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The default pull: An experimental demonstration of subtle default effects on preferences

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Abstract

The impact of default options on choice is a reliable, well-established behavioral finding. However, several different effects may lend to choosing defaults in an often indistinguishable manner, including loss aversion, inattention, information leakage, and transaction costs associated with switching. We introduce the notion of the "default pull" as the effect that even subtle default options have on decision makers' uncertainty about their own preferences. The default pull shapes what a decision maker prefers by causing her to consider whether she prefers the default. We demonstrate default pull effects using a simple decision making task that strips away many of the usual reasons that defaults could affect choices, and we show that defaults can have substantial effects on choice, even when the default itself was not chosen.

Keywords: default, loss aversion, uncertainty.

1 Introduction

Perhaps one of the most well-established behavioral decision making effects is the effect of default options on choice. People choose options presented as defaults more often than they otherwise would, even for important decisions that would seem to require careful thought, such as choosing health care or retirement plans (for several examples, see Thaler & Sunstein, 2008). But under the umbrella that is "default bias" are several different effects that all point in the direction of choosing the default. Mere inattention could lead some decision makers to retain a default if action is required only when opting out of the default. Loss-averse decision makers may not want to give up the default because it feels like a loss that is more painful than gaining a different option is pleasurable (Kahneman, Knetsch, & Thaler, 1991; Camerer, 2004). The fact that someone has set an option as a default can create an "information leakage" (McKenzie, Liersch, & Finkelstein, 2006; Sher & McKenzie, 2006) from which people might infer normative reasons for choosing the default. Finally, people may choose defaults when there are sufficient transaction costs of money or time in choosing an alternative.

We examine an effect of default options on choices that we call the *default pull*. The default pull is the effect that default options have on decision makers' uncertainty about their own preferences. When deciding what one likes, we argue that even subtle defaults can help to shape what a decision maker prefers by causing her to consider whether she prefers the default. This process provides a link between how defaults influence choices and how anchors influence judgments (Strack & Mussweiler, 1997). In this way, the default pull effect is a kind of constructed preference (Slovic, 1995), wherein the manner in which preference is elicited influences what one's preferences are. Unlike many findings that people stick with the default, we show that the default pull sometimes involves choosing the default and sometimes involves choosing something different from what one otherwise would in the presence of a default, but not the default itself.

To study the default pull, we use a motivated experimental choice that strips away many of the common reasons why defaults might work: a modified presentation of a dictator game (Forsythe et al., 1994) in which whatever option is on the top of a list of allocations is left selected on a computer interface, ostensibly unintentionally (see Figure 1). This subtle default option substantially affects players' choices; different defaults can change the average amount given by 17% of the total endowment. The design and results of our experiment allow us to rule out inattention, loss aversion, information leakage, and transaction costs as explanations for the effect of the default. Before we describe the specifics of the task, we briefly review the literature on default biases, and then formally define the default pull.

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1.1 Default biases

Making an option a default that will be retained unless the decision maker actively chooses something else leads to more people choosing the default across a variety of contexts. Johnson et al. (1993) analyzed auto insurance choices in two bordering states (New Jersey and Pennsylvania) that switched to a no-fault regime that allowed consumers to limit their right to sue for tort damages. New Jersey made limited tort the default option, while Pennsylvanians were presumed to select full tort, for which they would pay higher rates unless they specified that they wanted limited tort. In this natural experiment, 75% of Pennsylvania consumers paid to retain full tort, while only 20% of New Jersey consumers did. Pennsylvanians spent millions of dollars more on auto insurance, apparently as a result of this default setting. Sticking with the default in this manner has been argued to reflect loss aversion (e.g., Kahneman, Knetsch, & Thaler, 1991; Camerer, 2004), with the default choice representing the reference point. If full tort is a default, then the prospect of losing it makes it seem more valuable than the prospect of gaining it, due to the steeper slope of the Prospect Theory value function in losses.

Similarly, Korobkin (1998) demonstrates default effects in an experiment with legal contract default rules that are consistent with loss aversion. Law student subjects provided advice to clients in hypothetical contract negotiation scenarios, with the content of the legal default terms (e.g., limited or full liability) manipulated between experimental groups. The results show that the choice of default terms subsequently affected the students' preferences for the terms of their contract. While the standard law and economics view is that defaults promote efficient bargaining, these results suggest that the choice of legal default terms can be problematic because it can also directly affect what terms the contracting parties prefer.

Another explanation for choosing defaults is that for unfamiliar decisions, consumers see defaults as carrying normative information that serves as guidance for their decision making. In the example above, if the state saw fit to make full tort rights the default, then some might reason that it is unwise to relinquish this right unless they feel sure of the consequences. Thaler and Sunstein (2008) discuss the ramifications of default options in the context of the Medicare Part D prescription drug program, which can be difficult for some consumers to navigate. Subjects who failed to sign up for a plan, perhaps because they were overwhelmed with the choice, were assigned to default plans and once assigned to such default plans, may never switch. This bias toward the status quo (Samuelson & Zeckhauser, 1988) has been demonstrated for similar decisions, e.g., sticking with one's retirement plan provider when new options become available, even though most people making the choice for the first time prefer the new options.

Defaults have been to shown to have effects on a wide variety of health decisions. For example, employees are more likely to get flu vaccinations when given a default appointment time than when asked to set an appointment (Chapman et al., 2010) and cadaveric organ donation rates increase when people are presumed to be donors (Johnson & Goldstein, 2003). Abadie and Gay (2006) examine default options within the opt-in/opt-out structure of cadaveric organ donation. In opt-in systems of informed consent, one must demonstrate explicit consent to being a donor, e.g., checking a box that says one wants to donate her organs in the event of death, while with opt-out systems of presumed consent, one is classified as a potential donor unless one actively opposes donation. Across 22 nations, opt-out structures were found to increase the number of people choosing to be organ donors. It is unclear how much the default conveyed normative information about what one should choose or how much transaction costs influenced the decision to stick with the default.

1.2 Default pull effect

In this section, we present a formal representation of the default pull effect that borrows from Kreps' (1979) preference for flexibility model. Default effects have been formally modeled using (A, f) representations (see Salant & Rubinstein, 2008), where preference is a function of both the choice options available and the frame, taken to include problems in which one option is a default. Axiomatic models of choice where defaults affect preferences (Masatlioglu & Ok, 2005; Sagi, 2006) have also been developed, but all of these representations do not necessarily distinguish among reasons *why* the default affects preferences. We chose a representation that describes the default as helping to resolve a decision maker's own uncertainty about preferences.

Unlike the many findings of people sticking with a default option, which may be due to loss aversion, information leakage, inattention, or transaction costs, the default pull effect does not imply that one will stick with the default. Rather, decision makers sometimes retain the default and sometimes move substantially away from it, while still being affected by it. This happens because the default affects the manner in which the decision maker constructs his or her preferences. Decision makers, we argue, recruit information to decide whether the default is plausibly what they prefer, so that, even if the default isn't chosen, it affects their preferences.

To formalize our idea of the default pull, it is helpful to conceive of variability in choice behavior. For example, one can imagine that if a subject were asked to make the dictator choice many times with memory be-

ing wiped out between each choice, he or she might not always choose the same thing. Similarly, the idea of constructed preference (Payne, Bettman, & Johnson, 1992; Slovic, 1995) is that across a number of different preference elicitations with the same choice options, a person does not always choose the same thing. The influence of a default option is one such example. If basic preferences are indeed shaped by the presence of a default, we need a conception of how decision makers are uncertain about what it is that they want. We focus on *mixture models* (also called *random preference models*, Loomes & Sugden, 1995; see Heyer & Niederée, 1992; Regenwetter, Dana, & Davis-Stober, 2010, 2011) as a way to characterize choice variability. Mixture models assume that the decision maker has a probability distribution over the different possible preference orderings of the choice objects. That is, mixture models assume choices vary because the decision has varying preferences across time. As opposed to a *true plus error* conception of choice variability, wherein a decision maker has one true preference that is expressed with error when making choices, or *multi-attribute models* that rely on thresholds of noticeable differences between attributes to create uncertainty in choice (Tversky, 1969; Ariely, Loewenstein, & Prelec, 2003), mixture models seem more naturally related to constructed preference, wherein what one prefers changes as a function of how preferences are elicited.

Mixture models hold that when decision makers with variable preferences make a choice, it is as if they make a draw from this probability distribution. For the preference that they draw, they choose the most preferred option. Applying a mixture model to the case of our dictator game task, we assume that experimental subjects have a probability distribution over all possible preference rankings of the allocations. Some rankings might have little or no support in this distribution, e.g., those rankings that place 0–10 as the most preferred option, while empirically, rankings that place 10–0 or 5–5 as the most preferred option should tend to have the most support. The probability that a decision maker selects an allocation is, then, the probability that the allocation is preferred, which in turn is the sum of the probabilities of all preference states which rank that allocation most preferred. Formally stated,

$$P_{xy} = \sum_{\substack{s \in \mathcal{S} \\ x \succ y}} P_s \tag{1}$$

where P_{xy} is the probability of choosing allocation x over y, $s \in \mathcal{S}$ is a preference state (i.e., a ranking of the allocations) from among the set of all possible states, and P_s is the probability that one is in a state that ranks x over y.

We can use the mixture model framework to put into expected utility terms a decision maker's utility for a given menu of choice options. The decision maker has utility $u_s(x)$ for an allocation x when in a preference state s. Given a menu of options A, like the options available in our dictator game, the decision maker's utility for the menu, $v(A)$, is the sum of the utilities for the most preferred allocations within each mental state:

$$v(A) = \sum_{s \in \mathcal{S}} p(s) \Big[\max_{x \in A} u(x, s) \Big] \tag{2}$$

At this point, our formulation simply represents a preference for flexibility, wherein a decision maker prefers a larger menu because she is uncertain what she will want in the future (Kreps, 1979; see also Ergin & Sarver, 2010). The notion of the default pull is that the presentation of options itself, or more precisely which option is presented as the default, somehow influences the decision maker's preference distribution. For example, because prior literature on dictator games suggests that 0–10 is rarely chosen (see review in Camerer, 2003), one might conclude that it would not even matter if 0–10 was an option presented to the dictator. Yet, our study will show that having the option of 0–10 affects choices, particularly when 0–10 is the default, even if the decision maker does not choose 0–10.

The default pull suggests that an option defined as a default directly influences the decision maker's probability distribution over preferences states. Put differently, the default influences the decision maker's beliefs about her own preferences. Thus, the particular presentation of a menu becomes important. We can define the decision maker's utility over pairs (A,a) where A is the menu of all options and $a \in A$ is the default option. The decision maker's utility for a pair (A,a) where the probability distribution over states is referenced by the default is then:

$$v(A, a) = \sum_{s \in \mathcal{S}} p(s : (A, a)) \Big[\max_{x \in A} u(x, s) \Big] \tag{3}$$

One way to describe the process is that the decision maker is unsure whether she will ultimately be happy with a particular choice. The presence of a default allocation primes her to consider first whether that allocation is the one she prefers. A literature on anchoring processes in judgment suggests that a *selective accessibility* takes place (Strack & Musweiler, 1997) in which decision makers test a proposition in a confirmatory manner by first recruiting reasons why it might be true. In anchoring processes, selective accessibility leads to judgments that are closer to an anchor's value because people have considered reasons why the anchor might be accurate. Here, we suggest a similar process in which the default leads decision makers to conclude that their own mixtures place greater weight on some preference states because considering whether they prefer the default triggers "salient considerations" for making the choice (Salant & Rubinstein, 2008).

For example, a decision maker faced with a default choice of (0–10) in a dictator game may consider whether she will be happy with being very generous. In doing so, she may recruit reasons why she likes generosity, and as a result conclude that her mixture places more weight on generous outcomes than it otherwise would. Note that this process does not imply that the decision maker will choose the default, in this case (0–10). If the decision maker normally has zero weight on preference states that rank (0–10) highest, she may come away from the process still with zero weight on (0–10), but in recruiting reasons why she likes generosity, support could shift toward plausibly favorite but generous allocations like (5–5) so that they are more likely to be chosen.

We hypothesize that once the default pull has triggered these salient considerations, they can influence choices beyond the one in which preference construction takes place. That is, the presence of a default choice affects the probability distribution over preference states, but that distribution may remain as such for successive choices. In this way, the default pull is similar to work by Ariely, Loewenstein, and Prelec on "coherent arbitrariness" (2003) in that there is uncertainty when formulating preferences, but then decision makers behave as if those preferences are stable. The default pull differs from the coherent arbitrariness work in that we suggest a different process by which preferences are formulated and conceive of preference uncertainty in a different manner.

2 Experiment

We chose our particular formulation of a dictator game to demonstrate the default pull because it strips away several reasons why a default might influence choices. First, the game is incentivized and not particularly complicated, so that there is little reason to believe that the default would be chosen because the task was overwhelming or because subjects were indifferent among the options. Second, it is difficult to apply the loss aversion explanation in a consistent manner across our results. Suppose, for example, that a decision maker who normally chooses (10,0) without a default chooses (5,5) when it is the default option. We could view own and other's payoff as separate dimensions and thus, choosing (10,0) could seem like a gain of 5 in the "self" dimension, but a loss of 5 in the "other" dimension relative to the default. Standard loss aversion could then be applied if losing 5 in the "other" dimension is more painful than gaining 5 for one's self is pleasurable. However, we will show that (5,5) is a modal choice when (0,10) is offered as a default, implying that gaining 5 is better than losing 5 in the "other" dimension. Third, our particular default treatment involves leaving the top option in an apparently random payoff array preselected, subtly encouraging subjects to consider using that option without calling it a default as such. In this way, it is unlikely that the default involves information leakage about what one ought to do. Indeed, several subjects reported either not noticing the default or not realizing that the experimenters left it selected intentionally. Finally, our task uses multiple rounds of the same decision. If inattentiveness or transaction costs were the reason that subjects left the default selected, then they should leave the default selected in every round. We show that if a default allocation is selected in the first round, subjects are likely to seek it out and choose it again in subsequent rounds, even though it is no longer a default and the order of the allocations changes in every round.

Previous work has noted that dictator games are notoriously sensitive to context (see, e.g., Bardsley, 2008; List, 2007; Levitt & List, 2007; Dana, Weber, & Kuang, 2007), thus it is not surprising that a manipulation could strongly affect levels of giving. While this prior work draws into question how we should interpret giving and points out how strong demand effects can be in the dictator game, neither concern bears on the question of whether a subtle default affects choices. Indeed, our subjects explicitly deny the possibility of a demand affect, overwhelmingly reporting that the default did not affect their choices.

3 Methods

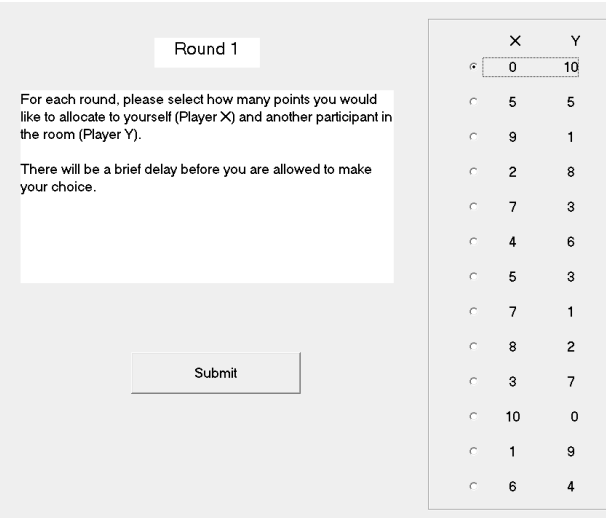
3.1 Subjects

Subjects ($n = 82$) were students at the University of Pennsylvania, all of whom participated voluntarily in response to an online advertisement for paid decision experiments. All subjects gave informed consent prior to the experiment. Seven sessions were run, ranging in size from 6 to 18 subjects.

3.2 Procedures

Stimuli were presented via computer interface and instructions were additionally read aloud. Subjects were instructed that they would play a simple economic game with another person with whom they would be randomly matched and that all identities would be kept anonymous. Each subject was instructed to complete a series of four consecutive dictator games in which they would choose an allocation of points between themselves and the anonymous person with whom they were matched. Each game consisted of a list of possible divisions of 10 points between the subject and the anonymous other party in whole number amounts. The points were converted to cash at a rate of 25 cents each at the end of the experiment, making the total endowment being allocated over the four rounds $10.

Figure 1: Interface.



The strategy method was used to elicit choices; all subjects were instructed to make choices in the role of dictator (described in neutral language as "Player X") and informed that after all decisions were made, half would be randomly assigned to be Player X, and thus have their choices executed, while the other half ("Player Y") would not have their choices executed and instead be assigned to be the recipients of the choices made by Player X. No subject could be assigned to be the recipient of his or her own choices. There is some concern that the strategy method could affect levels of giving because dictator choices are made while knowing that one could end up being a recipient instead. Our results will show, however, that our subjects gave at somewhat lower levels than average (typically a little under 30%, see Camerer, 2003) when they were not assigned a default. More importantly, we are less concerned in this study with the levels of giving than with differences in giving across default treatments.

In each round of the game, thirteen possible wealth allocations were presented in a checklist format on the computer interface (see Figure 1 below). These allocations included all 11 of the possible whole divisions of 10 plus 2 distracter allocations that were Pareto-dominated (i.e., summed to less than 10). The distractors changed in each round and were included to promote attentiveness. The order in which the options were presented changed in each round of the game, such that the subject had to search through a randomized list of options to select their choice. Subjects were instructed to select one option in each round and verify their choice before continuing to the next round.

"Defaults" were created by leaving the allocation at the top of the list pre-selected on the screen at the beginning of each round (e.g., 10–0 in Figure 1). This situation is common, for example, on web forms where one of the objects on the display must have focus. At no time during the experiment was mention made of the pre-selected choices. One of four default conditions was assigned in each round, with allocations of (10–0), (5–5), and (0–10) used as defaults in 3 of the rounds, and no default selected in the 4th. The order of default presentation was fully balanced; each subject was serially assigned to see one of the 4! = 24 possible orders until all were exhausted and the process was repeated.

After subjects completed all four rounds, roles were randomly assigned and subjects were informed of their monetary compensation for the experiment. Subjects then filled out a brief survey including three questions about the experiment. In one version (n = 37), we asked (1) whether they noticed the presence of a pre-selected option; (2) whether the presence of a default affected their choices; and (3) whether their choice in the first round of the experiment affected their choice in subsequent rounds. For a second group of subjects (n = 32), we replaced question (2) by a free-response question asking why they thought an option was left selected on the screen. For this group of subjects, we only asked the free-response question if they had responded affirmatively to question (1) about noticing that an option had been selected. Due to an error in one session and one subject leaving the items blank, 13 subjects did not answer any survey questions.

4 Results

4.1 Dictator choices

Within-subject choices stayed largely consistent across the 4 rounds of the experiment. Figure 2 plots the mean amount of points given in each round by which default was presented in round 1. The between-subject effect of having either a fair or hyperfair default in round 1 (5–5 or 0–10) vs. a selfish default (10–0) or no default drowns out the within-subject effect of having different defaults across rounds; mean giving starts relatively high for the fair and hyperfair defaults and remains so throughout the 4 rounds, while giving stays relatively low across all rounds for the selfish default and no default. Choices in the first round were highly correlated with choices in the second, third, and fourth rounds (rs = .71, .52, and .65 respectively). Thus, the default affects choices in round 1, but then recognizing that the subsequent rounds essentially represent iterations of the same decision, subjects stay consistent with their earlier choices even though the default changes—a "coherent arbitrariness" of sorts (Ariely, Loewenstein, & Prelec, 2003). In light of the distracter allocations and randomized choice set, the ob-

Figure 2: Mean amount of points given as a function of the default in round 1.

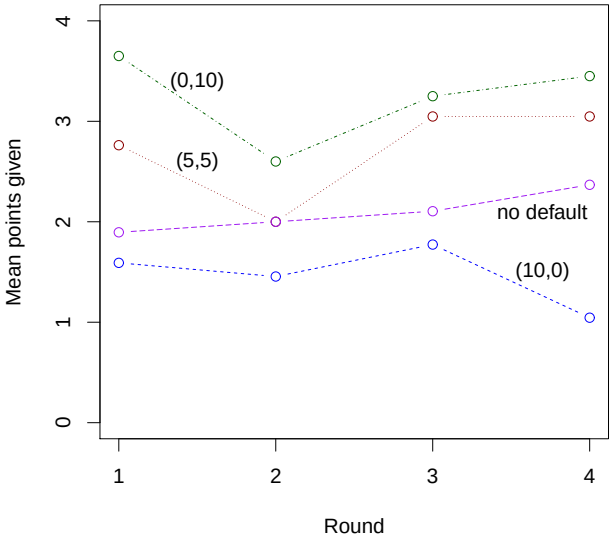
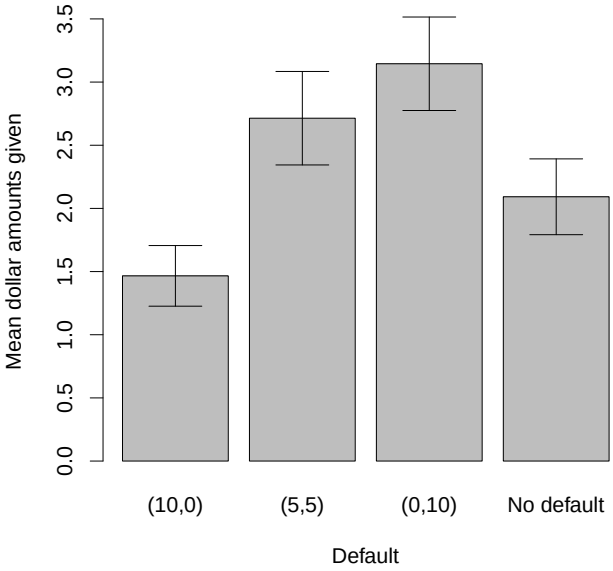


Figure 3: Mean total dollar amounts given out by dictators and standard errors by which default they saw in round 1.



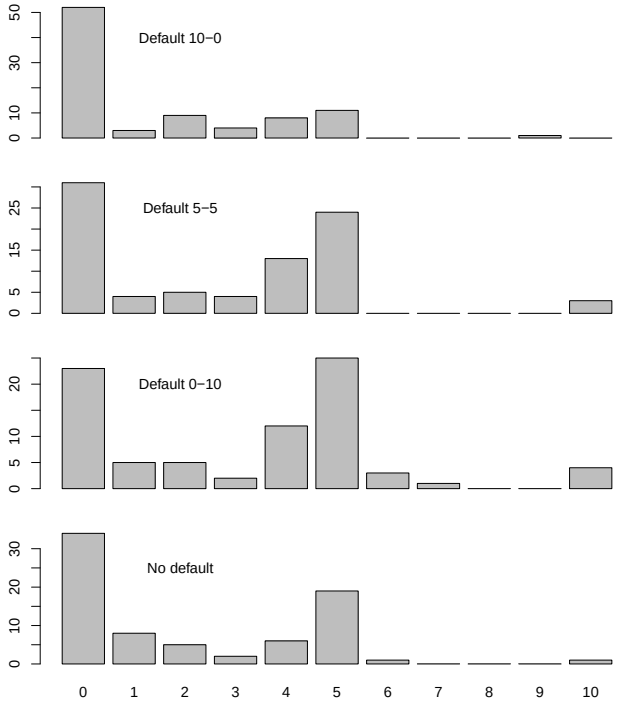
served behavior strongly supports the idea that subjects did not make their choices through indifference or inattentiveness, but rather actively remained consistent by having to search through the list in each round for the desired allocation. We will focus the remainder of our analyses on the between-subject effects of the round 1 default on the total amount a dictator gave.

Figure 3 displays the mean amount of money players gave for each of the default conditions. Choices were strongly affected by the presence of first-round defaults. Overall, giving was higher in the 5–5 (n = 21) and 0–10 (n = 20) default conditions (ms = \$2.71 and \$3.14, respectively) than in the 10–0 (n = 22) and no default (n = 19) conditions (ms = \$1.47 and \$2.09, respectively), so that the default that a subject received in the first round could influence the amount they gave overall by about 17% of the total endowment. The omnibus null hypothesis of equal giving across all default conditions can be rejected ($F_{(3,78)}$ = 3.17, p = .029), while a planned contrast confirms that giving in the 5–5 and 0–10 default groups combined is significantly higher than in the 10–0 and no default groups combined ($t_{(78)}$ = -2.74, p = .008). Further planned contrasts reveal that giving is significantly less in the 10–0 default condition than in both the 5–5 default condition ($t_{(78)}$ = -2.07, p = .04) and the 0–10 default condition ($t_{(78)}$ = 2.91, p = .005). No significant differences emerged between giving in the 10–0 and no default groups, suggesting that keeping the endowment was a sort of default position of our subjects. Further, we failed to reject the null hypothesis of equal giving between the 5–5 and 0–10 default groups, consistent with the idea that our subjects, while affected by the default, did not just stick with the default.

The effect of the first-round default clearly did not depend on choices of the default itself. We eliminated all cases in which 10 or 0 contribution was chosen, then examined contributions (mean contribution over the four rounds) as a function of the first-round default, looking only at those subjects who received 10 or 0 as the first-round default. The mean contributions were 3.61 when the first-round default was 0 and 4.66 when it was 10, and these differed significantly ($t_{(13)}$ = 2.87, p = .013).

Figure 4 displays the frequencies of giving decisions across all rounds when facing each first round default condition. We note that the distribution of choices when facing the (5,5) and (0,10) defaults is nearly identical. While the large number of even split choices in the (5–5) default condition could be attributed to subjects retaining the default, we note that a similar number of subjects chose the even split when the default was (0–10). Further, gifts of the entire 10 points were uncommon, even when the default was 0–10. This behavior is consistent with our idea of the default pull: Subjects are not necessarily sticking with the default, though the default affects behavior. The default is sometimes used if it is a plausibly favorite allocation, as in the case of (5–5), but only affects choices without being chosen itself when not a plausibly preferred allocation, as in the case of (0–10). This behavioral result is thus consistent with subjects having uncertainty over what they want and using the default to construct their preferences.

Figure 4: Frequency of amounts given in any round as a function of the default.



4.2 Survey responses

Survey responses confirmed the subtlety of the default manipulation. Approximately 29% (20/69) of subjects reported that they had not even noticed the presence of a pre-selected option on the screen. Although the presence of this option had an effect on choices, of 37 respondents who were asked explicitly whether their choices were influenced by the default, only 3 (8%) replied that it had. Of the 32 subjects assigned to be probed about why an option was pre-selected, 26 noticed the default. Interestingly, 18 of these 26 responses suggested in some way the possibility that the experimenter was trying to influence their choice with the pre-selected option. Apparently, subjects considered that a default might be an attempt to influence them, but did not believe that it worked to affect their own choices. Further, only 29 out of 69 (42%) felt that their choice in the first round influenced the choices in subsequent rounds, despite the fact that choices in later rounds were strongly correlated with first round choices. Taken together, these responses are consistent with Nisbett and Wilson's (1977) classic findings on "telling more than we can know". While the effects of the default in the first round and status quo in subsequent rounds are quite evident when viewed between-subject, the subjects themselves do not appear to experience the default as affecting their choices. These results speak against an information leakage explanation of why defaults worked in this setting, as subjects are explicitly denying that they are using the default to make choices.

5 Discussion

We have shown evidence of a default pull effect wherein people appear to be affected by subtly presented default options while constructing their preferences. Unlike biases toward sticking with the default, the default pull affects choices even though decision makers may not choose the default itself. Additionally, we have shown evidence that the default pull happens outside of the decision maker's awareness; almost all of our subjects denied that they were affected by the presence of a default despite statistical evidence to the contrary, and a sizeable portion of our subjects reported not even noticing the presence of defaults. Finally, we show that even though preferences are largely determined by an arbitrary default, decision makers try to remain consistent with those preferences in future decisions, a sort of "coherent arbitrariness" (Ariely, Loewenstein, & Prelec, 2003).

One concern is that the default pull effects we find are the result of poor incentives. Although our payment was standard for this type of task, it represented compensation for 4 such choices combined. This payment structure, however, was transparent to subjects, who also tended to choose the same thing across all 4 rounds, so the total incentives they faced were standard. Further, a lack of motivation would predict the opposite of what we observed: If people were not making careful choices, we wouldn't find systematic differences based on defaults. These differences did not arise from laziness: a (0–10) default was rarely chosen, for example, but it did lead subjects to seek out (5–5). Further, defaults that were retained in round 1 often led subjects to seek out that same allocation in subsequent rounds, even though it was not a default.

The present findings can enrich our understanding of how defaults affect behavior. While defaults can be chosen for many reasons including loss aversion, inattentiveness, information leakage, and transaction costs, we show that default options can subtly affect preferences in a more fundamental way by serving as a cue by which people decide what they like. That people do not have access into this mental process points to a reason why the effects of arbitrary defaults are so persistent. Because people do not consciously realize when defaults affect their choices, they cannot effectively learn not to be affected by them. For decisions such as what prescription plan to choose, whether to waive one's right to full tort, or, as in our case, how generous to be, it remains unclear how a market would punish the default pull and promote resistance to the effects of arbitrary defaults, thus allowing default effects to persist in the face of incentives to be unbiased.

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