Thinking about and deciding to be an organ donor: An experimental analysis

Justin Buffat* Lorenz Goette† Simona Grassi‡

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Abstract

This paper describes the results from two field experiments in which we investigated how reflecting about organ donation affected the decision to become an organ donor and the reasons behind the decision. We also study the effect of a "commitment nudge" on immediate decisions. We find that reflection has a statistically significant negative effect on the decision to become an organ donor. The commitment nudge limits the tendency to adduce procrastination reasons for not making a decision, but does not lead to higher organ donor rates than in the control group. The results from this study will aid the design of effective sensitization campaigns and enrollment mechanisms for organ donation.

*Department of Organizational Behavior, University of Lausanne, justin.buffat@unil.ch
†Institute for Applied Microeconomics, University of Bonn, lorenz.goette@uni-bonn.de
‡King's Business School, King's College London, simona.grassi@kcl.ac.uk

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1 Introduction

Signing up as an organ donor is an important decision, because donating one's organs after death may save another person's life or substantially improve the quality of life of the recipient. Surveys indicate overall support for organ donation in many countries (Besser et al., 2004; Kittur et al., 1991),[1] yet few individuals make the decision to sign an organ donor card (see, e.g., *United Network for Organ Sharing*, 2014; Morgan and Miller, 2001).

Some studies have reported a correlation between the type of enrollment mechanism onto the donor registry and realized choices (see, e.g., Abadie and Gay, 2006; Johnson and Goldstein, 2003, 2004).[2] For given and immutable preferences regarding organ donation and becoming an organ donor, the type of enrollment mechanism only matters when it changes the material costs associated with enrollment. In fact, these monetary costs are typically low, suggesting that the low sign-up rate may arise for other reasons.

Our working hypothesis is that many individuals do not have a clear and well-formed preference about whether or not to become an organ donor, and that this preference can remain undefined because of a tendency to postpone difficult or uncomfortable decisions. In two laboratory-in-the-field experiments, we attempt to break this tendency by asking individuals in the treatment group to reflect upon becoming an organ donor. We then compare their decisions to become organ donors to those made by the control group. We also test whether a "commitment nudge" to make a decision has an impact on the decision to be an organ donor, and study how reflection and commitment affect the reasons for whether or not a decision is made.

Regarding the expected effect of reflection on the decision to become an organ donor, we acknowledge two conflicting predictions. Reflection can make the future benefits of

[1] Strong support for organ donation is not only observed in the field but also in laboratory studies through high rates of willingness to donate one's organs (see, e.g., Kessler and Roth, 2014a; Herr and Normann, 2016).

[2] Abadie and Gay (2006) identified correlations between enrollment mechanisms and donations using cross-country data, whereas Johnson and Goldstein (2003, 2004) provided evidence of the effect of enrollment mechanisms from a laboratory setting.

a prosocial decision more salient in comparison to the present costs; as a consequence, reflection increases prosocial choices. This hypothesis is supported by Stutzer et al. (2011) in their study on blood donation.

Conversely, reflection can encourage the decision to be or remain a non-donor and/or the tendency to postpone the decision if it raises uncomfortable thoughts about, for example, one's own death. In this scenario, reflection makes the present costs of the decision, rather than the future social benefits, more salient, so we should not expect reflection to promote the decision to become an organ donor.

The study of reflection in the process of becoming an organ donor is of importance for two reasons. First, information and sensitization organ donation campaigns aim to inform, raise awareness, and stimulate reflection to help individuals to make a decision regarding organ donation. However, to the best of our knowledge, no studies have tested whether reflection has a causal impact on the likelihood of registering as an organ donor.

Second, the effects of reflection and commitment on the reported organ donor registration rates in our experiments help us understand how enrollment mechanisms affect decisions.

Two common enrollment mechanisms are the default and active decision (AD). The extent to which these mechanisms stimulate reflection and are susceptible to a commitment nudge, which are our experimental means of manipulation, is quite different.

The default mechanism does not require an active decision and seems to be extremely powerful in corralling individuals into the default option. For example, Beshears et al. (2009) showed that changes in the default rule (whether individuals are enrolled or not by default) have dramatic effects on individuals' saving decisions.

AD requires individuals to actively select from among the available options, and often relies on a deadline as a commitment device. Thus, AD is more likely to stimulate individuals to reflect on the issue at stake (Thaler and Sunstein, 2008).

AD is effective at increasing enrollment in retirement saving plans (Carroll et al., 2009), but its effect on registration rates for organ donation is mixed. Johnson and Goldstein

(2003) found that AD increases organ donor registration rates, whereas other studies gave less optimistic results (see, e.g., Kessler and Roth, 2014a,b).

To shed light on the effect of reflection and commitment on the decision to become an organ donor, we carried out two randomized controlled laboratory-in-the-field experiments, denoted as Study 1 and Study 2, in a French-speaking region of south-west Switzerland. Under Swiss law, nobody is an organ donor by default. Thus, this country is a particularly interesting object of study with regard to opt-in decisions.

Organ donation rates in Switzerland are quite low. Around 15% of Swiss carry an organ-donor card, more than 1,000 people are currently waiting for an organ transplant in Switzerland, and about 7% of individuals on the wait-list die every year (Schulz et al., 2006; Swisstransplant, 2013).

In Study 1, we investigate the causal effect of reflection on the decision to become an organ donor and on the reasons behind this decision. In Study 2, we test two alternative frames to stimulate reflection on the same outcomes. Another condition, denoted as commitment, is also implemented in Study 2, whereby participants are asked to make the decision to become an organ donor on the spot.

More than 1,100 young adults participated in the experiments while taking a mandatory driving course to obtain a driving license. We distributed a blank donor card together with surveys containing the treatment and control conditions. Three days later, we measured the decision on whether or not to become an organ donor by asking the participants whether they had signed the donor card. All other outcomes were also measured three days after the assignment of treatments.

In the treatment denoted "reflection," we asked participants to write down their thoughts about organ donation. We framed our question to match real-life organ donation campaigns that stimulate reflection by highlighting the shortage of organs and that donors can save human lives.

We found that reflection causally affects the willingness to become an organ donor, but does so in a negative way. Reflection significantly reduces registration rates by almost half

compared to the control condition (15% in the control, 7% in the reflection treatment).

The negative effect of reflection on the likelihood of becoming an organ donor compared to the control group is stronger in individuals who are more certain that they are sufficiently informed about organ donation prior to the treatment. The level of informedness is based on how much the individual agrees with the statement "I feel sufficiently informed about the topic of organ donation" (variable *Feel informed*).

Among those who strongly agreed with this statement, 32.7% of those in the control group chose to become organ donors, whereas only 14.7% of those in the reflection group signed up for organ donation. No significantly different behavior between the control and reflection groups was observed in participants with lower levels of *Feel informed*.

Several studies have examined the motivations that lead individuals to become organ donors. Feeling more informed about the process of organ donation is robustly correlated with the willingness to donate organs (Morgan and Miller, 2001; Morgan et al., 2008a,b). Note that, in our study, participants who already had a donor card at the time of the experiment reported higher levels of *Feel informed*. Thus, in our experiment, reflection negated a proxy for intrinsic motivation towards becoming an organ donor.

Our results suggest that reflection may have made the present costs of becoming an organ donor more salient than the future benefits. In experimental psychology, studies on the determinants of the willingness to become an organ donor relate these costs to non-cognitive factors such as death anxiety, basic disgust at the idea of organ procurement, and fear. These factors can coexist with positive attitudes towards organ donation in general, but if triggered, they may be strong enough to reduce the likelihood of signing an organ donor card (see, e.g., Greenberg and Arndt, 2011; Morgan et al., 2008a; Sanner, 1994).

An example of these studies is Hirschberger et al. (2008), which reports on the so-called theory of Terror Management (TMT). The TMT argues that, while an awareness of death heightens one person's perception of being part of a community, and hence generates prosocial behaviors, all reminders of one's own physical death generate a defen-

sive mechanism that leads to a reduction in prosocial behavior. Hirschberger et al. (2008) tested and confirmed that mortality salience reduces organ donor registration rates. They claimed that "when the prosocial cause requires participants to face the fact that they are mortal and may prematurely die, primes of death significantly reduce the motivation to contribute."

In parallel to the reflection treatment, we implemented a treatment whereby participants were asked to write down their thoughts about the use of a seatbelt. The effect of this seatbelt treatment on the decision to become an organ donor was not significantly different from that in the control group, but was also not significantly different from the reflection treatment. Individuals with higher levels of *Feel informed* also reacted differently to the seatbelt treatment than less-informed individuals, but the effect was only marginally significant.

The seatbelt treatment was designed to test whether the act of reflecting and writing thoughts per se had an effect on the outcomes. However, according to the TMT and the findings in Morgan et al. (2008a) and Sanner (1994), the fact that the use of seatbelts is related to safety and, by association, to car crashes and premature death could have played a role in explaining the effect of the seatbelt treatment on the decision to become a donor.

The seatbelt treatment mentions explicitly that "fastening the seatbelt reduces the risk of death," and may therefore generate a weaker, but similar, defensive mechanism against death that reduces organ donor registration according to TMT.

In Study 2, we 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 (Johnson et al., 2007). The results show that, within our design, the way that reflection is stimulated has no effect on the registration outcomes. We also found that the commitment nudge has no effect on registration outcomes, although it is effective at overcoming reasons that adduce procrastination.

In terms of policy recommendations, we highlight a potential fallacy implicit in sensi-

tization campaigns on the topic of organ donation. According to our results, stimulating reflection on organ donation, as pursued in many public-information campaigns, can backfire if the policy goal is to increase donation rates. Sensitization campaigns may benefit from being tested on different subpopulations to increase their effectiveness, and may benefit from not stimulating introspection and confrontation with one's own death.

In terms of enrollment mechanisms, our main contribution to the existing literature on organ donation supports more skeptical results on the effect of reflection and the AD mechanism, to the extent that AD stimulates reflection more than the default. Moreover, we find that high procrastination rates persist, even after reflection has been stimulated. This is consistent with the findings that reflection reduced subjective informedness in those who chose to remain non-donors compared to the control group.

The effect of the commitment nudge proves to be unstable: while many reported the willingness to become donors, relatively few acted consistently on this decision. 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.

The remainder of this paper is organized as follows. Section 2 and its subsections describe the experimental setup. An overview of the data collected is provided in Section 3. The results are presented in Section 4 and discussed in Section 5. Section 6 concludes the paper.

2 Experimental Setup

2.1 Enrollment system in Switzerland

In Switzerland, organ donation is regulated by the Federal Act on the Transplantation of Organs, Tissues and Cells (2007).[3] To become an organ donor, one must explicitly consent to the explant of one's organs, tissues, or cells after death. By default, nobody

[3]The text can be found at https://www.admin.ch/opc/en/classified-compilation/20010918/index.html

is an organ donor.

The official Swiss donor card, provided by Swisstransplant,[4] is an intention card, because the holder states whether or not she wants to be a donor. Organ donors have to sign and carry the card. The law does not allow record-keeping of organ donors. In fact, there is no organ donor registry.

In the absence of documented consent or explicit refusal, the next-of-kin is asked about the intention of the deceased. The next-of-kin can consent to the explant if she believes this is the will of the deceased. In our experiment, we asked participants about their will to become an organ donor, as it is otherwise impossible to determine their decision in the absence of an organ donor registry.

2.2 The studies

We conducted two randomized studies, denoted as Study 1 and Study 2. The main goal of Study 1 was to test the effect of reflection on the decision to become an organ donor. Study 2 tested the effect of two alternative forms of reflection and of a commitment nudge on the same decision.

Both studies were conducted in Switzerland, with Study 1 lasting from October 2012 to February 2013 (12 weeks) and Study 2 running from February 2013 to May 2013 (14 weeks). The participants were young adults attending a course to familiarize themselves with road traffic (driving course), which is mandatory in the process of obtaining a driving license. A driving course consists of four 2-hour classes in one week, from Monday to Thursday.

For both Study 1 and Study 2, two surveys were distributed before the beginning of class, the first one on the Monday and the second one on the Thursday of the same week. The surveys contained questions regarding demographics, personality traits, and other questions that measure knowledge about organ donation. The Monday survey explicitly asked whether the individual was an organ donor and was distributed together

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

with the official blank organ donor card. It also contained the treatment conditions. The treatment conditions were randomized at the course level. Participants were given around ten minutes to complete the Monday survey. The second survey, distributed on the Thursday, was identical for both studies and all participants, and contained measures for the outcomes. It only took around five minutes to complete. Informed consent was obtained from all participants.

2.3 The outcomes

On the Thursdays, 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 making any decision. To measure (i), we asked the participants to report whether they had signed the card to become an organ donor since beginning the class on the Monday.[5] To measure (ii), we asked the participants to provide a free-form explanation for the decision taken or for not making any decision. We coded all reported reasons into the categories summarized in Table 1.[6]

Table 1: Reasons for decision, 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 elements related to altruism	0.11	0.13
Referred to elements 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

A shortage of time, the need to think more, and/or the will to decide at a later time were

[5] As explained in Subsection 2.1, in Switzerland, one can carry a donor card to indicate refusal to be an organ donor. Outcome (i) only measures decisions to sign the donor card to become an organ donor.

[6] The explanations were coded independently by two trained research assistants.

the reasons given by many individuals (more than 30% overall) for the lack of a decision or a negative decision. We interpret these reasons as an indication of procrastination.[7] Thus, we collapse 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 construct 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. In Appendix A, we show that the results are not affected by the way the procrastination variable is constructed.[8]

When dealing with self-reported outcomes, social desirability bias (SDB), i.e., the tendency of respondents to over-report good behavior in an attempt to be viewed favorably by others, is a major concern (Tourangeau et al., 2000). For instance, SDB could cause participants to lie about their decision to have become an organ donor to please the experimenter.

While we cannot rule out the presence of this bias, we are convinced that its effect in our study is very limited. The low self-reported registration rates before the experiment (14.8%) as well as the modest self-reported signing rates after the experiment (15.7%) suggest little evidence of systematic lying about the status of organ donation. In addition, these rates are consistent with the estimated fraction of the Swiss population carrying a donor card (about 15%). Although the data suggest a limited role for SDB, one might still be worried that this could interact with the treatments, and thus bias the effect of the treatments. As we show later in the analysis (see Subsection 4.1), if anything, SDB would cause the impact of the main reflection treatment to be underestimated.

[7]Procrastination is the act or habit of procrastinating, or putting off to a future time (Websters Revised Unabridged Dictionary).

[8]We perform two robustness checks to assess the effects of the treatments on the dummy procrastination: (i) we exclude one item at a time from the procrastination index and (ii) we perform the analysis on each single item. In both cases, the results hold true.

2.4 Study 1: Reflection

In Study 1, the survey distributed on the Monday to participants in the reflection treatment contained an additional page with two questions requiring free-form answers. The first question asked for two thoughts about organ donation and a sentence explaining each. The second question was intended to put participants in the position of someone in need of an organ transplant by asking them to write two thoughts about the decision to accept or refuse an available organ for transplant.

These two questions constituted our reflection treatment (see Appendix B), which aimed to stimulate reflection on organ donation. We designed this treatment to match real-life organ donation campaigns that encourage reflection by highlighting the shortage of organs and that donors can save lives. For example, the Swisstransplant campaign advocates that[9]

> *Every person who has a donor's liver, a new lung or somebody else's heart beating in their body knows that they owe their survival to a real lifesaver...An organ donor can save the lives of up to seven people. In Switzerland, over 1,330 people are currently waiting for a new organ* (as of March 2015). *Around 100 people die every year because a suitable organ could not be found for them. These are all reasons to save somebody else's life after your own death...*

The framing of the reflection questions should prompt participants to become organ donors. In Subsection 4.2, we show that the more neutral framing used in Study 2 (for treatments called POS and NEG) does not produce different outcomes compared to the reflection treatment.

The control treatment is the Monday survey without the reflection questions (see Appendix B). We implemented a third treatment, denoted seatbelt, that was similar to reflection, but which asked the participants to write down two thoughts on the use of seatbelts in a car rather than on organ donation (see Appendix B). The seatbelt treat-

[9]See https://www.swisstransplant.org/en/organ-donation-transplantation/why-become-a-donor/.

ment allowed us to test whether the act of reflecting on reducing their risk of death by fastening a seatbelt had an effect on the outcomes. By reminding participants about the risk of death while driving a car, we prompted some thoughts about death and may have made mortality salient. According to the TMT (discussed in Section 5), making one's own mortality salient may disrupt prosocial behaviors such as the decision to become an organ donor.

Finally, we crossed each condition with an information treatment: upon returning the first survey, half of the participants received an eight-page informative flyer designed by Swisstransplant. This allowed us to compare the effects of reflection alone and reflection with supplementary information. The design of Study 1 is summarized in Table 2, panel (a).

Table 2: Treatment assignment in Study 1 and Study 2

(a) Study 1

	Reflection	Seatbelt	Control	Total
Flyer	85	121	93	299
No flyer	103	77	108	288
Total	188	198	201	587

(b) Study 2

	Reflection	POS	NEG	Total
Commitment	94	62	89	245
No commitment	62	91	83	236
Total	156	153	172	481

Note: Each cell displays the number of participants.

2.5 Study 2: Alternative forms of reflection and the commitment nudge

In Study 2, we tested two variants of the reflection treatment, denoted as POS and NEG.

The POS condition stimulated reflection by prompting positive thoughts first and negative thoughts afterwards, whereas the NEG condition prompted these thoughts in the

reverse order. In POS, the first question stated that 15% of the Swiss population are organ donors[10] and asked them to explain possible reasons for this fact. The second question stated that 85% of the Swiss population are not organ donors and asked them to explain possible reasons thereof. In NEG, participants faced the same questions, but in the reverse order. In POS and NEG, participants were asked to provide free-form answers to these questions on the Monday (see Appendix B). The treatment conditions in Study 2 were POS, NEG, and the reflection treatment of Study 1.

The treatment conditions POS and NEG were inspired by the Query Theory (Johnson et al., 2007), which argues that preferences are constructed through an introspective process of questioning oneself on a topic. The order of the queries has an effect on the final decision: the first queries are more salient and have a stronger impact than the latter.[11] In the POS treatment, participants were induced to discuss reasons for being a donor first, whereas in the NEG treatment, they discussed reasons for not being a donor first; the Query Theory predicts a greater probability of becoming an organ donor in POS than in NEG.

Because the donation rate in Switzerland is only 15%, a somewhat low level, the POS condition may accidentally trigger reasons for not becoming an organ donor via negative social proof (see, e.g., Cialdini et al., 2006), that is, participants feel that not being a donor is common and hence acceptable. We minimized this risk by forcing participants to question the fact rather than taking it as a given, but above all, as both POS and NEG cited the same low donation rate of 15%, the hypothetical negative social proof effect would affect both conditions and be factored out in the comparison.

In Study 2, we also tested the effect of introducing a commitment nudge. This is denoted as the commitment treatment (see Appendix B). The commitment nudge took the form of a question in the Monday survey following the page that stimulated reflection.

[10]This rate is an estimation by Swisstransplant obtained in a telephone survey of representative Swiss households in 2011. This figure is similar to the percentage that we found in Study 1 when we asked participants to indicate whether they held a donor card prior to the study.

[11]In an experiment on the endowment effect, Johnson et al. (2007) showed that the value assigned by participants to their endowment depends on the order of the queries posed by the experimenters.

The question asked the participant to make the decision of whether or not to become an organ donor on the spot by checking either the "Yes" or "No" box:[12]

> *Becoming or not becoming an organ donor is a decision that many people keep putting off. We would like you to decide* ***now*** *whether or not to become an organ donor. You can indicate your choice using the official donor card that we gave you. Think about it. Do you want to become an organ donor?*

The comprehensive design of Study 2 is illustrated in Table 2, panel (b). The commitment treatment is designed to reduce procrastination. We expect commitment to reduce the frequency of the procrastination-type reasons for not making a decision. Because the commitment nudge always occurs after reflection in Study 2, its effect cannot be isolated from reflection.

2.6 Procedures and participants

A total of 1,191 people took part in the experiments. We excluded 123 participants because they did not return one of the two surveys or failed to report one of the outcome variables.[13] Of the remaining 1,068 participants, 587 participated in Study 1 and 481 participated in Study 2. We conducted the experiments across 135 driving courses (74 in Study 1, 61 in Study 2). The classes on each course were quite small, with an average of 8.29 participants and a maximum of 12 participants per class.[14]

To ensure that participants were not influenced by the experimenters or the course instructors, we let each driving school receptionist distribute the surveys as the participants signed in for the class. In the few cases where the receptionist was absent, the instructor

[12]The experiment was carried out in French. We have translated the survey here for the purpose of this article.

[13]The exclusion of these observations, about 10%, is independent of the treatment assignments, and hence should not affect the results.

[14]In Study 1, the average numbers of participants per course returning the completed survey were 8.7, 8.22, and 8.72 for the reflection, seatbelt, and control treatments, respectively. An F-test indicates no significant differences ($F(2,73) = 0.02$, $p = 0.98$). In Study 2, the averages were 8.63, 9.24, and 9.42 for the reflection, POS, and NEG treatments, respectively. An F-test indicates no significant differences ($F(2,60) = 0.56$, $p = 0.58$).

distributed the surveys. Instructors were reminded not to mention the topic of organ donation during the course.

We incentivized participants by including all those who completed the surveys in a lottery run at the course level. The winner received CHF 45 ($\approx$ USD 50), the equivalent of the fee for collecting a driving license. By using a lottery that pays the collection fee rather than a reward for completing the surveys, we minimized the risk that the payment could be perceived as a compensation for prosocial behavior (becoming an organ donor), and hence prevented confounding effects such as, for example, the crowding out of intrinsic motivation.

3 Descriptive Statistics

Table 3 provides an overview of the data collected in both studies. About 13.5% of the participants in Study 1 and 16.4% of those in Study 2 had a donor card before the experiment. This difference is insignificant ($p = 0.19$). There were equal numbers of male and female participants in each study, and the average age of the participants was 21.5 and 22 in Study and Study 2, respectively.[15]

Students constituted 35.5% of the sample. They were enrolled either in high school (50%), university (35%), or other tertiary institutions (typically technical training institutes). The non-student participants were either enrolled in vocational training courses (45%), a common experience for young people in Switzerland, or already employed. These figures reflect the official statistics for the Swiss youth.

We collected individual characteristics such as feeling informed about organ donation, altruism, and attitudes towards organ donation because, according to the literature, these are relevant in the decision to be an organ donor (Morgan and Miller, 2001).

To assess how informed participants felt about the topic of organ donation, we asked them to rate the sentence "I feel sufficiently informed about the topic of organ donation"

[15]The age difference is simply due to the fact that Study 2 started half a year after Study 1, and participants reported their birth year, rather than their birth date.

on a Likert scale from 1–7, with 1 denoting strong disagreement, 4 denoting neither agreement nor disagreement, and 7 denoting strong agreement; participants could also answer 0 (no opinion) (see question 8 in survey A, Appendix B). This measure reflects self-reported awareness about organ donation.

Altruism was measured on a 7-point Likert scale based on three items, with higher values indicating a higher level of altruism. The three items were "Helping others makes me happy," "I enjoy doing small favors every day for the people I care about," and "My family tends to do what we can to help those less fortunate than ourselves" (see question 5 in survey B, Appendix B).

Overall attitudes towards organ donation were measured using four items each on a 7-point Likert scale, with higher values indicating more positive attitudes towards organ donation (Morgan and Miller, 2001). The four items stated "I see organ donation as a benefit to humanity," "I believe organ donation is an act of compassion," "I see organ donation as a natural way to prolong life," and the negative statement "I view organ donation as a negative procedure" (see question 8 in survey A, Appendix B).

The high average attitude score in Table 3 suggests that, overall, participants favored organ donation, a common finding in the literature. For example, the National Survey of Organ Donation Attitudes and Behaviors (2012) reports that more than 94% of Americans interviewed either strongly supported or supported the donation of organs for transplant.

We measured attitudes towards organ donation and informedness twice, in the Monday and the Thursday surveys (see question 4 in survey B, Appendix B), to test whether the treatments affected these variables. In the analysis, only the Monday measures of these variables are used as control variables, because the Thursday measures might have been affected by the treatments.

The measures of altruism, attitudes towards organ donation, and informedness had similar average values in Study 1 and Study 2. We also calculated the fraction of participants who had ever given blood (variable *Ever given blood* in Table 3), and found similar values of 14–16% in both studies. Finally, about 75% of participants wrote some sentences in

the blank space provided to explain the reasons for their decision in the Thursday survey (therefore allowing us to measure the second outcome).

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)	0.495	(0.500)
Age	21.489	(5.565)	22.041	(5.985)
Student (=1)	0.355	(0.479)	0.353	(0.478)
Altruism	5.617	(0.922)	5.565	(0.923)
Attitude	5.584	(0.924)	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	

As mentioned earlier, the assignment of treatments to groups was randomized at the course level. Overall, in both studies, the randomization was successful, except for the variable *Feel informed* in Study 2 and one dummy variable for education (*Mandatory school*) in both studies. While there was a significant difference in mean for the variable *Feel informed* between commitment and no commitment in Study 2, the magnitude was small (less than a third of a standard deviation). In all regressions, we controlled for levels of education. Randomization tests can be found in Appendix A (see Tables 10, 11, and 12).[16]

Table 4 presents the correlations between the probability of carrying a donor card before the experiment and various individual characteristics. Table 4 reports the sign and magnitude of each variable, using ordinary least-squares (OLS) estimations. In both studies, as expected, better attitudes and a better level of informedness are associated with higher donor registration rates before the experiment. Overall, an increase of one standard deviation in the attitude and informedness scale (S.D.= 0.94 and S.D.=1.59,

[16]In Appendix A, we explain why the difference in mean for the variable *Feel informed* between the commitment and no-commitment conditions does not affect the estimated coefficient on commitment. We also explain why this should not affect the validity of the results.

respectively) is associated with an increase of 4.5 percentage points for attitude and 7.8 percentage points for informedness in the probability of having a donor card before the experiment.

The registration rate for male participants is lower, about 8 percentage points less than that for female participants. Participants who had given blood at least once in their life were 16–26 percentage points more likely to be carrying a donor card. Students were also more likely (about 7.4 percentage points) to be organ donors than non-student participants. Finally, none of the big-five personality dimensions—extroversion, agreeableness, conscientiousness, stability, and openness, as measured in Gosling et al. (2003)—is associated with higher registration rates.

Table 4: Likelihood of carrying an organ donor card before the experiment.

	Study 1	Study 2	Both studies
Attitude	0.047**	0.048***	0.048***
	(0.019)	(0.018)	(0.013)
Feel informed	0.058***	0.039***	0.049***
	(0.009)	(0.012)	(0.007)
Altruism	-0.008	0.032*	0.010
	(0.014)	(0.018)	(0.011)
Male	-0.072**	-0.089**	-0.083***
	(0.030)	(0.036)	(0.023)
Ever given blood (=1)	0.157***	0.263***	0.211***
	(0.050)	(0.062)	(0.039)
Student (=1)	0.083**	0.058	0.074***
	(0.032)	(0.038)	(0.025)
Extroversion	-0.017	-0.016	-0.016
	(0.014)	(0.016)	(0.010)
Agreeableness	0.004	-0.011	-0.003
	(0.015)	(0.019)	(0.012)
Conscientiousness	-0.021	-0.014	-0.020*
	(0.015)	(0.016)	(0.011)
Stability	-0.013	-0.018	-0.015
	(0.012)	(0.015)	(0.009)
Openess	0.013	0.000	0.009
	(0.015)	(0.016)	(0.011)
R^2	0.178	0.184	0.174
Observations	502	406	908

Notes: The dependent variable is 1 if the individual reported carrying an organ donor card before the experiment, and 0 otherwise. The table reports OLS regressions with robust standard errors. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

4 Results

In the first survey, distributed on the Monday, participants were asked to indicate whether they already had a donor card before the experiment. This allows 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). Because the results do not depend on the choice of the sample, we hereafter present the results for the restricted sample; the results for the full sample can be found in Appendix A.

4.1 Effects of reflection

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 reflection treatment reduces the fraction of participants signing a donor card: more than 16% in the control condition against 10% in the reflection treatment.

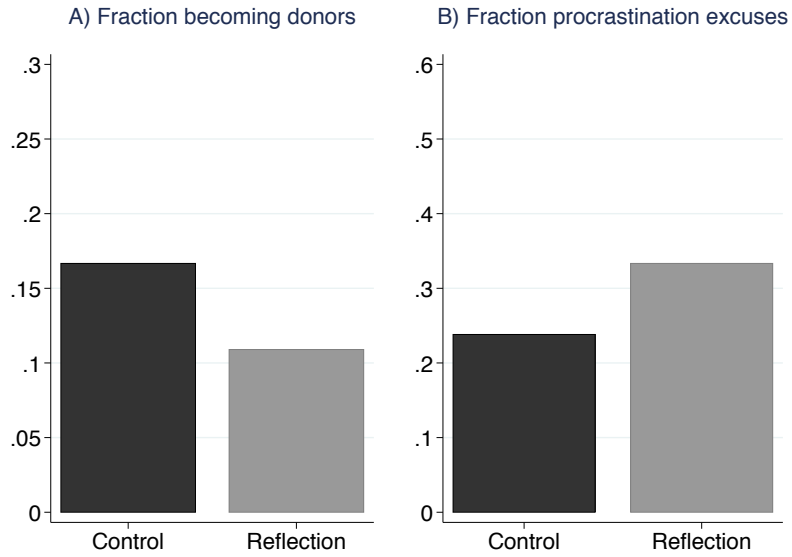

Figure 1: Effect of reflection on donor registration rates and procrastination reasons (Study 1). **(A)** Fraction of participants signing a donor card to become a donor. **(B)** Fraction of participants giving a procrastination reason.

We estimated 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 ranging from 7.2–9.6 percentage points compared with the control condition ($p = 0.030$ and $p = 0.011$).[17]

This decrease is sizable and represents about 40% of the rate in the control condition. The seatbelt treatment also decreases registration rates, by 2.3–3.3 percentage points, but not significantly ($p = 0.485$, column 1). The information flyer distributed to half of the participants had a positive effect on registration rates that remains marginally significant ($p = 0.073$) when controlling for many individual characteristics (column 2).

While we cannot argue that the reflection treatment produces a different effect from the seatbelt treatment ($p = 0.160$), the data provide clear evidence that reflection reduces registration rates relative to the control condition.

In addition, an F-test rejects the null hypothesis that the average registration rate is the same in the reflection, seatbelt, and control conditions ($p = 0.089$ and $p = 0.037$, columns 1 and 2 in Table 5).

In the description of the treatments, we discussed the possibility that SDB could affect our estimates. One may worry that SDB is stronger in the reflection treatment, because participants are asked explicitly to think about organ donation and so may perceive that being an organ donor is the right thing to do. If this were true, we would observe over-reporting of registration rates in reflection compared to the control. The negative effect of reflection would then be underestimated.

Apart from the treatment effects, some individual characteristics are positively correlated with registration rates, such as feeling informed about and having positive attitudes towards organ donation. Moreover, males are less likely to become donors by 13.1 percentage points ($p < 0.01$), which is in line with the data on participants who carried a donor card before the experiment (see Table 4).

[17]Table 15 in Appendix A presents the results of OLS regressions on the sample including participants carrying a donor card before the experiment. We treat the participants who reported carrying a donor card before the experiment as organ donors if they did not indicate a change of status in the second survey. The table shows that the effect of reflection on the probability of becoming an organ donor is weakened, but is marginally significant ($p = 0.06$).

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

	Became a donor		Procrastination	
	(1)	(2)	(3)	(4)
Reflection	-0.072**	-0.096**	0.092	0.101
	(0.032)	(0.037)	(0.071)	(0.071)
Seatbelt	-0.023	-0.033	0.085	0.091*
	(0.032)	(0.035)	(0.055)	(0.054)
Flyer	0.038	0.059*	-0.002	-0.002
	(0.029)	(0.033)	(0.052)	(0.052)
Male	-0.131***	-0.136***	-0.068	-0.037
	(0.034)	(0.033)	(0.041)	(0.047)
Feel informed		0.033***		-0.012
		(0.011)		(0.016)
Attitude		0.065***		0.006
		(0.021)		(0.027)
Altruism		0.003		0.020
		(0.015)		(0.029)
Constant	0.234**	-0.010	0.548***	0.293
	(0.089)	(0.191)	(0.082)	(0.232)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
P-value $H_0 : R = SB = C$	0.089	0.037	0.240	0.182
R^2	0.102	0.173	0.044	0.081
# Clusters	74	74	74	74
Observations	476	423	476	423

Notes: The dependent variable in (1)–(2) is 1 if the individual signed a card and decided to become an organ donor, and 0 otherwise. The dependent variable in (3)–(4) is 1 if the individual reported a procrastination reason for her decision, and 0 otherwise. OLS regressions with standard errors clustered at the course level in parentheses. 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 for the reflection (R), seatbelt (SB), and control (C) treatments, that is, H_0: $R = SB = C$. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

We now turn to the effects of treatments on procrastination. Panel B of Figure 1 depicts the mean frequency of the dummy variable *Procrastination*. It can be seen that, overall, roughly 30% of the participants reported a reason that falls into this category. The effect of reflection is not significantly different compared with the control ($p = 0.200$ and $p = 0.162$, columns 3 and 4 in Table 5).

The results of Study 1 show that reflection reduces registration rates by almost half. In addition, reflection has no effect on the type of reasons provided by an individual for his or her behavior, or on procrastination.

4.2 Effects of POS and NEG

In Study 2, we implemented two additional conditions, POS and NEG, as well as reflection. The average registration and procrastination rates in each treatment are shown in Figure 2. The left panel shows that, as expected, the NEG treatment leads to lower donor registration rates (15%) than the POS treatment (21%), while the reflection treatment gives a rate between these two (16%).

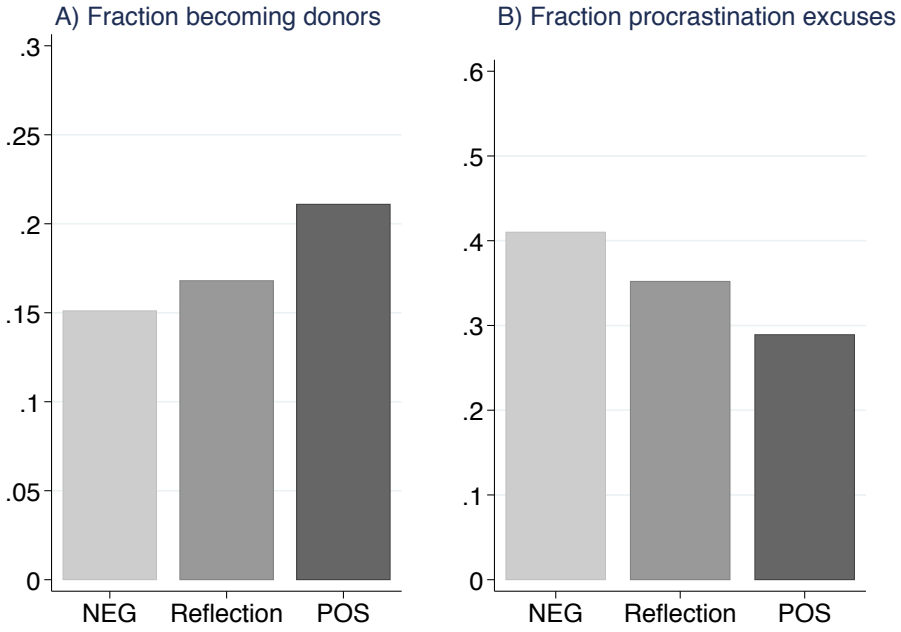

Figure 2: Effect of POS and NEG on donor registration rates and procrastination reasons (Study 2). **(A)** Fraction of participants signing a donor card to become a donor. **(B)** Fraction of participants giving a procrastination reason.

Table 6 presents the coefficients of the OLS regressions. Compared with standard reflection, POS and NEG have no statistically significant effect on donor registration rates, as shown in columns 1 and 2. An F-test suggests that conditions POS and NEG do not produce significantly different outcomes ($p = 0.345$ and $p = 0.329$).

As for the effects on procrastination, POS and NEG are not statistically different from the standard reflection (see columns 3 and 4). The results are not statistically significant, even if in line with the hypothesis based on the Query Theory (Johnson et al., 2007) described in Subsection 2.5.

As explained in Subsection 2.4, we were concerned that stimulating reflection by taking the perspective of someone in need of an organ (in the reflection treatment, see Appendix A) may have raised image concerns or hinted to the participants that becoming a donor is the right thing to do. In the commitment treatment of Study 2, the Monday survey asked participants to answer the question "Do you want to become an organ donor?" on the spot (see Subsection 2.5).

We compared the mean of the "Yes" responses in the reflection treatment to those in the POS and NEG conditions, because POS and NEG stimulated reflection without the empathy framing. The average willingness to become a donor on the spot was 58.3%, 59.5%, and 55.5% for reflection, POS, and NEG, respectively. The F-test cannot reject the hypothesis that these means are equal ($F = 0.11$, $p = 0.89$). This suggests that the solicitation of empathy did not have an effect on the willingness to become an organ donor on the spot.

4.3 Effects of commitment

Figure 3 presents the effect of commitment on outcomes (i) and (ii) measured on the Thursdays. Panel A shows that commitment leads to an increase in reported registration rates of 2.2 percentage points, but the OLS regressions reported in Table 6 suggest that the positive effect of commitment on registration rates is statistically insignificant ($p = 0.320$ and $p = 0.321$, see columns 1 and 2).

Of those who checked the "Yes" box in the commitment condition (50.3%), only 37% actually fulfilled their commitment, pushing the registration rate by only 2.2–4.7 percentage points above the no-commitment condition. In contrast, 98% of participants who indicated that they did not wish to become a donor stuck with this decision.

The registration rate in the reflection treatment in Study 2 is somewhat larger than that in Study 1. To test whether this difference is statistically significant, we compared the donor registration rate following reflection on the information flyer in Study 1 (11.3%) with that following reflection on the information flyer and without the commitment nudge in Study 2 (19.6%). We selected comparable groups (in fact, the information flyer was given to all participants on Mondays in Study 2). A t-test reveals that this difference is not statistically significant ($p = 0.22$).

The difference may be the result of a slightly different sample (the studies did not take place at the same time), with participants taking the reflection treatment in Study 2 having significantly better attitudes (+0.275, $p = 0.052$) than participants taking the same treatment in Study 1. Table 17 in Appendix A indicates that the overall effect of reflection remains negative and significant when observations from both studies are included simultaneously to estimate the coefficient.[18]

Regarding the effect of commitment on procrastination, columns 3 and 4 in Table 6 demonstrate that commitment reduces the incidence of procrastination reasons by 17.5–19.4 percentage points. This decrease is sizable and significant ($p < 0.01$ in all specifications). This result suggests that, although commitment has no effect on registration outcomes, it is effective at reducing procrastination-type reasons.[19] This finding is consistent with the evidence that most individuals have self-control problems that can be overcome by imposing a deadline or forcing a decision (Ariely and Wertenbroch, 2002; Ashraf et al., 2006; Kaur et al., 2010).

To further support the effect of commitment on procrastination, we performed two robustness checks. Table 13 in Appendix A shows that the effect of commitment on procrastination is mainly dependent on the reduction of two types of procrastination

[18] All regressions in Table 17 include observations from Study 1 and Study 2. They show the effect of reflection when the reference group is (i) the control group without the information flyer in Study 1 (columns 1 and 2), (ii) the control group with the information flyer in Study 1 (columns 3 and 4), and (iii) the control group without the information flyer in Study 1, but excluding participants in the POS and NEG groups (columns 5 and 6).

[19] Table 16 in Appendix A presents the results of OLS regressions on the sample including participants with a donor card before the experiment. This table indicates that the effect of commitment on procrastination is weakened, but remains negative and strongly significant ($p < 0.01$).

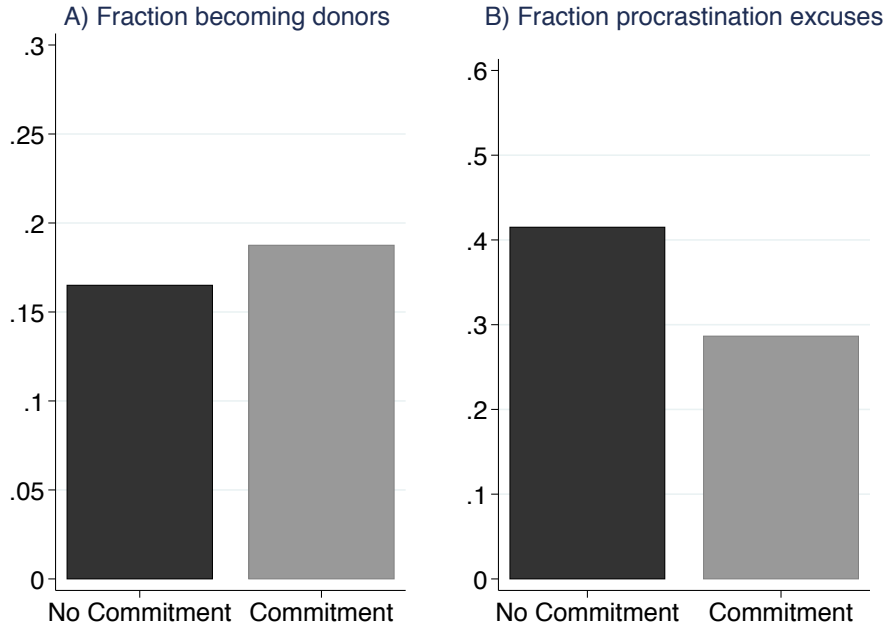

Figure 3: Effect of commitment on donor registration rates and procrastination reasons (Study 2). **(A)** Fraction of participants signing a donor card to become a donor. **(B)** Fraction of participants giving a procrastination reason.

reasons: shortage of time—"Did not have time to think/do"—(columns 1 and 2) and the "need to think more" about the decision (columns 3 and 4). Finally, the exclusion of one item at a time from the three items that define the procrastination dummy variable does not affect the sign nor the significance of the effect of commitment on procrastination (Table 14 in Appendix A).

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

	Became a donor		Procrastination	
	(1)	(2)	(3)	(4)
Commitment	0.047	0.048	-0.175***	-0.194***
	(0.047)	(0.048)	(0.054)	(0.061)
POS	0.043	0.090	-0.088	-0.110
	(0.056)	(0.063)	(0.061)	(0.070)
NEG	-0.025	0.028	0.006	-0.015
	(0.050)	(0.054)	(0.068)	(0.072)
Male	-0.092**	-0.059	-0.028	-0.035
	(0.045)	(0.049)	(0.058)	(0.069)
Feel informed		0.014		-0.007
		(0.013)		(0.016)
Attitude		0.107***		0.001
		(0.024)		(0.033)
Altruism		0.001		0.022
		(0.026)		(0.036)
Constant	0.309***	-0.465**	0.605***	0.687**
	(0.089)	(0.211)	(0.104)	(0.278)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
P-value $H_0 : POS = NEG$	0.345	0.363	0.159	0.174
R^2	0.034	0.156	0.105	0.129
# Clusters	61	61	61	61
Observations	376	332	376	332

Notes: OLS regressions with standard errors clustered at the course level in parentheses. The dependent variable in columns 1 and 2 is 1 if the individual signed a card and decided to become an organ donor, and 0 otherwise. The dependent variable in columns 3 and 4 is 1 if the individual reported a procrastination reason for her decision, and 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 the averages are the same in conditions POS and NEG, that is, H_0: $POS = NEG$. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

4.4 Heterogeneous treatment effects

The results presented above cast doubt on the effectiveness of reflection and commitment to increase organ donor registration rates, at least for the average individual. In this subsection, we show that average effects mask some interesting heterogeneity in response to experimental conditions.

Previous research has found that individuals who are more likely to become organ donors are more aware about and have better attitudes towards organ donation, and are more altruistic (see, e.g., Morgan and Miller, 2002). This motivates us to look for interaction effects between the treatment dummies and *Feel informed*, *Attitude*, and *Altruism*.

Feel informed is a measure of awareness about organ donation.[20] In Figure 4, we observe that participants in the control group who feel more strongly that they are sufficiently informed about organ donation (those with *Feel informed* levels of 5, 6, or 7) are more likely to become organ donors than those with lower levels of awareness in the control group, as expected from previous research.

The surprising observation from Figure 4 is that while 32.7% of the participants in the control group with *Feel informed* levels of 5, 6, or 7 become organ donors, the percentage reduces to only 14% for participants with similar levels of awareness in the reflection treatment (t-test, $p = 0.024$). No significantly different behavior is observed between the control and reflection treatment for participants with lower *Feel informed* levels.

Table 7 summarizes the regression results, where we have controlled for some relevant covariates and treated the variable *Feel informed* as continuous. The regression analysis confirms the findings that emerged from Figure 4. The effect of reflection on the probability of becoming a donor varies with *Feel informed*. The coefficient of the interaction with *Feel informed* is negative (-0.056) and significant (column 2, $p = 0.016$). We do not find any significant interaction effect between the reflection treatment with *Altruism*[21] or with *Attitude*, as shown by the OLS regressions reported in Table 7.[22]

Individuals with high *Feel informed* levels also react differently to the seatbelt treatment

[20]These variables are described in Subsection 3. As already discussed, the variables *Feel informed* and *Attitude* were measured in both the Monday and Thursday surveys; in the analysis, we use the measures from the Monday survey.

[21]We do not find significant heterogeneous effects even when we use the dummy variable *Blood* as a proxy for *Altruism*. *Blood* indicates whether a subject has ever donated blood.

[22]We have also estimated a model that contains interaction terms with all three variables (*Feel informed*, *Attitude*, and *Altruism*). We do not report this regression because the reference group, consisting of subjects with low altruism, low attitude, and low informedness, is very small. Overall, only 16 individuals display altruism values below 4, and of these 16, only 4 are in the control group, with the remainder taking the reflection and seatbelt treatments. Therefore, the coefficients are poorly estimated. Additionally, *Feel Informed*, *Attitude*, and *Altruism* are highly correlated.

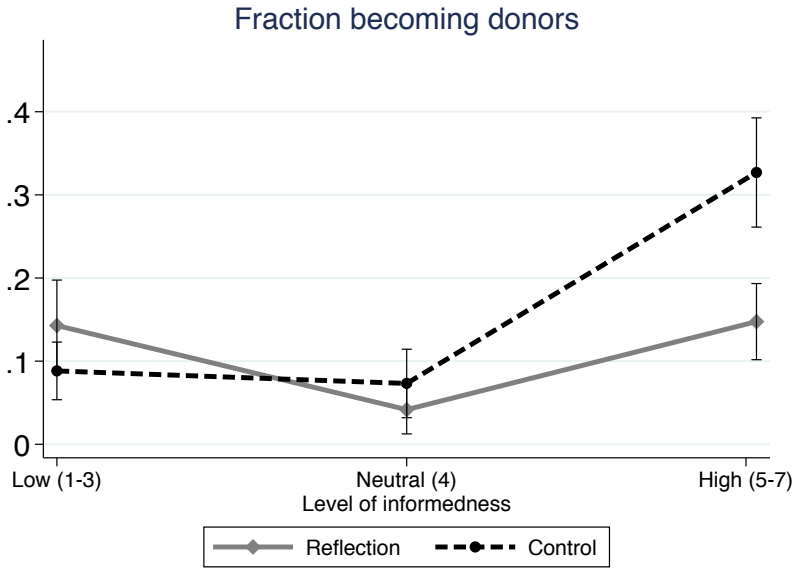

Figure 4: Fraction of individuals becoming donors, by self-assessment of informedness about organ donation on a 7-point Likert scale (*Feel Informed*) collapsed into "low" (1–3), "neutral" (4), and "high" (5–7) for Study 1 participants in the reflection treatment and control. The bars indicate plus/minus one standard error from the mean.

compared with those with low levels, as shown in Table 7. The interaction term is also negative and marginally significant (column 2, $p = 0.068$ and column 4, $p = 0.098$). In our experiment, reflection overcomes a proxy for intrinsic motivation towards becoming an organ donor: reflection undoes the entire difference in the probability of becoming a donor between highly informed and less informed individuals. This is a surprising result, which to our knowledge has never before been documented.

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

	Became a donor		
	(1)	(2)	(3)
Reflection	0.172	0.142	0.181
	(0.163)	(0.101)	(0.268)
Seatbelt	0.229	0.161*	0.187
	(0.180)	(0.096)	(0.237)
Reflection × Altruism	-0.046		
	(0.030)		
Seatbelt × Altruism	-0.045		
	(0.033)		
Reflection × Feel informed		-0.056**	
		(0.023)	
Seatbelt × Feel informed		-0.046*	
		(0.025)	
Reflection × Attitude			-0.048
			(0.050)
Seatbelt × Attitude			-0.038
			(0.045)
Altruism	0.032	0.003	0.002
	(0.023)	(0.014)	(0.013)
Feel informed	0.032***	0.064***	0.032***
	(0.011)	(0.014)	(0.011)
Attitude	0.051***	0.050**	0.079**
	(0.019)	(0.019)	(0.037)
Male	-0.122***	-0.119***	-0.122***
	(0.034)	(0.035)	(0.034)
Constant	-0.255*	-0.217	-0.240
	(0.151)	(0.136)	(0.191)
Education, age	Yes	Yes	Yes
P-value $H_0 : R \times Informed = SB \times Informed = Control \times Informed$		0.034	
R^2	0.153	0.162	0.152
# Clusters	74	74	74
Observations	448	448	448

Notes: OLS regressions with standard errors clustered at the course level in parentheses. The dependent variable is 1 if the individual signed a card and decided to become an organ donor, and 0 otherwise. At the bottom of the table, the P-value is reported for the test of the null hypothesis that the interaction terms of treatments with levels of informedness are equal, that is, H_0: R (Reflection) × Feel Informed = SB (Seatbelt) × Feel informed = C (Control) × Feel informed. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

To better understand the relationship between reflection, the willingness to become a donor, and awareness about organ donation, we explored the effect of reflection (and seatbelt) on the difference between the measure for *Feel informed* reported on the Thursday and that reported on the Monday at the individual level. The difference can be measured by the variable denoted as *Feel informed*$_2$ – *Feel informed*$_1$, and the results are presented in Table 8.

Table 8: Effects of reflection on *Feel informed*$_2$–*Feel informed*$_1$ for those who do not choose to be organ donors in Study 1

	Overall		*Feel informed*$_1 \leq 4$		*Feel informed*$_1 > 4$		*Feel informed*$_1 > 5$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reflection	-0.347*	-0.465**	-0.091	-0.173	-0.657**	-0.850***	-1.003**	-1.337***
	(0.197)	(0.211)	(0.174)	(0.192)	(0.324)	(0.288)	(0.401)	(0.394)
Seatbelt	-0.187	-0.206	0.070	-0.079	-0.357	-0.163	-0.113	-0.095
	(0.155)	(0.157)	(0.201)	(0.207)	(0.255)	(0.267)	(0.293)	(0.333)
Flyer	-0.051	0.027	-0.070	-0.038	-0.285	-0.313	-0.451	-0.651*
	(0.157)	(0.158)	(0.155)	(0.166)	(0.250)	(0.257)	(0.306)	(0.350)
Male	0.254	0.252	0.423**	0.451**	0.084	0.108	0.087	-0.128
	(0.153)	(0.182)	(0.188)	(0.204)	(0.225)	(0.255)	(0.270)	(0.302)
Attitude		0.100		0.140		0.192		0.089
		(0.123)		(0.140)		(0.185)		(0.198)
Altruism		-0.002		0.119		0.000		0.213
		(0.098)		(0.129)		(0.136)		(0.197)
Constant	0.911**	-0.084	0.328	-2.352**	0.546	-0.089	0.680	-0.045
	(0.367)	(0.921)	(0.505)	(1.158)	(0.547)	(1.280)	(0.778)	(1.536)
Education, age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes	No	Yes	No	Yes
P-value $H_0 : R = SB$	0.446	0.253	0.433	0.667	0.354	0.026	0.030	0.001
R^2	0.034	0.070	0.035	0.091	0.097	0.227	0.230	0.428
# Clusters	74	74	68	68	60	56	47	43
Observations	395	357	257	235	138	122	77	69

Notes: OLS regressions with standard errors clustered at the course level in parentheses. The dependent variable is the difference in levels of informedness, *Feel informed*$_2$ – *Feel informed*$_1$, between the measures obtained on the Monday and the Thursday. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

For the subsample of individuals who chose to remain non-donors, reflection significantly reduces *Feel informed*$_2$–*Feel informed*$_1$ compared with the control group (see Table 8, $p = 0.083$ for column 1 and $p = 0.025$ for column 2); this effect is driven by those with *Feel informed*$_1$ greater than 4 (column 5, $p = 0.047$ and column 6, $p = 0.048$) and the effect is even greater for those with values greater than 5 (column 7, $p = 0.016$ and column 8, $p < 0.01$).

It is possible that participants choosing not to become donors feel the need to justify their choice to the experimenter or to themselves by reporting that they do not feel more informed about organ donation; however, if this explanation were true, we would observe the same behavior in the control group, a hypothesis that is not supported by the data.[23]

Overall, reflection reduces awareness about organ donation compared with the control

[23]In fact, levels of informedness increased in all conditions, with the increase being significant in the control (0.44, t-test $p < 0.01$) and seatbelt (0.219, t-test $p = 0.06$) treatments, but insignificant in the reflection treatment (0.128, t-test $p = 0.44$).

group. The actual provision of information with the flyer treatment in Study 1 has no effect on *Feel informed*$_2$ – *Feel informed*$_1$ compared with the no-flyer treatment. We controlled this result using the subsample of participants in the reflection treatment, and compared those who received the flyer with those who did not. In both cases, the flyer has no effect on *Feel informed*$_2$ – *Feel informed*$_1$ for those who remained non-donors and those who became donors.[24]

In Table 9, we present the heterogeneous responses to the commitment, POS, and NEG treatments. There are no significant interaction effects between either *Altruism*, *Attitude*, or *Feel informed* and commitment on the probability of becoming a donor. Except for a marginally significant coefficient of interaction for commitment with *Altruism*, none of the coefficients of interaction terms is significant (see columns 1–3), suggesting that participants did not respond differently to commitment depending on these selected characteristics. As for the interactions with POS and NEG, none of the coefficients for POS or NEG is significant and no difference between POS and NEG could be detected.

[24]The results on the effect of *flyer* are omitted, but available upon request.

Table 9: Effects of commitment on registration rates interacting with altruism and informedness

	Became a donor		
	(1)	(2)	(3)
Commitment	-0.385	-0.021	-0.264
	(0.231)	(0.110)	(0.198)
POS	-0.332	0.183	-0.276
	(0.338)	(0.145)	(0.290)
NEG	-0.312	0.006	-0.180
	(0.291)	(0.110)	(0.243)
Commitment × Altruism	0.078*		
	(0.042)		
POS × Altruism	0.076		
	(0.060)		
NEG × Altruism	0.059		
	(0.052)		
Commitment × Feel informed		0.016	
		(0.028)	
POS × Feel informed		-0.021	
		(0.030)	
NEG × Feel informed		0.004	
		(0.029)	
Commitment × Attitude			0.056
			(0.041)
POS × Attitude			0.067
			(0.059)
NEG × Attitude			0.034
			(0.049)
Altruism	-0.067	0.011	0.008
	(0.044)	(0.025)	(0.026)
Feel informed	0.013	0.012	0.014
	(0.012)	(0.025)	(0.012)
Attitude	0.101***	0.107***	0.049
	(0.024)	(0.023)	(0.042)
Male	-0.062	-0.070	-0.065
	(0.045)	(0.046)	(0.046)
Constant	0.058	-0.391*	-0.060
	(0.276)	(0.214)	(0.248)
Education, age	Yes	Yes	Yes
R^2	0.136	0.125	0.129
# Clusters	61	61	61
Observations	353	353	353

Notes: OLS regressions with standard errors clustered at the course level in parentheses. The dependent variable is 1 if the individual signed a card and decided to become an organ donor, and 0 otherwise. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

5 Discussion

Our main finding is the statistically significant negative effect of reflection, compared to the control group, on the decision to act in a prosocial manner in the context of organ donation. Indeed, this effect is more negative for those participants who felt they were sufficiently informed about organ donation.

A plausible explanation for the effect of reflection on organ donor rates is provided by TMT (see Greenberg et al., 1986; Hirschberger et al., 2008), which 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. Prosociality boosts the sense of belonging to something greater that can outlive the individual, and reduces the anxiety caused by the inevitability of death (see Greenberg et al., 1986). However, TMT also predicts that when an individual is presented with the thought of her own physical death, mortality salience disrupts the terror management processes and reduces the probability of engaging in prosocial behavior.

In their study, Hirschberger et al. (2008) showed that the simple question of whether to register as an organ donor can disrupt the terror management process more than a request for donations to a charitable organization. In their experiment, death primes were generated by an explicit request to think about death.

It was found that death primes reduce the probability to register as an organ donor compared to a control condition in which participants were asked to think about pain; these same death primes, however, increase donations to the charitable organization compared to the same control condition. In summary, making mortality salient acts to increase prosocial behavior such as donating to a charity, but does not work to increase organ donor registration rates.

Similar conclusions have been reported by the psychologist Sanner (1994) and in a recent paper by Morgan et al. (2008a). Sanner studied how people react to procedures

involving a dead body, such as autopsy, organ donation, dissection, and cremation, and found that those who are willing to donate their organs are more positive towards autopsy, dissection, and cremation.

Morgan et al. (2008a) surveyed more than 4,000 participants in the US to find which factors correlated with the decision to sign an organ donor card. They found that non-cognitive beliefs such as how much one values protecting their own body, fear, and disgust regarding organ procurement are negatively associated with the donor card status. They also found that these non-cognitive beliefs are negative predictors of knowledge and attitudes about organ donation, suggesting that information about organ donation is selectively processed through non-cognitive factors. This is consistent with the observation reported in Subsection 4.4 concerning the crowding out effect of reflection on the levels of *Feel informed*.

Our reflection treatment may have acted in a similar manner as the death primes in Hirschberger et al. (2008), and may have triggered those non-cognitive factors associated with a reduced willingness to become an organ donor in comparison to the control condition. These beliefs may have made the decision to become an organ donor very costly. To a lesser extent, the seatbelt treatment may also have triggered thoughts about death, resulting in a lower probability of registering as an organ donor.

As for the other results, we did not find significant effects for the POS and NEG treatments.

Regarding the commitment nudge after stimulating reflection, we observed 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 donors on the Monday when solicited by the commitment nudge, but had not followed through with their decision on the Thursday.

The commitment nudge used in Study 2 was not very strong, being just a question with no legal implications, and this may have reduced the power of the nudge.

Nevertheless, commitment does produce an effect. Without the commitment nudge,

individuals made up excuses for not making a decision or for choosing not to be a donor (45% of the participants). When nudged to make a decision on the Monday, we observed that, three days later, the participants did not use procrastination reasons as frequently (less than 28%). Thus, this type of commitment nudge helps individuals to make up their minds, but does not necessarily imply higher or more socially desirable outcomes. One interpretation of these findings is that the negative effect of reflection crowds out any possible benefits from the use of a commitment nudge to increase organ donation rates.

6 Concluding Remarks

In two field experiments, we asked people to reflect on organ donation. Reflection reduced their propensity to become organ donors compared with the control condition in which reflection was not explicitly stimulated. The analysis of heterogeneous responses to reflection has demonstrated that reflection is particularly detrimental to the responses of individuals with higher awareness about organ donation.

Our results suggest that sensitization campaigns aimed at increasing organ donation may not work as intended, and may require testing and appropriate framing before being launched. We also took a first step towards understanding how to design effective enrollment mechanisms to increase organ donor registration rates. Other research has shown that AD has a strong impact on choices. We have shown that reflection has a negative effect on organ donor registration rates and that, as far as AD stimulates reflection, this may be one of the reasons why AD is not always effective in increasing organ donor registration rates.

It is possible that stimulating reflection could have a different effect on other decisions, for example, the decision to invest in retirement plans. Such comparisons would help in the design of effective policies to pursue different social goals. This study raises a question for future research: How do reflection and reduced procrastination interact while affecting preference formation on a topic? Field experiments have proven to be a

valuable instrument in answering such questions.

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Appendix A: Additional tables

Randomization tests

We selected measures that previous evidence suggests may be correlated with the decision to become an organ donor and performed tests to check the randomization with respect to the treatments. The mean and standard deviation of the relevant variables are displayed in Table 10 for the reflection, seatbelt, and control treatments, in Table 11 for commitment and no commitment, and in Table 12 for POS, NEG, and reflection. We report the F-test and the P-value to compare the different conditions in each study across these measures. Specifically, we tested for differences in attitudes towards organ donation, subjective level of information, proportion of males, age, at least one donation of blood, an index for altruism, and many dummy variables for education.

In Table 10, the binary variable *Ever given blood* (=1 if have donated blood at least once, 0 otherwise) reveals some weak imbalance between conditions ($p < 0.10$, see Table 10). However, this variable does not have an impact on any of the outcome variables, and 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 Table 11, all individual variables except *Feel informed* are well balanced between conditions. Participants in the commitment condition evaluated themselves as 0.5 points 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 the standard deviation. Our results should not be affected for the following reasons. First, including this variable as a control in the regressions accounts for the difference between conditions. We show that it does not affect the estimated coefficient of commitment (see columns 2 and 4 in Table 6). Second, this variable positively affects registration rates, and so the bias, if any, would be to overestimate the effect of commitment on registration rates.

The unbiased estimate would be even lower than that reported here, which is already insignificant.

Regarding education dummies in Table 11, a t-test shows that *Mandatory school* suffers some imbalance, 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 10: Randomization tests in Study 1 (reflection)

	Reflection		Seatbelts		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	5.572	(0.927)	5.686	(0.940)	5.593	(0.898)	0.807	0.447
Attitude	5.625	(0.885)	5.512	(0.933)	5.617	(0.950)	0.884	0.414
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 final columns report the F-tests and P-values for testing the equality of means across conditions.

Table 11: Randomization tests in Study 2 (commitment)

	Commitment		No commitment		Test	
	Mean	S.D.	Mean	S.D.	F stat	P-value
Male	0.506	(0.501)	0.483	(0.501)	0.255	0.614
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	5.634	(0.890)	5.493	(0.953)	2.738	0.099
Attitude	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 final columns report the F-tests and P-values for testing the equality of means across conditions.

Table 12: Randomization tests in Study 2 (reflection, POS, and NEG)

	Reflection		Positive first		Negative first		Test	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	F stat	P-value
Male	0.455	(0.500)	0.549	(0.499)	0.482	(0.501)	1.455	0.234
Age	22.520	(6.098)	21.101	(5.051)	22.458	(6.565)	3.231	0.040
Student (=1)	0.304	(0.462)	0.397	(0.491)	0.355	(0.480)	1.446	0.237
Altruism	5.703	(0.917)	5.516	(0.915)	5.487	(0.927)	2.478	0.085
Attitude	5.785	(0.875)	5.427	(0.992)	5.467	(0.994)	6.947	0.001
Feel informed	4.546	(1.703)	4.047	(1.543)	4.240	(1.454)	3.597	0.028
Ever given blood (=1)	0.175	(0.381)	0.164	(0.372)	0.135	(0.343)	0.547	0.579
Education, highest degree:								
Mandatory school	0.513	(0.501)	0.608	(0.490)	0.453	(0.499)	3.994	0.019
Vocational training	0.128	(0.335)	0.118	(0.323)	0.233	(0.424)	4.360	0.013
High school	0.141	(0.349)	0.111	(0.315)	0.174	(0.381)	1.345	0.261
Applied university	0.045	(0.208)	0.026	(0.160)	0.023	(0.151)	0.604	0.547
University	0.064	(0.246)	0.072	(0.259)	0.029	(0.168)	2.055	0.129
Other/Missing	0.109	(0.313)	0.065	(0.248)	0.087	(0.283)	0.941	0.391
Observations	156		153		172		481	

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

Robustness checks for the effect of commitment on procrastination

Table 13: Effects of commitment on different procrastination items

	No Time		Think more		Later	
	(1)	(2)	(3)	(4)	(5)	(6)
Commitment	-0.164***	-0.172***	-0.093**	-0.086*	-0.017	-0.025
	(0.041)	(0.045)	(0.040)	(0.045)	(0.024)	(0.027)
POS	-0.011	0.006	-0.112**	-0.143**	-0.011	-0.011
	(0.046)	(0.054)	(0.051)	(0.062)	(0.028)	(0.031)
NEG	0.013	0.022	-0.035	-0.070	-0.030	-0.035
	(0.047)	(0.050)	(0.053)	(0.060)	(0.031)	(0.036)
Male	0.007	-0.005	-0.061	-0.089	0.002	-0.001
	(0.047)	(0.062)	(0.049)	(0.060)	(0.016)	(0.024)
Feel informed		-0.003		-0.026**		0.012
		(0.013)		(0.012)		(0.011)
Attitude		0.014		0.004		-0.016
		(0.020)		(0.025)		(0.014)
Altruism		-0.018		0.028		0.019**
		(0.030)		(0.025)		(0.009)
Constant	0.446***	0.249	0.315***	0.579**	0.039	0.016
	(0.088)	(0.199)	(0.095)	(0.233)	(0.050)	(0.100)
Education, age	Yes	Yes	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes	No	Yes
P-value $H_0 : POS = NEG$	0.646	0.786	0.088	0.123	0.534	0.462
R^2	0.086	0.105	0.058	0.091	0.021	0.052
# Clusters	61	61	61	61	61	61
Observations	376	332	376	332	376	332

Notes: OLS regressions with standard errors clustered at the course level in parentheses. 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 the averages are the same in conditions POS and NEG, that is, H_0: $POS = NEG$. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table 14: Effects of commitment on procrastination dummy excluding one item at a time

	Without Later		Without Think More		Without No Time	
	(1)	(2)	(3)	(4)	(5)	(6)
Commitment	-0.257***	-0.258***	-0.181***	-0.196***	-0.110**	-0.111*
	(0.060)	(0.070)	(0.043)	(0.049)	(0.052)	(0.056)
POS	-0.124	-0.137	-0.022	-0.005	-0.123*	-0.154**
	(0.075)	(0.089)	(0.048)	(0.058)	(0.062)	(0.075)
NEG	-0.022	-0.048	-0.017	-0.013	-0.065	-0.105
	(0.072)	(0.084)	(0.051)	(0.053)	(0.069)	(0.076)
Male	-0.054	-0.093	0.010	-0.006	-0.059	-0.090
	(0.074)	(0.094)	(0.052)	(0.069)	(0.054)	(0.066)
Feel informed		-0.029		0.009		-0.014
		(0.019)		(0.015)		(0.018)
Attitude		0.018		-0.003		-0.012
		(0.035)		(0.025)		(0.031)
Altruism		0.010		0.001		0.046*
		(0.048)		(0.031)		(0.025)
Constant	0.761***	0.828**	0.486***	0.265	0.355***	0.595**
	(0.146)	(0.340)	(0.102)	(0.228)	(0.112)	(0.263)
Education, age	Yes	Yes	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes	No	Yes
P-value $H_0 : POS = NEG$	0.190	0.286	0.925	0.885	0.370	0.472
R^2	0.091	0.108	0.093	0.114	0.061	0.091
# Clusters	61	61	61	61	61	61
Observations	376	332	376	332	376	332

Notes: OLS regressions with standard errors clustered at the course level in parentheses. 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 the averages are the same in conditions POS and NEG, that is, H_0: $POS = NEG$. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Robustness checks including individuals who were already donors prior to the experiment

Table 15: 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*	-0.067**	0.091	0.101
	(0.029)	(0.032)	(0.063)	(0.061)
Seatbelt	-0.012	-0.018	0.073	0.072
	(0.028)	(0.030)	(0.047)	(0.047)
Flyer	0.030	0.048*	0.004	0.004
	(0.025)	(0.028)	(0.046)	(0.045)
Already a card	0.780***	0.692***	-0.277***	-0.283***
	(0.032)	(0.041)	(0.033)	(0.042)
Male	-0.114***	-0.116***	-0.062*	-0.032
	(0.030)	(0.030)	(0.036)	(0.041)
Feel informed		0.029***		-0.013
		(0.011)		(0.015)
Attitude		0.067***		0.007
		(0.019)		(0.022)
Altruism		0.005		0.021
		(0.014)		(0.026)
Constant	0.176**	-0.119	0.505***	0.265
	(0.073)	(0.164)	(0.073)	(0.210)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
R^2	0.482	0.519	0.082	0.118
# Clusters	74	74	74	74
Observations	550	494	550	494

Notes: OLS regressions with standard errors clustered at the course level in parentheses. The dependent variable in columns 1 and 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 a donor or had a card before the experiment and did not change her status of being a donor, and 0 otherwise. The dependent variable in columns 3 and 4 is 1 if the individual reported a procrastination reason for her decision, and 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 16: 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	0.035	-0.147***	-0.154***
	(0.040)	(0.041)	(0.045)	(0.052)
POS	0.028	0.073	-0.073	-0.089
	(0.049)	(0.054)	(0.052)	(0.060)
NEG	-0.024	0.024	0.003	-0.017
	(0.041)	(0.045)	(0.057)	(0.062)
Already a card	0.809***	0.720***	-0.343***	-0.370***
	(0.030)	(0.042)	(0.048)	(0.053)
Male	-0.078*	-0.043	-0.027	-0.044
	(0.039)	(0.042)	(0.050)	(0.061)
Feel informed		0.012		-0.007
		(0.011)		(0.014)
Attitude		0.097***		-0.004
		(0.022)		(0.030)
Altruism		0.007		0.022
		(0.024)		(0.032)
Constant	0.304***	-0.357*	0.597***	0.586**
	(0.079)	(0.188)	(0.092)	(0.249)
Education, age	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes
P-value $H_0 : POS = NEG$	0.400	0.406	0.165	0.197
R^2	0.446	0.501	0.144	0.173
# Clusters	61	61	61	61
Observations	451	405	451	405

Notes: OLS regressions with standard errors clustered at the course level in parentheses. The dependent variable in columns 1 and 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 a donor or had a card before the experiment and did not change her status of being a donor, and 0 otherwise. Observations for participants who had a donor card before the experiment are also included in the regressions. Levels of significance: $*p < 0.1, **p < 0.05, ***p < 0.01$.

Robustness checks for the sample including observations from both studies

Table 17: Effects of treatments on donor registration rates, sample including both studies

	Combined		Only Flyer		Without POS & NEG	
	(1)	(2)	(3)	(4)	(5)	(6)
Reflection	-0.062*	-0.082**	-0.106*	-0.139**	-0.069**	-0.094**
	(0.034)	(0.038)	(0.061)	(0.068)	(0.033)	(0.038)
Seatbelt	-0.017	-0.030	-0.062	-0.089	-0.020	-0.033
	(0.033)	(0.036)	(0.055)	(0.063)	(0.033)	(0.036)
Flyer	0.027	0.047			0.029	0.055*
	(0.029)	(0.032)			(0.029)	(0.033)
Commitment	0.045	0.046	0.045	0.048	-0.029	-0.025
	(0.046)	(0.047)	(0.047)	(0.047)	(0.042)	(0.059)
POS	-0.015	0.003	-0.061	-0.051		
	(0.063)	(0.070)	(0.081)	(0.090)		
NEG	-0.090	-0.073	-0.131	-0.124		
	(0.060)	(0.064)	(0.079)	(0.087)		
Study 2 (= 1)	0.039	0.018	0.052	0.028	0.087**	0.064
	(0.048)	(0.052)	(0.058)	(0.062)	(0.042)	(0.052)
Male	-0.113***	-0.106***	-0.130***	-0.119***	-0.101***	-0.103***
	(0.028)	(0.029)	(0.034)	(0.037)	(0.032)	(0.032)
Feel informed		0.025***		0.020*		0.032***
		(0.009)		(0.010)		(0.010)
Attitude		0.088***		0.097***		0.072***
		(0.016)		(0.019)		(0.019)
Altruism		0.003		0.001		-0.003
		(0.014)		(0.018)		(0.015)
Constant	0.277***	-0.192	0.398***	-0.178	0.244***	-0.103
	(0.061)	(0.144)	(0.077)	(0.186)	(0.073)	(0.181)
Education, age	Yes	Yes	Yes	Yes	Yes	Yes
Blood, Personality	No	Yes	No	Yes	No	Yes
R^2	0.049	0.129	0.047	0.133	0.059	0.130
# Clusters	135	135	98	98	95	95
Observations	852	755	614	542	594	524

Notes: OLS regressions with standard errors clustered at the course level in parentheses. Columns 1 and 2 include all participants from Study 1 and Study 2, columns 3 and 4 include only those in Study 1 and Study 2 who received the information flyer, and columns 5 and 6 exclude participants in treatments POS and NEG. The dependent variable is 1 if the participant decided to become an organ donor, and 0 otherwise. Only observations for participants without a donor card before the experiment are included in the regressions. Levels of significance: $^*p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Appendix B: Surveys

The following pages present all the surveys distributed to the participants. The surveys have been translated from French. Survey A contains the treatment questions (e.g., << Reflection treatment >>) and was distributed on the Mondays. Survey B contains the questions for the outcome variables and was distributed on the Thursdays.

Survey A <<distributed on Monday>>

0. Is French your mother tongue?

☐ Yes ☐ No.
Please indicate your language: _____

1. Do you know what organ donation is?

☐ Yes ☐ No.
If No, please go to question 5.

2. Do you have an organ donor card?

☐ Yes
Since __ months or __ years.

☐ No
If No, please go to question 4.

3. If Yes, mark one or more reasons that made you sign a card:

☐ A family member advises me to sign one.
☐ A friend advises me to sign one.
☐ Following an advertisement on TV or in the street.
☐ Phone call from an organization.
☐ Following the advertisement campaign of *Swisstransplant*.
☐ At school/university or workplace.
☐ Other reason: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _.

4. The following questions deal with road traffic. How often do you fasten your seatbelt while you are driving a car or are the passenger of a car?

☐ Never
☐ Sometimes
☐ Most of the time
☐ Always

If « Never», please go to question 6.

5. If you fasten your seatbelt, please mark the best explanation in the following list. Because…

☐ It is the law.
☐ The fine is high.
☐ This increases the likelihood of surviving in case of an accident.
☐ I always fastened it.
☐ Other reason: _ _ _ _ _ _ _ _ _ _ _

6. If you **never** fasten your seatbelt, please mark the best explanation in the following list. Because…

☐ I don't like the law.
☐ I don't think the seatbelt is useful.
☐ I find it uncomfortable.
☐ My parents never fastened it.
☐ Other reason: _ _ _ _ _ _ _ _ _ _ _

7. Have you ever given blood?

☐ Yes. ☐ No.

8. Please indicate the extent to which you agree or disagree with the following statements.

To answer, please use the following scale:

0: No opinion
1: Disagree strongly
2: Disagree moderately
3: Disagree a little
4: Neither agree nor disagree
5: Agree a little
6: Agree moderately
7: Agree strongly

	Disagree strongly ↓ 1	2	3	4	5	6	Agree strongly ↓ 7	No opinion ↓ 0
I feel sufficiently informed about the topic of organ donation.	☐	☐	☐	☐	☐	☐	☐	☐
I view organ donation as a benefit to humanity.	☐	☐	☐	☐	☐	☐	☐	☐
I believe that organ donation is an act of compassion.	☐	☐	☐	☐	☐	☐	☐	☐
Organ transplantation is a unnatural procedure.	☐	☐	☐	☐	☐	☐	☐	☐
I see organ donation as a natural way to prolong life.	☐	☐	☐	☐	☐	☐	☐	☐
Having another person's organs would make me uncomfortable.	☐	☐	☐	☐	☐	☐	☐	☐
I view organ donation as a negative procedure.	☐	☐	☐	☐	☐	☐	☐	☐

9. Here are a number of personality traits that may or may not apply to you. Please indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the **pair of traits** applies to you, even if one characteristic applies more strongly than the other.

To answer, use the following scale

1: Disagree strongly
2: Disagree moderately
3: Disagree a little
4: Neither agree nor disagree
5: Agree a little
6: Agree moderately
7: Agree strongly

I see myself as:	Disagree strongly 1	2	3	4	5	6	Agree strongly 7
Extraverted, enthusiastic.	☐	☐	☐	☐	☐	☐	☐
Critical, quarrelsome.	☐	☐	☐	☐	☐	☐	☐
Dependable, self-disciplined.	☐	☐	☐	☐	☐	☐	☐
Anxious, easily upset.	☐	☐	☐	☐	☐	☐	☐
Open to new experiences, complex.	☐	☐	☐	☐	☐	☐	☐
Reserved, quiet.	☐	☐	☐	☐	☐	☐	☐
Sympathetic, warm	☐	☐	☐	☐	☐	☐	☐
Disorganized, careless.	☐	☐	☐	☐	☐	☐	☐
Calm, emotionally stable.	☐	☐	☐	☐	☐	☐	☐
Conventional, uncreative.	☐	☐	☐	☐	☐	☐	☐

<< REFLECTION TREATMENT >>

10. Organ donation is the donation by one person, generally deceased, of one or many organs to be transplanted on another person.

In Switzerland, half of the persons waiting for an organ received an organ in 2011. The other half is still waiting.

We would like you to think **about the following two questions** and to answer by writing 2-3 sentences.

Name two things that come to your mind about organ donation. Explain and describe each with a sentence.

Suppose that only organ transplantation can save your life. Name two things that come to your mind that would influence your decision to ask for organ transplantation. Explain and describe each with a sentence.

<< SEATBELT TREATMENT >>

10. The seatbelt has been first installed in Switzerland in 1959. It is mandatory in the majority of countries, including for passengers.

According to the Wealth Health Organization (WHO), in case of an accident, fastening the seatbelt reduces the risk of death in numerous cases.

We would like you to think **about the following two questions** and to answer by writing 2-3 sentences.

Suppose you are driving your car. Name two things that come to your mind about your decision to fasten or not to fasten your seatbelt. Explain and describe each with a sentence.

Suppose you are driving a car with a passenger next to you. Name two things that come to your mind about your passenger fastening his or her seatbelt. Explain and describe each with a sentence.

<< POS TREATMENT >>
<< (NEG is the reverse order of the following two questions) >>

10. Organ donation is the donation by one person, generally deceased, of one or many organs to be transplanted on another person.

In Switzerland, half of the persons waiting for an organ received an organ in 2011. The other half is still waiting.

We would like you to think **about the following two questions** and to answer by writing 2-3 sentences.

According to Swisstransplant, 15% of the Swiss population is an organ donor. Indicate, according to you, two reasons that influence the choice of these persons. Explain and describe each with a sentence.

According to Swisstransplant, 85% of the Swiss population is not an organ donor. Indicate, according to you, two reasons that influence the choice of these persons. Explain and describe each with a sentence.

<< COMMITMENT TREATMENT >>

Becoming or not becoming an organ donor is a decision that many keep putting off until later. We would like you to decide **now** whether to become or not become an organ donor. You may indicate your choice using the official donor card we gave you.

Think about it, do you want to become an organ donor?

☐ Yes.
☐ No.

Thank you for having fulfilled the survey! We need some additional information. The following information will be treated **confidentially** and **will not be disclosed**.

11. Gender: ☐ Male. ☐ Female.

12. Year of birth: 19_____

13. Marital status: ☐ Single ☐ Married
☐ Divorced ☐ Widowed

14. Please mark the highest degree you obtained:

☐ Mandatory school
☐ Vocational training certificate
☐ High school
☐ Applied university
☐ University/EPFL

15. What are you currently doing?

☐ I'm working.
☐ I'm studying.
☐ Vocational training.
☐ Other: _ _ _ _ _ _ _ _ _ _ _.

16. What degree are you currently studying for?

☐ Vocational training certificate
☐ High school
☐ Applied university
☐ University/EPFL
☐ Other: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Thank you very much for your time!

Survey B <<distributed on Thursday>>

1. Have you signed an organ donor card **since the first questionnaire distributed on Monday**?

   Yes, I signed a card… ☐ No, I did not sign a card.
   - ☐ I chose to become donor.
   - ☐ I chose **not** to become donor.

2. Whatever the decision you made, could you please explain it with a few words:

3. **If you signed a card**, did you inform a member of your family? If yes, who?

   ☐ Yes… ☐ No.
   - ☐ Spouse/partner.
   - ☐ Parents
   - ☐ Brothers/sisters.
   - ☐ Other: _ _ _ _ _ _ _ _

4. Please indicate the extent to which you agree or disagree with the following statements To answer, please use the following scale:

   0: No opinion
   1: Disagree strongly
   2: Disagree moderately
   3: Disagree a little
   4: Neither agree nor disagree
   5: Agree a little
   6: Agree moderately
   7: Agree strongly

	Disagree strongly ↓ 1	2	3	4	5	6	Agree strongly ↓ 7	No opinion ↓ 0
I feel sufficiently informed about the topic of organ donation.	☐	☐	☐	☐	☐	☐	☐	☐
I support the idea of organ donation for transplantation purposes.	☐	☐	☐	☐	☐	☐	☐	☐
I believe that organ donation is an act of compassion.	☐	☐	☐	☐	☐	☐	☐	☐
I believe that organ donation is an unselfish act.	☐	☐	☐	☐	☐	☐	☐	☐
I see organ donation as a natural way to prolong life.	☐	☐	☐	☐	☐	☐	☐	☐
I view organ donation as a benefit to humanity.	☐	☐	☐	☐	☐	☐	☐	☐
I view organ donation as a negative procedure.	☐	☐	☐	☐	☐	☐	☐	☐

5. Please indicate the extent to which you agree or disagree with the following statements.

To answer, please use the following scale:

1: Disagree strongly
2: Disagree moderately
3: Disagree a little
4: Neither agree nor disagree
5: Agree a little
6: Agree moderately
7: Agree strongly

	Agree strongly → 1	2	3	4	5	6	Disagree strongly → 7
Overall, I tend to be a cheerful person.	☐	☐	☐	☐	☐	☐	☐
Helping others makes me happy.	☐	☐	☐	☐	☐	☐	☐
When people hurt me, I usually hold a grudge for a long time.	☐	☐	☐	☐	☐	☐	☐
I am an affectionate and tender person.	☐	☐	☐	☐	☐	☐	☐
I enjoy doing small favors every day for the people I care about	☐	☐	☐	☐	☐	☐	☐
I am not what I would call a warm-hearted person.	☐	☐	☐	☐	☐	☐	☐
My family tends to do what we can to help those less fortunate than ourselves.	☐	☐	☐	☐	☐	☐	☐

6. Did you discuss the topic of organ donation with your family this particular week?

☐ Yes. ☐ No.

7. In the last month, how often did you have diner together with your family?

About _ _ _ _ _ _ time(s) a week.

8. As far as you know, does any member of your family have an organ donor card?

☐ Yes. ☐ No.
If No, please go to question 10.

9. If Yes, please indicate your relationship with her/him/them?

☐ Spoue/partner. ☐ Brothers/sisters.
☐ Parents. ☐ Other: _ _ _ _ _ _ _ _ _ _ _ _ _ _.

10. We would like you to check whether the following statement are True or False.

	True	False
It is important to inform the family about the decision to be a donor.	☐	☐
The body can reject a foreign organ.	☐	☐
I can choose which organs to donate.	☐	☐
At the age of 60, I'm no longer able to donate my organs.	☐	☐
The possibility of receiving an organ depends on the type of insurance contract.	☐	☐
It is possible to receive a normal funeral after the explant of one's organ.	☐	☐
Doctors exert less effort to save some one if they know he or she is an organ donor.	☐	☐
Most of patients waiting for an organ receive one.	☐	☐

We would like you to indicate which of the following answers are correct. There may be one or more correct answers.

11. Which of the following organ(s) can be transplanted?

- ☐ Heart.
- ☐ Brain.
- ☐ Appendix.
- ☐ Lung.

12. The rules to allocate an organ depends on:

- ☐ Blood type.
- ☐ Emergency and waiting time on the list.
- ☐ Tissue compatibility.
- ☐ Financial means of the receiver.

13. The number of patients on the waiting list is:

- ☐ Less than 100.
- ☐ Between 100 and 500.
- ☐ Between 500 and 900.
- ☐ More than 900.

14. In case the wishes of the deceased person are not known, the decision to explant his or her organs is made by:

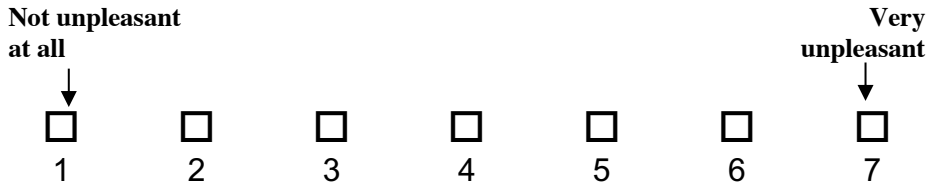
- ☐ The surgeon general in the hospital.
- ☐ His or her family.
- ☐ The State/Canton in which he or she died.
- ☐ The doctor of a person waiting for an organ.

15. How can indicate my willingness to become an organ donor in Switzerland?

- ☐ By signing a donor card.
- ☐ By signing up in a registry.
- ☐ By informing my family.
- ☐ By writing it in my will.

16. Suppose your parents strongly disagree with a decision that you really want to make (e.g. getting a piercing, a tattoo, join an organization, etc).

    Please indicate how unpleasant it would be for you to inform them that you actually made this decision.



17. Suppose one offers you CHF 50 today or CHF 60 in two months. What would you chose?

- ☐ CHF 50 today.
- ☐ CHF 60 in 2 months.

18. In general, how satisfied are you with your life?