Understanding organ donation attitudes and behaviour from a theory of planned behaviour perspective

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ABSTRACT

Currently, the number of people on the UK organ donor register is insufficient (NHS, 2010a). It is therefore vital that how people make their organ donation decision is known in order for interventions to become more efficient. The Theory of Planned Behaviour (TPB) is a well-known and useful model of health behaviour (Armitage & Conner, 2001 and Godin & Kok, 1996), and is applied to organ donation behaviour in this research. In this study, 111 participants from the University of Chester, three Warwickshire workplaces, a Warwickshire Women's Institute Group, and a Warwickshire Book Group were used. Demographic information, and their scores in all components of the TPB were assessed through a self-report questionnaire, following Ajzen's (2006) guide. Findings showed TPB components to account for a large amount of variance in behaviour and intention. Particular beliefs were found to be significantly associated with attitude, subjective norm and perceived behavioural control. Demographic differences were only visible within age and occupation. Findings suggest interventions should aim to increase, particularly the elderly's, control beliefs, highlight the positive aspects of becoming a donor, and also encourage religious institutions to actively promote organ donation.

KEYWORDS	ORGAN DONATOR	THEORY OF PLANNED BEHAVIOUR	IINTENTION	BEHAVIOUR

INTRODUCTION

The UK organ donor register was established in 1994 (NHS, 2009a). It is a system for keeping record of people who consent to donating their healthy organs when they have died (NHS, 2010c). People choose to sign up to the register, in line with the opt-in system of consent presently operating in the UK (POST, 2004). Donated organs then go to those most in need of a transplant (where a match is optimal), a system which significantly improves or saves the lives of around 2,700 people in the UK each year (NHS, 2010b). Although 28% of people in the UK are currently potential organ donors, there is a significant shortage of available organs. For example, more than 10,000 people in the UK are currently awaiting transplant, 1,000 of which will die each year (NHS, 2010a). The present system of organ donation in the UK is not sufficient as it does also not capture the wishes of many people: only 28% are registered, yet 45% are reported to have good intentions to join the organ donor register (NHS, 2009d).

It has been suggested that the significant gap between the number of people intending to join, and those actually registered could be solved by reforming the UK system. An independent review by the Organ Donation Taskforce (ODT) (2008) examined a system of mandated choice and an opt-out system as possibilities of reform. Introducing mandated choice would mean that people would legally be obliged to opt in or out at some point in their lives. However, problems with this include issues such as: people changing their opinion, but not their status on the register, whether the family's opinion should carry any weight, when the choice should occur, and what the consequence of people failing to comply would be (ODT, 2008). The ODT(2008) were also concerned that mandated choice may also cause resentment toward organ donation, and so it was deemed unsuitable.

An opt-out system of consent is used in Spain, the country currently with the highest rate of organ donation in Europe, as well as many other European and worldwide countries (Directorate-General for Health & Consumers, 2007). This system assumes all people to consent to donation, unless they otherwise opt-out. This would be assumed to increase numbers on the register, as those who intend to register, but have not yet done so, would automatically be considered a registered donor. However, the ODT (2008) concluded that an opt-out system would be too costly and complex to introduce. Most importantly, a strong possiblity that it could have a negative affect on organ donation rates was highlighted: this occured under an opt-out system in Brazil because of a lack of trust in the government and accusations of body snatching (ODT, 2008), and in France for six years following corneas being wrongly taken from a young road traffic accident victim under their opt-out system (ODT, 2008). If an opt-out system were adopted, this could well repeat itself in the UK, as disputes over organs taken without consent have already occured at Alder Hey children's hospital centres (BBC, 2001), and The Bristol Royal Infirmary (BBC, 1999).

Further to this, many studies into attitudes towards organ donation report a significant lack of trust in the NHS (e.g. Alkhawari, Stimson, & Warrens, 2005; Sonmez, Zengin, Ongel, Kisioglu, & Ozturk, 2010; Morgan, Adams, Seed, & Jones, 2010). It is for these reasons that the ODT (2008), and others such as Johnstone (2007), from the UK charity 'Transplants in Mind' argue that rather than reform the

UK system, there is a better route to improving organ donation rates whilst still using the opt-in system presently in place.

To improve the number of registered organ donors in the UK, it is primarily important to understand why people choose to, or not to, register as organ donors and what exactly influences their decision, so that research-based, effective strategies can be implemented. Previous research has commonly aimed to do this by asking people about their attitude towards organ donation. Many different reasons have been highlighted from this research.

Religious beliefs are the most commonly cited reason for not wanting to register as an organ donor. In Sonmez et al.'s (2010) study; 25.7% of participants gave religion as their explanation for non-donation, and has also been reported in many other studies (e.g. Albright, Glanz, Wong, Dela-Cruz, Abe, & Sagayadoro, 2005; Uriarte, Amarillo, Ampil, Manauis, Danguilan, & Ona, 2010; Hamouda, Hamida, Benzarti, Zouari, & Chebil, 2009; Alkhawari et al., 2005). However; the only mainstream religions that may be viewed as opposing organ donation are Buddhism and Judaism (although these are both arguable), as their diagnosis of death is different from that of the 'brain death diagnosis' used for organ donation(NHS, 2009f). Faiths such as Christianity, Hinduism, Sikhism and Islam particularly support organ donation (NHS, 2009f). Despite this, 16.5% of theology students in Turkey thought organ donation not to be in accordance with Islamic beliefs, and another 67.9% said that they did not know about the religious aspect of organ donation. They also reported a significant lack of knowledge about the legal (78.9%) and scientific (80.5%) aspects of organ donation (Nacar, Cetinkaya, Baykan, & Poyrazoglu, 2009): evidently people hold little knowledge about organ donation and whether or not their religion is supportive of the concept.

Knowledge and awareness itself has been linked to attitudes towards organ donation; for example, Albright et al. (2005) found awareness to be the main problem, both inside and outside the medical professions. However, it has been proposed that decisions over organ donation are not based on knowledge or awareness, but on moral or cultural factors (Roza, Pestana, Barbosa, & Schirmer, 2010), and so therefore suggest that increasing knowledge and awareness is not important for increasing numbers on the register. In conjuction with this, several studies have found family beliefs to be an important influence (e.g. Hyde & White, 2010; Albright et al., 2005).

A fear of their organs being used for commercial use (i.e. being sold) was the number one reason (45.7%) found for not registering as an organ donor by Sonmez et al. (2010). Although this study's participants were all Turkish students, there have also been reports in the USA that the media is scaring people away from registering as an organ donor due to fictious storylines about a black market for organs, and doctors murdering their patients for their organs (Patterson-Neubert, 2006). Many people also believe that if they are a known registered organ donor, then they will recieve lesser treatment by the medical staff as they see an opportunity to gain organs for transplant (e.g. Alkhawari et al., 2005). Astonishingly, 13% of post-graduate medical students in India held suspicions of care being hampered for those on the register, and only 79% agreed that doctors would not call death prematurely for registered patients (Bapat & Kedlaya, 2009). However this research was carried

out in India, and so it is unknown how applicable these views are to the UK's NHS doctors.

A further commonly found reason for non-donation is the belief that organ donation would cause a loss of body integrity. A Tunisian study found this to be the number one reason for non-donation, as 79.9% of participants disapproved of the loss of body integrity caused by organ donation (Hamouda, et al., 2009). In Nacar at al.'s, (2009) Turkish study, 13.3% held the same view, which was also reported in other studies (e.g. Hyde & White, 2010; Alkhawari et al., 2005). However, although body integreity is clearly of importance in these predominantly Muslim countries, research needs to establish whether it is a concern for other non-Muslim countries, such as the UK.

Other reasons for non-donation are: worry that donated organs will go to an unworthy recipient (e.g. a prisoner or someone with a self-inflicted illness) (Hyde & White, 2010), wanting to look nice in their coffin (Hyde & White, 2010), fears of the operation itself (Uriarte et al., 2010), and personal factors such as believing themselves to be too old (NHS, 2009c), or having a medical condition (Hyde & White, 2010) which would not allow them to register - despite the fact that anyone of any age and with any medical conditon can register (Johnstone, 2008).

Documented motives for wishing to become a donor include the way in which registering as an organ donor can induce positive feelings about oneself, and the belief that organ donation may help loved ones to cope with your death (Hyde & White, 2010). Altruism has been reported to be the main reason for donation, and to hold higher value than even religion when considering donation (Lippincott, Williams, & Wilkins, 2004). Furthermore, knowing someone who has received an organ from transplant has frequently been correlated with more postivie attitudes toward organ donation (e.g. Roza et al., 2010; Hyde & White, 2010). Lastly, being in, or knowing several people within the medical profession is associated with favourable attitudes (e.g. Sonmez et al., 2010; Rois, et al., 2010).

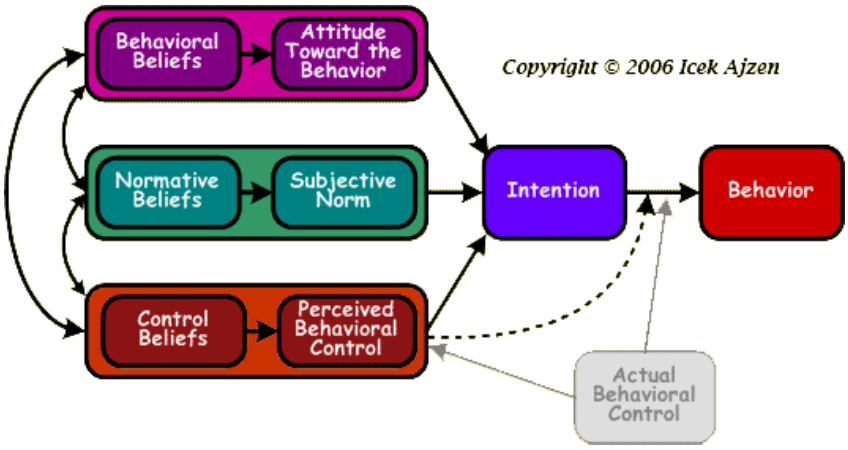
Particular demographic factors have also been associated with different organ donation attitudes: generally, ethnic minorites are less favourable of organ donation (Alkhawari et al., 2005; Manninen & Evans, 1985; Albright et al., 2005). However, this may be a result of them feeling marginalised in the UK, as Afro-Americans were more favourable of organ donation when living in Barbados than in London (Morgan et al., 2010). It is argued as to whether age affects likelihood of registering; some studies have found no differences (e.g. Morgan et al., 2010), although correlations indicate that those over 75 are less likely to be registered (NHSBT, 2009e; ONS, 2003). Manninen and Evans (1985) found those aged 35-44 to be most favourable of organ donation, but as this study was conducted in 1985, this age group would now be aged 61-70; further research needs to establish whether particular age groups are more favourable, and if people become less favourable oforgan donation as they age.

Higher levels of education and income have also been correlated with more favourable attitudes towards organ donation (e.g. Sonmez et al., 2010; Manninen & Evans, 1985), presumably because higher levels of education would also mean that they have better knowledge and awareness of organ donation. Finally, some gender

differences have been found regarding attitudes towards organ donation: although Sonmez et al. (2010) found women to be more likely to be considering donation than men; Roza et al. (2010) reported more men to be registered donors, whereas studies such as Morgan et al. (2010) found no signficant difference.

A weakness of much of this previous research is that it lacks a strong theoretical basis. Using a theory or model of health behaviour when looking at topics such as organ donation can help to ensure that all factors contributing to a decision or behaviour are assessed, and can tell us more about the relationships between these factors (Radecki & Jackard, 1997). The TPB (Ajzen, 1991) attempts to explain behaviour by introducing the idea that other components are important, as well as attitude. This may be cruicial in organ donation research,as studies such as Albright et al. (2005) found an individual's own attitude to be the main reason for non-donation for only 10% of their sample.

The Theory of Planned Behaviour(TPB) considers a person's *attitude*, *subjective norm* and *perceived behavioural control* of a behaviour. *Attitude* is the individual's positive or negative feelings towards a behaviour; this is determined by what the individual feels the consequences of performing the behaviour would be (Maio & Haddock, 2010). Overall *attitude* is formed from a set of *behavioural beliefs*, which are specific thoughts or beliefs about a behaviour (Maio & Haddock, 2010). Secondly, *subjective norm* is the individual's perception of whether they think that those they value the opinion of would encourage the behaviour or not; this is influenced by *normative beleifs* which are feelings about what specific groups of people (such as friends or family) may think about the behaviour in question (Maio & Haddock, 2010). Finally, *perceived behavioural control* is an individual's perception of how easy or difficult it would be to perform the behaviour in mind. This is influenced by their *control beliefs* which are specific beliefs about whether they have the correct resources and opportunities needed for the behaviour, such as time, money etc.(Maio & Haddock, 2010). The TPB also recognises that intention does not necessarily always predict behaviour; Ajzen (1991) proposes that perceived behavioural control mediates this link (see figure below).



Ajzen (2006)

Figure1 Diagram of the Theory of Planned Behaviour

The TPB has proved to be a useful tool in predicting many health related behaviours: meta-analytic reviews suggest self report measures of the TPB to account for between 31% (Armitage & Conner, 2001) and 34% (Godin & Kok, 1996) of varying health related behaviours. Few studies have appiled the TPB directly to organ donation, and those that have found differing results: Hyde and White (2009) found attitude, subjective norm and perceived behavioural control all to significantly influence registering intentions for all participants. However, this research was carried out in Australia using students who were prodominantly Caucasian, female, and aged 17-24, and so may not be representative of a wider sample. Research using students in the Netherlands indicated that the organ donation decision was predominantly based on attitude, and that this was mostly influenced by having a large presence/absence of negative beliefs, rather than a large presence/absence of positive beleifs (Brug, Van Vugt, Van Den Borne, Brouwers, & Van Hooff, 2000). Notably, there are distinct differences between cultures: Bresnahan, et al. (2007) used the TPB to assess donation attitudes between Americans, Koreans and Japanese students. Despite discovering that within all three countries spirital connection/concern was the main influence of attitude, it was only in America that subjective norm was important. In Japan perceived behavioural control was the best predictor of intention to register; and in Korea, increased knowledge was actually associated with reluctance to register. It is therefore important to use the TPB to assess organ donation behaviour in the UK, as there is clearly an effect of culture.

Clearly, there is disagreement as to what influences a person's decision regarding registering as an organ donor. Research needs to clarify whether this decision is mostly influenced by a person's individual attitude, their culture, family or religion. Little is also known about what demographic factors are associated with differences in donation, and what specific thoughts or feelings influence people's organ donation decisons. Importantly, a significant amount of previous research has been carried out in countries other than the UK, using young people; it is therefore very important to establish whether the trends in these cultures and age groups can be generalised to all populations. The present study will therefore attempt to gain insight into how people of all ages in the UK make their decision regarding organ donation using a questionnaire assessing all components of the TPB.

Hypotheses

1. There will be significant differences in demographic factors between components of the TPB.
2. The questionnaire based on the TPB will be able to account for a large proportion of variance in organ donation behaviour.
3. The questionnaire based on the TPB will be able to account for a large proportion of variance in intention.
4. Some components of the TPB will have a larger association with behaviour than others.
5. Some components of the TPB will have a larger association with intention than others.
6. Some behavioural beliefs will have larger associations with attitude than others; some normative beliefs will have larger associations with subjective norm than others; and that some control beliefs will have larger associations with perceived behavioural control than others.

METHOD

Design

The independent variables were: attitude, subjective norm, perceived behavioural control, behavioural beliefs, normative beliefs, control beliefs, motivation to comply, and power of control scores. The dependent variables were behaviour and intention. For further analysis, the dependent variables were the main components of the model (intention, subjective norm, perceived behavioural control) and independent variables were the belief questions asked in relation to these (for attitude this was all behavioural belief questions, for subjective norm this was all normative belief questions, and for perceived behavioural control this was all control belief questions). The experiment followed an independent measures design.

Participants

Participants consisted of 111 people recruited using opportunistic sampling from staff and students at the University of Chester, workplaces within Warwickshire (Barford St Peter's Primary School, ASK Restaurant Warwick, Estates Office at the University of Warwick), a Warwickshire Book Group and a Warwickshire Women's Institute group. Participants were of various ages: 25 were aged 18-30, 23 were aged 31-45, 34 were aged 46-60 and 28 were aged 61+; 1 participant did not state their age. Of the participants, 44 were male, 59 were female, and 8 did not state their gender. Participants were a volunteer sample. Following British Psychological Society Guidelines, consent for the research to be carried out was sought from all sources; all participants were given information regarding the nature of the research, were informed of the right to withdraw, and kept anonymous throughout the research. Participants were also informed that by completing and submitting their questionnaire, consent for their data to be used would be assumed.

Materials and Apparatus

Participants completed a questionnaire measuring all components of the TPB (behavioural beliefs, attitude, normative beliefs, subjective norm, control beliefs, perceived behavioural control, intention and behaviour). The questionnaire was written according to Ajzen's (2006) manual: 'Constructing a TPB Questionnaire'. Questions related directly to components within the TPB framework, as well as participants' power of control and motivation to comply. Most questions were answered using a 7-point Likert scale, ranging from 1 being "strongly disagree", to 7 being "strongly agree". Three questions measured intention, e.g. "I want to register as an organ donor". Five questions measured attitude, e.g. "For me, being a registered organ donor is good". Five questions measured subjective norm, e.g. "Many people like me are registered organ donors". Four questions measured perceived behavioural control, e.g. "If I wanted to, I would know how to register as an organ donor". Twenty-three questions measured behavioural beliefs, e.g. "Organ donation is playing God". Four questions measured normative beliefs, e.g. "My family think that I should be a registered organ donor". Four questions measured control beliefs, e.g. "I believe myself to be too old to become an organ donor". Four questions measured motivation to comply, e.g. "When considering becoming an organ donor yourself, how much do you care about what your family thinks of organ donation?". Finally, four questions measured power of control factors, e.g. "My age affected my choice of whether to become a registered organ donor or not".

Ajzen's (2006) manual recommends that the belief components' questions are formulated from a pilot study, asking participants about their opinions and attitudes of the given topic. However, due to time constraints, these specific beliefs were instead gained from the wealth of past literature on organ donation. All questions were in a random order, as suggested by Ajzen's (2006) manual of 'Constructing a TPB Questionnaire'. Demographic information (gender, age, ethnicity, occupation, religion and strength of religiosity) was also collected. Envelopes for all completed questionnaires, as well as three secure boxes for them to be posted in were used. For data input and analysis, a computer with PASW 17.0 for Windows was used.

Procedure

Participants were approached either individually or in small groups, and asked if they would like to fill in a questionnaire researching people's attitudes towards organ donation. Participants then read an information sheet explaining the nature of the research, assuring them that any data given would remain confidential and anonymous, and also advising them not to take part if they felt uncomfortable answering questions about organ donation. Participants were also informed that they could cease completion of the questionnaire at any point with no further consequences. The sheet also provided contact details: the researcher's email address, and the UK organ donation website and telephone number, should they need them following participation. Participants then completed the questionnaire, placed it in a sealed envelope and then either gave it directly back to the researcher, or posted it into a designated secure box for the researcher to later collect.

Analysis

Results were analysed using PASW 17.0. Some scores were reversed and all were labelled for analysis. Tests for parametricity were carried out, followed by Cronbach's alpha to check for internal consistency. T-tests (or Mann-Whitney tests for non-parametric data), ANOVA (or Kruskal-Wallis for non-parametric data), and chi-squared tests were performed to identify differences between demographic variables. Finally, multiple regression analysis was used to analyse associations between components of the model. For all statistical tests, the alpha level was set at $p < 0.05$.

All data was checked for parametricity using the Sharipo-Wilk test, Box-Plot, Q-Q Plots, and Stem and Leaf diagrams. All variables other than intention and motivation to comply were determined as having normally distributed data. Therefore, for intention and motivation to comply, non-parametric tests were used.

RESULTS

Descriptive Statistics

Frequencies

In total, 52 (46.8%) of participants were registered organ donors, and 59 (53.2%) were not. 85 (77.3%) of participants were in favour of an opt-out system of consent, 13 (11.8%) were not, and 12 (10.9%) were unsure.

Below is a table indicating the frequencies and valid percentages for all demographic variables of participants.

Table 1
Frequencies and valid percentages of demographic variables of participants.

Demographic		Frequency	Valid Percent
Gender	Male	44	42.7
	Female	59	57.3
	Total	103	100
Age	18-30	25	22.7
	31-45	23	20.9
	46-60	34	30.9
	61+	28	25.5
	Total	110	100
Ethnicity	White British	93	96.9
	White/Asian	2	2.1
	Turkish	1	1
	Total	96	100
Religion	Christian	80	74.1
	Atheist	18	16.7
	Agnostic	7	6.5
	Alevi	1	0.9
	Buddhist	1	0.9
	Total	108	100
Occupation	Student	19	17.1
	Teacher	15	13.5
	Estates Office	18	16.2
	Retired	23	20.7
	Other	36	32.4
	Total	111	100

Table 1 shows that occupation, age and gender were all fairly representative. However, ethnicity and religion among participants was predominantly white British and Christian.

Tests for Internal Consistency

Below is a table giving all means, standard deviations, number of items in each variable's scale, and Cronbach's alpha for all variables to measure their internal consistency. Cronbach's alpha for all belief components (Behavioural Beliefs, Normative Beliefs, Motivation to Comply, Control Beliefs and Power of Control) are not given, as each question should not measure the same construct.

Table 2
Mean, standard deviation, number of items in each variable's scale, and Cronbach's alpha coefficient for all variables.

Variable	Mean (SD)	No. of Items in Scale	Cronbach's Alpha
Intention	12.72 (4.39)	4	0.939
Attitude	28.41 (5.98)	5	0.861
Subjective Norm	19.65 (5.95)	4	0.725a
Perceived Behavioural Control	22.58 (3.75)	3	0.508b
Behavioural Beliefs	121.5 (11.95)	23	
Normative Beliefs	15.98 (4.87)	4	
Motivation to Comply	9.52 (4.48)	4	
Control Beliefs	19.44 (3.85)	4	
Power of Control	16.61 (3.99)	4	

aCronbach's alpha coefficient after SN_Expect removed.
bCronbach's alpha coefficient after PBC_Me removed

According to Gliem and Gliem's (2003) suggested categorisations, Intention has "excellent" internal consistency, as Cronbach's alpha is >0.9. Attitude has "good" internal consistency, as Cronbach's alpha is <0.8. Subjective Norm has "acceptable" internal consistency, as Cronbach's alpha is <0.7, after item labelled 'SN_Expect' was removed. Cronbach's alphas below 0.5 are considered "poor", and so Perceived Behavioural Control (after PBC_Me removed, see Appendix C) fits into this category. However, Cortina (1993) points out that Cronbach's alphas appear much lower, and are not as valid for use with scales of few number of items, as is the case here. Therefore, these scales may in fact be more internally consistent than the alpha levels suggest.

Inferential Statistics

Demographic Differences

Below is a table showing how demographic groups differed between each variable. Ethnicity was excluded from the analyses as there was not enough variance for any valid conclusions to be drawn.

Table 3
Differences in variables between all demographic groups.

Variable	Gender	Age	Religion	Occupation
Intention	U = -0.142	H = 3.087	H = 5.960	H = 5.137
Attitude	t = 1.664	F = 1.128	F = 1.461	F = 3.037*
Subjective Norm	t = 0.922	F = 0.217	F = 0.559	F = 1.519
Perceived Behavioural Control	t = 0.608	F = 1.122	F = 1.608	F = 1.645
Behavioural Beliefs	t = -1.205	F = 0.144	F = 2.071	F = 3.688**
Normative Beliefs	t = -1.288	F = 0.299	F = 0.313	F = 1.825
Control Beliefs	t = -1.875	F = 2.696*	F = 1.043	F = 3.989**
Motivation to Comply	U = -0.474	H = 2.325	H = 7.139	H = 3.607
Power of Control	t = 0.078	F = 0.508	F = 1.328	F = 1.334
Behaviour	$\chi 2$ = 1.515	$\chi 2$ = 1.486	$\chi 2$= 0.420	$\chi 2$= 10.222*

*p< 0.05
**p< 0.01

Table 3: Key

Symbol	Test
U	Mann Whitney
t	T test
$\chi 2$	Chi Square
F	Anova
H	Kruskal-Wallis

Table 3 shows that most demographic groups did not differ significantly. However; there was a significant difference for age and control beliefs; those who were aged 18-30 had significantly higher Control Beliefs than those who were aged 61+, F(3,103)=2.696,p=0.029. There was a significant difference for occupation and Attitude; teachers had a significantly more favourable attitude than those who worked at the Estates Office, F(4,102)=3.097,p=0.016. There was a significant difference for occupation and behavioural beliefs; teachers had significantly more positive Behavioural Beliefs than those who worked at the Estates Office, F(4,98)=3.688,p=0.003. There was a significant difference for occupation and Control Beliefs; students had significantly higher control beliefs than those who were retired, F(4,103)=3.989,p=0.006. Finally, there was a significant difference for occupation and Behaviour; teachers and students were more likely to be registered, whereas those who worked at the estates office, were retired, or classified as 'other' were more likely not to be registered.

Model as a Predictor of Behaviour

Multiple regression analyses were carried out to test the predictive value of the model as a whole, and to find out what variables have the largest associations. However, the intention-behaviour link was not analysed as only participants who were not registered answered the questions regarding intention. All multiple

regression analyses were also checked for normality using histograms and Q-Q plots, all of which were deemed normal.

Firstly, multiple regression analysis was used to test the model as a predictor of organ donation behaviour. The table below shows how well Attitude, Subjective Norm and Perceived Behavioural Control scores predict behaviour.

Table 4
Multiple regression analysis of variables as predictors of organ donation behaviour.

Model as a Predictor of Behaviour					
	Unstandardised Coefficient		Model Summary		
Variable	*B*	*SE*	*df*	R^2	*F*
Constant	3.44	0.246	3	0.43	25.170***
Attitude	-0.03***	0.008			
Subjective Norm	-0.017*	0.008			
Perceived Behavioural Control	-0.033*	0.013			

*p< 0.05
*** p< 0.001

Table 4 shows that the variance accounted for by the model is 43% (R^2=0.43). According to Cohen (1988), this is a large associated strength, as R^2>0.25. Attitude appears to have the largest association with organ donation behaviour, B(3,103)=-0.03,p<0.001: those with a more favourable attitude were significantly more likely to be a registered organ donor. Perceived Behavioural Control appears to have a significant, although smaller, association with Behaviour, B(3,103)=-.033,p=0.012: those with better Perceived Behavioural Control over registering as an organ donor were significantly more likely to be registered. Subjective Norm also has a significant and again smaller, association, B(3,103)=-0.017,p=0.039: those with a more positive subjective norm regarding organ donation are significantly more likely to be a registered organ donor.

Model as a Predictor of Intention

Multiple regression analysis was used to test the model as a predictor of Intention. The table below shows how well Attitude, Subjective Norm and Perceived Behavioural Control scores predict intention.

Table 5
Multiple regression analysis of variables as predictors of intention.

Model as a Predictor of Intention					
	Unstandardised Coefficient			Model Summary	
Variable	*B*	*SE*	*df*	R^2	*F*
Constant	-7.015	2.211	3	0.723	42.730***
Attitude	0.572***	0.64			
Subjective Norm	0.176*	0.67			
Perceived Behavioural Control	0.126	0.103			

*p< 0.05
*** p< 0.001

Table 5 shows that the variance accounted for by the model is 72.3% (R^2=0.723). According to Cohen (1988), this is a large associated strength, as R^2>0.25. Attitude appears to have the largest association with Intention, B(3,52)=0.572,p<0.001: those who were not already registered were significantly more likely to intend to register as a donor if they had a more favourable attitude. Subjective Norm appears to have a significant, although smaller, association with intention, B(3,52)=0.176,p=0.011: those who had a more positive subjective norm were significantly more likely to intend to register as a donor. Perceived Behavioural Control had a small, but not significant association with intention, B(3,52)=0.126,p=0.228; those who had a better-perceived behavioural control were more likely to intend to register, but not significantly.

Behavioural Beliefs as Predictors of Attitude

Multiple regression analysis was used to test how well Behavioural Beliefs predicted Attitude, and to find out which behavioural beliefs in particular predict attitude well.

Table 6
Multiple regression analysis of behavioural beliefs as predictors of attitude.

Behavioural Beliefs as Predictors of Attitude					
	Unstandardised Coefficient		Model Summary		
Variable	*B*	*SE*	*df*	R^2	*F*
Constant	3.827	7.159	23	0.636	5.923***
B_Aware	0.343	0.34			
B_Worthy	-0.415	0.248			
B_Docs	-0.282	0.319			
B_Organ	-0.243	0.254			
B_Short	0.372	0.367			
B_Sold	-0.348	0.233			
B_Know	0.278	0.281			
B_NHS	0.55	0.415			
B_Receive	0.09	1.237			
B_Body	-0.181	0.292			
B_Good	0.925**	0.294			
B_Save	1.385*	0.587			
B_Integ	0.574	0.306			
B_KnowMed	0.466*	0.228			
B_Bereave	0.805***	0.244			
B_Med	-1.96	1.945			
B_Reincarn	-0.25	0.345			
B_Mutil	0.277	0.318			
B_Selfless	0.501	0.344			
B_Worsen	-0.193	0.304			
B_Coffin	-0.059	0.422			
B_God	0.823*	0.335			
B_Op	-0.177	0.283			

*p< 0.05
** p< 0.01
*** p< 0.001

Table 6 shows that the variance in attitude accounted for by all Behavioural Beliefs is 63.6% (R^2=0.636). According to Cohen (1988), this is a large associated strength, as R^2>0.25. Significant predictors of attitude appear to be: firstly, believing that having your organs donated will help with you loved ones bereavement (B_Bereave), B(23,101)=0.805,p<0.001. Secondly, believing that becoming an organ donor would make you feel good about yourself (B_Good), B(23,101)=0.925,p=0.002. Also, knowing more people in the medical profession (B_KnowMed), B(23,101)=0.466,p=0.045. And finally, believing that registering as an organ donor meant that they could one day save someone's life (B_Save), B(23,101)=1.385,p=0.021.

These significantly associated beliefs, and most others, were associated with attitude in the expected direction. However this was not true for some. As shown in table 6, fearing that your organs may go to someone unworthy was in fact associated with

having a more favourable attitude (B_Worthy), B(23,101)=-0.415,p=0.099. Similarly, believing that the doctors' efforts leading up to your death would be different if you were a registered organ donor was in fact associated with having a more favourable attitude (B _Docs), B(23,101)=-0.282,p=0.379. Not believing that you may one day need an organ from transplant was in fact associated with having a more favourable attitude (B_Organ), B(23,101)=-0.243,p=0.342. Fearing that your organs may be used for commercial use (be sold) was also associated with having a more favourable attitude (B_Sold), B(23,101)=-0.348,p=0.233. Believing that organ donation would cause body disfigurement was in fact associated with having a more favourable attitude (B_Body), B(23,101)=-0.181,p=0.292. Those not in the medical profession were also associated with having a more favourable attitude, than those in the medical profession (B_Med), B(23,101)=-1.960,p=0.317. Believing that organ donation would negatively affect your reincarnation was also associated with having a more favourable attitude (B_Reincarn), B (23,101)=-0.250,p=0.471. Believing that your organ would cause the recipient's condition to worsen was also associated with having a more favourable attitude (B_Worsen), B(23,101)= -0.193,p=0.528. Fearing organ donation because you believe that it would make you look bad in your coffin was also associated with having a more favourable attitude (B_Coffin), B(23,101)=-0.059,p=0.890. Finally, fearing the transplant operation itself was associated with having a more favourable attitude (B_Op), B(23,101)=-0.177,p=0.534.However, as these associations are very small and not significant, they should be interpreted with caution.

Normative Beliefs as Predictors of Subjective Norm

Multiple regression analysis was used to test how well normative beliefs predicted subjective norm scores, and to find out which normative beliefs in particular predict subjective norm score well.

Table 7
Multiple regression analysis of normative beliefs as predictors of subjective norm.

Normative Beliefs as Predictors of Subjective Norm					
	Unstandardised Coefficient		Model Summary		
Variable	*B*	*SE*	*df*	R^2	*F*
Constant	6.765	1.34	4	0.599	37.012***
NB_Soc	0.04	0.239			
NB_Rel	0.704***	0.196			
NB_Friend	1.158***	0.256			
NB_Fam	1.397***	0.248			

*** $p < 0.001$

Table 7 shows that the variance in Subjective Norm accounted for by all Normative Beliefs is 59.9% (R^2=0.599). According to Cohen (1988), this is a large associated strength, as R^2>0.25. Significant predictors of Subjective Norm appear to be: family's opinion (NB_Fam), B(4,103)=1.397,p<0.001; friends' opinion (NB_Friend), B(4,103)=1.158,p<0.001; and their religion's opinion (NB_Rel), B(4,103)=0.704,p<0.001. Society's opinion (NB_Soc), B(4,103)=0.040,p=0.866)

appears to be least important, and not significant when considering what others feel they should do regarding becoming an organ donor.

Control Beliefs as Predictors of Perceived Behavioural Control

Multiple regression analysis was used to test how well Control Beliefs predicted Perceived Behavioural Control scores, and to find out which control beliefs in particular predict perceived behavioural control score well.

Table 8
Multiple regression analysis of control beliefs as predictors of perceived behavioural control.

Control Beliefs as Predictors of Perceived Behavioural Control					
	Unstandardised Coefficient		Model Summary		
Variable	*B*	*SE*	*df*	R^2	*F*
Constant	14.581	1.785	4	0.212	6.858***
CB_Ill	-0.033	0.197			
CB_Old	0.498**	0.191			
CB_Time	0.72**	0.23			
CB_Opp	0.56**	0.213			

** $p < 0.01$
*** $p < 0.001$

Table 8 shows that the variance in Perceived Behavioural Control accounted for by all Control Beliefs is 21.2% (R^2=0.212). According to Cohen (1988), this is a medium associated strength, as R^2>0.09. Significant predictors of Perceived Behavioural Control appear to be: whether or not the person feels them self to be too old to become a registered organ donor (CB_Old), B(4,106)=0.498,p=0.01; the time it takes to register (CB_Time), B(4,106)=0.72,p=0.002; and the number of opportunities they come across to register (CB_Opp), B(4,106)=0.56,p=0.01. Whether the person feels that they are too ill to donate (CB_Ill), B(4,106)=-0.033,p=0.868, was not significantly associated with Perceived Behavioural Control, but interestingly, was in the unexpected direction as those who believed themselves to have an illness that prevented them from becoming a donor actually had a better overall perceived behavioural control.

DISCUSSION

The first hypothesis that there will be significant differences in demographic factors between components of the TPB can be accepted for occupation, and to some extent age, but not for the other demographic variables. No significant differences for gender or religion were found. Significant differences for age were found in that those aged 18-30 had significantly better control beliefs than those aged 61+. More significant differences were found for occupation: teachers were significantly more favourable of organ donation and held more positive beleifs about it than those who worked at the Estates Office. There was also a significant difference for behaviour; teachers and students were more likely to be registered, whereas the other occupational groups were more likely not to be registered.

The second hypothesis that the questionnaire based on the TPB will be able to account for a large proportion of variance in organ donation behaviour can be accepted as 43% of variance was accouted for. The third hypothesis that the questionnaire based on the TPB will be able to account for a large proportion of variance in intention can also be accepted as 72.3% of variance was accounted for.

The fourth hypothesis that some components of the TPB will have a larger association with behaviour can than others can be accepted as attitude was most significantly associated with behaviour, then perceived behavioural control, then subjective norm. The fifth hypothesis that some components of the TPB will have a larger association with intention than others can also be accepted as attitude was most significantly associated with intention, then subjective norm. Perceived behavioural control was also a predictor, but did not have a signficant association with intention.

The final hypothesis that some behavioural beliefs will have larger associations with attitude than others, some normative beliefs will have larger associations with subjective norm than others and that some control beliefs will have larger associations with perceived behavioural control than others can be accepted as this can be seen for all three, as some beliefs appeared as significant predictors, and some did not.

In the present sample, 46.8% of participants were registered organ donors, higher than the national figure of 28%. Higher levels of education has previously been linked to having more favourable attitudes towards organ donation (e.g. Sonmez et al., 2010, and Manninen & Evans, 1985): this may explain the difference in this sample, as a majority of participants were from a middle-class background, and so probably have higher levels of education. The present study also showed 77.3% to be in favour of an opt-out system of donation in the UK, a figure which may show that people would be more supportive of this system than the ODT (2008) anticipated.

Although there appeared to be no difference in behaviour outcomes between the different age categories, there were significant differences in control beliefs between those aged 18-30 and 61+. The results of 1540 face to face interviews with those who were supportive of, but not registered as, organ donors found that over half of over 55 year olds disgregard themselves as potential organ donors because they believe themselves to be too old or ill (NHS, 2009c). As some control belief questions in the present study referred to age and illness, this too may highlight a specific need to increase knowledge of organ donation in the elderly, ensuring that they are informed of the fact that anyone, of any age, and in any medical condition can register (Johnstone, 2008). In the present study, control belief questions also referred to how time consuming they believed registering to be, and how frequently they came across opportunities to register; given that those aged 61+ scored significantly lower, this could also indicate a need to make registering as a donor less time consuming for, and to provide more opportunities to register to the elderly, particularly.

The present study also found those working in a primary school to hold significantly more positive behavioural beliefs and attitude toward organ donation than those

working at the Estates office. This may be due to the difference in education levels (Sonmez et al., 2010 and Manninen & Evans, 1985), or perhaps because of another external factor, such as a particularly helping or altruistic quality which both teachers and registered organ donors are more likely to hold. Students and teachers were found overall to be significantly more likely to be registered than the other groups, again something which is probably a reflection of education level.

Sonmez et al. (2010) found women to be more likely to be considering donation than men, although Roza et al. (2010) reported more men to actually be registered. However, neither of these trends could be seen in the present study; in fact, no gender differences at all were visible. These differences may be a result of culture, as these previous studies were carried out in Turkey and Brazil respectively. Supporting this theory, Morgan et al.'s (2010) research in the UK also found no gender differences.

The present study found attitude, subjective norm, and perceived behavioural control all to significantly predict behaviour, but that only attitude and subjective norm significantly predict intention. The model also accounted for a large amount of variance and was a significant predictor for both behaviour and intention. This is supportive of Ajzen's (1991) model; percived behavioural control not appearing as a signficant predictor of intention shows how it is our perceived behavioural control that mediates intention and behaviour regarding organ donation registration. This is extremely important, as 45% of those who are not registered have been reported to have the intention to do so, but have not yet got around to it. (NHS, 2009d). The present study now shows that it appears to be a lack of perceived behavioural control that is causing this gap between intention and behaviour; therefore, if future strategies to bridge this gap are to have maximum effect, it would be recommended that they target people's perceived behavioural control.

To target a person's perceived behavioural control effectively, the factors that influence this would need to be addressed; multiple regression analyses showed the significant predictors of perceived behavioural control to be the control beliefs referring to: whether or not the person believes themselves to be too old to donate, how time consuming they believe organ donation to be, and how frequently they believe themselves to come across opportunities to register. Therefore, effective campaigns to bridge the gap between intention and behaviour would firstly need to provide these people with the knowledge that no one can be too old or young to donate. They would also need to either make the process of registering as an organ donor less time consuming, or show people just how easy it is to do, especially when done online; registering online only asks requires a person's name, D.O.B, sex, ethnicity, and address (NHS, 2011) and so already takes very little time. Campaigns would also need to provide people with more opportunities to register.

It is therefore clear that more, and quicker, ways to register are needed. However, the registration process could not be made much more concise, as most of the details asked for are needed for the register. It is for these reasons that some existing newer opportunities to register are performed by ticking a box on a registration form, on which the person has already had to provide the necessary details, but for another purpose. For example, this form of registration is available when registering for a Boots Advantage Card, a new GP surgery, a passport,

European Health Insurance Card, and a number of local authority's SmartCard schemes (NHS, 2009b). Importantly, it has recently been announced that all people registering for a driving licence will be obliged to tick a box indicating whether they wish to register as an organ donor, or not, as of July 2011; the consequence of not doing so being that they do not receive their driving licence (COBIT, 2010).

Nevertheless, the present study showed that it was those aged 61+ who had particularly low control beliefs; however these newer methods of registration may be somewhat aimed at lower age groups, as they are all things that older people are unlikely to be registering for. This problem may also be reflected in the statistic that 30% of people register when aged 16-25 (NHS, 2009b). It is therefore suggested that this system of ticking a box to consent to being an organ donor should also be applied to registration forms that older people are more likely to be completing, such as the seasonal flu jab form; recommended once a year for all aged 65+ (Department of Health, 2011), when applying for pensions or bus passes, or at health screenings, such as colorectal cancer screening offered to those aged 60-69 every 2 years (NSC, 2010).

Increasing people's perceived behavioural control should close the gap between intention and behaviour. However, the model and results show that to encourage more people to actually intend to register as an organ donor, it is their attitude and subjective norm that should be targeted. Brug et al. (1999) found attitude to be the main predictor of intention, and that attitude was predominantly influenced by the presence/absence of negative behavioural beliefs, but not affected particularly by the presence/absence of positive ones. Interestingly, although the present study did find attitude to have the largest association with intention, multiple regression analysis showed it to actually be the presence/absence of positive attitudes, and not negative, that affect overall attitude. For example, 4/5 significant predictors of attitude were: believing that registering as an organ donor would make you feel good about yourself, believing that by registering as an organ donor you could one day save someone's life, knowing many people who work within the medical profession, and believing that being an organ donor would help with your family's bereavement when you passed away. Further to this, 8/10 specific factors that were not significantly related, but appeared to be associated with attitude in the direction that we would not expect, were mostly negative beliefs, for example: believing the donation of their organs may cause the recipients condition to worsen, the fear that their organ may go to someone unworthy, and the fear that their organs may be sold.

In terms of applications, these results show that to make people more favourable of organ donation, and so increase their likelihood of intending to register, the following things would need to be addressed: firstly, people would need to be made to think about how becoming an organ donor would make them feel good about themselves. People should also be reminded that by becoming an organ donor, they really could one day save someone else's life. People should be encouraged to think about how if their loved ones organs were donated, this could help them in their bereavement, and to share these thoughts with their loved ones. Other behavioural beliefs significantly related to attitude referred to whether organ donation was 'playing God', and whether they knew many people in a medical profession. These may be more difficult to target; however, methods such as using medical professionals in adverts, or encouraging medical professionals to talk to their patients about organ donation

could help. To allow more people to believe that organ donation was not 'playing God', perhaps religious institutions could be consulted to help advertise this idea.

Family and religion has been found to be extremely important in the organ donation decision (e.g. Sonmez et al., 2010; Albright et al., 2005; Uriarte et al., 2010; Hamouda et al., 2009; Alkhaweri et al., 2005; Roza et al., 2010; Hyde & White, 2010). This was also reflected in the present study, as the opinions of both religion and family were significantly associated with subjective norm, which in turn was significantly associated with both behaviour and intention. This shows how the influence of family and religion is not a culturally-bound or age-restricted phenomenon. Adding to this, the present research also highlights the importance of friends' attitudes towards organ donation. Interestingly, the opinion of society in general was not found to affect a person's subjective norm, suggesting that decisions regarding organ donation are much more strongly influenced by those close to us, rather than society as a whole.

To change the subjective norm influence of friends and family, the individual attitudes of these would need to be changed themselves. However, the mean score for each item in normative beliefs was =4 (SD=1.21), showing that most people answered around the middle of the Likert scale for the beliefs of their family, friends, religion and society's opinion. This may indicate that in fact people do not know how these people/institutions feel about organ donation; this could be changed by encouraging organ donation to be discussed more in families, among friends, by religions etc. Discussion of wishes among family has frequently been encouraged by past research (e.g. Martinez, Lopez, Martin, Martin, Scandroglio, & Martin, 2001).

The influence of religion regarding organ donation is interesting as there are very few religions that may possibly be seen as opposing it (NHS, 2009f). It is therefore suprising that religion is frequently quoted as a major barrier to donation (e.g. Sonmez et al., 2010; Albright et al., 2005; Uriarte et al., 2010; Hamouda et al., 2009; Alkhaweri et al., 2005). Bresnahan & Mahler (2010) suggest that this discrepancy between belief and truth about religious opinions is partly due to false information available on the internet. Using 'Google'; they found that within the first page of listings, controversy regarding the brain death diagnosis used in organ donation could be seen for Buddhism, Catholicism, Hinduism, Judaism and Islam. Therefore, it is suggested that religious institutions themselves should more readily provide their followers with correct information, for example by talking about the concept in religious services, or providing official written information at places of worship. This should be done not only because people are receiving incorrect information, but more importantly because the present study shows how important this information is for people making their own choice regarding organ donation.

Limitations and Future Directions

The results of and recommendations from the present study should be accepted taking into consideration its limitations however. Firstly, despite the sample being representative in terms of age and gender, most participants were white British and from a middle-class background; two demographics which have been associated with more favourable attitudes of organ donation in themselves (Alkhaweri et al., 2005; Sonmez et al., 2010).

The sample size may also not have been adequate for one of the analyses carried out. When performing multiple regression analyses, data sets with smaller sample sizes are more likely to result in larger R_2 values than those with larger sample sizes (Ito, Kneipa, & Lioy, 1986), and so it is recommended that at least 10-20 participants are used for each independent variable used in the regression(Hill & Lewicki, 2007). This was achieved in all regressions in present study, other than when analysing associations between behavioural beliefs and attitude. For this, there were 23 behavioural beliefs, therefore requiring a minimum of 230 participants: however only 101 were used in this analysis. The implications of this are that for this regression only, the results are unstable and would be unlikely to replicate themselves if this were to be conducted again with a different sample. In addition to this, a problem with multiple regression analysis itself is that relationships can only be inferred from them; no cause or effect can be truly established. Therefore, the relationships highlighted in this research are simply just associations, as there may be an external influence causing both behaviours (Hill & Lewicki, 2007).

Another limitation of the current study is that although all regression associations were defined as 'large' or 'medium' (Cohen, 1988), they may actually be relatively small in context. For example, the model accounted for 43% of variance in behaviour; therefore, there is still another 57% of variance that is not accounted for by the questionnaire. Similarly, there is 27.7% of variance in intention not account for by the model. It can therefore be said that despite the variance sizes being described as large, there is still a relatively high amount of variance not accounted for by the TPB model when applying it in this format to organ donation.

The final limitation addressed is that not all data collected from the research was fully utilised in the analysis of this study. Secondary analysis could use the data to analyse more relationships. For example, it may be of interest to determine exactly where the differences in control beliefs lie between those aged 18-30 and 61+ to establish what exactly it is that the elderly need to make them feel as though they are more able to become a donor. Secondary analysis could also analyse all questions as direct predictors of behaviour/intention, to determine exactly which beliefs are important.

However, due to sample size limitations, some of these analyses would not be possible using the present research's data whilst maintaining a high level of reliability. Therefore, it would be recommended that the research were performed using a larger sample size so that all regressions could be stable; to use all questions as predictors, a minimum of 580 participants would be necessary (Hill & Lewicki, 2007). If this future research were to be carried out, it would also be recommended that a more representative sample were sought, particularly in terms of ethnicity and occupation/background.

Future research is also needed to establish what accounts for the missing variance within the model. The TPB may need to be extended to be able to account for the missing 57% of variance for behaviour, and 27.7% for intention. Further to this, to account for more of what formulates a person's attitude, subjective norm and perceived behavioural control, future research should aim to establish more behavioural, normative and control beliefs surrounding organ donation. Although the present study was performed following Ajzen's (2006) manual: 'Constructing a TPB

Questionnaire', it was not possible to conduct the recommended pilot study due to time constraints. This will have influenced results as all beliefs surrounding organ donation will not have been covered by the questionnaire, the missing variance being a reflection of this. Using a pilot study in future research may allow for more beliefs to be addressed, therefore increasing the amount of variance accounted for by the questionnaire.

Conclusion

In conclusion, the present research shows that overall; the TPB is a good predictor of organ donation behaviour, and particularly, intention. Attitude, subjective norm and perceived behavioural control were all found to significantly predict behaviour, and attitude and subjective norm were found to significantly predict intention. Multiple regression analysis also showed the present study to have accounted for a large amount of variance in attitude, subjective norm and perceived behavioural control through the belief questions used in the present study's questionnaire. Particular behavioural beliefs, especially positive ones, were found to be significant predictors of attitude. The opinions of friends, family and religion, but not society were found to significantly predict subjective norm. Finally, perceived time registration takes, perceived number of opportunities to register and whether the donor believes they are too old to donate, but not whether they have an illness preventing them, were found to significantly predict perceived behavioural control. It is recommended that campaigns to increase numbers of the register particularly focus upon these beliefs.

Some demographic differences were visible from the research; they particularly highlight how levels in education are associated with organ donation attitudes and behaviour, and also how the elderly particularly need to increase their control beliefs surrounding organ donation. However, the research should be approached with caution, as many problems regarding the use of multiple regression analysis and sample particularly, question the reliability of the results and conclusions drawn from this research.

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