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## Implicit attitudes to organ donor registration: altruism and distaste

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### ABSTRACT

Organ transplantation offers patients cost-efficient quality-of-life improvements and life-saving opportunities. In England, the majority of transplants emanate from cadaver donation in a system where would-be-donors register their agreement to donation. Despite the majority of the population stating approval of organ donation, only a minority register as a donor. Research has traditionally examined explicit attitudes, typically demonstrating how distaste limits the translation of altruism into behaviour. In contrast, this study explored the relationship of implicit as well as explicit altruistic and distaste attitudes to donor register status. A cross-sectional study employed a novel approach to the measurement of implicit attitudes as participants ( $N = 166$ , mean age 22 years) completed a Single-Category Implicit Association Test (SC-IAT) on organ donation with two separate components – one examining implicit altruistic attitudes and another examining implicit distaste attitudes. Explicit altruistic and explicit distaste attitudes were measured via a questionnaire, as was organ donor register status. Multinomial logistic regression investigated the relationship of register position to altruistic and distaste explicit and implicit attitudes, gender and age, and established that those intending to register (33%) and those who did not intend to register (30%) were differentiated from those already registered (37%) in a number of ways ( $LR\chi^2 = 84.22$ ,  $df\ 12$ ,  $p < .001$ ). Explicit altruistic attitudes were very positive among all three groups. Negative explicit distaste attitudes were especially characteristic of those who did not intend to register. Implicit distaste attitudes did not vary by register status, but negative altruistic implicit attitudes were more commonly found among those intending to register than among the registered. Men were under-represented on the register, and over-represented among those intending to register. The results are relevant for donation propaganda indicating the possibility that among intenders, registration may be limited more by ambivalent altruism than by distaste.


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## 1. Introduction

Organ transplantation is one of medicine's greatest achievements, offering cost-efficient quality-of-life improvements and life-saving opportunities. Worldwide, over 100,000 organ transplantations are conducted annually, mostly emanating from cadaveric donations (WHO, 2013). However, the number of patients needing an organ far exceeds the number of donations, a position expected to deteriorate due to the increasing prevalence of conditions associated with organ failure. In the UK, annually, at least 1000 of the approximately 10,000 patients (comprising 6476 listed + 3452 temporarily suspended from list) eligible for transplant die while waiting for an organ (NHS Blood & Transplant [NHSBT], 2016).

In consideration of the organ supply–demand gap, it is often noted that the consensual view towards donation is very favourable (Coad, Carter, & Ling, 2013). Yet, in countries with an opt-in system of donation, such as the UK, only a minority register as potential donors (NHSBT, 2016).<sup>1</sup> Furthermore, in 2014/2015, the UK experienced a small decline in rates of organ donation due in part to a decline in numbers of deceased persons being medically eligible to donate but also due to no rise in the readiness of relatives to agree to donation (NHSBT, 2015). Traditionally, the highest proportion of registrations to the UK organ donor register has come from those aged 21–30 years at the time of signing (NHSBT, 2016). However, the age profile of registrants over the last 20 years indicates a small but systematic decline in the relative propensity of this age group to sign up, indicating that the attitudes of this age group are worthy of study.<sup>2</sup>

The failure to translate good intention into action has long been noted by social and health psychologists (Gollwitzer, 1999), and low registration rates can be regarded as an example of this common tendency. In line with Thaler and Sunstein's (2008) view that organ donation registration is likely to be susceptible to “choice architecture”, the UK government attempted to “nudge” would-be signers into action from August 2011, by disallowing online driving license applicants to skip a donor registration question. However, this has not seen a great rise in numbers signing up via this route, suggesting procrastination is not the only explanation of low registration. A different viewpoint notes that attitudes comprise positive views concerning the moral, ethical, altruistic and humanitarian benefits of organ donation and negative views regarding body mutilation with distaste. These opposing dimensions are commonly construed as cognitive/positive and affective/negative (Parisi & Katz, 1986; Van den Berg, Manstead, Van der Pligt, & Wigboldus, 2005), with negative affect seen as limiting the conversion of positive cognitions into positive behaviour (Morgan, Stephenson, Harrison, Afifi, & Long, 2008; O'Carroll, Foster, McGeechan, Sandford, & Ferguson, 2011). An alternative conceptualisation can be derived from Moral Foundations theory (Graham et al., 2013; Haidt, 2012) in which both dimensions could be seen as primarily intuitive/affective, with the positive dimension being an example of the Care/Harm foundation and the negative dimension an example of the Sanctity/Degradation foundation.

Research on the relationship of organ donation attitudes to behavioural intention and behaviour has focused on explicit attitudes but has rarely examined implicit attitudes (Hübner, Mohs, & Petersen, 2014). The implicit attitude concept has been of great value in domains where respondents may feel constrained to report positive attitudes which, consciously or less consciously, they may not fully endorse (Wittenbrink & Schwarz, 2007), and is best known for research in ethnic and gender prejudice (Greenwald, McGhee, & Schwartz, 1998).

Implicit processes are considered to be of growing value in the field of health psychology (Sheeran et al., 2016), and have been applied to health behaviours in the expectation that they will further the understanding of “why interventions that target only reflective factors may not be entirely effective” (Sheeran, Gollwitzer, & Bargh, 2013, p. 468). One of the most common and well-established measures of implicit attitudes is the IAT designed to indirectly measure the strength of associations among concepts (Greenwald, Nosek, & Banaji, 2003). The standard IAT task “requires a sorting of stimulus exemplars from four concepts using just two response options, each of which is assigned to two of the four concepts” (Nosek, 2007, p. 267). Typically, respondents sort at speed a series of words of “good” and “bad” valence interspersed with a series of contrasting images from a binary social category. The IAT logic is that the sorting task should be easier and thus faster if the two concepts sharing a response pad are strongly rather than weakly associated.

Implicit attitudes, studied via the IAT as well as by other methods such as evaluative priming tasks (Fazio, Sanbonmatsu, Powell, & Kardes, 1986) and the Affect Misattribution Procedure (Payne, Cheng, Govorun, & Stewart, 2005), have been demonstrated to add to the understanding of a variety of health behaviours – such as drinking onset in adolescents (Payne, Lee, Giletta, & Prinstein, 2016), health information avoidance (Howell, Ratliff, & Shepperd, 2016) and perceived controllability of condom use (Ellis, Collins, Homish, Parks, & Kiviniemi, 2016).

Noting that in an IAT study of blood donation, non-donors showed more negative implicit donation attitudes than donors (Warfel, France, & France, 2012), the current study aimed to explore whether the measurement of implicit attitudes adds to the understanding of barriers to organ donation. It is reasoned that implicit attitudes may well play an important role in organ donation since explicit attitudes in this domain (where the positive benefits to others may compete with perceived negative outcomes to self, including bodily mutilation) are likely to be subject to self-presentational and social desirability biases. Particular emphasis will be placed on comparing the roles of distaste (as described by O’Carroll et al, 2011b; Shepherd & O’Carroll, 2014a), and altruism (as described by Cohen & Hoffner, 2013), and their relationship to donor registration, important as relatives are more likely to consent to organ donation if the deceased had in their lifetime registered as a donor (NHSBT, 2015; Siminoff, Gordon, Hewlett, & Arnold, 2001).

## 2. Method

### 2.1. Study design

A cross-sectional study investigated the relationship of explicit altruistic, explicit distaste, implicit altruistic and implicit distaste attitudes, gender and age to the outcome measure organ donor register status (namely, registered, intend to register, do not intend to register).

### 2.2. Measures

#### 2.2.1. Explicit attitude measures

Regarding attitudes as multi-dimensional, the current study measured both the explicit and the implicit attitudes on separate altruistic and distaste dimensions. On screen, participants were asked eight questions measuring their explicit attitudes towards organ

donation. Following Cohen and Hoffner (2013), four questions were designed to capture both the “ethical/altruistic/admirable” and warm-glow/pride aspect of organ donation. These included “Being on the organ donor register shows that a person has a sense of social responsibility”, and “Would-be organ donors should feel proud that they have offered to help others after their own death”, scored “strongly disagree” (1) through “neutral” (4) to “strongly agree” (7) ( $\alpha = .727$ ). Following O’Carroll et al. (2011b), four questions were designed to capture the distaste/disgust/“icky” aspect of organ donation, with a particular emphasis on bodily integrity. These included “The image of your body not being complete at your funeral disgusts you” and “It makes you feel squeamish to think about organs being taken from your body after your death”, scored “strongly disagree” (7) through “neutral” (4) to “strongly agree” (1) ( $\alpha = .808$ ).

To assess the concurrent validity of the explicit attitude measures, a separate and additional group of 28 respondents (recruited from a similar pool to the main study) answered both O’Carroll et al.’s (2011b) questionnaire (itself derived from Morgan et al.’s questionnaire, 2008) and our own questions. The relationship between our 8 item questionnaire and O’Carroll et al.’s (2011b) full 16 item questionnaire was  $r = +0.798$  ( $p < .001$ ), and between our altruism scale and O’Carroll et al.’s “perceived benefit” scale was  $r = +0.823$  ( $p < .001$ ), and between our distaste scale and O’Carroll et al.’s “icky” scale was  $r = +0.632$  ( $p < .001$ ).

Participants also reported on their organ donor register status – already registered, intend to register, and do not intend to register. Furthermore, those who intended to register were also asked to state when they intended to register – within the next month, within the next year, within the next five years, unsure when intend to register.

### 2.2.2. *Implicit attitude measures*

Implicit attitudes were measured using a SC-IAT. While the standard IAT is ideally suited to the investigation of associations between two pairs of binary categories, the SC-IAT has been used to study associations related to a single category where there is no obvious comparator (Galdi, Acuri, & Gawronski, 2008; Karpinski & Steinman, 2006) and was thus more suitable for the current study.

Following standard IAT procedure, participants used E and I keyboard pads to sort two series of words and pictures to the side of the computer screen labelled as either “good” or “bad”. IAT studies usually use one set of words to encapsulate the concept “good” (such as wonderful, happy) and another set of words to encapsulate the concept “bad” (such as terrible, awful). Following the conceptualisation in the case of organ donation of good/bad comprising two contrasting and separate dimensions as discussed above, this study distinguished between two different aspects of good/bad. Thus, one series contained seven positive and seven negative words of an “ethical/altruistic/admirable tone” (such as honourable, charitable; selfish, miserly). The other series contained seven positive and seven negative words of a “distaste” tone (such as appealing, pleasing; revolting, disgusting). Interspersed with the words in each sort, participants allocated seven different colour images of NHS donor cards and non-graphic organ donation promotional material to the side of the screen designated “organ donation”, which on half the trials was assigned to the side of the screen labelled as “good”, and on half the trials was assigned to the side of the screen labelled as “bad” for the purposes of the word sorting task. (See Supplemental Material for full details of measures.)

Using the improved  $D$  score algorithm (Greenwald et al., 2003),  $D$  scores (implicit attitudes) were calculated by subtracting reaction times when the pictorial image shared a response key with good words from those when the image relating to organ donation shared a response key with bad words. A positive score thus indicates a quicker reaction time when the organ donation image shared a response key with good words (viz. the positive end of the altruistic or the distaste dimensions), and a negative score indicates a quicker reaction time when organ donation images shared a response key with bad words (namely, the negative end of the altruistic or the distaste dimensions).

### 2.3. Participants

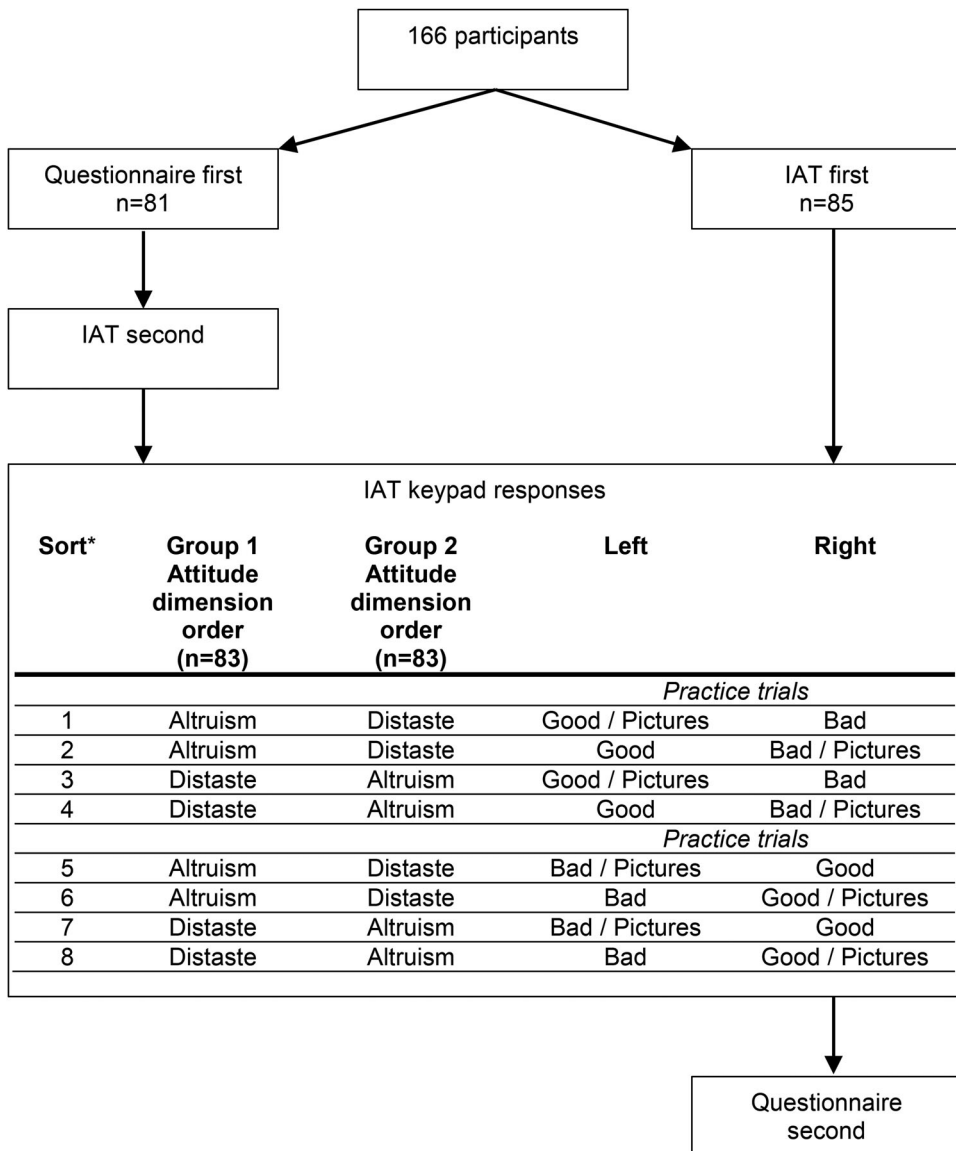
Participants were invited to take part in a computer-based reaction time task and questionnaire about organ donation. One hundred and ninety-six took part – 46 to gain course credit, and 150 recruited by opportunity sampling in a cafeteria of an English university (and, having agreed to take part, were tested in a separate and quiet area close by). In the Implicit Association Tasks, participants corrected errant word or picture sorting responses during the trials, and following Greenwald et al. (2003), trials with latencies  $>10,000$  ms were excluded, as were respondents for whom more than 10% of their trials had latencies of less than 300 ms. This resulted in a sample of 188 (89 males, 99 females), further reduced to 166 (79 males, 87 females) (mean age = 21.83 years, SD 5.13, range 18–49 years) as 3 participants did not give their age, and 19 participants were lost due to computer failure during the IAT task or to giving inconsistent answers to the organ register status questions (such as stating both that they were and were not on the organ donor register, suggesting ill-attention to their questionnaire responses). With  $N = 166$ , G-power *post hoc* analysis indicates an achieved power of 97.4%: based on a regression model with six predictors, Altruistic explicit attitude, Distaste explicit attitude, Altruistic implicit attitude, Distaste implicit attitude, gender and age,  $\alpha = .05$ , medium effect size ( $f^2 = 0.15$ ).

### 2.4. Procedure

Eighty-one participants answered the explicit attitude questions before the IAT task and 85 answered the explicit attitude questions after the IAT task. In addition to practice trials, each participant completed a series of eight IAT sorts. Each sort involved 42 trials involving two repeats of 7 “good” words, 7 “bad” words, and 7 organ promotion images in random order. These were presented in one of two sequences – either two altruistic, two distaste, two altruistic, two distaste (83 participants) or two distaste, two altruistic, two distaste, two altruistic (83 participants) (see Figure 1: study design and participant flow). Ethical clearance was granted by the Oxford Brookes University Research Ethics Committee.

### 2.5. Statistical analysis

All data analyses were performed using the Statistical Packages for the Social Sciences (SPSS) Version 23. The key independent variables were examined using  $t$  tests, analysis of variance and  $\chi^2$  tests (as fully detailed in the Results section). Multinomial logistic regression was used to investigate the relationship of the altruistic and distaste explicit



\* Each sort involved 42 trials i.e. 2 sorts of 21 items, presented in random order:  
7 good words, 7 bad words, 7 pictures.

**Figure 1.** Study design and participant flow.

and implicit attitude variables, gender and age to the outcome variable (namely, organ donor registration status – registered, intend to register and do not intend to register).

### 3. Results

Among sample participants, 37% were registered as potential organ donors, 33% intended to register as a donor and 30% did not intend to register as a donor. This distribution



differed by gender,  $\chi^2(2, N = 166) = 7.08, p = .029, d = 0.41$ ): among men – 28% registered, 42% intend to register, 30% do not intend to register; among women – 46% registered, 25% intend to register, 29% do not intend to register (see Table 1). Among those intending to register, the most common responses were to expect to sign within five years (45%) or to be unsure when they would sign (22%). Those registered were slightly older ( $M = 23.6$  years,  $SD = 6.65$ ) than those intending to register ( $M = 20.9$  years,  $SD = 4.09$ ) and those who did not intend to register ( $M = 20.7$  years,  $SD = 2.98$ );  $F = 6.50, p = .002, \eta^2 = 0.07$ . As also shown in Table 1, explicit altruistic attitudes were very positive, averaging at 5.68 ( $SD = 1.02$ ) on a 7-point scale, and did not differ by gender ( $t(167) = -0.88, p = .381$ ). Explicit distaste attitudes were also positive, averaging at 5.15 ( $SD = 1.42$ ) (where a high score indicates low distaste) and did not differ by gender,  $t(167) = 0.79, p = .429$ . However explicit distaste attitudes were somewhat less positive than explicit altruistic attitudes,  $t(165) = 4.70, p < .001, d = 0.36$ .

On average, responses were quicker when the organ donation image shared a keypad with a good word as indicated by a positive  $D$  score mean of 0.1267 ( $N = 166, SD = 0.25$ ), significantly different from zero:  $t(165) = 6.54, p < .001$ ; and did not vary by altruistic/distaste,  $t(168) = 0.30, p = .762$ . The average  $D$  score did not differ by order of task (explicit/implicit  $F(1, 161) = 2.67, p = .104$ ); or within implicit attitudes by order of altruistic/distaste,  $F(1, 161) = 0.113, p = .737$ ; or by gender,  $F(1, 161) = 0.24, p = .626$ . Altruistic and distaste explicit attitudes correlated  $r(165) = .32, p < .001$ , whereas the correlation between altruistic and distaste implicit  $D$  scores did not reach significance,  $r(165) = 0.13, p = .09$ . There was no relation between altruistic explicit attitudes and altruistic implicit  $D$  scores,  $r(165) = 0.02, p = .830$ ; or between distaste explicit attitudes and distaste implicit  $D$  scores,  $r(165) = 0.08, p = .323$ .

Multinomial logistic regression was conducted to investigate the relationship of altruistic attitudes (explicit and implicit), distaste attitudes (explicit and implicit), gender and age to register status (already registered, intend to register, do not intend to register) using “already registered” as the reference category ( $LR\chi^2 = 84.22, df = 12, p < .001$ , Cox and Snell pseudo  $R^2 = 0.398$ ).

Those who intend to register are distinguished from the already registered on 4 of the 6 variables studied (see Table 2). That is to say, in comparison to the registered group, the intenders were more likely than the registered group to be male (Wald = 5.44,  $df = 1, p = .020$ ), and more likely to have slightly less positive altruistic and less positive distaste explicit attitudes, and more likely to have negative altruistic implicit attitudes. A one unit increase in the explicit altruism attitude score reduced the odds of being in the intend to register group by 41% (Wald = 4.62,  $df = 1, p = .032$ ); and a one unit increase in the explicit distaste score reduced the odds of being in the intend to register group by 42% (Wald = 8.80,  $df = 1, p = .003$ ). Every unit increase in the altruistic implicit attitude  $D$  score reduced the odds of being in the intend to register group by 72% (Wald = 4.00,  $df = 1, p = .046$ ). Neither implicit distaste nor age differentiated between the intending to register and the already registered group in the multivariate analysis.

Those who do not intend to register differed from the already registered group on only two of the variables studied, in that those who did not intend to register had less positive scores on altruistic explicit attitude and distaste explicit attitude measures than did the already registered. When comparing the odds of the non-intenders to the already



**Table 1.** Descriptive statistics: four attitude measures, age and gender.

Donor registration status	All		Registered		Intend to register		Do not intend to register		Uni-variate statistics		
<i>N</i>	166		62		55		49				
Attitudes, age and gender*	<i>M</i>	95% CI	<i>M</i>	95% CI	<i>M</i>	95% CI	<i>M</i>	95% CI	<i>F</i>	<i>p</i>	$\eta^2$
Altruistic explicit (scale 1–7)	5.68	5.53, 5.84	6.18 <sup>a*</sup>	5.93, 6.44	5.65 <sup>b</sup>	5.44, 5.85	5.09 <sup>c</sup>	4.81, 5.37	19.31	<.001	0.19
Distaste explicit (scale 1–7)**	5.15	4.94, 5.37	5.94 <sup>a</sup>	5.64, 6.24	5.14 <sup>b</sup>	4.83, 5.44	4.17 <sup>c</sup>	3.78, 4.56	28.29	<.001	0.26
Altruistic implicit ( <i>D</i> score)***	0.13	0.08, 0.18	0.18 <sup>a</sup>	0.11, 0.25	0.06 <sup>a</sup>	–0.04, 0.15	0.16 <sup>a</sup>	0.05, 0.27	2.23	0.110	0.03
Distaste implicit ( <i>D</i> score)***	0.12	0.07, 0.17	0.15 <sup>a</sup>	0.07, 0.24	0.12 <sup>a</sup>	0.04, 0.20	0.08 <sup>a</sup>	–0.02, 0.18	0.65	0.523	0.01
Age (in years)	21.83	21.04, 22.62	23.63 <sup>a</sup>	21.94, 25.32	20.85 <sup>b</sup>	19.75, 21.96	20.65 <sup>b</sup>	19.80, 21.51	6.50	0.002	0.07
Gender											
Male ( <i>N</i> = 79)	47%		28%		42%		30%		$\chi^2$		<i>d</i>
Female ( <i>N</i> = 87)	53%		46%		25%		29%		7.08	0.029	0.41

\*Shared superscript indicates no significant differences between scores/values

\*\*Where a high score indicates lack of distaste

\*\*\*Theoretical range of a *D* score is –2.0 to +2.0 (Greenwald et al., 2003), where a negative score indicates a negative implicit association with organ donation (also see Endnote 3).

**Table 2.** Relationship of donor registration status to altruistic and distaste explicit and implicit attitudes, age and gender.

Register status <i>N</i>	Intend to register using registered as reference group				Do not intend to register using registered as reference group			
	55				49			
	<i>B</i>	Wald (df 1)	<i>p</i>	Odds ratio (95% CI)	<i>B</i>	Wald (df 1)	<i>p</i>	Odds Ratio (95% CI)
Altruistic explicit	−.55	4.62	.032	0.59 (0.35–0.95)	−1.01	14.99	<.001	0.35 (0.20–0.59)
Distaste explicit	−.55	8.80	.003	0.58 (0.40–0.83)	−1.07	24.55	<.001	0.34 (0.23–0.52)
Altruistic implicit	−1.29	4.00	.046	0.28 (0.08–0.98)	−.51	0.51	.476	0.60 (0.14–2.54)
Distaste implicit	.13	0.04	.841	1.14 (0.32–4.13)	−.14	0.04	.851	0.87 (0.19–3.88)
Age	−.083	2.73	.099	.921 (0.83–1.02)	−.087	2.25	.133	0.92 (0.82–1.03)
Gender <sup>a</sup>	1.03	5.44	.020	2.81 (1.18–6.71)	.75	2.18	.140	2.12 (0.78–5.77)

<sup>a</sup>All variables entered as continuous covariates, apart from gender which is entered as a categorical factor, with Female as reference group.

registered, a one unit increase in the explicit altruism attitude score approximately reduced the odds of being in do-not-intend-to-register group by 65% (Wald = 14.99, df 1,  $p < .001$ ); and a one unit increase in the explicit distaste attitude score approximately reduced the odds of being in the do-not-intend-to-register group by 66% (Wald = 24.55, df 1,  $p < .001$ ). The implicit altruism and distaste attitudes, age and gender did not differentiate between the not intending to register and the already registered groups in the multivariate analysis.

Although altruistic explicit attitudes did distinguish between the three participant groups, in absolute terms, all three groups had predominantly positive attitudes as only 1.8% of the entire sample showed an absolute negative score (i.e. scored below 3.50 on the 7-point scale, where 4 indicates a “neutral” attitude) (1.6% of the already registered, 0% of the intenders, and 4.0% of the do-not-intend-to-register group).<sup>3</sup> In contrast, it was more common to hold negative explicit distaste attitudes (i.e. 11% of the entire sample scored below 3.50 on the 7-point scale). Furthermore, explicit distaste attitudes discriminated strongly between the three groups, and particularly so between the already registered (among whom only 3% displayed absolute distaste) and those who do not intend to sign the register (among whom as many as 28% displayed absolute distaste attitudes).

As already shown, the intenders did have, in absolute terms, positive but slightly lower altruistic and distaste explicit attitudes than the already registered. But the intending to sign group was also distinguished from the already registered by a lower altruistic implicit *D* score. The intenders’ altruistic implicit attitude *D* score was close to zero,  $t(54) = 1.21$ ,  $p = .230$ ; while the score of the already registered,  $t(61) = 4.97$ ,  $p < .001$ , was positive, as was the score of those who do not intend to register,  $t(48) = 2.88$ ,  $p = .006$ . Furthermore, behind the intenders’ average score of zero, it is the case that as many as 27% of the intenders had a negative *D* score in absolute terms (i.e. had a score of below minus 0.15), whereas only 11% of the already registered group had an absolute negative implicit altruistic score.<sup>4</sup> Additionally, among intenders, those who stated that they were unsure when

they would sign or were only likely to sign within the next five years were more likely to have lower altruistic *D* scores ( $M = -0.01$ ,  $SD = 0.30$ ) as compared to those who intended to sign “within the next month” or “within the next year” ( $M = 0.19$ ,  $SD = 0.40$ ;  $t(53) = 2.05$ ,  $p = .05$ ).

#### 4. Discussion

This study examined the views of existing registrants and those currently not registered, and used a tri-partite distinction to compare those who stated that they intended to register (33% of the sample) and those who stated that they did not intend to register (30%) with those who stated that they already had registered (37%). While both the altruistic and distaste explicit attitude measures, in addition to the altruistic implicit attitude measure, were predictive of register status, those who intended to register and those who did not intend to register were differentiated from those already registered in contrasting ways. The intenders were in particular characterised by a greater likelihood of having a negative implicit altruistic response and the non-intenders were characterised by a greater likelihood of having an explicit negative distaste response.

Controversy surrounds the relationship between explicit and implicit attitudes and the degree to which implicit attitudes are “unconscious” (Gawronski & Bodenhausen, 2014; Hahn, Judd, Hirsh, & Blair, 2014). In this study, no overall relationship was detected between explicit/implicit measures on altruistic or distaste dimensions, although among intenders, lower (relatively more negative) implicit altruistic attitudes were more characteristic of those who stated that they planned to sign the organ donor register within the next five years (as opposed to within the next month or year). The lack of a strong relationship between explicit and implicit attitudes accords with Nosek’s (2007) suggestions that explicit/implicit relations may be harder to detect when measuring a single category with no comparator, and that weaker explicit/implicit relations might also characterise students who as a group may be unusually keen to express liberal views. That doubts about the altruistic value of organ donation are likely to be more unacceptable than finding the idea organ removal distasteful (admission of which is itself a common finding in both quantitative and qualitative studies, O’Carroll et al., 2011b; Sanner, 2001) could explain why altruistic rather than distaste implicit attitudes predicted donation status. In this sample, men were more likely than woman to be intenders rather than already registered, and intenders were characterised by a greater likelihood of having a lower (relatively more negative) implicit altruistic score than the registered. In this context, it is interesting to note that a number of studies have shown that men are more likely than women to favour organ donation financial incentive schemes (Haddow, 2006; Inthorn, Wöhlke, Schmidt, & Schicktanz, 2014), which can be interpreted as suggesting that men have less “pure” altruistic attitudes towards organ donation than women have.

In making suggestions regarding the promotion of organ donation, psychologists have advised that propaganda should focus not only on increasing knowledge about organ transplantation (Morgan & Cannon, 2003) but also on assuaging unease, since affective attitudes – and bodily integrity in particular – are commonly cited as accounting for low registration levels (Sanner, 2001; Shepherd & O’Carroll, 2014a). In this study’s comparison of the non-registered with those already registered, explicit distaste attitudes are indeed a major deterrent to registration for those who have said that they do not

intend to register at all. The group of respondents who among the non-registered are most favourably disposed to registration (i.e. they report that they do plan to register) are characterised not only by a relative lack of distaste concerns but also by a discrepancy between positive explicit and negative implicit altruistic views. It remains a matter of empirical investigation to establish whether it is easier to persuade non-intenders to overcome their commitment to bodily integrity or to persuade intenders to move further in the direction of altruism. It can be argued that the latter might be more fruitful than the former, as the findings of one recent Randomised Control Trial (RCT) project comparing different kinds of intervention showed that merely reminding non-donor participants of negative attitudes (via questionnaire “ick”/disgust items) was associated with lower subsequent rates of organ donor registration than simply being asked demographic questions (O’Carroll, Ferguson, Hayes, & Shepherd, *in press*).

In the UK, encouraging people to sign by not permitting an organ donor register question to be skipped while applying for a driver’s license online has not dramatically increased registration rates, perhaps because cognitive resources at that time are limited to the task in hand. But it is notable that in a recent RCT, on the UK government driving license/vehicle tax website comparing the effectiveness of seven new web-page variants/interventions against the status quo, the two best-performing messages were ones which drew either on reciprocity (“If you needed an organ transplant would you have one? If so, please help others”) or on loss frame (“Three people die every day because there are not enough organ donors”) (Cabinet Office, 2013). Both of these messages serve to remind people of the social care and ethical values similar to those encapsulated in the implicit altruism measure in this study (i.e. words such as charitable, generous). Messages vary in persuasiveness (Petty & Cacioppo, 1986) and research highlights the variety of drivers that may motivate organ donation (e.g. ideas about the public good, Anker & Feeley, 2011; Hill, 2016; and anticipated regret, O’Carroll, Dryden, Hamilton-Barclay, & Ferguson, 2011a; Shepherd & O’Carroll, 2014b). Given the ubiquity of positive explicit altruistic attitudes to organ donation, if some potential registrants are ambivalent about signing, they may respond well to a more elaborated and powerful message which would specifically stimulate them to consider their responsibility to contribute to the public good and/or the regret they may feel if they do not contribute either by signing themselves or by agreeing to donate a deceased family member’s organs.

The study relied on participants’ truthfulness about their current donor status – 37% stated that they were already on the register, close to the national rate of 35%, and the slight under-representation of males on the register among participants in this study is also a feature of the UK organ donor register itself (NHSBT, 2016). Participants were university students drawn from a wide range of subjects (including architecture, engineering, motor sport, police studies and publishing) but are not fully representative of the population of whom, among current 17–30-year-olds, 57% do not participate in higher education (National Statistics, 2014). Since higher education is associated with more positive donation attitudes (Mossialos, Costa-Font, & Rudisill, 2008) the study may have under-sampled those with negative attitudes. However, the prevalence of disgust/distaste attitudes among those in this study who stated that they did not wish to sign the register is typical of anti-donation attitudes in studies with non-student samples (Sanner, 2001) and mixed samples (Coad et al, 2013; O’Carroll et al, 2011b). Most participants were under the age of 30 but this can be regarded as an advantage since the shortage of

organs is leading to the growing use of organs from marginal donors, including older and obese donors (Akkinä et al., 2012). The attitudes of young people matter because medically speaking, they make ideal donors since their organs are less likely to be compromised by ill-health.

As is common in psychological studies, much may depend on the stimuli chosen to represent categories of interest (Judd, Westfall, & Kenny, 2012). No distinction was made between the benefits to others and the benefits to self (such as pride in benefitting others, Cohen & Hoffner, 2013; or “warm glow” giving, Evans & Ferguson, 2014; Ferguson, Atsma, de Kort, & Veldhuizen, 2012), as the items were collapsed into one explicit attitude altruism scale. Distaste was prioritised over other negative attributes such as the jinx factor or distrust in medical practitioners (as elucidated by Morgan et al, 2008), and within distaste, no distinction was made between bodily integrity and more general squeamishness surrounding organ removal (as differentiated by Shepherd & O’Carroll, 2014a) as, in this study, these aspects were collapsed into one explicit distaste scale. Furthermore, the relative power of altruistic and distaste attitudes may vary by decision point. Implicit distaste may play a bigger role not when signing the register but at the more emotional time of considering donation on a deceased relative’s behalf.

Although organ donation is often modelled as the outcome of altruism/distaste conflict, this study’s innovative use of two contrasting implicit measures to capture two different dimensions of good/bad suggests that, for some intenders, an important attitude discrepancy resided not between altruism and distaste, but within altruism. Further research is clearly required to demonstrate the reliability and generality of this finding. However, that a disproportionate number of those who described themselves as intending to sign the donor register responded more slowly when the donation image shared a keypad with words such as honourable/charitable/worthy suggests some ambivalence about the humanitarian imperative of organ donation. Given the youthful sample, this adds to concern that young adults in North America and Europe show less altruism than previous cohorts, evidenced by lower rates of blood donation (NHSBT, 2011) and of philanthropic giving, even lower among men than women (Charities Aid Foundation, 2012; Piper & Schnepf, 2008). Whether this is due to decreased empathy or increased individualism and/or narcissism is unclear (Twenge & Foster, 2010; Twenge, Campbell, & Freeman, 2012).

Registration rates must rise if the organ supply is to increase. Inasmuch as the implicit altruistic attitude measure demonstrates that among those who intend to register are some who appear ambivalent about the moral value of organ donation, education and persuasive propaganda need to focus more explicitly on the uncomfortable choices involved. After all, “Should people’s moral choices cost them nothing when these same choices cost others their very lives?” (Brazier & Harris, 2011, p. 28).

## Notes

1. In December 2015, Wales (one country within the UK) moved from an opt-in to an opt-out system of consent to deceased organ donation.
2. Percentage of registrants aged 21–30 at the time of registration: 28.7% (1994), 22.2% (2014). Linear regression of proportion of 21–30-year-olds among sign-ups on a constant and a 21-year time-trend:  $R^2 = 0.69$ ,  $\beta = -0.83$ ,  $se\ 0.08$ ,  $p < .001$ .

3. The skew in the Explicit Altruistic attitudes data does not pose a statistical problem due to the use of multinomial logistic regression whose assumptions are not violated by non-normally distributed data.
4. In the absence of a comparator, it is reasonable to interpret a D score below  $-.15$  as Negative (i.e. a quicker reaction time when the organ donation image response key was shared with responses to words of negative valence), a D score above  $+.15$  as Positive (i.e. a quicker reaction time when the organ donation image response key was shared with responses to words of a positive valence) and a D score at and between  $-.15$  and  $+.15$  as Neutral, although we recognise that a Single-Category IAT D score near zero can indicate a neutral association with the target or “could indicate ambivalent attitudes (i.e. the presence of positive and negative associations, but in equal amounts or held with equal strength)” (Breen & Karpinski, 2013, p. 370).

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