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Prioritizing Patients for Surgery: Factors Affecting Allocation of Medical Resources for Kidney Transplantation, IVF, and Rhinoplasty[1]

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The present study sought to investigate whether the factors that affect the allocation of scarce medical resources vary across different types of treatment and whether participants prioritize hypothetical patients based on patients' marital status, annual income, history of mental illness, and smoking habits. Study participants ($N = 114$) made prioritization decisions that were found to be very different across treatments. Repeated-measure ANOVAs showed that single patients were favored for rhinoplasty, while married patients were favored for in vitro fertilization (IVF) and kidney transplant treatment. Nonsmoking patients were preferred over their smoking counterparts. Low-income patients were favored for rhinoplasty and kidney transplant operations, but not for IVF. Mentally healthy patients were generally preferred over mentally ill patients.

The allocation of scarce medical resources is an important problem in medical ethics (Abouna, 2002; Calman, 1994; "Ethical Considerations," 1995; Gillon, 1985; Hope, 2001; McLachlan, 1995; Weinstein, 2001); health policy and medical care (Jones, 2006; Nord, 1993; Shmueli, 1999); medical practice (Melia, 2001); and theology (Engelhardt & Cherry, 2002). There is a considerable literature in bioethics on the problems associated with distributing healthcare resources (Charlesworth, 1993), including both micro- and macro-allocations (Brody, 1981) in different countries with different healthcare systems (Tolloczko 1999). Researchers have looked at ethical issues affecting specific groups of individuals, such as children (Street, Ashcroft, Henderson, & Campbell, 2000), the aged (Kilner, 1988; Shaw, 1994), smokers (McLachlan, 1995; Peters, 2007), and people from ethnic minorities (Lowe, Kerridge, & Mitchell, 1995).

The present study investigates possible factors that may affect how non-expert people make prioritization decisions in a medical context. It is a study

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of individual decision making using medical examples, rather than an attempt to understand the processes by which medical ethics boards make their decisions. It is one of a series of studies in a programmatic series (see Table 1).

Much of the interest in this area is of a philosophical nature, with empirical research usually focusing on public attitude data (Nord, 1993), rather than on experimental data (Reeves, 2000). For example, Zweibel, Cassel, and Karrison (1993) used American national public opinion data to examine attitudes about the use of chronological age as a criterion for allocating healthcare resources. More recently, Shmueli (1999) used a large Israeli database of adults—45 to 75 years of age—to examine priorities in allocating scarce medical resources between prolonging survival or preventing a severe and permanent disability. These survey studies provide clues into how laypeople may make prioritization decisions.

Over the past decade, there has been a growing experimental literature that has used vignette-based methodology to study issues concerning distributive justice (Skitka & Tetlock, 1993). Ubel and colleagues (Ubel, 1996a, 1996b, 1999a, 199b; Ubel, De Kay, Baron, & Asch, 1996) have conducted many studies showing how the general public makes medical prioritization decisions. Ubel (1996b) found that the public tends to reject medical utilitarianism and to place great importance on the concepts of equality and need, but those decisions depend on the specific situation they are asked to judge. Thus, equality is more important when distributing transplantable organs; and need is more important in situations in which welfare is a primary goal. Ubel (1999a, 1999b) also found, in various studies, that laypeople place great importance on treating severely ill patients beyond any measurable benefit that could be gained from actually helping them (Ubel, 1999).

Various studies have asked participants to read vignettes about hypothetical patients and then to rank-order them for surgical treatment (Furnham & Ofstein, 1997; Murphy-Berman, Berman, & Campbell, 1998; Reeves, 2000; Wiseman, 2006, 2007). The aim of these studies has been to examine the prioritization decisions of lay participants as a function of specific patient characteristics.

Table 1 shows the results from 14 studies that have examined 22 different individual variables in total. Most of these studies looked at medical issues, although 2 studies were concerned with allocation to social housing (Furnham & McClelland, 2004; Furnham & Petrides, 2007), and 1 study was concerned with the allocation of correctional resources (electronic monitoring; Furnham, McClelland, & Drummond-Baxter, 2010). Of these variables, patient gender has produced robust results, with females favored over males in every instance. Results for other variables have been found to be dependent on the context of the studies; that is, on the particular medical condition of the hypothetical patients (Furnham, Ariffin, & McClelland, 2008).

Table 1

Summary of Findings from Previous Studies

Variable	Finding	Study
Age	Young favored over old	Furnham & Briggs (1993) Furnham, Thomson et al. (2002) Furnham et al. (2008) Wiseman (2007) Furnham et al. (2010)
Birthplace	English-born favored over those from abroad	Furnham & Briggs (1993)
Community service	Participators favored over nonparticipators	Furnham et al. (2000)
Dependents	Patients with a high number of dependents favored over those with a low number	Furnham & Ofstein (1997) Furnham, Thomson et al. (2002) Wiseman (2007) Furnham et al. (2010)
Drinking	Nondrinkers favored over drinkers	Furnham et al. (1998)
Employment	No significant finding Employed favored over unemployed	Murphy-Berman et al. (1998) Furnham et al. (2000)
Honesty	Honest patients favored over dishonest patients	Furnham & Ofstein (1997)
Income	Poor favored over rich	Furnham (1996) Furnham et al. (1998) Furnham, Thomson et al. (2002) Furnham & Petrides (2007)
Intelligence	Highly intelligent favored over the average	Furnham, Thomson et al. (2002) Furnham & McClelland (2004) Wiseman (2006) Furnham et al. (2008)
Job skills	Job skilled over the less skilled	Furnham et al. (2010)
Marital status	Married favored over unmarried	Furnham & Briggs (1993)
Mental illness	Healthy favored over the mentally ill	Furnham, Thomson et al. (2002) Furnham & McClelland (2004) Wiseman (2006) Furnham & Petrides (2007)
Offenders	First time favored over those with criminal record	Furnham et al. (2010)
Personality	Introverts favored over extroverts	Furnham, Thomson et al. (2002)
Political beliefs	Left-wing voters favored over right-wing voters	Furnham (1996)

Table 1 *Continued*

Variable	Finding	Study
Prognosis	Patients with a good medical prognosis favored over those with a poor medical prognosis	Furnham & Ofstein (1997)
	No significant differences	Murphy-Berman et al. (1998)
Promiscuity	Monogamous favored over promiscuous	Furnham et al. (2008)
Race	No significant differences	Murphy-Berman et al. (1998)
Religion	Christians favored over atheists	Furnham et al. (1998)
Responsibility for illness	Patients with a low responsibility for illness favored over those with a high responsibility for illness	Murphy-Berman et al. (1998)
Sex	Females favored over males	Furnham & Briggs (1993) Furnham (1996) Furnham et al. (1998) Furnham & McClelland (2004) Furnham et al. (2010)
Sexual orientation	Heterosexuals favored over homosexuals	Furnham et al. (2008)
Smoking	Nonsmokers favored over smokers	Furnham (1996) Furnham et al. (2000) Furnham & McClelland (2004) Furnham, Hassomal et al. (2002)

Various studies have shown evidence of in-group favoritism, such that laypeople tend to favor people like themselves.

An important methodological limitation of many studies in Table 1 concerns the response format of the questionnaires. Much research has required individuals to rank-order hypothetical patients for treatment, which is problematic because it imposes a heavy demand on participants, who are asked to rank-order as many as 16 different hypothetical patients. Further, it complicates the analysis because of the dependencies between the data points. Reeves (2000) demonstrated that Likert-type ratings can be used effectively in lieu of rankings, and the present study employs this type of ratings, which respondents prefer but that seems not to cause social desirability responding.

Allocation Across Medical Conditions

Most empirical research has looked at prioritizing patients for specific operations, such as heart treatment (Murphy-Berman et al., 1998) or kidney

transplantation (Furnham, 1996; Furnham, Meader, & McClelland, 1998; Furnham, Simmons, & McClelland, 2000). Furnham, Thomson, and McClelland (2002) extended this research by examining how prioritization decisions change as a function of the medical condition of the hypothetical patient, because the medical complaint or issue confronting patients will render different kinds of factors salient in the prioritization process. For example, decision making for life-threatening conditions is likely to bring to the forefront issues such as responsibility toward dependants. In contrast, such issues are less likely to assume prominence in the context of cosmetic surgery. Likewise, fertility treatments may lead to an emphasis of the hypothetical patient's marital status.

Furnham, Thomson et al. (2002) asked participants to rank-order patients for three different operations (i.e., rhinoplastic surgery, heart transplant, and in vitro fertilization [IVF]). The 16 hypothetical patients differed in age, income, smoking habits, and whether or not they had children. As predicted, marked differences were found in the rankings across treatments. For example, income was a strong determinant of prioritization for rhinoplasty, but less so for IVF. Similarly, being a parent was particularly important for heart transplant operations and for IVF, but not for rhinoplasty. In a similar study, Furnham et al. (2008) used a similar methodology to look at allocations of HIV antiretroviral treatment and heart transplant surgery. They found, as predicted, that young people were favored over old people, heterosexual over homosexual, and monogamous over promiscuous patients, the latter being particularly the case in the HIV treatment condition.

The present study revisits these issues, using Likert-based measurement and examining the following three conditions: IVF, kidney transplant, and rhinoplasty. As in previous studies, 16 hypothetical patients, differing in marital status, income, smoking habits, and history of mental illness, were presented to participants for rating. There were four groups of hypotheses.

Main Effects for Patient Variables

With regard to patient variables, the following hypotheses are proposed:

> *Hypothesis 1a*. There will be a main effect of condition such that participants' overall ratings will vary across the three operations.

This hypothesis is based on the proposition that the salience of the different factors affecting allocation decisions varies as a function of the patient's required treatment from more serious to less serious (Furnham, Hassomal, & McClelland, 2002; Furnham et al., 2008).

Hypothesis 1b. Nonsmokers will be favored over smokers for all three treatments.

Many laypeople believe, often erroneously, that smoking is at least a partial cause of the medical condition of the smoker. While this may be true in certain cases (e.g., lung cancer), it is unlikely to be true for many others. Nevertheless, the antismoking climate increases the likelihood of smokers experiencing discrimination (Peters, 2007).

Hypothesis 1c. The poor will be favored over the rich across all treatments because the latter can very often prioritize themselves through seeking private treatment (Furnham, Thomson et al., 2002).

Interaction Effects

All of the aforementioned hypotheses refer to main effects. In the present study, it is also possible to investigate two-, three-, four-, and five-way interactions. Hypotheses for two-way interactions of particular interest are presented here. No explicit hypotheses were advanced for three-way interactions, although these were systematically explored in the analyses.[3]

Hypothesis 2a. Participants will favor married patients over single patients for the kidney transplant and IVF operations because they are more likely to have dependants. However, for cosmetic surgery (i.e., rhinoplasty), single patients will be preferred over married patients because their condition can be seen as an impediment to the formation of social relationships.

Hypothesis 2b. Mentally healthy individuals will be favored over their mentally ill counterparts for IVF treatment only.

Laypeople are not fully informed about the causes, consequences, and cures for mental illness (Furnham & Bower, 1992). Thus, while they may take pity on the mentally ill, they are also frightened about them and ignorant about the etiology of their illness. This means that participants may be reluctant to prioritize mentally ill patients for IVF treatment.

In-Group Favoritism in Allocation Decisions

Few studies have investigated in-group favoritism effects by looking at possible interactions between participant and patient variables. Furnham

[3]Details on the four- and five-way interactions are available from the authors upon request.

(1996) demonstrated that participants' political-party allegiance interacted with the voting preferences of the hypothetical patients, such that left-wing voters favored left-wing patients and right-wing voters favored right-wing patients for a place on a kidney machine. In contrast, Furnham et al. (1998) did not find any evidence of religious in-group favoritism. Furnham et al. (2000) found that nonsmoking participants showed a clear preference for nonsmoking patients to go on a kidney machine, whereas smoking participants gave priority to smoking patients. Smoking remains a contentious topic in medical ethics (McLachlan, 1995; Persaud, 1985; Peters, 2007), and the present study seeks to determine whether in-group favoritism effects persist, irrespective of the type of treatment patients require.

> *Hypothesis 3*. Nonsmokers will favor nonsmokers over smokers, and vice versa.

Ethical Ideologies and Patient Prioritization

The present study also investigates whether participants' personal ethical beliefs influence their prioritization decisions. Ethicists have distinguished between various coherently argued positions, such as teleological and deontological. Reeves (2000), following Rawls (1971), differentiated between four ethical positions with respect to healthcare resource-allocation decisions: maximin, utilitarianism, desert, and egalitarianism. *Maximin* allows inequalities in allocations that act to maximize the benefits of the worst off; *utilitarianism* attempts to allocate resources to achieve the greatest net gain in reward over pain; *desert* does allocation based on moral worthiness or contribution to the society or the group; while *egalitarianism* stresses that because everyone is equal, random allocation is fairest. Reeves was able to demonstrate that the ethical positions held by participants had a direct impact on their allocation decisions.

Forsyth (1980) devised an inventory to measure individual differences in idealism and relativism (Ethics Position Questionnaire or EPQ). *Idealistic* individuals assume that good consequences can always be obtained from specific actions, whereas less idealistic individuals accept that untoward consequences are often mixed with good ones. *Relativistic* individuals believe that universal moral principles are of little value when making moral judgments, whereas less relativistic people emphasize the use and importance of fundamental principles.

Cross-tabulation of high and low scores on idealism and relativism gives rise to four groups with distinct ethical positions; that is, situationists, absolutists, subjectivists, and exceptionists. While the EPQ (Forsyth, 1980)

identifies whether a participant is inclined to accept universal moral principles, it does not map directly onto the four principles suggested by Reeves (2000). Furnham and Ofstein (1997) found an interaction between idealism and honesty whereby participants with high idealism scores were more likely to favor honest patients, whereas participants with low idealism scores did not differentiate between honest and dishonest patients. Thus, we propose the following:

> *Hypothesis 4a*. Because non-idealistic individuals (i.e., subjectivists and exceptionists) tend to be more pragmatic, they will be more differentiating in their ratings than will their idealistic counterparts (i.e., situationists and absolutists).

The study also considered a second variable relating to ethical ideology; that is, belief in a just world (BJW). Lerner and Miller (1978) suggested that individuals have a need to believe that the world in which they live is a just and orderly one, where people usually get what they deserve.

In short, those who believe that the world is just tend to see all people as responsible for their own condition; their illness as a function of their habits, their wealth as a function of their efforts. In contrast, those who believe that the world is unjust tend to think that "victims" are not at all personally responsible, but that they have been randomly assigned into their condition and, therefore, require help, rather than condemnation. Thus, we propose the following:

> *Hypothesis 4b*. Participants with high just-world scores will discriminate against smokers and the poor.

Method

Participants

In total, 114 individuals (50 males, 62 females, 2 did not indicate gender) participated in the present study. Participants' mean age was 36.1 years ($SD = 13.9$; range = 19–78). Of the participants, 64 had at least an undergraduate degree. With respect to marital status, 58 participants were single, 39 were married, 1 was widowed, 10 were cohabiting, and 1 was divorced (data were missing for 5 participants). In terms of smoking habits, 15 were regular smokers, 12 were occasional smokers, 69 were nonsmokers, and 16 were ex-smokers (data were missing for 2 participants). With respect to gross annual pre-tax income, 43 participants earned less than £15,000 (≈ $22,000

US), 25 earned between £15,000 and £22,000 (≈ $32,000 US), 9 earned between £22,000 and £30,000 (≈ $44,000 US), 10 earned between £30,000 and £45,000 (≈ $66,000 US), and 20 earned over £45,000 (data were missing for 7 participants).

Questionnaires

All participants completed a seven-page questionnaire. The questionnaire included three sections.

Patient ratings. Participants were presented with the three conditions (i.e., kidney transplant, IVF, and rhinoplasty) on separate pages with identical instructions:

> Dampshire County Hospital needs your help. It has a large number of people who have applied for a kidney transplant/IVF/rhinoplasty (plastic surgery on the nose), and it is having problems making priority decisions. As always, the hospital has fewer organs than patients applying for transplants/vacancies, so each case has to be judged on its merits and prioritized. One kidney/vacancy has just become available, and the following short list of people has been drawn up. The following facts are known to be true of all of them. They are all British citizens and have been on the kidney transplant/IVF/rhinoplasty list for some time. Each fulfills the strict requirements for transplants/operation. You are asked to act as if you were to make the decision. There are very few vacancies, and we are interested in your priorities. Please rate each one. We appreciate that this is a difficult task, but please have a go. Do your best to differentiate between the 16 different applicants.

Subsequently, a description of 16 named women was presented, along with a 7-point priority scale ranging from 1 (*very low*) to 4 (*high*) to 7 (*absolutely crucial*). The scale was not symmetrical with respect to the number of high and low priority response options in order to avoid ceiling effects. Because of the IVF condition, all of the cases had to be women. Sample descriptions are as follows:

1. Nina, who earns about half the average wage, has no history of mental illness, is married, and is a nonsmoker.
2. Josephine, who earns about half the average wage, is single, a nonsmoker, and has a history of mental illness.

3. Paula is single, earns about double the average wage, is a non-smoker, and has a history of mental illness.

Ethics Position Questionnaire (EPQ; Forsyth, 1980). The EPQ consists of two 10-item scales that measure idealism (e.g., "A person should make certain that their actions never intentionally harm another, even to a small degree") and relativism (e.g., "What is ethical varies from one situation to another"). In the present study, alphas for the dimensions of idealism and relativism were .85 and .76, respectively. The two dimensions intercorrelated at –.07 (*ns*).

Just-World Beliefs (JWB; Rubin & Peplau, 1975) scale. The JWB scale is comprised of 20 items, approximately half of which are scored in the just world direction, and the rest are scored in the unjust world direction. It is the most widely used scale to measure JWB. In the present study, the alphas for just and unjust world belief scores were .68 and .61, respectively. The two dimensions intercorrelated at –.08 (*ns*).

Procedure

A market research agency was given clear instructions for collecting data from a representative sample—in terms of gender, age, and education—of 100 adults in the southeast of England. Additional data were collected from 40 postgraduate students in central London. There were no significant differences overall in responses from the two groups.

Participants were paid £10 ($13 US) for their time and were assured that the data they provided would be kept strictly confidential. Ethical committee permission was sought and obtained. Of the 140 individuals who agreed to complete the questionnaire, 114 did so sufficiently to allow data analysis.

Results

Within-Subjects Analysis: Main Effects

A 3 (Condition) × 2 (Marital Status) × 2 (Smoking) × 2 (Income) × 2 (Mental Illness) repeated-measures ANOVA was performed on the data. Table 2 shows all of the main effects and interactions, along with the corresponding effect sizes.

With respect to main effects, participants favored married individuals ($M = 3.42$, $SD = 0.07$) over single individuals ($M = 3.04$, $SD = 0.06$); non-smokers ($M = 3.53$, $SD = 0.07$) over smokers ($M = 2.93$, $SD = 0.06$); low-income individuals ($M = 3.36$, $SD = 0.07$) over high-income individuals

Table 2

Results of Overall Repeated-Measures ANOVA

Source	*df*	*F*	Effect size
C	1.74, 177.34	29.95***	0.23
MS	1, 102	61.83***	0.38
SMOK	1, 102	88.36***	0.46
INCOM	1, 102	26.79***	0.21
ILL	1, 102	29.16***	0.22
C * MS	1.64, 167.30	85.92***	0.46
C * SMOK	1.87, 190.63	5.27**	0.05
C * ILL	2.00, 203.71	33.84***	0.25
C * INCOM	1.73, 176.25	5.76**	0.05
MS * SMOK	1.00, 102	5.84*	0.05
MS * ILL	1, 102	4.28*	0.04
MS * INCOM	1, 102	0.38	0.00
SMOK * INCOM	1, 102	0.19	0.00
SMOK * ILL	1, 102	30.21***	0.23
INCOM * ILL	1, 102	1.39	0.01
C * MS * SMOK	1.55, 158.50	1.94	0.02
C * MS * INCOM	1.83, 186.99	0.45	0.00
C * INCOM * ILL	1.97, 200.85	0.10	0.00
C * SMOK * INCOM	1.97, 200.70	2.62	0.03
C * MS * ILL	1.81, 184.97	18.82***	0.16
C * SMOK * ILL	1.95, 199.11	6.84***	0.06
MS * INCOM * ILL	1, 102	0.89	0.01
MS * SMOK * INCOM	1, 102	0.03	0.00
MS * SMOK * ILL	1, 102	4.00*	0.04
SMOK * INCOM * ILL	1, 102	0.19	0.00
C * MS * SMOK * INCOM	1.99, 202.95	4.85**	0.05
C * MS * SMOK * ILL	1.82, 185.45	1.77	0.02
C * MS * INCOM * ILL	2.00, 203.52	0.26	0.00
C * SMOK * INCOM * ILL	1.92, 195.61	0.73	0.01
MS * SMOK * INCOM * ILL	1, 102	0.04	0.00
C * MS * SMOK * INCOM * ILL	1.99, 203.00	2.60	0.03

Note. C = condition; MS = marital status; SMOK = smoking; INCOM = income; ILL = mental illness.
*$p < .05$. **$p < .01$. ***$p < .001$.

($M = 3.09$, $SD = 0.07$); and mentally healthy individuals ($M = 3.40$, $SD = 0.07$) over mentally ill individuals ($M = 3.06$, $SD = 0.07$). The strong main effect for condition supports the prediction that participants' allocation decisions varied as a function of medical condition, thus supporting Hypothesis 1a.

Before considering the interactions in detail, it may be useful for clarity to look simply at the within-subjects analyses for each medical condition separately. Table 3 shows these results. Married patients were significantly favored over single patients for kidney transplants, and especially IVF; however, single patients were favored for rhinoplasty. These results support Hypothesis 2a. Nonsmokers were significantly favored over smokers in all three conditions, which supports Hypothesis 1b. The poor were favored over the rich for kidney transplantation and rhinoplasty, but not for IVF, which partly supports Hypothesis 1c. Finally, mentally healthy individuals were preferred over mentally ill individuals for IVF, which supports Hypothesis 2b.

Within-Subjects Analysis: Interactions

There was a series of interactions involving the three different conditions (i.e., kidney transplant, IVF, rhinoplasty). Thus, there was a significant interaction between condition and marital status (see Table 2 for statistical details). Simple main effects analysis indicates that participants favored single individuals ($M = 3.17$, $SD = 0.10$) over their married counterparts ($M = 3.00$, $SD = 0.09$) for rhinoplasty, $F(1, 106) = 6.59$, $p < .05$, $\eta^2 = .06$; but the opposite was the case for both kidney transplant (single, $M = 3.62$, $SD = 0.10$; married, $M = 3.75$, $SD = 0.10$), $F(1, 106) = 5.39$, $p < .05$, $\eta^2 = .05$; and especially IVF operations (single, $M = 2.36$, $SD = 0.08$; married, $M = 3.51$, $SD = 0.08$), $F(1, 107) = 139.03$, $p < .01$, $\eta^2 = .57$.

There was a significant ordinal interaction between conditions and smoking (see Table 2). While nonsmokers were consistently preferred over smokers across all conditions, the effect was much stronger for kidney transplant ($\eta^2 = .42$) and IVF operations ($\eta^2 = .40$) than for rhinoplasty ($\eta^2 = .29$).

For the Condition × Income interaction (see Table 2), simple main effects analyses show that participants gave priority to low-income individuals over their high-income counterparts for rhinoplasty (low income, $M = 3.26$, $SD = 0.09$; high income, $M = 2.91$, $SD = 0.11$), $F(1, 106) = 13.16$, $p < .01$, $\eta^2 = .11$; and kidney transplant operations (low income, $M = 3.90$, $SD = 0.10$; high income, $M = 3.46$, $SD = 0.10$), $F(1, 106) = 31.40$, $p < .01$, $\eta^2 = .23$. However, this was not the case for IVF operations ($F < 1$, *ns*).

Table 3

Results of Repeated-Measure ANOVAs Within Each of the Three Conditions

	M	*F*	Effect size
Kidney transplant			
Marital status			
Single	3.61	5.39*	0.05
Married	3.74		
Smoking			
Smoking	3.31	71.34***	0.40
Nonsmoking	4.04		
Income			
Half the average	3.89	31.40***	0.23
Double the average	3.46		
Mental illness			
History	3.66	0.41	0.00
No history	3.69		
In vitro fertilization			
Marital status			
Single	2.33	139.03***	0.57
Married	3.49		
Smoking			
Smoking	2.62	76.43***	0.42
Nonsmoking	3.21		
Income			
Half the average	2.94	0.38	0.00
Double the average	2.89		
Mental illness			
History	2.47	77.52***	0.42
No history	3.36		
Rhinoplasty			
Marital status			
Single	3.16	6.59*	0.06
Married	3.00		
Smoking			
Smoking	2.84	43.85***	0.29
Nonsmoking	3.32		
Income			
Half the average	3.24	13.16***	0.11
Double the average	2.92		
Mental illness			
History	3.03	0.43	0.00
No history	3.13		

For the Condition × Mental Illness interaction (see Table 1), simple main effects analyses indicate that participants strongly preferred the mentally healthy ($M = 3.39$, $SD = 0.08$) over the mentally ill ($M = 2.48$, $SD = 0.08$) for in vitro operations, $F(1, 107) = 77.52$, $p < .01$, $\eta^2 = .42$. However, this was not the case for rhinoplasty ($F < 1$, *ns*) or kidney transplant ($F < 1$, *ns*), which thus supports Hypothesis 2b.

The three different conditions were also involved in two 3-way interactions (see Table 2). Thus, there was a Condition × Marital Status × Mental Illness interaction. Simple interactions analysis shows that there was a Marital Status × Mental Illness interaction for IVF operations, $F(1, 107) = 22.74$, $p < .01$, $\eta^2 = .18$; and for kidney transplant operations, $F(1, 106) = 4.52$, $p < .05$, $\eta^2 = .04$; but not for rhinoplasty ($F < 1$, *ns*). For the IVF operation, simple main effects analysis reveals that participants gave priority to mentally healthy patients; however, the effect was much more pronounced for the married patients ($\eta^2 = .44$) than for the single patients ($\eta^2 = .29$). In contrast, the corresponding analysis for the kidney transplant operations did not reveal any significant simple main effects, although the married-favoring preference approached significance for patients who were mentally ill, $F(1, 106) = 3.00$, $p < .09$, $\eta^2 = .03$.

The second three-way interaction was Condition × Smoking × Mental Illness (see Table 2). In this case, there were significant simple interactions for IVF, $F(1, 107) = 37.96$, $p < .01$, $\eta^2 = .26$; and rhinoplasty, $F(1, 106) = 4.29$, $p < .05$, $\eta^2 = .04$; but not for kidney transplant operations, $F(1, 106) = 3.92$, $p = .50$, $\eta^2 = .04$. For the IVF operation, simple main effects analysis indicates that participants favored mentally healthy over mentally ill individuals whether or not they smoked. However, the effect was more accentuated for nonsmokers (smokers, $\eta^2 = .33$; nonsmokers, $\eta^2 = .46$). Despite the significant simple interaction, the simple main effects analysis did not reveal any reliable differences between the mentally healthy and the mentally ill, irrespective of whether they smoked.

In-Group/Out-Group Analysis

In order to investigate in-group/out-group effects for smoking versus nonsmoking participants, we conducted a six-way split-plot ANOVA. Participants were divided into two groups according to whether or not they had ever been smokers. This dichotomous variable was labeled *partsmoke* and represented the between-subjects factor in the ANOVA, which also included the same five repeated-measures factors as in the aforementioned analyses. There were 43 part smokers and 69 nonsmokers. The focus of this analysis was on the effects of partsmoke, with particular emphasis on two- and

three-way interactions involving the repeated-measures smoking variable. There was a significant two-way interaction between partsmoke and smoking, $F(1, 100) = 9.02$, $p < .01$, $\eta^2 = .08$. Interestingly, across the three different conditions (i.e., kidney transplant, IVF, rhinoplasty), smokers (or ex-smokers) as well as nonsmokers gave priority to nonsmoking patients, although the preference was stronger in the nonsmoking participant ratings ($\eta^2 = .55$) than in the ratings of their smoking counterparts ($\eta^2 = .37$). Although these findings suggest a limited in-group/out-group effect, they are not fully in line with Hypothesis 3, which predicted a disordinal interaction.

Another two-way interaction was between partsmoke and mental illness, $F(1, 100) = 7.41$, $p < .01$, $\eta^2 = .07$. Simple main effects analyses (across conditions) indicate that participants who had been smokers at some point in their lives did not show any preference between mentally ill patients and mentally healthy patients, $F(1, 40) = 3.14$, *ns*; while those who have never been smokers showed a strong preference for mentally healthy patients over mentally ill patients (mentally healthy, $M = 84.52$, $SD = 2.32$; mentally ill, $M = 72.88$, $SD = 1.81$), $F(1, 60) = 32.20$, $p < .01$, $\eta^2 = .35$.

Ethical Position Questionnaire

We performed a six-way ANOVA with the five repeated-measures factors and a between-subjects factor based on the four groups from the EPQ (Forsyth, 1980; i.e., situationists, absolutists, subjectivists, and exceptionists). Median splits on each of the two dimensions were used to classify the four scores. With the exception of an unexpected four-way interaction (Condition × Marital Status × Mental Illness × Groups), there was only one statistically significant effect involving a three-way Condition × Mental Illness × Ethical Position Groups interaction, $F(5.98, 177.48) = 2.22$, $p < .05$, $\eta^2 = .07$. Despite the significant overall interaction, however, none of the simple interactions within conditions reached significance, which does not support Hypothesis 4a.

Just and Unjust World

We performed a six-way ANOVA, this time with the five repeated-measures factors along with high versus low scorers (using a median split) on the just-world scale (Rubin & Peplau, 1973) as the between-subjects factor. The just-world factor was part of both a two-way interaction and a three-way interaction (Just World × Income and Condition × Income × Just World, respectively). The two-way interaction was significant,

$F(1, 98) = 5.18$, $p < .05$, $\eta^2 = .05$, simple main effects analysis shows that all participants prioritized low-income patients over their high-income counterparts, although the effect was more accentuated for participants with low just-world scores (low just-world scores, $\eta^2 = .32$; high just-world scores, $\eta^2 = .08$). This result partly supports Hypothesis 4b, which predicted that participants with high just-world scores would discriminate against smokers and the poor.

The three-way interaction was also significant, $F(1.73, 169.48) = 3.26$, $p < .05$, $\eta^2 = .03$. Further analysis indicates that the Just World × Income interaction was not significant for kidney transplant ($F < 1$, *ns*) or IVF operations ($F < 1$, *ns*), but was highly significant for rhinoplasty, $F(1, 102) = 11.10$, $p < .01$, $\eta^2 = .10$. Simple main effects analysis shows that participants with low just-world scores favored low-income individuals over high-income individuals for rhinoplasty (low income, $M = 3.24$, $SD = 0.15$; high income, $M = 2.61$, $SD = 0.13$), $F(1, 54) = 29.25$, $p < .01$, $\eta^2 = .35$; whereas their counterparts with high just-world scores did not ($F < 1$, *ns*).

We conducted a final six-way ANOVA with the standard five repeated-measures factors and high versus low scorers on the unjust world scale as the between-subjects factor. The unjust world factor did not have any statistically significant effects in this analysis.

Discussion

The results of the present study confirm the finding that patient prioritization decisions vary as a function of the medical condition under consideration (Furnham, Thomson et al., 2002; Furnham et al., 2008). Of the eight hypotheses, Hypotheses 1a, 1b, 1c, 2a, 2b, 3, and 4b were confirmed; but Hypothesis 4a was not confirmed. The data clearly indicate that the illness or complaint for which the patient is waiting is important and may mean that prioritization could be reversed, given similar patient variables but different conditions. Such illnesses or complaints may differ along a number of dimensions; for example, life-threatening (e.g., heart transplant) to non-life-threatening (e.g., rhinoplasty) or self-inflicted (e.g., cirrhosis of the liver) to genetic (e.g., congenital heart disease). Other factors that may affect prioritization decisions include the cost of the operation, the chances of success, the time spent in hospital, and so forth (Brody, 1981; Charlesworth, 1993; Lamb, 1990).

The present findings suggest that it may be useful to taxonomize operations and treatments into a parsimonious system before anticipating how patient factors may influence allocation decisions. Laypeople appear to be relativists, in the sense that they arrive at different decisions depending on the nature of the treatment sought by patients.

Overall, married patients were preferred over their single counterparts, particularly for IVF operations. This finding perhaps reflects the view that children should be born into wedlock and to a traditional nuclear family. In contrast, participants favored single patients in the rhinoplasty condition. Unattractive facial features may mean potential rhinoplasty patients are less able to attract a partner to marry, which is likely why participants prioritized them.

Preference for nonsmokers was consistent across conditions, with medium-range effect sizes (.30 to .40). In line with many previous studies, these findings show that nonsmokers were favored over smokers (Furnham & McClelland, 2004; Furnham et al., 2000). Discrimination against smokers may stem from a generalized disapproval of smoking and possibly from laypeople utilizing dessert principles in their decision making; that is, by people arguing that smokers got their "just desserts" in their illness. Thus, a smoker may be perceived as irresponsible regarding his or her own health and, therefore, a burden rather than a contributor to society.

What is particularly interesting about the present findings is that smokers appear to be discriminated against even when the habit is unrelated to the etiology of their problem (i.e., in the rhinoplasty condition). However, even if smoking is unrelated to the cause of the problem, it can be argued that it may be related to the probability of a successful outcome, thereby making it a relevant factor in the prioritization of scarce medical resources. Because participants were not interviewed in depth, it is difficult to be certain about the particular reasoning that led to a specific conclusion. These results suggest, therefore, that smokers are a stigmatized group, particularly in medical contexts, but also elsewhere. For instance, Furnham and McClelland (2004) found that nonsmokers were prioritized over smokers for social housing. Note also that nonsmokers showed a stronger preference than did smokers over their preference for mentally healthy patients. It seems nonsmokers may take a more puritan and discriminating stance on these issues, which merits further research.

With respect to mental health, there was a strong effect for IVF treatment, favoring mentally healthy patients over their mentally ill counterparts, but not for kidney transplant or rhinoplasty. This result reflects participants' concerns both with the genetic and with the nurturing welfare of any potential offspring. If, as many people believe, mental illness is incurable and degenerative, then a utilitarian approach may obviously favor the mentally healthy, who are better placed to contribute to society and more likely to have healthy children. Nevertheless, much depends on the mental illness considered (e.g., neurosis vs. psychosis) as well as on people's understanding of it. In future studies of this type, it may be important to specify the illness more clearly, but also to ascertain the extent to which participants are informed about it.

The in-group/out-group analysis for smoking shows that nonsmoking patients were favored overall, although the effect was stronger in the ratings of nonsmoking participants. This may simply reflect the current antismoking zeitgeist (Peters, 2007). The results suggest that if lay ethical committees are formed and smoking is a salient patient variable, it may be important to know the smoking habits of the committee, as they are likely to have an influence on the final decision.

As has been shown in previous studies (e.g., Furnham & Ofstein, 1997), the ethical belief systems of participants seem to have little bearing on their prioritization decisions. Thus, participants with low just-world scores favored low-income patients for rhinoplasty, but not for kidney transplant or IVF operations. Overall, however, individual differences on ethical and moral beliefs do not seem to have had a strong impact on prioritization decisions.

This study, like all others, has its drawbacks. The sample was modest in size and was biased toward the better educated. The vignettes about each patient were minimalistic, including no data outside the four factors mentioned. Further, the nature of the mental illnesses was not specified.

Future research must give more consideration to the dynamics of the decision-making process, particularly in situations in which decisions are made by groups, rather than by individuals. The present findings highlight the need for a systematic categorization of medical treatments, since it appears that different decision-making principles and heuristics are used for different medical problems. For example, one could categorize treatments on a scale from life-threatening to purely cosmetic or from expensive to cheap, and so forth. This taxonomy could subsequently be used to identify the circumstances, nature, and processes by which participant and patient variables operate and interact to affect prioritization decisions.

This study could, but should not be considered an investigation of the decision making of medical ethics boards. It has poor ecological validity from that perspective: Individual not group decisions were made; no discussions were held; medical and biographical history on the patients were minimalistic; and medical conditions like rhinoplasty are, at any rate, unlikely to be discussed by medical ethics committees. However, as a study of how ordinary people make ethical type decisions, the study revealed a series of issues; particularly discrimination against smokers and the mentally ill.

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