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# Does default organ donation registration compromise autonomous choice? Public responses to a new donor registration system

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ABSTRACT

Defaults have been shown to increase the number of organ donor registrations but it is unclear whether they violate personal autonomy of the people being registered. The implementation of a new Donor Act in the Netherlands, providing people with the opportunity for active registration before being defaulted, allowed for examining to what extent default registration affects personal autonomy and associated concepts. In an online survey among a representative sample ($N = 1259$), four groups were compared regarding autonomy, decision-making competence, decision satisfaction, and being pressured to register as a donor: people (1) who had registered their status prior to the Donor Act, (2) who had not yet received an invitation for default registration, (3) who had received an invitation and then registered their choice, and (4) who had received an invitation but took no action and were defaulted into donor registration. We found that among the three groups who were the target population of the new arrangement, people who registered their status reported relatively high levels of autonomy and related concepts. However, people who were invited to register but passed the opportunity to respond reported lower scores on these outcomes. We conclude that default organ donation registration may bear negative consequences for a minority of people who feel unable to take action after having been invited to make a choice for registration.

In 2019, 67 people in the Netherlands died waiting for a kidney transplant, and another 112 got off the waiting list for a kidney as their condition got too bad to still receive a transplant [1]. In the same year, the Netherlands had 15.1 post mortal organ donors per million citizens, which is low compared to many other European countries like France (29.4), Portugal (33.7), and Spain (49.6) [2]. About two decades ago, Johnson and Goldstein brought attention to the big gap in donor registration percentages between countries, which could not be explained by factors like religion, education levels and other differences between populations [3]. Rather, whether or not countries employed defaults (i.e., an opt-out donor registration arrangement) with people having to actively opt out instead of opt in to promote registration as a donor played a major part in explaining the difference between countries.

It is generally agreed upon that defaults or opt-out donor registration arrangements are part of a group of behavior change techniques called 'nudges' [3]. Nudges were introduced by Thaler and Sunstein [4] as an umbrella term for strategies that speak to people's non-reflective decisions to promote desirable choices that are considered to gently suggest preferred choices (soft paternalism) by some [4] or impose preferred choices (hard paternalism) by others [5]. Nudges have been defined as 'any aspect of the choice architecture that alters people's behavior in a predictable way, without forbidding any options or significantly changing their economic incentives' [4, p.6]. Default nudges specifically are expected to affect behavior through various mechanisms that relate to non-reflective decision making, including inertia [6], loss aversion [7], status quo bias [8], and suggesting a norm or recommendation [9].

Defaults have been frequently used and found to be effective across various domains of public policy that involve personal choices, including the uptake of green energy arrangements [10] and donating to charities [11]. It is therefore not surprising that Johnson and Goldstein found that in countries where an opt-out donor registration arrangement is in place, more citizens are registered as donors than in countries where citizens have to take action themselves to be registered as a donor (an opt-in arrangement) [3]. The Netherlands, with its low number people registered as potential organ donors, unsurprisingly, employed

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the less effective opt-in format.

Acknowledging the problematic low number of organ donor registrations and the potential effectiveness of an opt-out format as opposed to the opt-in format to increase donor registrations, the Netherlands introduced the new Donor Act in 2020, changing donor registration into to an opt-out system [12]. While this change was expected to be highly effective in increasing the number of registered donors, it was, however, not uncontroversial [13]. In particular, concerns were voiced regarding the ethical aspects of the government manipulating such a highly personal and impactful choice. It was also suggested that the new opt-out format could negatively impact individuals' experience of autonomy (we will use the term 'autonomy' to refer to the personal experience of autonomy) [14]. These ethical concerns, and concerns regarding autonomy specifically, are not unique for the case of organ donation or for the Netherlands but are central in heated debate in the broader literature on nudging as well as a frequent barrier to implementation of nudges in practice [15,16].

Opponents of nudges argue that nudges may have a negative effect on autonomy because they take advantage of automatic thinking and thus circumvent deliberate decision making [17]. Nudges also have been criticized because their presence and influence is often undetected or underestimated by the decision maker [18,19]. Concerns about the manipulative nature of nudges are especially prevalent in debates about sensitive medical topics such as to promoting donor registration [20–22]. It has been argued that default opt-out arrangements in donor registration are problematic because they take advantage of people's tendency to rely on non-deliberative system 1 reasoning, which may violate autonomous decision making because people are not given the opportunity to use their rational capacities [23]. Default nudges are generally considered to be the most powerful type of nudge [24] and controversial because their effectiveness may depend on deceit [23]. However, in a recent review discussing the conditions that determine people's susceptibility to (default) nudge influence, it was found that people are nudgeable only insofar the nudge aligns with their goals, values and preferences [15]. It was further shown that default nudges are still effective when their presence and purpose are revealed and that effects do not hinge on system 1 reasoning and thus allow for a reasonable degree of informed decision making [15,25]. This implies that the ethical requirements for the legitimate employment of nudges in public policy, formulated by philosopher Luc Bovens [18] more than a decade ago, are fulfilled: nudges do not 'operate in the dark' but allow for making autonomous decisions. Notwithstanding this, it has been argued that mandated active choice where people are forced to make an active decision whether or not they want to register as a donor should be preferred over a default opt-out arrangement [23]. Interestingly, the New Donor Act in the Netherlands stipulates a first stage where people are prompted to make such an active choice before the enter they default opt-out arrangement. That is, people receive a letter in which they are asked to make a choice; six weeks later they receive a reminder letter and another six weeks a notification letter that they are defaulted into the 'no objection' group.

The debate about the ethics of nudging is strongly determined by abstract ethical notions about autonomous decision making. A strong empirical basis to support claims about these unfavorable effects of nudging on autonomy is lacking. In fact, to date the few studies that have empirically investigated the effect of defaults on autonomy showed no or only marginally negative effects in hypothetical scenarios [26–28], also in case of organ donation [29]. However, results from hypothetical studies may be very different compared to when people are actually confronted with a default nudge in real life [28,30]. Studies that employed real-life decisions thus far have only investigated decisions with very low stakes, such as being defaulted into choosing a 5 min longer version of a questionnaire [28]. Clearly, these findings cannot be extrapolated to the complex context of decision to register oneself as an organ donor. Whether changing from an opt-in to an opt-out arrangement when registering for organ donation negatively impacts individuals' autonomy thus remains an open question. With the present research, we employ the transformation of the Dutch organ donation registration system to conduct a quasi-experimental study aimed at addressing this important issue.

The stepped-wedged introduction of the new Donor Act in the Netherlands provides a unique opportunity to investigate the effects of a default nudge on autonomy in real life. The Donor Act was implemented in the Netherlands in June 2020 by sending a letter to all citizens who had, by that time, not yet recorded their choice (either or not in favor of registration as a donor) in the Dutch organ donation registry, urging them to register their choice. Should they not register their choice (to be a donor, to not be a donor, to let a specific person decide, or to let relatives decide) within six weeks, they received a second letter, and should they not register their choice within the next six weeks upon receiving the second letter, they would be registered as a donor (under the label 'no objection to organ donation') in the Donor Register by default and receive a notification letter.

Crucially, the timing of receiving the first letter was dependent on the province of residence, which means that at the time of data collection for this study (Spring 2021), individuals in some provinces were still waiting to receive their first letter, some had just received the second letter, and for others the six-week waiting period after receipt of the second letter had already passed. As a result, we could compare individuals who would not be subjected to a nudge as they were already registered before the introduction of the Donor Act, to the target population consisting of people who were in expectation of an invitation to register by default or already received at least one letter of invitation. Moreover, the province-based timing of implementation of the Donor Act allowed for the opportunity to compare within the nudge condition individuals who had already actively registered their choice upon receiving the letter to individuals who were inactively being defaulted into being registered as an organ donor.

In order to examine whether default registration as an organ donor poses a threat to autonomy, we thus created different groups that allowed for comparing autonomy in people who already registered their choice before the implementation of the new default registration (Group 1), people who did not already register their choice and were still waiting to be invited to register (Group 2), people who were invited to register and either actively responded by registering (Group 3) or did not respond to this invitation (Group 4). We did so by asking about 1200 participants about their registration status and their experience of autonomy upon making a decision. We also assessed participants' competence in making the decision and satisfaction with their decision as these constructs are closely related to autonomy [26]. Finally, we asked all participants to what extend they experienced pressure to make a decision as this has been found to be associated with autonomy [27]. For ethical reasons, we did not directly ask participants what choice they registered but focused on their experience of autonomy when making this decision. Participants in Groups 2 (not yet invited) and 4 (not having responded to the invitation) were made aware of their current registration status by providing a link to the donor registration website so that they knew about their (lack of) choice and their responses to the questionnaires would be comparable to the response of participant in Groups 1 and 3 who already registered their choice.

## 1. Methods

### 1.1. Ethics statement

Ethical approval for the study was obtained from Ethics Committee of the Faculty of Social and Behavioural Sciences of Utrecht University, filed under number 21–0079.

### 1.2. Data availability

The collected data are available at the website of the open science

framework (https://osf.io/2whfn/).

### 1.3. Participants

Participants were recruited via a Dutch online panel agency (Flycatcher.eu). Informed consent was obtained from all individual participants included in the study and all data were collected in accordance with the Helsinki declaration. Out of the 1897 panel members who were invited, 1185 completed the survey. The sample is representative of the Dutch adult population in terms of gender, age, education, and region (see Supplementary Materials for details).

### 1.4. Procedure

After giving informed consent, participants were asked six questions regarding their donor registration status in order to assign them to one of four groups (see Fig. 1). Next, they were shown a brief description of their current registration status based on their answers and were then asked to fill out questionnaires on autonomy, decision making competence, decision satisfaction, and pressure to register as a donor. Finally, participants were debriefed and thanked for their participation. They were also provided with links to check on their current donor registration status.

### 1.5. Materials

All questionnaires can be found in the Supplementary Materials.

*Registration status.* This routed questionnaire comprised four questions (see Fig. 1). A total of 16 participants who answered 'no' to all questions and therefore fell into the categories of 'will definitely not actively register as a donor' ($N = 6$), 'will definitely actively register as a donor' ($N = 9$), or 'not sure whether or not to register' ($N = 1$) were excluded from all analyses as the sample sizes, even when summed into one group, were too small for a meaningful examination.

*Autonomy.* Autonomy was measured with nine items on a 5 point scale, ranging from 1 = "totally disagree" to 5 = "totally agree" [31]. This scale was constructed to represent the three dimensions that were identified in a study on the relevant aspects of autonomy in response to nudging [16], i.e., freedom of choice (the availability of multiple options; sample item *'I felt free to choose what I wanted'*), agency (the capacity to deliberate and determine what to choose; sample item *'I deliberated this decision'*), and self-constitution (options that are relevant to one's personal values and goals; sample item *'This decision fits what I find important'*). Items were presented in randomized order for each participant. They were explained that they should refer to the experience of their current registration status when answering these questions (see Supplementary Materials for details). Similar instructions were provided for the questions on Decision Making Competence, Decision Satisfaction, and Pressure.

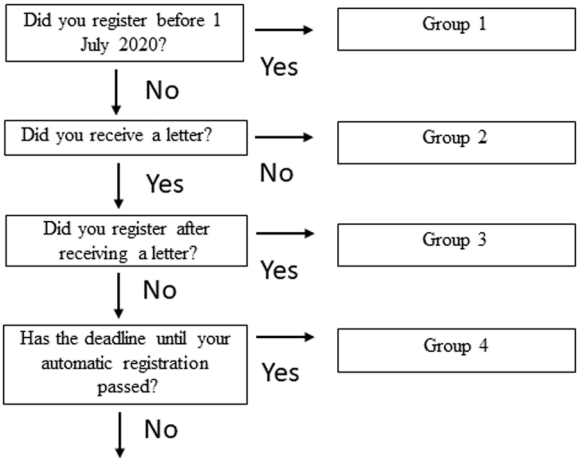


**Fig. 1.** Flowchart of the routed questionnaire on registration status.

*Decision Making Competence.* Competence was measured with six items (e.g., 'I was pretty skilled at making this decision') on a 5 point scale, ranging from 1 = "totally disagree" to 5 = "totally agree" [26]. Items were presented in a randomized order for each participant.

*Decision Satisfaction.* Decision Satisfaction was measured with a slightly adjusted questionnaire [32] comprising five items (e.g., 'My choice is the right one for my situation') on a 5 point scale, ranging from 1 = "totally disagree" to 5 = "totally agree". Items were presented in a randomized order for each participant.

*Pressure to register as a donor.* Participants indicated on a slider from 0 to 100 how much pressure they experienced to make a decision about donor registration.

*Demographic data.* Data on participants' gender, age, level of education, and region were provided by the panel agency.

## 2. Results

### 2.1. Descriptives

Based on their responses to the registration status questionnaire, participants were categorized into the four aforementioned groups. Fig. 2 provides an overview of the sample size, gender composition and age for each group. Table 1 gives the means and standard deviations as well as correlations of all variables.

### 2.2. Autonomy, decision making competence and decision satisfaction

The pattern of results (see Fig. 3) reveals that participants in all groups reported on average relatively high levels of autonomy, with mean scores well above the neutral midpoint of the scale for all conditions. The same holds for mean scores on decision making competence and decision satisfaction. A MANOVA with autonomy, decision making competence and satisfaction as the dependent variables, and group as the independent variable was conducted to test the differences between the four groups. This yielded a significant multivariate effect, Wilk's $\Lambda = 0.801$, $F(9, 2806) = 29.7$, $p < .001$, $\eta 2 = 0.067$. The univariate effects were also significant: Group significantly predicted autonomy $F(3, 1155) = 75.6$, $p < .001$, decision making competence $F(3, 1155) = 68.1$, $p < .001$, and decision satisfaction $F(3, 1155) = 68.1$, $p < .001$.

Tukey HSD post-hoc tests revealed significant differences between all groups on all variables $ps < 0.026$ (for details see Supplemental Materials). As shown in Fig. 3, among the target population for the default nudge (those who were not yet registered on June 1st 2020, Groups 2–4), participants who were exposed to the nudge and actively registered (Group 3), reported on average higher levels of autonomy, $M = 3.95$, $SD = 0.54$, compared to participants who had not yet received a letter of invitation to register (Group 2), $M = 3.62$, $SD = 0.66$, and participants who had received a letter but did not respond to this letter (Group 4), $M = 3.28$, $SD = 0.66$. The latter group of participants, those who let the deadline pass, reported the lowest level of autonomy of all groups. In contrast, participants who had responded positively to the invitation letter by indicating their preferred choice (Group 3) had near to similar levels of autonomy as participants who had indicated their choice prior to the introduction of the new Donor Act (Group 1), $M = 4.20$, $SD = 0.50$. A similar pattern was observed for the dependent measures competence for making a decision and satisfaction with the decision.

### 2.3. Pressure

An ANOVA was conducted to test whether the groups differed in the pressure they experienced to make a decision about donor registration. The effect of group was significant $F(3, 1155) = 24.41$, $p < .001$. A

| Variable | Group 1 | Group 2 | Group 3 | Group 4 | Total |
|---|---|---|---|---|---|
| N | 929 | 67 | 111 | 52 | 1159 |
| Gender | 50.6% female | 47.8% female | 45.9% female | 42.3% female | 49.6% female |
| Age | 33.8 (17.3) | 37.7 (17.8) | 35.1 (17.6) | 31.1 (17.7) | 34.0 (17.4) |

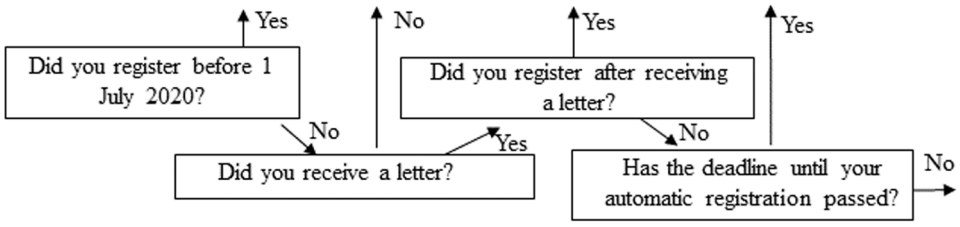


**Fig. 2.** Means and standard deviations of background information per group and total.

**Table 1**
Means, standard deviations, and correlations with confidence intervals of all variables.

| Variable | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| 1. Autonomy | 4.10 | 0.57 | | | | | | |
| 2. Satisfaction | 4.16 | 0.68 | .68** [.64, 0.71] | | | | | |
| 3. Competence | 3.96 | 0.63 | .67** [.64, 0.70] | .75** [.72, 0.77] | | | | |
| 4. Pressure | 26.83 | 29.78 | −0.31** [−0.36, −0.26] | −0.32** [−0.37, −0.27] | −0.30** [−0.35, −0.24] | | | |
| 5. Sex* | 50% female | | .13** [.07, 0.18] | .00 [−0.06, 0.06] | .00 [−0.05, 0.06] | −0.00 [−0.06, 0.05] | | |
| 6. Education | 2.03 | 0.76 | .14** [.08, 0.19] | .03 [−0.02, 0.09] | .04 [−0.02, 0.09] | −0.02 [−0.07, 0.04] | .16** [.11, 0.22] | |
| 7. Age | 34.04 | 17.39 | −0.10** [−0.16, −0.04] | .03 [−0.03, 0.09] | .07* [.01, 0.13] | −0.07* [−0.12, −0.01] | −0.34** [−0.39, −0.28] | −0.39** [−0.44, −0.34] |

*Note.* Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation; * $p < .05$, ** $p < .01$.
*1 = male; 2 = female.

Tukey HSD post-hoc test revealed significant differences between Group 1 and all other groups (all $ps < 0.026$), indicating that all participants who received the letter (Groups 3 and 4) or who were waiting to receive the letter (Group 2) experienced more pressure compared to the participants who had already registered (Group 1). No other comparisons were statistically significant. See Fig. 4 for means and differences between the groups on pressure.

## 3. Discussion

The aim of the current study was to investigate how the newly implemented Donor Act in the Netherlands that employs a default to promote donor registration affects personal autonomy and related concepts. To that end, we asked participants about their registration status, exposure to the default nudge (receipt of the letter) and their response to this nudge (active registration or not) on their experience of autonomy, decision making competence, satisfaction with their decision, and experienced pressure to make a decision. The results show that individuals who had registered their choice before the new Donor Act (Group 1) was implemented reported the highest levels of autonomy. This is not surprising, as they made their own decision, even before being urged to do so by invitation and as a result were not confronted with the new default arrangement. None of the groups who were exposed to the nudge experienced similarly high levels of autonomy.

However, to investigate the effect of the new default nudge on autonomy, competence and satisfaction the crucial comparisons lie *within* those groups that represent the target population of the new policy, who are the people not yet registered on June 1st 2020 (Groups 2–4). The most relevant reference group to compare the effects of the default nudge is therefore Group 2, who are people who belong to the target population but have not yet received the invitation. When comparing Group 2 to Group 3 and 4 (including people who are part of the target population and who have already received the invitation), a different pattern is observed for people who received an invitation to register and let the deadline pass without taking the opportunity for actively registering either or not as a donor (Group 4) than for people who responded to the nudge by actively registering upon receiving the letter (Group 3). Compared to the group of individuals who had not been exposed to the nudge because they were still awaiting an invitation letter (Group 2), people who were nudged but did not actively respond to the nudge (Group 4) reported significantly lower levels of autonomy. This finding could be interpreted as evidence that there is a negative relationship between exposure to a default nudge and autonomy. However, people who were nudged and also responded to the nudge by actively

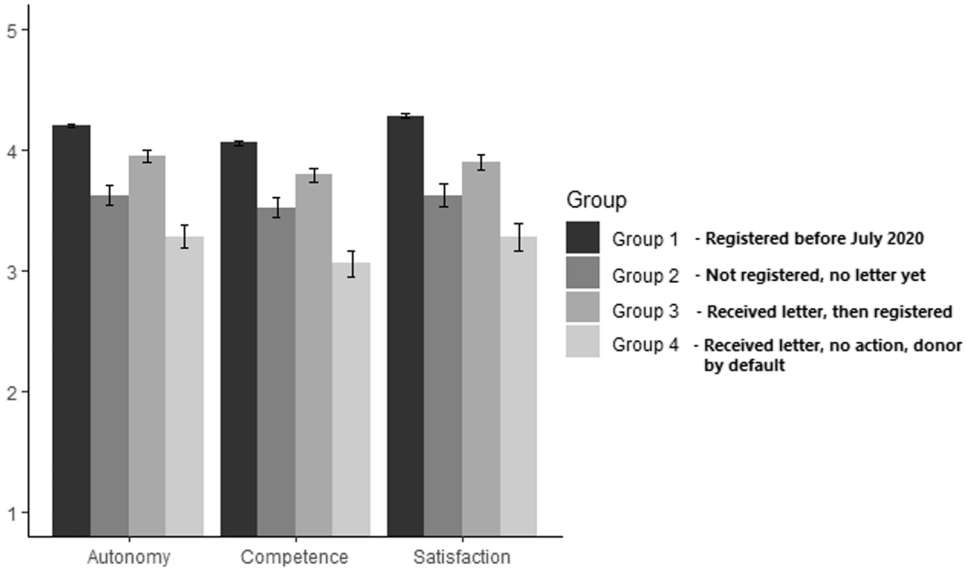


**Fig. 3.** Means with standard errors for autonomy, decision making competence, and decision satisfaction, for all groups.

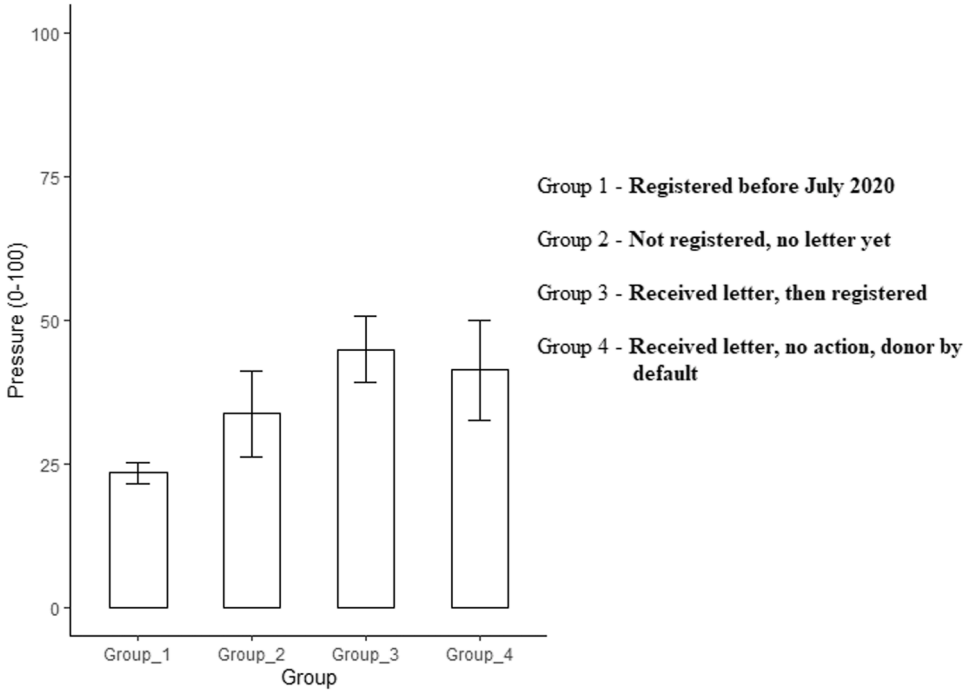


**Fig. 4.** Means with standard errors for pressure for all groups.

registering upon receiving the letter (Group 3) were also confronted with the new default, but actually reported higher levels of autonomy than people who had not yet received the letter of invitation (Group 2). In fact, the people who did respond to the invitation to register came close to the high level of autonomy of people who had already registered before implementation of the default arrangement (Group 1).

Based on this pattern of results with marked differences in autonomy and related concepts between groups, one could adopt a 'glass half full' perspective and optimistically argue that for Group 4 the nudge has double benefits: not only does it increase the number of people for whom a decision is registered, it simultaneously increases the experienced autonomy, competence and satisfaction of those individuals who actively make a decision. However, a 'glass half empty' argument could just as easily be made, as clearly there is a substantial number of people who do not actively register upon being nudged and for whom the increased number of registrations as a result of the nudge comes with negative effects on experienced autonomy, competence and satisfaction. An interesting question that emerges in view of these findings is whether the negative effects on autonomy would violate the libertarian principle of freedom of choice that is central to the concept of nudging [4,33]. Strictly speaking, people being exposed to an opt-out arrangement do have freedom of choice but apparently they experience pressure to choose. So far, the debate on the legitimacy of nudging has been mute on the question how much pressure to choose is acceptable when exposing people to a nudge. This question is particularly interesting considering that the first stage of the New Donor Act in the Netherlands employed an arrangement that comes close to mandated active choice where people are required to make an active decision whether or not they want to

register as a donor, which is considered to be less infringing upon autonomy and thus ethically superior to a default opt-out arrangement [23].

Another question that emerges is what kind of levels of citizen autonomy governments should strive for in case of donor registration (and other important but sensitive topics) and to what extent a minor drop in autonomy for a small proportion of the population would be acceptable in view of the benefits for the population at large (an increased number of donor registrations). These kind of questions warrant further research and debate.

Notwithstanding these questions, we argue that the most striking finding of our study is the observation that it is not so much the nudge itself that affects autonomy but rather the response to the nudge, i.e., whether invitees take the opportunity to either or not register themselves (in whatever way) by responding to mandated active choice [23]. One could argue that people who did not actively register upon being invited did so deliberately because they did not want to be confronted with the difficult question of organ donation or did not want to be personally responsible for this decision. this would be the case, autonomy would not necessarily be decreased. However, the pattern of results for decision making competence and satisfaction with one's choice mimicked the findings on autonomy. This suggests that lower autonomy was experienced negatively to the extent that people were less satisfied with their decision and also felt less competent to make this decision. Our findings on how much pressure people experienced to make a decision about registration reveal that the invitation letter for default registration also resulted in a higher experience of pressure regardless of how people responded to the invitation. This implicates that the differential pattern of autonomy (and decision making competence and satisfaction) between groups who received the letter is not a reflection how much pressure they experienced [28].

The present findings have important implications for debates about whether and how nudges affect autonomy as well as whether and how nudges should be implemented in public policy. First, our findings inform current debates regarding the ethics of nudging and suggest that nudges may have a double advantage as they both lead to an increase in donor registrations while at the same time preserving autonomy, decision making competence, and satisfaction with one's decision for the large majority of people being exposed to the default nudge of opt-out donor registration. It should be noted, however, that about 30% of invitees did not register their choice upon being invited to do so. Their inertia in response to the default may eventually help to increase the number of donor registrations but was found to come at a cost for experienced autonomy, decision making competence and decision satisfaction for individuals who did not take the opportunity to express their choice. The negative effects on autonomy, competence and satisfaction for this group should be taken seriously. Future research is required to investigate in more detail the characteristics of this group, as these might be individuals who are already more vulnerable and lack resources to respond to the invitation to register proactively [34]. These people may be part of a group of individuals who have less trust in the Dutch government in general. This implies that it crucial to design default nudges in such a way that it increases the odds of active registration while at the same time maintaining or enhancing individual autonomy.

Second, the present findings also inform the broader literature on nudging as they suggest that it is important to distinguish not only between a no nudge (control) and a nudge (experimental) condition, but also to differentiate between responses to a nudge when examining the psychological downstream consequences of nudges. Had we lumped together people who either or not responded to the nudge (Groups 3 and 4) as a nudge condition and compared them to people who had not been nudged (Group 2), we would have concluded that nudges do not affect autonomy. The present analyses in which we differentiate between whether or not people responded to the nudge show that effects are markedly different for these two groups. Finally, it is worth pointing out that in fact the majority of people who received the letter did actively register (111 out of 163 or about 70%) but not all of them did, which indicates that inertia, loss aversion and status quo bias may be less important mechanisms in explaining the effects of defaults. Rather, these findings suggest that implicit recommendation may drive default effectiveness [9].

Several limitations should be noted. First, it should be noted that the conceptualization and operationalization of autonomy we employed in the present study is derived from a psychological understanding of autonomy in terms of the ability to determine one's choices from a range of options [14] that is not defined by the absence of external influences but rather by one's assent to such inputs to the extent that one can voluntary decide in accordance with one's interests and beliefs [35]. This approach represents the three dimensions that have been found to be relevant when investigating autonomy in response to nudging, i.e., freedom of choice (the availability of multiple options), agency (the capacity to deliberate and determine what to choose), and self-constitution (options that are relevant to one's personal values and goals) [16]. Whilst such an understanding is not at odds with the conception of autonomy in philosophical circles that equally defines autonomy as the capacity for self-governance [36], we realize that self-assessment of autonomy may raise concerns about flawed perceptions of autonomy as they require a sense of self-knowledge. One may wonder about the substantial associations of the autonomy concept with the concepts of choice satisfaction and decision competence that we identified in the present study, but conceptual overlap makes sense when considering that autonomy in terms of the capacity for self-governance is strongly related to being able to make a decision and being satisfied with one's choice. Notwithstanding this limitation, we consider it important to inform the ethical debate on nudging donor registrations with empirical findings on the experience of autonomy and related concepts when presenting potential registrees with a default opt-out arrangement with the purpose of increasing the number of donor registrations.

Second, an important observation in the current study is that roughly 80% of the participants reported to have already been registered before the new default arrangement was put into effect. This is more than expected, as only about 50% of the Dutch population older than 18 was registered in the Netherlands at the time of conducting our study [37] and our sample was found to be representative of the general population in terms of gender, age, and education. A possible explanation for the discrepancy is that participants were able to choose whether or not to participate in our study, possibly leading to a bias where people who avoid thinking about organ donation and did not register may have been less willing to participate in the study. Finally, it is important to point out that our results refer to registration of a choice in the donor register which can range from either or not being registered as a donor to let relatives decide later on. We interpreted the pattern of results based on whether people actively registered their choice, but this is at least partly confounded with donor status (all participants in group 2 were not registered as a donor whereas all participants in group 4 were registered as a donor).

## 4. Conclusion

In conclusion, our findings show that autonomy, decision satisfaction, and decision making competence after being nudged by default to register as a donor is also associated with the response to the nudge and not simply the result of mere nudge exposure. People who take the opportunity to register their donor status in response to a default nudge report higher levels of autonomy, decision making competence and satisfaction with their decision than people who ignore the nudge and end up being registered as a donor at the cost of lower experienced autonomy.

## 5. Author contributions

JW, MA and DR… conceptualized the study. JW was responsible for investigation, formal analysis and writing the original draft. JW, MA, MH and DR… were responsible for review and editing. DR… was responsible for funding acquisition.

## Declaration of Interest Competing

The authors report no conflict of interest.

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## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.healthpol.2022.07.002.

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