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Patients' self-interest bias: Empirical evidence from a priority-setting experiment*

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ABSTRACT

This paper provides empirical evidence on the biasing effects of self-interest on patients' stated preferences in a priority setting experiment. The analysis is based on a choice experiment to elicit preferences on the prioritization of patients on a waiting list for a non-urgent surgical intervention. We implement a procedure to test the existence of self-interest based on the similarity between respondents and the hypothetical scenarios they have to evaluate. Our findings indicate that when patients rank the hypothetical scenarios on the waiting list, they consider not only the explicit attributes described in each card but also the similarity of each scenario to their own. In particular, they assign a higher priority to those scenarios that better mimic their own states. Furthermore, we find that patients show a higher probability of providing "irrational" rankings than general public participants. The degree of similarity between the respondent patient and the dominated scenario partially explains this result.

Keywords: choice experiment; patient preferences; self-interest; health care priority setting

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1. Introduction

Over the past two decades there has been growing interest in the measurement of patient and general public preferences in health care allocation through discrete choice experiments. Although existent literature is controversial, in the sense that there are differences in the findings, one of the most documented results from these experiments is that patients and general public assign different values to hypothetical health. Understanding the reasons behind these discrepancies is crucial for health policy-makers willing to decide whose preferences should be elicited.

Literature suggests different types of psychological processes to explain discrepancies between patients and general public members in the valuation of health states (see Ubel *et al.*, 2003 for a revision of explanations). Most of these processes are related to the experience of illness. Discrepancies may occur because patients have more information about what it means to be in a certain health state than the general public. Discrepancies may also arise because patients are adapted to health related restrictions in daily life while the general population does not incorporate this aspect when trying to imagine what it is like to be in those states (Dolan, 1999; De Witt *et al.*, 2000; Menzel *et al.* 2002, Dolders *et al.*, 2006.). Other sources of differences are related to patients' difficulty to separate certain attributes distinguishing health state from other circumstances of life that, in their own experience of illness, have been associated to them (De Witt *et al.*, 2000). In this case, patients would be considering omitted information for the general public. This, in practice, is equivalent to their valuing different health states than the general public.

The explanations above reflect differences between the informational sets of patients and general public. Besides this aspect, patients and general public may also

differ in the perspective they adopt in choice experiments. According to Dolan *et al.* (2003), the perspectives a participant may adopt in experiments designed to elicit preferences for health resource allocation can be classified into *personal*, *social* and *socially inclusive personal*. There is empirical evidence indicating that each of these perspectives may lead to different valuations because the participant takes into account different kinds of considerations (Pinto and Abellán, 2005). In the *personal perspective*, the participants focus on the effect of the program on themselves; therefore taking into account their own personal welfare but not others' welfare. In other words, self-interest drives the decision. In the *social perspective*, the participants are asked about treatments that affect the others but not themselves, thus eliciting their preferences on distributional and fairness issues. In the *socially inclusive personal perspective*, the participants are asked about programs that affect themselves and others; hence their valuation includes both self-interest and distributive considerations.

The *personal* and *socially inclusive personal perspectives* differ from the *social perspective* in that they incorporate self-interest in the decision, given that participants evaluate the personal gains and costs of their responses. This has positive implications when eliciting the social values of health programs. As Menzel (1999) points out, in order to discern social values, participants should be confronted with “questions that encompass their own self-interest [...] not questions that focus only on others”. For this reason, recent literature has shown an increasing interest on the *socially inclusive personal perspective*, in contraposition to the social perspective, to elicit health-related societal values (Johannesson, 1999; Menzel, 1999, Murray *et al.*, 2000; Pinto and Abellán, 2005).

The problem arises when self-interest motivates participants to not declare their own preferences. This occurs when participants perceive that their responses may

somehow alter their future gains and subsequently modify their responses to deviate resources to themselves. When this occurs, a self-interest bias emerges. A way to reduce this bias in a *socially inclusive personal perspective* is to elicit preferences in an ex-ante context using, for instance, the veil of ignorance approach (Rawls, 1971; Johannesson and Gerdtham, 1996; Johannesson, 1999). An individual behind a veil of ignorance does not know who s/he is in a population and, therefore, is expected to respond as if s/he did not know the resources s/he might obtain if the resulting allocation criterion were to be applied. This reduces the incentives to behave strategically. The ex-ante context, however, cannot be defined when participants are not hypothetical beneficiaries but rather true beneficiaries of the program under evaluation (e.g. patients). In this case, participants do know who they are in the population and, consequently, can anticipate the resources they will obtain if the allocation criterion they decide were to be applied.

For example, let us suppose a group of individuals participates in a choice experiment in which they have to value different health programs defined in function to the set of characteristics (pain treatment effectiveness, gain in mobility, cost, etc.). If these individuals are not patients at that moment and, therefore, do not know what their future situation will be, it is likely that they will not bias their valuations and will manifest their true preferences. However, if the participants are patients, they know that some of the characteristics of the program may affect them more than others. A self-interest bias will occur if the patients overvalue those characteristics more related with their situation and undervalue those which do not affect them in order to gain in their own self-interest),

The aim of this paper is to provide empirical evidence on the biasing-effects of self-interest on patients' stated preferences in experiments on health resource allocation. Our study is based on a choice experiment implemented to design a prioritization system

of patients on a waiting list for a non-urgent surgical intervention. Participants in the experiment are patients awaiting a similar intervention and members of the general public. Therefore, this experiment adopts two perspectives: a *social perspective* in the case of the general population participants and a *socially inclusive perspective* in the case of the patients. Although the experiment was not designed specifically to investigate self-interest biases on behalf of patients, it provides suitable information to carry out this analysis. Since the patients who participate in the experiment are prospective recipients of the treatment for which they are setting priority, they may perceive potential gains in the results if they consider that their answers may somehow improve their position on the waiting list. The first goal of the paper is to determine whether patients place “their group” (i.e. hypothetical patients who mimic their own health state) on an advantageous position on the waiting list.

A second aspect we investigate is to what extent patients’ self-interest bias lead to “irrational rankings”, that is, to failures in dominance tests. Such failures occur when patients rank a hypothetical scenario which represents a patient in a better situation higher on the waiting list than another that is ranked lower. There are several papers that explore why participants fail dominance test in choice experiments (e.g. Lancsar and Louviere, 2006; Ryan and Bate, 2008; San Miguel *et al*, 2005). These studies show that incorporating additional information on the mental processes undertaken by participants in choice experiments may help to rationalize apparently “irrational responses”. For example, San Miguel *et al*. (2005) note that individuals who had experience of attending the practice and the condition evaluated may bring “extra” information which is not controlled for in the experiment. In line with this idea, we analyze whether the similarity between the patient and each evaluated scenario act as an omitted attribute (or “extra”

information) for which its valuation on behalf of patients may lead to failures in dominance tests.

The rest of the paper is organized as follows. Section 2 describes the design of the choice experiment and the methodology to obtain the point system to prioritize patients on the waiting list. Section 3 analyzes self-interest bias in patients' stated preferences and, finally, Section 4 discusses the implications of our findings.

2. Methods

2.1 Choice experiment design

The initial purpose of the experiment was to obtain a point system to prioritize patients on a waiting list for a non-urgent surgical intervention, following the methodology proposed by Rodríguez-Míguez *et al.* (2004). The selected intervention was prostatectomy on patients with Benign Prostatic Hyperplasia (BPH). Participants in the experiment had to rank a set of hypothetical candidates for this intervention according to the degree of priority they should be given on the waiting list (a detailed description of the experiment is provided in Abad *et al.*, 2006).

The attributes that defined the hypothetical patients were previously selected by three focus groups: patients (n=7), health professionals (n=8) and general public (n=7). Participants in these groups were interviewed on the factors they considered important in determining a patient's priority on the waiting list for a BPH intervention. After a discussion time, participants in each group scored the attributes cited during the meeting 0 to 9 according to the relevance they considered each attribute should have in a prioritization system. We selected the five attributes that obtained the highest positions

after summing up the scores across the three groups: 1) discomfort due to BPH; 2) severity of BPH; 3) limitations for non-work activities (due the BPH); 4) limitations for work activities (due the BPH); and 5) having other illnesses that worsen health condition.

The levels of the clinic attributes (discomfort and severity) were established based on interviews with experts in Urology and some medical references on the HBP clinical practice (Barry *et al.*, 1992). For the non-clinic attributes the levels were defined as having/not having. Table A1 in Appendix A shows a detailed description of the attributes and their levels. The combinations of the attribute levels (five attributes with two levels each) gave rise to 32 hypothetical patients or scenarios. A fractional factorial design allowed us to reduce the total possible number of scenarios to eight.

Participants in the experiment consisted in patients and general population individuals. The sample of patients was made up of 85 men with BPH and indication for prostatectomy intervention who were recruited from the waiting lists of three hospitals in Galicia (a North-Western region of Spain). The sample of general population was made up of 220 individuals and it was designed to be representative of the Galician population. All participants were requested to fill out a questionnaire carried out by trained interviewers. Firstly, each attribute was carefully explained to each participant. Secondly, respondents ranked the eight hypothetical scenarios according to the degree of priority they considered it should be given on the waiting list. Finally, participants answered a set of questions on personal characteristics (age, gender, labor status etc.). In the case of patients, we also collected additional information on their situation in two attributes that define the hypothetical scenarios: limitations for non-work activities due to BPH and having other illnesses that worsen health condition. Table 1 displays

descriptive statistics of these variables for both patients and general population participants.

Table 1. Descriptive characteristics of respondents

Variables	General population (N=220)	Patients (N=85)
Age (mean, std)	47.7 (18.81)	67.4
Male	47.7%	100 %
<i>Education</i>		
Below primary	6.05	34.52
Primary	32.09	52.38
Secondary and university	61.86	13.10
<i>Labor status</i>		
Active	51.3%	9.4%
Inactive	45.8%	90.6%
Limitations in non-working activities due to BPH	--	35.0%
Has other illnesses that worsen the situation	--	11.3%
Duration (minutes) of the interview (mean, std)	27.55 (10.84)	34.70
Bad comprehension of the interview	12.73%	17.65%

There is an obvious difference in the demographic composition of these two samples which is related to the nature of the selected treatment: patients are men with a higher average age (67 years) than general public participants (48 years). It is also noteworthy that only 9.4% of patients in our sample classify themselves as economically active against 51.3% of general public participants. Regarding the experiment, patients devoted 34.7 minutes, on average, to complete the survey and in 17.6% of cases they were rated by interviewers as having a bad comprehension of the procedure. For general public participants both time of completion (27.5 minutes) and prevalence of bad comprehension (12.73 %) were lower than for patients. Also, there are appreciable differences in the educational background of these two groups of participants. In particular, only 6.052% of respondents from the general population have less than primary education, 32.09% have completed primary education and 62% have secondary or higher education. For patients these percentages are 34.5%, 52.38% and 13.1%, respectively.

2.2 Patient versus general public prioritization systems

Responses of participants to the choice experiment were modeled within the framework of random utility theory. We assumed a linear additive model of preferences which states that the utility derived from any combination of attributes is given by the sum of weights assigned to each of them. Under this assumption the scoring assigned to a scenario (patient) j is given by $P_j = \sum_{i=1}^5 x_{ji} \alpha_i$, where x_{ji} denotes the level of attribute i in scenario j and α_i is the parameter that reflects the weight assigned to the attribute level x_{ji} .

To obtain the contribution of each attribute level to the point system (the α_i 's), we estimated a rank ordered logit model (Beggs *et al.*, 1981). In this model, the dependent variable is the ranking of scenarios obtained from participants and the explanatory variables are the levels of the attributes displayed in each scenario. Since each attribute has only two levels, we consider as levels of reference for each the “best” ones (i.e. low severity, moderate discomfort, no limitations for non-work activities, no limitations for work activities and not having other illnesses that worsen the situation). Therefore, a priori, the coefficients on the explanatory variables are expected to have a positive sign indicating a higher position on the ranking relative to the reference case. In order to compare patient and general population preferences, we estimated separate models for each sample.

Table 2 summarizes the results. To ease the interpretation of the coefficients, they were transformed to a 0-100 point-count linear scale so that the patient scenario with the highest surgical priority would score 100 points. In this experiment the points coincide with the relative importance of each attribute which is obtained by dividing its

range (the difference between the highest and the lowest level coefficient) by the sum of all the attribute ranges (see columns 2 and 4 in Table 2).

Table 2: Priority system for BPH's intervention: rank-ordered logit estimates

Attributes	General population		Patients (Model I)		Patients (Model II)	
	Coeff. (Std. error)	Relative importance (%)	Coeff. (Std. error)	Relative importance (%)	Coeff. (Std. error)	Relative importance (%)
Discomfort	0.937*** (0.064)	21.4	0.764*** (0.097)	38.7	0.770*** (0.098)	33.4
Severity	1.822*** (0.0789)	41.6	0.198** (0.090)	10.0	0.201** (0.090)	8.7
Limitations for non-work activities	0.659*** (0.059)	15.0	0.443 *** (0.091)	22.4	0.501*** (0.094)	21.7
Limitations for work activities	0.474*** (0.058)	10.8	0.257*** (0.093)	13.0	0.392*** (0.107)	17.0
Having other illnesses	0.487*** (0.064)	11.1	0.312*** (0.091)	15.8	0.440*** (0.105)	19.1
EQUAL	---		---		0.175*** (0.070)	
Respondents (Obs.)	220 (1760)		85 (680)		85 (680)	
Log likelihood	-1843.678		-849.3831		-846.2414	

*** Significant at the 1% level, **significant at the 5% level and * significant at the 10% level

Overall, we observe that all attributes are highly significant in determining the priority of patients on the waiting list. The results also provide support for the model theoretical validity since the coefficients for each of the attributes have the expected signs. However, our estimates suggest that patients and general population assign different weights to these attributes. To assess this issue better, we tested for the equality of the estimated coefficients between the two populations. The likelihood-ratio test rejects the null hypothesis of homogeneous coefficients at the 1% level and, therefore, confirms the visual inspection of the results.

For general population *severity of illness* is the most important attribute in assessing priority (41.6 points up to 100), whereas patients relegate this attribute to the

last position in the point system (10 points). For patients, the attribute with the highest weight is *discomfort due to BPH* (38.7 points). The sizable difference between the weights assigned to *severity* and *discomfort* by patients and general population participants may be explained by differences in the perception of what suffering from the circumstances described by these attributes implies. The estimates suggest that, for general population participants, experiencing episodes of blood in urine or urinary infection, as described by the *severity* attribute, sounds more serious than for patients who have suffered from these circumstances. On the contrary, discomfort related to HBP seems to be of less importance for those who have not experienced them but it turns out to be highly burdensome for patients.

3. Testing for self-interest bias

As previously explained, in this experiment patients and general population participants differ in the perspectives they adopt. General population participants adopt a social perspective and, therefore, are detached from any self-interest. However, the patients who participated in the experiment were awaiting a prostatectomy at the time of the interview and, consequently, their responses were expected to come from a socially personal inclusive perspective in which valuations combine both self-interest and distributive considerations.

In this section, we analyze to what extent self-interest biases patients' responses with the aim of increasing their own gains, that is, to improve their own position on the waiting list. Our empirical strategy is based on the idea that patients may feel identified to a higher or lower degree with the hypothetical scenarios they have to rank. This

identification is established through the comparison of the attributes that define the scenarios and their own personal situation.

3.1 Do patients rank scenarios that are similar to their own higher?

To determine the similarity between patients' current situation and the scenarios, we exploit patients' information about their personal situation with respect to three of the five attributes that characterize the hypothetical scenarios: 1) labor status (levels: active / inactive); 2) limitations for non-work activities (levels: has / does not have); 3) having other illnesses that might worsen the situation due to BPH (levels: has / does not have). Note that patients' labor status does not exactly match the definition of the attribute *limitations for work activities*. However, as far as working patients are the only ones who may experience limitations in their work activities due to BPH, patients' labor status can be considered as a proxy variable for this attribute.

We built a new variable labeled EQUAL that takes values 0 to 3 according to the number of coincidences between the patient's situation in the three observed attributes and each hypothetical scenario to be ranked in the experiment. Thus, we obtained eight observations of the variable EQUAL for each interviewed patient: one for each ranked scenario. Since we do not have information about respondent's situation with respect to the clinical attributes *severity* and *discomfort*, the variable EQUAL is an imperfect indicator of the degree of similarity between the respondent and each hypothetical scenario. Nevertheless, the levels of three attributes considered to build the variable EQUAL show the advantage of having a simpler definition.

In order to test for the effect of the variable EQUAL on patients' stated preferences, we included it in the rank ordered logit model as an additional explanatory

variable. This strategy allows us to interpret the similarity between the respondent and the ranked scenarios as an added attribute of each scenario. Model II in Table 2 reports the estimates from this new specification. The results show that the coefficient on EQUAL is positive and statistically significant at the 1 % level. This means that, when patients rank the hypothetical scenarios, they evaluate not only the explicit attributes described in each card but also the similarity of each scenario to their own. In particular, they assign higher priority to those scenarios that mimic better their own states, which is consistent with self-interested behavior.

The last column of Table 2 displays the relative importance of the attributes after controlling for the effect of EQUAL. Note that though the ordering on the attributes is not affected by the inclusion of EQUAL (e.g. *discomfort* and *severity* remain as the most important attributes for patients and general population, respectively), the magnitude of the weights attached to each of them differs from those obtained in Model I. In fact, the sign of the changes corresponding to the three attributes used to define EQUAL is quite coherent with the existence of self-interest bias. Our results show that patients rank those scenarios that are more similar to their own higher so we expect that those attribute levels that are more prevalent in the patient sample are overvalued while those that are less prevalent are undervalued. This is exactly what we observe for *limitations for work activities* and *having other illnesses*. In both cases, the coefficients in Model I underestimate the weights of these attribute levels with respect to Model II. According to descriptive analysis presented in Table 1, these are the two attribute levels with the lowest prevalence among patients: only 9.4% of patients are inactive (i.e. may have limitations for work activities due to HBP) and about 11.3% have other illnesses that worsen the situation. As regards the attribute *limitations for non-work activities*, its

weight changes very little after controlling for EQUAL, which may be related to a more uniform distribution of its levels among patients.

Finally, note that controlling for EQUAL does not significantly reduce the discrepancies between general public and patient priority systems. This means that patients' self-interest bias is not the primary cause of this difference, which leaves room for other explanations proposed in the literature. Nevertheless, it is important to point out that the limitations in the available information preclude us from controlling for the similarity between patients and hypothetical scenarios in terms of *discomfort* and *severity*. Thus, we cannot discard the existence of further self-interest biases in the patients' point system.

3.2 Does self-interest explain “irrational” responses?

When using discrete choice analysis to elicit preferences, it is crucial to ensure that participants answer in a rational way. In this section, we test whether patients' self-interested behavior undermines this assumption.

There are different tests to analyze the rationality of individual choices (see, for instance, Lancsar and Louviere, 2006 and San Miguel *et al.*, 2005). One of the most frequently used checks is the non-satiation or dominance test that determines whether individuals chose dominated options. In our data it is straightforward to determine dominant scenarios because there is a clear ordering of the levels on all attributes. For example, a patient with *low severity* should be ranked lower than another patient with *moderate severity*, everything else being equal. In this case the first scenario would be the dominated scenario and the second one the dominant. A violation of this expected

ordering is identified as an “irrational” ranking. We put “irrational” in quotation marks because these answers can look “irrational” to us but be rational for the respondents.

To understand the empirical strategy, it is important to realize that when the participants ranked the eight hypothetical scenarios of the experiment, they implicitly carried out the comparison of 28 pairs of scenarios. In eight of the 28 pairs of scenarios there are dominances and, therefore, we can determine whether participants ranked them in an “irrational” way. Table 3 shows the percentage of patients and general population participants that provided “irrational” rankings in each of these dominance choices. The rate of failure is higher for patients than for general population participants with percentages that range from 12.94% (2.27%) to 41.18% (14.09%) in the case of patients (general population).

Table 3: Percentage of participants who failed non-satiation tests in each pair of scenarios

	Pairs of scenarios							
	1*	2*	3*	4*	5	6	7	8
General population	6.36	6.36	14.09	11.36	3.18	9.55	2.27	9.09
Patients	17.65	12.94	28.24	32.94	20.00	41.18	22.35	23.53
Total	9.51	8.20	18.03	17.38	7.87	18.36	7.87	13.11

(*) Pairs of scenarios used to build the dependent variable of Model III in Table 4.

As we have seen in Table 1, patients in our sample have, on average, a higher age and a lower educational level than general population participants. Also, patients show higher problems in comprehension. These differences might explain the higher probability of “irrational” answers on behalf of patients. To analyze whether this is true, we estimated a regression model to study the determinants of “rationality” failures. In this model, the dependent variable is a binary variable that takes value one if the respondent fails the rationality test and zero otherwise. Since there are eight potential

inconsistencies or “rationality” failures in which patients can incur when ranking the scenarios, we have eight observations of the dependent variable per participant. In order to capture unobserved factors specific to each respondent, we estimate a random-effects probit model. Following previous empirical literature on irrational preferences (e.g. San Miguel *et al.*, 2005), we include explanatory variables that account for both the context of the experimental design and respondents’ characteristics. In particular, we consider age, gender, education and a dummy variable that indicates whether the respondent is a patient or a general public participant. We also include a variable that captures the degree of similarity between the dominant and the dominated scenario (labeled “# identical attributes”). This variable counts the number of coincidences between the attribute levels displayed in the dominant and the dominated scenarios, so it takes different values for each inconsistency. For example, Figure B1 in Appendix B displays a pair of scenarios in which there is dominance. Note that, in this case, the number of identical attribute levels is two. Our hypothesis is that the bigger the number of equal attribute levels (i.e. the lower intensity of dominance) the higher the likelihood of providing an “irrational” ranking of scenarios. Finally, we add two explanatory variables related to the survey completion process: the first one is a dummy variable that takes value one if the interviewer perceived that the respondent had a bad comprehension of the survey (zero otherwise) and the second variable indicates the duration of the interview.

Model I in Table 4 summarizes the random-effects probit model estimates for the pooled sample of patients and general population participants.

Table 4: The determinants of the “irrational” responses: random-effects probit estimates

Independent Variables	Model I All dominances Coeff. (Std. error) ¹	Model II Four dominances Coeff. (Std. error) ¹	Model III Four dominances Coeff. (Std. error) ¹
Constant	-2.967*** (0.439)	-3.249*** (0.634)	-3.317* (0.007)
Age	0.010** (0.005)	0.011* (0.007)	0.011* (0.004)
Sex (female)	-0.214 (0.159)	-0.281 (0.218)	-0.268 (0.225)
Education [ref: below primary]			
Primary	0.069 (0.174)	0.239 (0.232)	0.261 (0.233)
Secondary and university	0.054 (0.226)	0.247 (0.284)	0.284 (0.298)
Bad comprehension of the interview	0.465** (0.190)	0.522** (0.244)	0.510** (0.228)
Duration of the interview	-0.026*** (0.008)	-0.024** (0.010)	-0.023** (0.010)
# Identical attributes	0.550*** (0.089)	0.562*** (0.125)	0.575*** (0.120)
Respondent [ref: GP]			
Patient	0.849*** (0.190)	0.693*** (0.229)	---
Patient more similar to the the dominated scenario	---	---	0.823*** (0.242)
Others patients	---	---	0.494* (0.256)
σ^2	0.644 (0.070)	0.783 (0.105)	0.766 (0.126)
Rho	0.293 (0.045)	0.380 (0.063)	0.370 (0.076)
Log likelihood	-744.890	-396.826	-395.838
Respondents ²	296	296	296
N	2368	1184	1184

*** Significant at the 1% level, **significant at the 5% level and * significant at the 10% level.

¹ Bootstrap standard errors.

² Nine observations were dropped from the original sample due to missing values.

The estimates show a significant positive effect of respondents’ bad comprehension and age on the probability of reporting “irrational” rankings. In contrast, we find that the higher the duration of the interview the lower the chances of providing an “irrational” ranking. In addition, the estimates confirm that the number of attribute level coincidences between the dominant and the dominated scenarios significantly

reduces the chances of the respondent ranking the pair of scenarios irrationally. Sex and education do not prove to be significant. However, the most interesting finding is that, even after controlling for all these explanatory variables, patients have a significantly higher probability (at a 1% level) of reporting “irrational” rankings than general population participants. The effect is almost twice as high as the effect of having bad comprehension of the survey.

To what extent does self-interest explain this finding? We consider that an “irrational” ranking is driven by a self-interested behavior. Patients who are more similar to the dominated than to the dominant scenario (i.e. patients who share more similar attribute levels with the dominated scenario than with the dominant scenario) are more likely to rank the dominated scenario higher. As in the previous section, the similarity between interviewed patients and the scenarios is determined on the basis of the information on three attributes included in the hypothetical scenarios: 1) labor status; 2) limitations for non-work activities; 2) having other illnesses that might worsen the situation due to BPH. The lack of information on patients’ severity of illness and discomfort precluded us from determining whether or not the interviewed patient was more similar to the dominated than to the dominant scenario in four of the eight potential inconsistencies. Therefore, we restricted the analysis to the four inconsistencies where this classification could be carried out. For instance, the pair of scenarios shown in Appendix B was excluded. Note that, in this case, we cannot determine whether or not an interviewed patient is more similar to the dominated than to the dominant scenario because the information on severity and discomfort is decisive to establish such comparison.

To analyze whether restricting the analysis to these four inconsistencies alters our conclusions, we re-estimated the random-effects probit model using this new dependent

variable. Now we have four observations per respondent. Results are presented in Model II in Table 4. We observe that neither the magnitude nor the significance of the coefficient estimates vary significantly, therefore this restriction does not impose important changes in the model.

The next step is to estimate the model by adding two new dummy variables that, for each patient, indicate which category this patient belongs to: a) patients that are more similar to the dominated than to the dominant scenario or b) other patients. The average percentage of patients who are more similar to the dominated than to the dominant scenario across the four inconsistencies is 61.76%. Model III in Table 4 shows the estimation results of this new specification using general population as the reference category. We find that the two categories of patients are more likely to report “irrational” rankings than general population participants but the magnitude of the effect is higher and more significant (1% level vs. 10% level) for patients who are more similar to the dominated scenario than for the rest of the patients. To assess this difference formally, we tested for the equality of coefficients on both types of patients against the alternative of a higher effect of patients who are more similar to the dominated scenario. We reject the hypothesis of equal coefficients at almost the 5% level ($p\text{-value}=0.0516$). These results suggest that the existence of self-interest bias is a possible explanation for the higher propensity of patients to report “irrational” rankings, even after controlling for other explanatory variables. Also, we can interpret the similarity between the respondent and each hypothetical scenario as “extra” information that patients incorporate into the decision. In this sense, it contributes by giving rationality to apparently “irrational” rankings.

4. Discussion and conclusions

The importance of accounting for social preferences in health care allocation decisions has been enhanced by many authors. However, deciding whose preferences should be elicited (patient or general public) remains an open question in literature. Those who criticize patient involvement in these decisions pose doubts related to the aspects that drive patient perceptions. One of the main critiques lies in the fact that patients may report strategic responses rather than the true ones if they perceive (correctly or incorrectly) these responses will affect payoff. The context of the experiment seems to be crucial in motivating such self-interest bias. In particular, experiments that adopt either a *personal* or a *social inclusive personal perspective* are more likely to motivate this sort of bias, since participants are (or pretend to be) potential recipients of the treatments under evaluation in both cases

This paper provides empirical evidence on self-interest bias, and the mechanism through which it operates, in a priority setting experiment in which participants are asked to rank hypothetical patients on a waiting list for a non-urgent surgical intervention. The context of this experiment is especially suitable to explore this issue given two main circumstances. First, that a group of participants are patients who were recruited from the waiting list of the same intervention under evaluation. Therefore, they adopt a *social inclusive personal perspective* in which the fact that they know their health status makes it impossible to elicit their preferences from behind the veil of ignorance. Second, that even though the experiment does not require patients to rank themselves on the waiting list (which would provide a direct incentive to search their own interest), it does provide information to determine the degree of similarity between patients and each hypothetical scenario they have to rank. This similarity is a proxy for

the intensity with which patients feel alike the individuals they are to allocate. Additionally, the extent to which this similarity increases the likelihood of ranking the scenario higher reveals a self-interest bias on behalf of the patient..

The first result of our empirical analysis is that patients do not only value the explicit attributes of the hypothetical scenarios when they rank them on the waiting list but also the similarity between each scenario and their own personal situation. In particular, the estimates reveal that patients position the scenarios that mimic better their own situation higher in the ranking. Indeed this result may be due not only to a self-interest bias but also to information asymmetries related to illness experience. That is, a patient could consider the scenario that is more similar to his own to be more burdensome than other scenarios because he knows what it is like to be in such a state. However, as we mentioned earlier, the empirical evidence goes in the opposite direction, i.e. patients usually attach a higher value to their own health states than general public do. For that reason, our results seem to be coherent with the hypothesis of self-interest bias. Furthermore, this finding is consistent with other papers that explore self-interest biases in allocation experiments outside health economics (e.g. Diekmann, 1997; Diekmann *et al.*, 1997; van Yperen *et al.*, 2005; Aydin and Sahin, 2003). This literature shows that when participants are asked to allocate resources among different candidates, their responses differ depending on the status of recipient or allocator in which they are placed. More specifically, when participants act as recipients (of the allocation) they rate those that overlap with their self-interest as preferable allocations. Yet, when they act as allocators, they do not recommend these allocations.

A second important result of the paper is that self-interest bias increases the probability of responding irrationally. In particular, we find that patients are more likely to provide irrational responses than general public participants. The degree of similarity

between the patient and the dominated scenario partially explains this source of difference between patient and general public stated preferences. Thus, it is more likely for a patient to rank a dominated scenario higher than a dominant scenario when the dominated scenario reproduces his own set of characteristics better than the dominant scenario does. This result holds even after controlling for other observable respondent characteristics and variables related to the experiment design. Our experiment suggests that the similarity between the patient and each evaluated scenario act as an omitted attribute (or an “extra” information) for which the valuation on behalf patients may lead to failures in dominance tests.

The existence of self-interest bias in priority setting experiments has efficiency and equity implications. First, if patient preferences are biased in the direction of self-interest, the resulting prioritization system would favor the most prevalent patient profiles. As far as this implies ranking patients with a lower health gain from the intervention higher than patients with a higher health gain, there will be efficiency losses. Second, if self-interest bias leads to a prioritization system that deviates resources from those in high health need to those in lower health need the system will also have negative effects in terms of equity.

Despite the fact that our experiment is restricted to a patients’ prioritization context, our findings can be extrapolated to other health care allocation experiments (e.g. discrete choice experiments for valuing health programs) in which participants have incentives to not declare their true preferences. Self-interest bias is likely to arise when participants are (or act as if they were) potential recipients of the health program to be evaluated and participants’ characteristics are used in the definition of the hypothetical scenarios or health states created to elicit preferences.

The limitations of this paper constitute lines for future research. First, our results are based on one only experiment and a relatively small sample of patients. To check the robustness of our results, it would be crucial to replicate similar experiments in other health priority setting contexts and include larger samples of participants. Second, our conclusions rely importantly on the measurement of the similarity between patients and hypothetical scenarios. However, this variable is measured with error because the similarity was established on the basis of only three of the five attributes that define the scenarios. Future work should include a wider range of information on participants' characteristics in order to allow for a closer comparison with the scenarios.

In conclusion, the existence of self-interest bias should be considered when carrying out health care allocation experiments where participants are users or potential users of the treatments considered. As far as participants identify themselves with some of the scenarios under valuation, they may report answers that are biased with respect to their true preferences with the purpose of deriving resources to themselves.–Therefore and with the purpose of reducing these incentives, special emphasis should be placed on the experimental design. Finally, if other sources of bias are to be identified, more qualitative information is needed to understand how individuals make their choices. This would add empirical evidence to the lively discussion on the pros and cons of using patient preferences.

References

- Abad P, Álvarez B, Rodríguez E, Rodríguez A. 2006. Preferencias sociales en las decisiones públicas: priorización de pacientes en lista de espera quirúrgica. *Hacienda Pública Española /Revista de Economía Pública* 179(4):113-134.
- Aydin O, Sahin DN. 2003. The effect of different types of reward allocation on future work partner preferences: An indirect test of the self-interest view. *Social Behavior and Personality* 31(2): 133-142.
- Barry MJ, Fowler FJ, O'Leary MP, Bruskewitz RC, Holtgrewe HL, Mebust WK Cockett ATK. 1992, The American Urological Association symptom index for benign prostatic hyperplasia. *Journal of Urology* 148(5): 1549-1557.
- Beggs S, Cardell S, Hausman J. 1981. Assessing the potential demand for electric cards. *Journal of Econometrics* 16: 1-19.
- De Witt GA, Busschbach JJ, De Charro FT. 2000. Sensitivity and perspective in the valuation of health status: whose values count? *Health Economics* 9(2):109-126.
- Diekmann KA. 1997. 'Implicit justifications' and self-serving group allocations. *Journal of Organizational Behavior* 18: 3-16.
- Diekmann KA, Samuels SM, Ross L, Bazerman MH. 1997. Self-interest and fairness in problems of resource allocation: Allocators versus recipients. *Journal of Personality & Social Psychology* 72(5): 1061-1074.
- Dolan P. 1999. Whose preferences count? *Medical Decision Making* 19(4): 482-486.
- Dolan P Olsen JA, Menzel P, Richardson J. 2003. An inquiry into the different perspectives that can be used when eliciting preferences in health. *Health Economics* 12(7):545-551.

Dolders MGT, Zeegers MPA, Groot W, Ament A. 2006. A meta-analysis demonstrates no significant differences between patients and population preferences. *Journal of Clinical Epidemiology* 59: 653-664.

Johannesson M, Gerdtham UG. 1996. A note on the estimation of the equity-efficiency trade-off for QALYs. *Journal of Health Economics* 15:359-368.

Johannesson M. 1999. On aggregating QALYs: a comment on Dolan. *Journal of Health Economics* 18: 381-386.

Lancsar E, Louviere J. 2006. Deleting 'irrational' responses from discrete choice experiments: a case of investigating or imposing preferences? *Health Economics* 15(8): 797-811.

Menzel P, Dolan P, Richardson J, Olsen JA. 2002. The role of adaptation to disability and disease in health state valuation: a preliminary normative analysis. *Social Science and Medicine* 55(12):2149-2158.

Menzel P. 1999. How should what economist call 'social values' be measured. *Journal of Ethics* 3(3): 249-273.

Murray C, Salomon J, Mathers C. 2000. A critical examination of summary measures of population health. *Bulletin of the World Health Organization* 78(8):981-994.

Pinto-Prades JL, Abellán-Perpiñan JM. 2005. Measuring the health of populations: the veil of ignorance approach. *Health Economics* 14(1):69-82.

Rodríguez-Míguez E, Herrero C, Pinto-Prades JL. 2004. Using a point system in the management of waiting lists: the case of cataracts. *Social Science & Medicine* 59:585-594

Rawls J. 1971. *A Theory of Justice*. Harvard University Press: Cambridge.

Ryan M, Bate A. 2001. Testing the assumptions of rationality, continuity and symmetry when applying discrete choice experiments in health care. *Applied Economics Letters* 8(1): 59-63.

San Miguel F, Ryan M, Amaya-Amaya M. 2005. 'Irrational' stated preferences: a quantitative and qualitative investigation. *Health Economics* 14(3):307-322.

Ubel PA, Lowenstein G, Jepson C. 2003. Whose quality of life? A commentary exploring discrepancies between health state evaluations of patients and the general public. *Quality of Life Research* 12: 599-607.

Van Yperen NW, Van den Bos K, De Graaf DC. 2005. Performance-base pay is fair, particularly when I perform better: Differential fairness perceptions of allocators and recipients. *European Journal of Social Psychology* 35: 741-754.

Appendix A

Table A1. Attribute and levels to prioritize patients on the waiting list for BPH intervention

Attribute	Definition	Levels
<i>Discomfort</i>	Symptoms or troubles the patient may be experiencing in his daily life (difficulty to urinate, frequent need to urinate during the day and the night, problems for urinary retention, sensation of not having a fully emptied bladder, etc.)	<ul style="list-style-type: none"> - <i>Moderate discomfort</i>: Some bothers less 15 times at month - <i>Severe discomfort</i>: A lot of bothers almost daily
<i>Severity of health condition</i>	Medical complications which the patient on waiting may be experiencing (blood in urine, urine retention, urinary infection, etc.)	<ul style="list-style-type: none"> - <i>Low severity</i>: No presence of these problems or an infrequent presence (once or twice a year) - <i>Intermediate severity</i>: presence of these problems frequently (more than 3 times a year)
<i>Limitations for non-work activities</i>	Degree to which the patient is limited to carry out social, family activities which he had always carried out before the illness.	<ul style="list-style-type: none"> - <i>Few limitations to carry out non-work activities</i> - <i>Many limitations to carry out non-work activities</i>
<i>Limitations for work activities</i>	Degree to which the patient is limited by his illness to carry out work activities	<ul style="list-style-type: none"> - <i>Patient does not work or his medical condition does not limit his work activities.</i> - <i>Patient's medical condition limits his work activities (only patients within the legal working age)</i>
<i>Having other illnesses</i>	This refers to whether or not the patient has any other medical incapacity (visual problems, mobility problems, dementia, etc.) which makes his medical condition less bearable	<ul style="list-style-type: none"> - <i>The patient does not have other diseases which make his condition worse.</i> - <i>The patient has other diseases which make his condition worse.</i>

Appendix B

Figura B1. Pair of hypothetical scenarios

(Dominated scenario)

Low severity
Moderate discomfort
Few limitations for non-work activities
Has limitations in work activities
Does not have other illnesses

(Dominant scenario)

Moderate severity
Severe discomfort
Many limitations for non-work activities
Has limitations in work activities
Does not have other illnesses

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