts first, then negative or the reverse order—has an impact on choices (see Johnson et al., 2007). The condition POS stimulated reflection by prompting positive thoughts first and negative afterwards, and NEG did the reverse. In condition POS, the first question stated that 15% of the Swiss population is an organ donor⁵ and asked to explain possible reasons for this fact. The second question revealed that 85% of the Swiss population is not an organ donor and asked to explain possible reasons thereof. In condition NEG, participants faced these same questions but in the reversed order. As for participants in the treatment reflection, those in POS and NEG were asked to provide free-form answers to these two questions in the first survey. The comprehensive design of Study 2 is illustrated in Table 2, panel (b).

2.5 Procedures and Participants

A total of 1,191 participants took part in the experiments. We excluded 123 because either they did not return one of the two surveys or failed to report one of the outcome variables⁶. Of the remaining 1,068 participants, 587 participated in Study 1 (299 males, mean age = 22), and 481 in Study 2 (237 males, mean age = 22). Written consent was obtained from each participant. We conducted the experiments on 135 driving courses. The classes per course were quite small, with an average of 8.29 participants and a maximum of 12.

To ensure that participants were not influenced in their choices by the experimenters or the course instructors, we let the course secretary distribute the surveys when the participants signed in the class. In the few courses without a secretary, the instructor distributed the surveys. In any case, instructors were reminded not to mention the topic of organ donation during the course. We incentivized participants to complete the two surveys by including all those who completed the surveys in a lottery, run at a course level. The winner received CHF 45 (\approx USD

⁵This is an estimation by *Swisstransplant*. This figure reflects the percentage that we found in Study 1 when we asked participants to indicate whether they had a card prior to the study.

⁶The non-response rate, about 10%, does not depend on the treatment assignments and hence does not affect the results.

50), the equivalent of the fee to be paid to collect the driving license.

3 Descriptive Statistics

Table 3 provides an overview of the data collected in both studies. About 13.5% of the participants in Study 1 had a donor card before the experiment, while this number is 16.4% in the Study 2. This difference is however insignificant ($p = 0.19$). There are as many male as female participants in each study, and the average age of the participants is respectively 21.5 and 22 years. The age difference is simply due to the fact that Study 2 started half a year after Study 1, while participants reported their birth year, not their birth date. About one third of the participants were enrolled in a Swiss university or high school at the time of the experiment.⁷

Table 3: Descriptive statistics for Study 1 and Study 2.

	Study 1		Study 2	
	Mean	S.D.	Mean	S.D.
Already a card	0.135	(0.342)	0.164	(0.371)
Male	0.510	(0.500)	0.494	(0.500)
Age	21.489	(5.565)	22.041	(5.985)
Student (=1)	0.355	(0.479)	0.353	(0.478)
Altruism	4.931	(0.635)	4.910	(0.639)
Attitudes	5.584	(0.922)	5.555	(0.968)
Feel informed	4.301	(1.607)	4.277	(1.575)
Ever given blood (=1)	0.144	(0.351)	0.158	(0.365)
Explained decision	0.733	(0.443)	0.780	(0.415)
Observations	587		481	

We measured individual characteristics deemed relevant in the context of deciding whether to become organ donor. First, we measured a general index of altruism on a 7-item, 7-point Likert scale (see Morgan and Miller, 2001), with higher values meaning higher level of altruism. Second, we collected each participant’s overall attitudes toward organ donation, using 4 items each on a 7-point Likert scale (see Morgan and Miller, 2001), with higher values indicating better attitude towards organ donation. The average attitude score suggests that participants favored organ donation, as it is generally observed in the literature.⁸ Third, to assess how

⁷Our sample consists of both student (35.5%) and non-student participants (64.5%). Students were enrolled either in high school (50% of them), at university (35%) or in other tertiary institutions (typically technical training institutes denoted as university of applied sciences). The non-student participants were either enrolled in vocational training courses (45% of them), a common experience for young people in Switzerland, or already employed. These figures reflect the official statistics for young Swiss population.

⁸The National Survey of Organ Donation Attitudes and Behaviors (2012) reported that more than 94% americans interviewed either strongly support or support the donation of organs for transplants.

informed participants feel about the topic of organ donation we asked them to rate the sentence “I feel sufficiently informed about the topic of organ donation” on a Likert scale from 1 to 7 with 1 (I strongly disagree), 4 (I don’t disagree, I don’t agree) and 7 (I strongly agree), including 0 (no opinion). This measure reflects self-reported awareness about organ donation. All three measures are similar in the two studies. We also calculated the fraction of participants who have ever given blood (variable Ever given blood in Table 3). The value is quite similar in both studies, about 14-16%. Finally, about 75% of participants wrote down some sentences in the blank space provided to explain the reasons for their decision in the second questionnaire.

In each study, the assignment of treatments to groups was random, with randomization performed at the course level. Randomization tests can be found in the Appendix (see Tables 9 and 10). The randomization of treatments was overall successful in both studies, except for the variable “feel informed” in Study 2 and one dummy variable for education (Mandatory school) in both studies. In the Appendix we explain why our results are valid despite this problem. In all regressions we control for level of education.⁹

In Table 4 we show correlations between the probability to carry a donor card before the experiment and individual characteristics. Table 4 reports the sign and magnitude of each variable, using OLS estimations. As expected, better attitudes and better level of informedness are associated with higher registration rates before the experiment, in both studies. Overall, an increase of one standard deviation in the attitude (informedness) scale (s.d.= 0.94 and s.d.=1.59) is associated with an increase of 4.9%-points (7.5%-points) in the probability of having a donor card before the experiments. The registration rate for male participants is lower, about 8%-points less than for female participants. Participants who had given blood at least once in their life are 16-26%-points more likely to carry a donor card. Students are also more likely (about 7.9%-points) to be organ donor than non-student participants. Finally, none of the big-5 personality dimensions—extroversion, agreeableness, conscientiousness, stability and openness as measured in Gosling et al. (2003)—is associated with higher registration rates.

⁹The difference in mean for the variable Feel informed between the commitment and no-commitment conditions is statistically significant but the magnitude is small, less than a third of a standard deviation. In Appendix A.1 we show that this difference does not affect the estimated coefficient on commitment.

Table 4: Probability to be organ donor before the experiment.

	Study 1	Study 2	Both studies
Attitudes	0.048*** (0.018)	0.056*** (0.017)	0.052*** (0.013)
Feel informed	0.058*** (0.009)	0.041*** (0.012)	0.050*** (0.007)
Altruism	-0.023 (0.023)	0.041 (0.027)	0.002 (0.018)
Male	-0.075** (0.030)	-0.088** (0.037)	-0.084*** (0.023)
Ever given blood (=1)	0.158*** (0.050)	0.264*** (0.061)	0.211*** (0.039)
Student (=1)	0.084** (0.033)	0.067* (0.039)	0.079*** (0.025)
Extroversion	-0.017 (0.014)	-0.013 (0.016)	-0.013 (0.011)
Agreeableness	0.006 (0.015)	-0.010 (0.019)	-0.001 (0.012)
Conscientiousness	-0.021 (0.015)	-0.017 (0.016)	-0.021* (0.011)
Stability	-0.013 (0.012)	-0.022 (0.015)	-0.016* (0.009)
Openess	0.013 (0.015)	-0.000 (0.016)	0.009 (0.011)
R^2	0.180	0.197	0.181
Observations	500	398	898

Notes: The dependent variable is 1 if the individual reported to carry an organ donor card before the experiment, and is 0 otherwise. The table reports OLS regressions with standard errors clustered at the course level. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4 Results

In the first survey distributed on Monday participants were asked to indicate whether they already had a card before the experiment. This allowed us to consider two specifications: one that excludes participants with a donor card before the experiment (restricted sample), and one that includes them (full sample). Since the results do not depend on the choice of the sample, hereafter we present the analysis for the restricted sample.¹⁰

¹⁰Results for the full sample can be found in the Appendix, section A.2.

4.1 The Effect of Reflection on the Willingness to Become an Organ Donor and the Willingness to Procrastinate Decisions

Panel A in Figure 1 illustrates the effect of reflection on the decision to sign the donor card and become an organ donor. It shows that the treatment reflection decreases the registration rate by 6%-points compared to around 16% in the control condition.¹¹

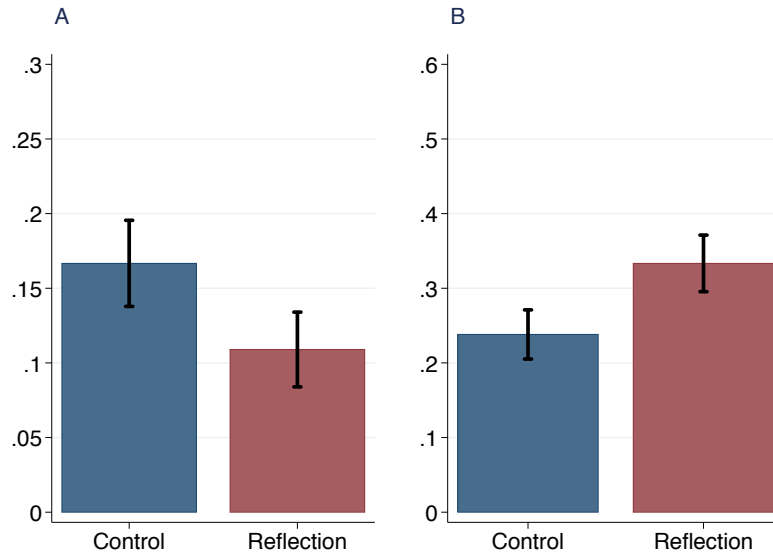


Figure 1: Effect of reflection on donor registration rates and procrastination reasons (Study 1). **(A)** Fraction of participants signing a donor card to become donor. **(B)** Fraction of participants giving a procrastination reason.

Thus, rather than increased, reflection decreased registration rates. We estimate the effects of the treatment through linear probability models, controlling for individual characteristics. Regressions (1) and (2) in Table 5 confirm a decrease in registration rates in the range of 7.2%-points to 9.2%-points compared to the control condition ($p = 0.024$ and $p = 0.015$).¹²

This decrease is sizable, it represents about 40% of the rate in the control condition. The treatment seatbelt also decreased registration rates, by 2.3%-3.3% points, the effect is however insignificant. The F-test suggests to reject the null hypothesis that the average registration rate is the same in the reflection, seatbelt and control conditions ($p = 0.088$ and $p = 0.058$, columns

¹¹The fraction of organ donors in the baseline category, 16%, is in line with the low registration rates in Switzerland. It is also comparable to the average registration rates reported by the participants in the first questionnaire of the experiment (13.5% in Study 1, 16.4% in Study 2).

¹²Table 11 in the Appendix presents the results of OLS regressions on the sample including participants with a donor card before the experiment. These participants are labeled as donors if they did not express otherwise in the second questionnaire. The table shows that the effect of reflection on the probability to become an organ donor is weakened, but remains negative and significant at conventional levels ($p = 0.06$).

Table 5: Effects of reflection on donor registration rates and procrastination reasons.

	Became a donor		Procrastination	
	(1)	(2)	(3)	(4)
Reflection	-0.072** (0.032)	-0.092** (0.038)	0.092 (0.071)	0.090 (0.068)
Seatbelt	-0.023 (0.032)	-0.033 (0.034)	0.085 (0.055)	0.085 (0.052)
Flyer	0.038 (0.029)	0.058* (0.033)	-0.002 (0.052)	0.001 (0.050)
Male	-0.131*** (0.034)	-0.131*** (0.035)	-0.068 (0.041)	-0.028 (0.047)
Feel informed		0.031*** (0.011)		-0.013 (0.016)
Attitudes		0.063*** (0.021)		0.007 (0.027)
Altruism		0.027 (0.023)		0.041 (0.038)
Constant	0.234** (0.089)	-0.094 (0.198)	0.548*** (0.082)	0.216 (0.249)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
P-value $H_0 : R = SB = C$	0.089	0.058	0.240	0.210
R^2	0.102	0.176	0.044	0.085
Observations	476	421	476	421

Notes: The dependent variable in (1)-(2) is 1 if the individual signed a card and decided to become an organ donor, and is 0 otherwise. The dependent variable in (3)-(4) is 1 if the individual reported a procrastination reason for her decision, and is 0 otherwise. OLS regressions with standard errors clustered at the course level. Only observations for participants without a donor card before the experiment are included in the regressions. At the bottom of the table the P-value is reported for the test of the null hypothesis that averages are the same in Reflection (R), Seatbelt (SB) and Control (C), that is $H_0: R = SB = C$. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

(1) and (2) in Table 5). The flyer of information distributed to half of the participants has a positive effect on registration rates, however marginally significant ($p = 0.079$) when controlling for many individual characteristics.

Apart from treatment effects, some individual characteristics positively correlate with registration rates, such as feeling informed and having positive attitudes toward the topic of organ

donation. Moreover, males are 13.1%-points less likely to sign a donor card after our manipulation ($p < 0.01$), consistent with what we observed for participants who already had a card before the experiment (see Table 4).

We now turn to the effects of treatments on procrastination. Panel B of Figure 1 depicts mean frequency of procrastination. It shows that roughly 30% of the participants reported a reason that falls into this category. Reflection increased the probability of procrastinatory reasons by about 10% points compared to the 23% in the control condition, however this difference is not significant at conventional levels as shown in columns (3) and (4) in Table 5.

The results of Study 1 do not support the hypothesis that reflection is effective at increasing organ donor registration rates. On the contrary, in our study, reflection significantly reduces registration rates by almost half. In addition, if reflection has any effect on the type of reasons provided by an individual to motivate behavior, this effect is to increase procrastination. Reflection seems to induce individuals to put off a decision rather than confront it.

4.2 The Effect of Commitment on the Willingness to Become an Organ Donor and the Tendency to Procrastinate Decisions

The commitment nudge was a question in the Monday survey following the page where reflection was stimulated. The question asked to take on the spot the decision to become or not an organ donor by checking either the box “Yes” or “No”. More than 90% of participants checked one of the two boxes, with roughly 58% indicating “Yes”.

Figure 2 presents the effect of commitment on outcomes i) and ii) measured on Thursday. It is important to stress that participants who checked the box “Yes” on Monday had to confirm their decision on Thursday, and were not at all bound by their choice on Monday. Panel A shows that commitment led to an increase in reported registration rates of 2.2% points. OLS regressions show that this effect is between 3.9%-4.7% controlling for individual characteristics, but is statistically insignificant ($p = 0.317$ and $p = 0.416$, see columns (1)-(2) in Table 6). Of those who checked the box “Yes” in the commitment condition, only 37% actually fulfilled their commitment, pushing the registration rates by only 2.2%-4.7% points above the no-commitment condition. In contrast, 98% of participants who indicated that they did not wish to become a donor actually stuck to the same decision.

As for the effect of commitment on procrastination, Panel B in Figure 2 shows that the probability of procrastination reasons is reduced from 41.5% in the no-commitment condition to less than 29% in the commitment condition. The decrease is sizable and significant ($p < 0.01$, see

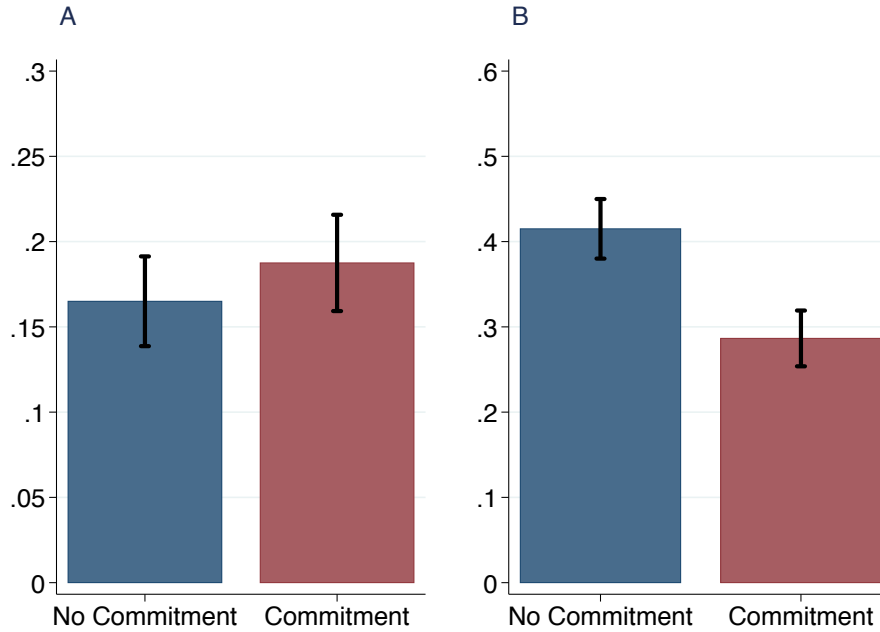


Figure 2: Effect of commitment on donor registration rates and procrastination reasons (Study 2). **(A)** Fraction of participants signing a donor card to become donor. **(B)** Fraction of participants giving a procrastination reason.

OLS regressions in columns (3)-(4) in Table 6). This result suggests that although commitment had no effect on registration outcomes, it was effective at reducing procrastination-type of reasons.¹³ This finding is consistent with the evidence that most individuals have self-control problems which can be overcome by imposing a deadline or forcing a decision (see Ariely and Wertenbroch, 2002; Ashraf et al., 2006; Kaur et al., 2010).

4.3 Order of Positive/Negative Thoughts

In Study 2, we find that the order of thoughts in a reflection process—either positive thoughts first, then negative or the reverse—has no impact on choices (contrary to the evidence in Johnson et al., 2007). We probed into the effect of the order of thoughts with the help of multiple regressions, but found no significant effect of POS or NEG, compared to standard reflection, on donor registration rates. In addition, a F-test suggest that conditions POS and NEG did not significantly differ from each other ($p = 0.345$ and $p = 0.329$, see Table 6). Furthermore, these conditions did not have a significant impact on the probability of reporting a procrastination

¹³Table 12 in the Appendix presents the results of OLS regressions on the sample including participants with a donor card before the experiment. The table shows that the effect of commitment on procrastination is weakened, but remains negative and strongly significant ($p < 0.01$).

Table 6: Effects of commitment on donor registration rates and procrastination reasons.

	Became a donor		Procrastination	
	(1)	(2)	(3)	(4)
Commitment	0.047 (0.047)	0.039 (0.048)	-0.175*** (0.054)	-0.187*** (0.062)
POS	0.043 (0.056)	0.100 (0.064)	-0.088 (0.061)	-0.109 (0.072)
NEG	-0.025 (0.050)	0.031 (0.054)	0.006 (0.068)	-0.011 (0.073)
Male	-0.092** (0.045)	-0.049 (0.048)	-0.028 (0.058)	-0.035 (0.071)
Feel informed		0.017 (0.013)		-0.007 (0.016)
Attitudes		0.111*** (0.024)		0.003 (0.033)
Altruism		-0.010 (0.041)		0.017 (0.042)
Constant	0.309*** (0.089)	-0.479** (0.225)	0.605*** (0.104)	0.721** (0.301)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
P-value $H_0 : POS = NEG$	0.345	0.329	0.159	0.164
R^2	0.034	0.163	0.105	0.123
Observations	376	326	376	326

Notes: OLS regressions with standard errors clustered at the course level. The dependent variable in (1)-(2) is 1 if the individual signed a card and decided to become an organ donor, and is 0 otherwise. The dependent variable in (3)-(4) is 1 if the individual reported a procrastination reason for her decision, and is 0 otherwise. Only observations for participants without a donor card before the experiment are included in the regressions. At the bottom of the table the P-value is reported for the test of the null hypothesis that averages are the same in conditions POS and NEG, that is $H_0 : POS = NEG$. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

reason, although participants in condition POS were about 9%-points less likely to do so than those in condition NEG ($p = 0.159$ and $p = 0.164$, see regressions (3)-(4) in Table 6).

4.4 Heterogenous treatment effects

These results cast doubts about the effectiveness of reflection and commitment, hence of AD, in the context of organ donation, at least for the average individual. It is worth exploring if

average effects mask some interesting heterogeneity in responses to experimental conditions by estimating treatment effects for different groups. We select groups according to variables that are believed to be correlated to pro-social behavior. The first variable is altruism. The second variable is a measure of awareness about organ donation (feel informed).¹⁴ Indeed, previous research has found that individuals who are more altruistic and who feel better informed about organ donation are more likely to become organ donors (see e.g. Morgan and Miller, 2002). Motivated by the positive correlation between having a donor card prior to the experiment and attitudes toward organ donation (attitudes), we also consider the variable attitudes, but we did not find significantly different responses to treatments for those with better attitudes.

First, we discuss heterogenous responses to reflection. In OLS regressions we interact altruism and informedness with the treatment dummies. The results are reported in Table 7. Column (1) shows that the coefficient of the interaction term $Reflection \times Altruism$ is negative (-0.104) and significant ($p = 0.030$). Column (2) shows that the coefficient of the interaction term $Reflection \times Feel\ informed$ is also negative (-0.057) and significant ($p = 0.011$). Finally, when the coefficients are estimated together both interactions remain negative (-0.091 and -0.054 , column 3) and significant at conventional levels ($p = 0.058$ and $p = 0.018$), while a F-test shows that the coefficients of interaction are jointly significant ($p = 0.005$). This analysis suggests that more altruistic and better-informed individuals are more strongly and negatively affected by reflection than the less altruistic and less informed ones.

High levels of altruism can be interpreted as a proxy for pro-sociality. Being informed about organ donation is also predictor of being organ donor (see Table 4). Basically reflection in our experiment has crowded out proxies for intrinsic motivation towards becoming an organ donor: reflection undoes the entire difference in the probability to become a donor between highly and less motivated individuals. This is a surprising result, that has never been documented before and that goes against common expectations about the effect of reflection on pro-social behaviors of motivated agents, at least in the context of organ donation.

¹⁴See Section 3 for a description of these variables.

Table 7: Effects of reflection on registration rates interacted with altruism and informedness.

	Became a donor		
	(1)	(2)	(3)
Reflection	0.426* (0.232)	0.150 (0.100)	0.579** (0.232)
Seatbelt	0.283 (0.228)	0.163* (0.097)	0.423* (0.235)
Reflection \times Altruism	-0.104** (0.048)		-0.091* (0.048)
Reflection \times Feel informed		-0.057** (0.022)	-0.054** (0.023)
Seatbelt \times Altruism	-0.062 (0.049)		-0.054 (0.049)
Seatbelt \times Feel informed		-0.046* (0.025)	-0.045* (0.025)
Altruism	0.077* (0.039)	0.022 (0.020)	0.072* (0.038)
Feel informed	0.032*** (0.011)	0.064*** (0.014)	0.063*** (0.014)
Attitudes	0.048** (0.019)	0.047** (0.019)	0.047** (0.019)
Male	-0.120*** (0.035)	-0.117*** (0.035)	-0.117*** (0.036)
Constant	-0.432** (0.206)	-0.292* (0.148)	-0.530** (0.206)
Education, age	Yes	Yes	Yes
P-value $H_0 : R \times Altruism = R \times Informed = 0$			0.005
R^2	0.157	0.164	0.168
Observations	446	446	446

Notes: OLS regressions with standard errors clustered at the course level. The dependent variable is 1 if the individual signed a card and decided to become an organ donor, and is 0 otherwise. At the bottom of the table the P-value is reported for the test of the null hypothesis that both interaction terms with reflection are significantly different from zero, that is $H_0: R(\text{Reflection}) \times \text{Altruism} = 0$ and $R(\text{Reflection}) \times \text{Feel Informed} = 0$. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Effects of commitment on registration rates interacted with altruism and informedness.

	Became a donor		
	(1)	(2)	(3)
Commitment	-0.223 (0.359)	-0.044 (0.110)	-0.311 (0.376)
Commitment \times Altruism	0.053 (0.073)		0.054 (0.074)
Commitment \times Feel informed		0.020 (0.027)	0.021 (0.027)
Altruism	-0.021 (0.054)	0.003 (0.038)	-0.022 (0.055)
Feel informed	0.016 (0.013)	0.007 (0.020)	0.006 (0.021)
POS	0.102* (0.061)	0.109* (0.062)	0.107* (0.062)
NEG	0.019 (0.055)	0.025 (0.055)	0.023 (0.055)
Attitudes	0.112*** (0.025)	0.113*** (0.024)	0.112*** (0.025)
Male	-0.062 (0.046)	-0.064 (0.045)	-0.060 (0.046)
Constant	-0.305 (0.267)	-0.374* (0.215)	-0.256 (0.277)
Education, age	Yes	Yes	Yes
P-value $H_0 : C \times Altruism = C \times Informed = 0$			0.577
R^2	0.128	0.128	0.130
Observations	346	346	346

Notes: OLS regressions with standard errors clustered at the course level. The dependent variable is 1 if the individual signed a card and decided to become an organ donor, and is 0 otherwise. At the bottom of the table the P-value is reported for the test of the null hypothesis that both interaction terms with commitment are significantly different from zero, that is $H_0: C \text{ (Commitment)} \times \text{Altruism} = 0$ and $C \text{ (Commitment)} \times \text{Feel Informed} = 0$. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In Table 8 we present the heterogenous responses to commitment. We find no significant interaction effects of altruism and feel informed with commitment on the probability to become donor. Both coefficients on the interaction terms estimated with OLS regressions are insignificant (see columns 1-3). This suggests that participants did not respond differently to commitment depending on these selected characteristics.

The sub-groups analysis reveals that the overall negative effect of reflection on registration

rates mainly comes from individuals that are more altruistic and better informed about the topic. However, the behavioral response to commitment is zero, irrespectively of participant's altruism and awareness.

5 Discussion

Our first main finding consists in a statistically significant negative effect of reflection on the decision to act in a pro-social manner in the context of organ donation, and more negatively so for those participants who are more informed and more altruistic. The policy implication of our paper is clear: if reflection crowds out intrinsic motivation to become an organ donor, then public information campaign aimed at stimulating reflection can backfire. Our study calls attention to the appropriateness of using active decision as enrollment mechanism for organ donation.

The psychological mechanisms underlying our main finding are to be explored with further analysis. Here we present two plausible explanations, based on theories put forward in the experimental psychology literature. The first explanation is based on the theory of intuitive cooperation (Rand et al., 2012), the second on the so called terror management theory (TMT) (see Greenberg and Arndt, 2011).

The theory of intuitive cooperation tries to understand the cognitive basis of prosocial behavior, being well established that individuals often behave, in various degrees, in a pro-social and altruistic manner (for a comprehensive review, see Andreoni, 2007). It is grounded on the assumption that human cognition consists of two distinct process, the controlled reasoning versus the automatic thinking (Evans, 2008; Kahneman, 2011), and tests if intuition favors cooperation while reflection (a cognitive slower and effortful process) leads to selfishness or the reverse.

The main hypothesis of intuitive cooperation is well described in the words of Cornelissen et al. (2011): “the social intuitionist paradigm states that moral decisions, like the choice between cooperation and defection, are generally the result of quick automatic evaluations or intuitions. These spontaneous response are shaped by social and cultural influences that become internalized in the course of personality development”. If this hypothesis is correct, at least for more prosocial individuals, cooperation is an automatic response to the social dilemma between defection or cooperation, while selfishness requires some active cognition process, such as reflection. Rand et al. (2012) experimentally tested the hypothesis of intuitive cooperation by putting individuals under time pressure and forcing them to decide quickly in a public good

game. Their findings support the hypothesis that intuition favors cooperation, while reflection leads to more selfishness. The authors propose that cooperation is intuitive because cooperative heuristics are developed in daily life where cooperation is typically advantageous.

There is no unanimous consensus about the predictions of intuitive cooperation and more research has to be done to settle the dispute between advocates and critics.¹⁵

Even if we did not explicitly manipulate intuition vs. reflection as in Rand et al. (2012), the results of our experiment can be interpreted in the light of the theory of intuitive cooperation. All participants in our experiment were exposed to the topic of organ donation. In the reflection treatment, participants were asked to actively think about the decision problem, while they were not in the control condition. In that respect, the finding that reflection reduces the propensity to become an organ donor is in line with the theory of intuitive cooperation together with the finding that reflection reduces organ donor registration rates more for more altruistic and aware individuals (see Rand et al., 2012; Cornelissen et al., 2011).

Another plausible explanation for the effect of reflection on organ donor rates is provided by terror management theory (TMT). This theory posits that individuals develop defense mechanisms against reminders of their vulnerability to death. A key finding of TMT is that making mortality more salient by priming death awareness promotes prosocial behavior. However, when the individual is presented with the thought of her own physical death, mortality salience disrupts TMT processes and reduces the probability to engage in prosocial behavior (Hirschberger et al., 2008). Our reflection treatment may have confronted participants with their own death and as a consequence discouraged them from signing an organ donor card.

Our second main contribution is about the role of a commitment nudge to increase organ donor registration rates when reflection has been stimulated. The commitment treatment in Study 2 helps understanding if low donation rates are a result of the widespread tendency to procrastinate decisions. Under the assumption that AD works mainly through nudging individuals with present-biased preferences, rather than by stimulating reflection, we should have observed a significant impact of commitment on the decision to become organ donor. But, we observe a statistically insignificant increase in registration rates due to commitment compared to the control. It is worth stressing that many participants did choose to become organ donor on Monday when solicited by the commitment nudge, but did not follow through with their decision on Thursday. The commitment nudge used in Study 2 was not very strong,

¹⁵See amongst the critics Tinghög et al. (2013) and Recalde et al. (2014), while support for the theory can be found also in Nielsen et al. (2014).

being just a question with no legal implications, and this may have reduced the power of the nudge.

Commitment, nevertheless, does produce an effect. Without the commitment nudge, individuals make up excuses for not taking a decision or for choosing not to be a donor (45% of the participants). When nudged to make a decision on Monday, we observe that three days later, on Thursday, they do not use procrastination reasons as frequently (less than 28%). Thus, AD mechanisms help individuals make up their mind, but this does not necessarily imply higher or more socially desirable outcomes. One interpretation of these findings is that the negative effect of reflection crowded out any possible benefits from the use of a commitment nudge to increase organ donation rates. Overall, our findings suggest that the adoption of AD mechanisms to raise contributions to public goods may be far more difficult than previously thought.

6 Concluding Remarks

We used two field experiments to test whether active decision mechanisms can raise organ donor registration rates. Our research has tested the two main channels through which active decision works, stimulating reflection and using a commitment nudge to reduce procrastination. Contrary to more optimistic results in the literature, we have found a rather pessimistic result. By forcing people to reflect on organ donation, we have reduced their propensity to become organ donors. Our results also show, however, that even a non-binding commitment nudge leads individuals to form an opinion regarding a contribution to the public good but this does not necessarily imply higher registration rates for organ donation. The analysis of heterogeneous responses to reflection has demonstrated that reflection is particularly detrimental to responses of highly pro-social individuals.

In this project, we took a first step towards understanding how the different components of AD mechanisms affect choices, but more research is needed to fully unveil under which conditions these mechanisms work well. More research is needed to understand the reasons why reflection decreases organ donation, and to test the generality of this finding to other contexts different from organ donation. More research would also be helpful to shed light on the interaction between preference formation through reflection and through reducing procrastination with a commitment nudge.

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A Appendix

A.1 Randomization tests

If randomization worked, then we should not observe statistically significant differences for average measures of the group characteristics between the treatment conditions. We selected measures that previous evidence suggest may be correlated with the decision to become organ donor and perform tests to check the randomization with respect to the treatments. Table 9 and Table 10 report the mean and standard deviation for relevant variables per condition. We report the F-test and the P-value to compare the different conditions in each study across these measures. Specifically, we test for differences in attitudes toward organ donation, subjective level of information, proportion of male, age, having donated blood at least once, an index for altruism and many dummies for education.

In Study 1, the binary variable “ever given blood” (=1 if have donated blood at least once, 0 otherwise) reveals some weak unbalances between conditions ($p < 0.10$, see Table 9). However, this variable does not have an impact on any of the outcome variables and hence should not affect the results. Furthermore, the dummy variable “Mandatory school” is well balanced between the control condition and seatbelt, but is less balanced regarding reflection. To account for this, we controlled for education dummies in the main regressions.

In Study 2 (Table 10), all individual variables except “feel informed” are well balanced between conditions. Participants in the commitment condition evaluated themselves as 0.5 point more informed than those in the no-commitment condition ($p < 0.01$). This difference is statistically significant but the magnitude is small, less than a third of a standard deviation. Our results should not be affected for the following reasons. First, including this variable as a control in the regressions accounts for this difference between conditions. We show that it does not affect the estimated coefficient on commitment (see columns (2) and (4) of Tables 6). Second, this variable positively affects registration rates, hence the bias, if any, would be to overestimate the effect of commitment on registration rates. The unbiased estimate would be even lower than the one we estimated, which is already insignificant.

Regarding education dummies in Study 2, a t-test shows that “Mandatory school” suffers some unbalancedness, but the difference between the treatments is small (48.2% versus 56.4%). Moreover, an omnibus test cannot reject the null hypothesis of the equality of education dummies between commitment and no-commitment ($F(6, 474) = 1.42, p = 0.2048$).

Table 9: Randomization tests in Study 1 (reflection).

	Reflection		Seatbelt		Control		Test	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	F stat	P-value
Male	0.543	(0.500)	0.503	(0.501)	0.488	(0.501)	0.622	0.537
Age	21.852	(5.600)	21.618	(5.839)	21.021	(5.244)	1.196	0.303
Student (=1)	0.359	(0.481)	0.347	(0.477)	0.360	(0.481)	0.044	0.957
Altruism	4.910	(0.622)	4.979	(0.685)	4.904	(0.595)	0.774	0.462
Attitudes	5.627	(0.883)	5.512	(0.933)	5.615	(0.948)	0.894	0.410
Feel informed	4.415	(1.552)	4.291	(1.608)	4.202	(1.657)	0.842	0.431
Ever given blood (=1)	0.150	(0.358)	0.182	(0.387)	0.100	(0.301)	2.960	0.053
Education, highest degree:								
Mandatory school	0.372	(0.485)	0.495	(0.501)	0.527	(0.500)	5.349	0.005
Vocational training	0.202	(0.403)	0.172	(0.378)	0.164	(0.371)	0.504	0.604
High school	0.266	(0.443)	0.177	(0.382)	0.169	(0.376)	3.106	0.045
Applied university	0.037	(0.190)	0.025	(0.157)	0.010	(0.100)	1.833	0.161
University	0.048	(0.214)	0.035	(0.185)	0.045	(0.207)	0.216	0.806
Other/Missing	0.074	(0.263)	0.096	(0.295)	0.085	(0.279)	0.286	0.752
Observations	188		198		201		587	

Notes: Means and S.D. of variables per condition. The last columns report F-tests and P-values for testing the equality of means across conditions.

Table 10: Randomization tests in Study 2 (commitment).

	Commitment		No commitment		Test	
	Mean	S.D.	Mean	S.D.	F stat	P-value
Male	0.504	(0.501)	0.483	(0.501)	0.212	0.646
Age	22.302	(6.527)	21.779	(5.387)	0.883	0.348
Student (=1)	0.318	(0.467)	0.388	(0.488)	2.521	0.113
Altruism	4.947	(0.615)	4.871	(0.662)	1.612	0.205
Attitudes	5.614	(0.912)	5.496	(1.019)	1.754	0.186
Feel informed	4.515	(1.585)	4.034	(1.530)	11.251	0.001
Ever given blood (=1)	0.173	(0.379)	0.142	(0.349)	0.874	0.350
Education, highest degree:						
Mandatory school	0.482	(0.501)	0.564	(0.497)	3.243	0.072
Vocational training	0.155	(0.363)	0.169	(0.376)	0.182	0.670
High school	0.147	(0.355)	0.140	(0.348)	0.049	0.824
Applied university	0.041	(0.198)	0.021	(0.144)	1.549	0.214
University	0.061	(0.240)	0.047	(0.211)	0.503	0.479
Other/Missing	0.114	(0.319)	0.059	(0.237)	4.631	0.032
Observations	245		236		481	

Notes: Means and S.D. of variables per condition. The last columns report F-tests and P-values for testing the equality of means across conditions.

A.2 Additional tables

Table 11: Effects of reflection on donor registration rates and procrastination reasons, sample including participants with and without a donor card.

	Became a donor		Procrastination	
	(1)	(2)	(3)	(4)
Reflection	-0.056*	-0.064*	0.091	0.091
	(0.029)	(0.032)	(0.063)	(0.058)
Seatbelt	-0.012	-0.018	0.073	0.066
	(0.028)	(0.030)	(0.047)	(0.045)
Flyer	0.030	0.047	0.004	0.007
	(0.025)	(0.029)	(0.046)	(0.043)
Already a card	0.780***	0.693***	-0.277***	-0.277***
	(0.032)	(0.042)	(0.033)	(0.042)
Male	-0.114***	-0.113***	-0.062*	-0.025
	(0.030)	(0.031)	(0.036)	(0.041)
Feel informed		0.029***		-0.013
		(0.011)		(0.015)
Attitudes		0.065***		0.008
		(0.018)		(0.022)
Altruism		0.026		0.039
		(0.021)		(0.033)
Constant	0.176**	-0.187	0.505***	0.203
	(0.073)	(0.165)	(0.073)	(0.225)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
R^2	0.482	0.521	0.082	0.121
Observations	550	492	550	492

Notes: OLS regressions with standard errors clustered at the course level. The dependent variable in (1)-(2) is 1 if the participant did not have a card before the experiment and decided to sign the card distributed with the survey to become donor or ii) she had a card before the experiment and did not change her status of being a donor, and is 0 otherwise. The dependent variable in (3)-(4) is 1 if the individual reported a procrastination reason for her decision, and is 0 otherwise. Observations for participants who had a donor card before the experiment are also included in the regressions. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Effects of commitment on donor registration rates and procrastination reasons, sample including participants with and without a donor card.

	Became a donor		Procrastination	
	(1)	(2)	(3)	(4)
Commitment	0.033 (0.040)	0.031 (0.041)	-0.147*** (0.045)	-0.148*** (0.052)
POS	0.028 (0.049)	0.082 (0.056)	-0.073 (0.052)	-0.088 (0.062)
NEG	-0.024 (0.041)	0.025 (0.046)	0.003 (0.057)	-0.013 (0.063)
Already a card	0.809*** (0.030)	0.714*** (0.044)	-0.343*** (0.048)	-0.369*** (0.055)
Male	-0.078* (0.039)	-0.036 (0.042)	-0.027 (0.050)	-0.044 (0.062)
Feel informed		0.014 (0.011)		-0.007 (0.014)
Attitudes		0.102*** (0.021)		-0.003 (0.030)
Altruism		0.001 (0.037)		0.006 (0.039)
Constant	0.304*** (0.079)	-0.390* (0.202)	0.597*** (0.092)	0.653** (0.273)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
P-value $H_0 : POS = NEG$	0.400	0.351	0.165	0.180
R^2	0.446	0.512	0.144	0.169
Observations	451	397	451	397

Notes: OLS regressions with standard errors clustered at the course level. The dependent variable in (1)-(2) is 1 if the participant did not have a card before the experiment and decided to sign the card distributed with the survey to become donor or ii) she had a card before the experiment and did not change her status of being a donor, and is 0 otherwise. Observations for participants who had a donor card before the experiment are also included in the regressions. Levels of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.