

Warning: You are about to be nudged

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Summary. Presenting a default option is known to influence important decisions. That includes decisions regarding advance medical directives, documents people prepare to convey which medical treatments they favor in the event that they are too ill to make their wishes clear. Some observers have argued that defaults are unethical because people are typically unaware that they are being nudged toward a decision. We informed people of the presence of default options before they completed a hypothetical advance directive, or after, then gave them the opportunity to revise their decisions. The effect of the defaults persisted, despite the disclosure, suggesting that their effectiveness may not depend on deceit. These findings may help address concerns that behavioral interventions are necessarily duplicitous or manipulative.

Nudging people toward particular decisions by presenting one option as the default can influence important life choices. If a firm enrolls employees in retirement savings plans by default unless they opt out, people are much more likely to contribute to the plan.¹ Likewise, making organ donation the default option rather than just an opt-in choice dramatically increases rates of donation.² The same principle holds for other major decisions, including choices about purchasing insurance and taking steps to protect personal data.^{3,4}

Decisions about end-of-life medical care are similarly susceptible to the effects of defaults. Two studies found that default options had powerful effects on the end-of-life choices of participants preparing hypothetical advance directives. One involved student respondents, and the other involved elderly outpatients.^{5,6} In a more

recent study, defaults also proved robust when seriously ill patients completed real advance directives.⁷

The use of such defaults or other behavioral *nudges*⁸ has raised serious ethical concerns, however. The House of Lords *Behaviour Change* report produced in the United Kingdom in 2011 contains one of the most significant critiques.⁹ It argued that the “extent to which an intervention is covert” should be one of the main criteria for judging if a nudge is defensible. The report considered two ways to disclose default interventions: directly or by ensuring that a perceptive person could discern a nudge is in play. While acknowledging that the former would be preferable from a purely ethical perspective, the report concluded that the latter should be adequate, “especially as this fuller sort of transparency might limit the effectiveness of the intervention.”

Philosopher Luc Bovens in “The Ethics of Nudge” noted that default options “typically work best in the dark.”¹⁰ Bovens observed the lack of disclosure in a study

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in which healthy foods were introduced at a school cafeteria with no explanation, prompting students to eat fewer unhealthy foods. The same lack of transparency existed during the rollout of the Save More Tomorrow program, which gave workers the option of precommitting themselves to increase their savings rate as their income rose in the future. Bovens noted,

If we tell students that the order of the food in the Cafeteria is rearranged for dietary purposes, then the intervention may be less successful. If we explain the endowment effect [the tendency for people to value amenities more when giving them up than when acquiring them] to employees, they may be less inclined to Save More Tomorrow.

When we embarked on our research into the impact of disclosing nudges, we understood that alerting people about defaults could make them feel that they were being manipulated. Social psychology research has found that people tend to resist threats to their freedom to choose, a phenomenon known as *psychological reactance*.¹¹ Thus, it is reasonable to think, as both the House of Lords report and Bovens asserted, that people would deliberately resist the influence of defaults (if informed ahead of time, or *preinformed*) or try to undo their influence (if told after the fact, or *postinformed*). Such a reaction to disclosure might well reduce or even eliminate the influence of nudges.

But our findings challenge the idea that fuller transparency substantially harms the effectiveness of defaults. If what we found is confirmed in broader contexts, fuller disclosure of a nudge could potentially be achieved with little or no negative impact on the effectiveness of the intervention. That could have significant practical applications for policymakers trying to help people make choices that are in their and society's long-term interests while disclosing the presence of nudges.

Testing Effects from Disclosing Defaults

We explored the impact of disclosing nudges in a study of individual choices on hypothetical advance directives, documents that enable people to express their preferences for medical treatment for times when they are near death and too ill to express their wishes. Participants completed hypothetical advance directives

by stating their overall goals for end-of-life care and their preferences for specific life-prolonging measures such as cardiopulmonary resuscitation and feeding tube insertion. Participants were randomly assigned to receive a version of an advance directive form on which the default options favored either prolonging life or minimizing discomfort. For both defaults, participants were further randomly assigned to be informed about the defaults either before or after completing the form. Next, they were allowed to change their decisions using forms with no defaults included. The design of the study enabled us to assess the effects of participants' awareness of defaults on end-of-life decisionmaking.

We recognize that the hypothetical nature of the advance directive in our study may raise questions about how a similar process would play out in the real world. However, recent research by two of the current authors and their colleagues examined the impact of defaults on real advance directives⁷ and obtained results similar to prior work on the topic examining hypothetical choices.^{5,6} All of these studies found that the defaults provided on advance directive forms had a major impact on the final choices reached by respondents. Just as the question of whether defaults could influence the choices made in advance directives was initially tested in hypothetical tasks, we test first in a hypothetical setting whether alerting participants to the default diminishes its impact.

To examine the effects of disclosing the presence of defaults, we recruited via e-mail 758 participants (out of 4,872 people contacted) who were either alumni of Carnegie Mellon University or *New York Times* readers who had consented to be contacted for research. Respondents were not paid for participating. Although not a representative sample of the general population, the 1,027 people who participated included a large proportion of older individuals for whom the issues posed by the study are salient. The mean age for both samples was about 50 years, an age when end-of-life care tends to become more relevant. (Detailed descriptions of the methods and analysis used in this research are published online in the Supplemental Material.)

Our sample populations are more educated than the U.S. population as a whole, which reduces the extent to which we can generalize the results to the wider population. However, the study provides information about whether the decisions of a highly educated and presumably commensurately deliberative group are changed

by their awareness of being defaulted, that is, having the default options selected for them should they not take action to change them. Prior research has documented larger default effects for individuals of lower socioeconomic status,^{1,12} which suggests that the default effects we observe would likely be larger in a less educated population.

Obtaining End-of-Life Preferences

Participants completed an online hypothetical advance directive form. First, they were asked to indicate their broad goals for end-of-life care by selecting one of the following options:

- I want my health care providers and agent to pursue treatments that help me to live as long as possible, even if that means I might have more pain or suffering.
- I want my health care providers and agent to pursue treatments that help relieve my pain and suffering, even if that means I might not live as long.
- I do not want to specify one of the above goals. My health care providers and agent may direct the overall goals of my care.

Next, participants expressed their preferences regarding five specific medical life-prolonging interventions. For each question, participants expressed a preference for pursuing the treatment (the prolong option), declining it (the comfort option), or leaving the decision to a family member or other designated person (the no-choice option). The specific interventions included the following:

- cardiopulmonary resuscitation, described as “manual chest compressions performed to restore blood circulation and breathing”;
- dialysis (kidney filtration by machine);
- feeding tube insertion, described as “devices used to provide nutrition to patients who cannot swallow, inserted either through the nose and esophagus into the stomach or directly into the stomach through the belly”;
- intensive care unit admission, described as a “hospital unit that provides specialized equipment, services, and monitoring for critically ill patients, such as higher staffing-to-patient ratios and ventilator support”; and

- mechanical ventilator use, described as “machines that assist spontaneous breathing, often using either a mask or a breathing tube.”

The advance directive forms that participants completed randomly defaulted them into either accepting or rejecting each of the life-prolonging treatments. Those preinformed about the use of defaults were told before filling out the form; those postinformed learned after completing the form.

One reason that defaults can have an effect is that they are sometimes interpreted as implicit recommendations.^{2,13–15} This is unlikely in our study, because both groups were informed that other study participants had been provided with forms populated with an alternative default. This disclosure also rules out the possibility that respondents attached different meanings to opting into or out of the life-extending measures (for example, donating organs is seen as more altruistic in countries in which citizens must opt in to donate than in countries in which citizens must opt out of donation)¹⁶ or the possibility that the default would be perceived as a social norm (that is, a standard of desirable or common behavior).

After completing the advance directive a first time (either with or without being informed about the default at the outset), both groups were then asked to complete the advance directive again, this time with no defaults. Responses to this second elicitation provide a conservative test of the impact of defaults. Defaults can influence choices if people do not wish to exert effort or are otherwise unmotivated to change their responses. Requiring people to complete a second advance directive substantially reduces marginal switching costs (that is, the additional effort required to switch) when compared with a traditional default structure in which people only have to respond if they want to reject the default. In our two-stage setup, participants have already engaged in the fixed cost (that is, expended the initial effort) of entering a new response, so the marginal cost of changing their response should be lower. The fact that the second advance directive did not include any defaults means that the only effect we captured is a carryover from the defaults participants were given in the first version they completed.

In sum, the experiment required participants to make a first set of advance directive decisions in which a default had been indicated and then a second set of decisions in which no default had been indicated.

Table 1. Experimental design

Group 1: Comfort preinformed	Group 2: Comfort postinformed	Group 3: Prolong preinformed	Group 4: Prolong postinformed
Disclosure		Disclosure	
Choice 1 Comfort default	Choice 1 Comfort default	Choice 1 Prolong default	Choice 1 Prolong default
	Disclosure		Disclosure
Choice 2 No default	Choice 2 No default	Choice 2 No default	Choice 2 No default

Participants were randomly assigned into one of four groups in which they were either preinformed or postinformed that they had been assigned either a prolong default or a comfort default for their first choice, as depicted in Table 1.

The disclosure on defaults for the preinformed group read as follows:

The specific focus of this research is on “defaults”—decisions that go into effect if people don’t take actions to do something different. Participants in this research project have been divided into two experimental groups.

If you have been assigned to one group, the Advance Directive you complete will have answers to questions checked that will direct health care providers to help relieve pain and suffering even it means not living as long. If you want to choose different options, you will be asked to check off a different option and place your initials beside the different option you select.

If you have been assigned to the other group, the Advance Directive you complete will have answers to questions checked that will direct health care providers to prolong your life as much as possible, even if it means you may experience greater pain and suffering.

The disclosure for the postinformed group was the same, except that participants in this group were told that that they had been defaulted rather than would be defaulted.

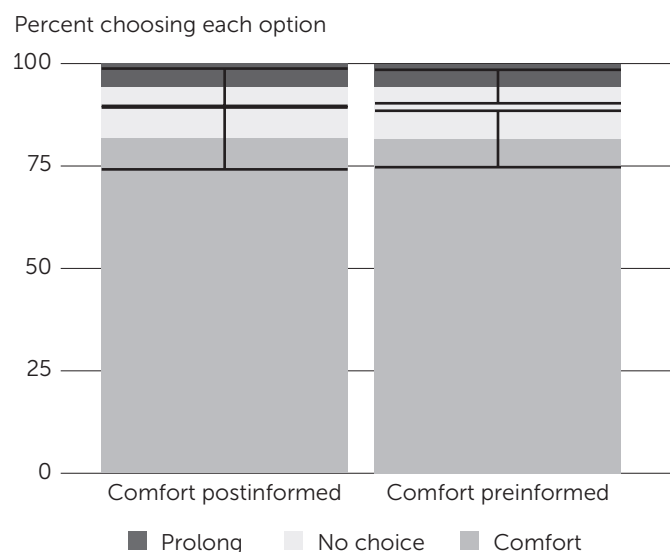
Capturing Effects from Disclosing Nudges

A detailed description of the results and our analyses of those data are available online in this article’s

Supplemental Material. Here we summarize our most pertinent findings, which are presented numerically in Table 2 and depicted visually in Figures 1 and 2.

Participants showed an overwhelming preference for minimizing discomfort at the end of life rather than prolonging life, especially for the general directives (see Figure 1). When the question was posed in general terms, more than 75% of responses reflected this general goal in all experimental conditions and both choice stages. By comparison, less than 15% of responses selected the goal of prolonging life, with the remaining participants leaving that decision to someone else.

Figure 1. The impact of defaults on overall goal for care



Error bars are included to indicate 95% confidence intervals. The bars display how much variation exists among data from each group. If two error bars overlap by less than a quarter of their total length (or do not overlap), the probability that the differences were observed by chance is less than 5% (i.e., statistical significance at $p < .05$).

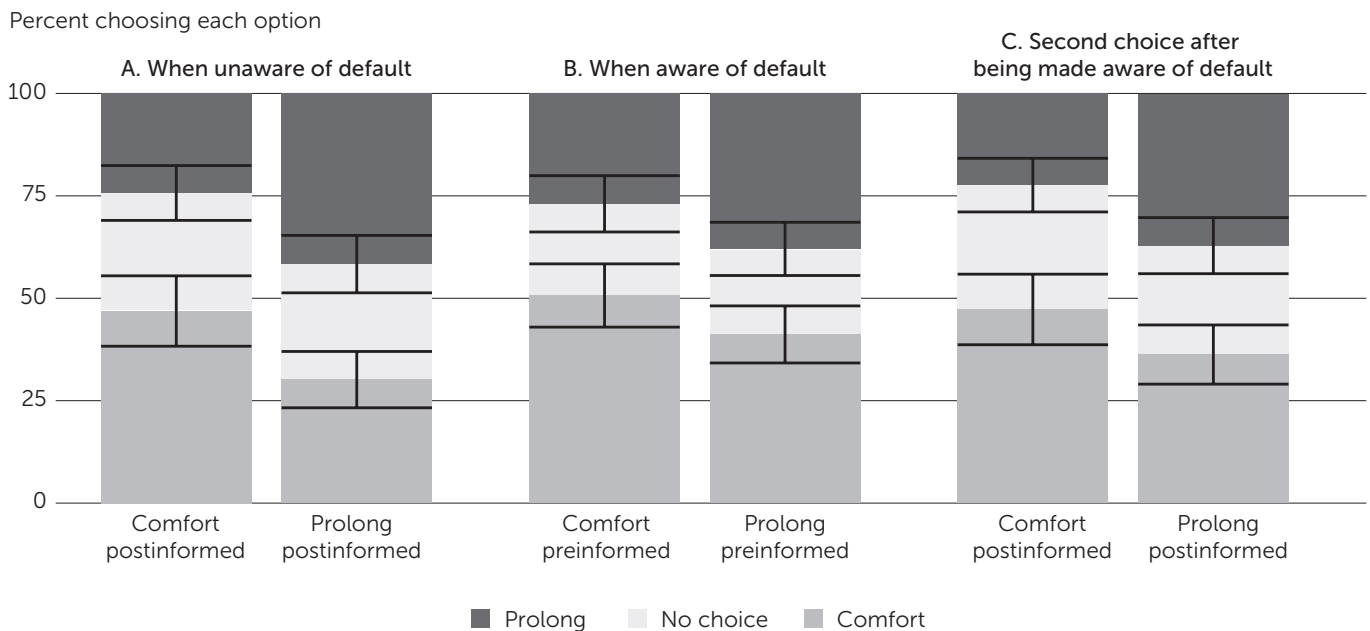
Table 2. Percentage choosing goal and treatment options by stage, default, and condition

Question	Choice	Choice 1				Choice 2			
		Comfort default		Prolong default		Comfort default		Prolong default	
		Pre-informed	Post-informed	Pre-informed	Post-informed	Pre-informed	Post-informed	Pre-informed	Post-informed
Overall goal	Choose comfort	81.6%	81.7%	80.5%	78.2%	76.0%	76.9%	79.7%	79.8%
	Do not choose	12.8%	12.5%	7.5%	16.1%	12.8%	15.4%	7.5%	14.5%
	Choose prolong	5.6%	5.8%	12.0%	5.6%	11.2%	7.7%	12.8%	5.6%
Average of 5 specific treatments	Choose comfort	50.7%	46.9%	41.2%	30.2%	53.8%	47.3%	45.4%	36.3%
	Do not choose	22.4%	28.8%	20.9%	28.2%	24.6%	30.4%	22.1%	26.6%
	Choose prolong	26.9%	24.2%	37.9%	41.6%	21.6%	22.3%	32.5%	37.1%

Preferences for comfort in the general directive were so fixed that they were not affected by defaults or disclosure of defaults (that is, choices did not differ by condition in Figure 1). We note that these results differ from recent work using real advance directives⁷ in which defaults had a large impact on participants' general goals. One possible explanation is that the highly educated respondents in our study had more definitive preferences about end-of-life care than did the less educated population from the earlier article.

Unlike the results for general directives, defaults for specific treatments, when the participant is only informed after the fact, are effective (see Figure 2A in Figure 2). We could observe this after averaging across the five specific interventions that participants considered: On this combined measure, 46.9% of participants who were given the comfort default (but not informed about it in advance) expressed a preference for comfort. By comparison, only 30.2% of those given the prolong default (again with no warning about defaults) expressed

Figure 2. The impact of default on responses to specific treatments



Error bars are included to indicate 95% confidence intervals. The bars display how much variation exists among data from each group. If two error bars overlap by less than a quarter of their total length (or do not overlap), the probability that the differences were observed by chance is less than 5% (i.e., statistical significance at $p < .05$).

a preference for comfort (a difference of 17 percentage points, or 36% [17/46.9]).

The main purpose of the study was to examine the impact on nudge effectiveness of informing people that they were being nudged, a question that is best addressed by analyzing the effects of preinforming people about directive choices. Figure 2B presents the impact of the default when people were preinformed. As can be seen in the figure, preinforming people about defaults weakened but did not wipe out their effectiveness (see Figure 2B). When participants completed the advance directive after being informed about the impact of the defaults, 50.7% of participants given the comfort default expressed a preference for comfort, compared with only 41.2% of those given the prolong life default (a difference of 10 percentage points, or 19%). Although all specific treatment choices were affected by the default in the predicted direction, the effect is statistically significant only for a single item (dialysis) and for the average of all five items (see the Supplemental Material). Preinforming participants about the default may have weakened its impact, but did not eliminate the default's effect.

Postinforming people that they have been defaulted and then asking them to choose again in a neutral way, with no further nudge, produces a substantial default effect that is not much smaller than the standard default effect, as seen in Figure 2C. When participants completed the advance directive a second time (this time without a default), having been informed after the fact that they had been defaulted, 47.3% of participants given the comfort default expressed a preference for comfort, compared with only 36.3% of those given the prolong life default (a difference of 11 percentage points, or 23%). Again, postinforming participants about the default and allowing them to change their decision may have weakened its impact, but did not eliminate the default's effect.

These results are important because they suggest that either a preinforming or a postinforming strategy can be effective in both disclosing the presence of a nudge and preserving its effectiveness. In addition, the results provide a conservative estimate of the power of defaults because all respondents who were informed at either stage had, by the second stage, been informed both that they had been randomly selected to be defaulted and that others had been randomly selected to receive alternative defaults. In addition, the second-stage advance

directives did not include defaults, so any effect of defaults reflects a carryover effect from the first-stage choice. (More detailed analysis of our results and more information listed by specific treatments are available in the online Supplemental Material.)

Defaults Survive Transparency

Despite extensive research questioning whether advance directives have the intended effect of improving quality of end-of-life care,^{17,18} they continue to be one of the few and major tools that exist to promote this goal. Combining advance directives with default options could steer people toward the types of comfort options for end-of-life care that many experts recommend and that many people desire for themselves. This study suggests such defaults can be transparently implemented, addressing the concerns of many ethicists without losing defaults' effectiveness.

More broadly, our findings demonstrate that default options are a category of nudges that can have an effect even when people are aware that they are in play. Our results are conservative in two ways. First, not only were respondents informed that they were about to be or had been defaulted, but they also learned that other participants received different defaults, thereby eliminating any implicit recommendation in the default. Given that the nudge continued to have an impact, we can only conjecture that the default effect would have been even more persistent if the warning informed them that they had been defaulted deliberately to the choice that policymakers believe is the best option.

Second, our results are conservative in the sense that the second advance directive that participants completed contained no defaults, so the effect of the initial default had to carry over to the second choice. Our experimental design minimized the added cost of switching: Regardless of whether they wanted to switch, respondents had to provide a second set of responses. Presumably, the impact of the initial default would have been even stronger if switching had required more effort for respondents than sticking with their original response.

What exactly produced the carryover effect remains uncertain. It is possible, and perhaps most interesting, that the prior default led respondents to think about the choice in a different way, specifically in a way that reinforced the rationality of the default they

were presented with (consistent with reference 16). It is, however, also possible that the respondents were mentally lazy and declined to exert effort to reconsider their previous decisions.

Although the switching costs in our study design were small, such costs may explain why we observed default effects for the specific items but not for the overall goal for care. If respondents were sufficiently concerned about representing their preferences accurately for their overall goal item, they may have been willing to engage in the mental effort to overcome the effect of the default. Finally, it is possible that the carryover from the defaults of stage 1 to the (default-free) responses in stage 2 reflected a desire for consistency.¹⁹ If so, then carryover effects would be weaker in real-world contexts involving important decisions. If the practice of informing people that they were being defaulted became widespread, moreover, it is unlikely that either of these default-weakening features would be common. That is because defaults would not be chosen at random and advance directives would be filled out only once, with a disclosed default.

Despite our results, it would be premature to conclude that the impact of nudges will always persist when people are aware of them. Our findings are based on hypothetical advance directives—an appropriate first step in research given both the ethical issues involved and the potential repercussions for choices made regarding preferences for medical care at the end of life. Before embracing the general conclusion that warnings do not eliminate the impact of defaults, further research should examine different types of alerts across different settings. Given how weakly defaults affected overall goals for care in this study, it would especially be fruitful to examine the impact of pre- or postinforming participants in areas in which defaults are observed to have robust impact in the absence of transparency. Those areas include decisionmaking regarding retirement savings and organ donation.

Most generally, our findings suggest that the effectiveness of nudges may not depend on deceiving those who are being nudged. This is good news, because policymakers can satisfy the call for transparency advocated in the House of Lords report⁹ with little diminution in the impact of positive interventions. This could help ease concerns that behavioral interventions are manipulative or involve trickery.

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supplemental material

- <http://behavioralpolicy.org/supplemental-material>
- Methods & Analysis

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