Perceptions of organ donors and willingness to donate organs upon death:
A test of the Prototype/Willingness Model.

Melissa K. Hyde and Katherine M. White
School of Psychology and Counselling, Queensland University of Technology, Institute of Health and Biomedical Innovation

Melissa Hyde is now at Behavioural Basis of Health, Griffith Health Institute, Griffith University

Correspondence concerning this article should be addressed to Dr Melissa Hyde, Behavioural Basis of Health, Griffith Health Institute, Griffith University, 176 Messines Ridge Road, Mt Gravatt, Queensland, 4122, Australia. Telephone: +61 7 3735 3369. Fax: +61 7 3735 3388. Email: melissa.hyde@griffith.edu.au

Word count: 100 (Abstract) 3380 (Main not including references and tables)
Abstract

Understanding people’s organ donation decisions may narrow the gap between organ supply and demand. In two studies, participants who had not recorded their posthumous organ donation decision (Study 1 $N = 210$; Study 2 $N = 307$) completed items assessing Prototype/Willingness Model (PWM) (attitude, subjective norm, donor prototype favorability and similarity, willingness) constructs. Attitude, subjective norm, and prototype similarity predicted willingness to donate. Prototype favorability and a prototype favorability x similarity interaction predicted willingness (Study 2). These findings provide support for the PWM in altruistic health contexts, highlighting the importance of people’s perceptions about organ donors in their donation decisions.

Keywords: organ donation, Prototype/Willingness Model, organ donor prototypes
A single posthumous organ donor can provide an average of 30 additional life-years to people awaiting transplantation, making continued efforts to encourage organ donation an important focus for health and social initiatives (Schnitzler et al., 2005). This endeavour is particularly vital in Australia, which, despite public support for organ donation, has one of the lowest organ donation rates in the world (15.6 donors per million population) (DonateLife, 2013). In recognition of the importance of increasing organ donation worldwide, much research has identified the factors comprising a profile of the (un)willing or (un)committed organ donor (e.g., Boulware et al., 2002; Haustein & Sellers, 2004; Horton & Horton, 1991), with a focus particularly on individual difference variables (e.g., gender, age, ethnicity; see Radecki & Jaccard, 1997). While individual difference variables are useful to identify target populations, by themselves, they are not readily amenable to change (Armitage & Conner, 2000).

In response to this limitation, several theory-driven investigations to develop organ donation models capable of explaining the decision-making process in this context have been developed (e.g. Horton & Horton, 1991; Kopfman & Smith, 1996; Morgan et al., 2003). A common feature of these models is to use elements of the Theory of Reasoned Action (TRA) (attitude and subjective norm; Fishbein & Ajzen, 1975) which is a social-cognitive decision-making model designed to predict people’s intentions to perform a volitional behaviour (a behaviour within the individual’s control). The TRA assumes that decisions are rational and planned. In the organ donation context, however, it is difficult for the individual to form concrete donation intentions or plans when, in reality, donation upon death is highly dependent on external circumstances beyond the control of the individual (e.g., dying in a way that facilitates donation, consent from family members). Nevertheless, people can express a general willingness for the idea of donating their organs upon death and it may be that a person’s willingness representing a general openness to organ donation if the
opportunity arises, rather than intention, is a more appropriate proxy measure of their organ donation behaviour.

For this reason, we propose a test of the Prototype/Willingness Model (PWM; Gibbons & Gerrard, 1995) to understand people’s decisions to donate organs upon death. While traditionally applied to understand young people’s decisions to engage in health-risk behaviours (e.g., Blanton, van den Eijnden, Buunk, Gibbons, Gerrard, & Bakker, 2001), more recently Hyde and White (2009a, 2009b, 2010) have incorporated constructs from the PWM in the altruistic context. These studies examined decisions to donate organs while living and to communicate consent for donation on a donor register and to family; however, they incorporated constructs from the PWM into another attitude-behaviour model (Theory of Planned Behaviour) and did not provide a full test of the PWM. Furthermore, these studies did not consider organ donation upon death, which is a fundamentally different behaviour and may be informed by different influences because the individual has no opportunity to actually perform the behaviour during their lifetime.

**Prototype/Willingness Model (PWM)**

The PWM is a social-cognitive decision-making model that provides an assessment of a person’s attitude (positive or negative evaluation of a behaviour) and subjective norm (perceived pressure from others and an evaluation of what important others do). The unique feature of the PWM is its inclusion of a ‘social reaction’ pathway, which allows an examination of behaviours that involve an element of risk and are largely dependent on situational factors (Gibbons, Gerrard, Ouellette, et al., 1998). There is great potential for the social reaction pathway of the PWM to be assessed in the context of altruistic or prosocial health behaviours because these behaviours involve an element of risk or danger to oneself (especially those involving medical procedures such as blood or bone marrow donation) in decision-making.
The social reaction pathway in the PWM suggests that a person’s willingness to perform a given behaviour is the most proximal predictor of that behaviour. Willingness, in turn, is influenced by a person’s attitude, subjective norm, and the prototype associated with the behaviour (image of the typical person who performs/does not perform the behaviour; e.g., a smoker). The more favourable a person’s evaluation of the prototype image, and the more similar the individual believes he or she is to the prototype image, the more willing that person will be to perform the behaviour if the opportunity arises (Gibbons, Gerrard, Ouellette, et al., 1998). Media stories regularly report on organ donation and transplantation and there is a socially shared notion about organ donors as altruistic or giving people (Lauri & Lauri, 2005). In the organ donation context, then, prototypes reflect the images or evaluations of the characteristics that define the typical person who donates his or her organs upon death (organ donor prototype). Perceptions of the type of people who donate their organs may encompass both negative (associations with death) and positive (saving a person’s life) images; however, the contribution of organ donor prototype perceptions to the prediction of people’s decisions to donate organs upon death has not been assessed and it is unclear the extent to which these donor prototypes predict people’s willingness to donate.

The Current Studies

A test of the PWM has yet to be conducted for the posthumous (upon death) organ donation context. In two tests of the PWM, it is expected that attitude, subjective norm, organ donor prototype favourability, and organ donor prototype similarity would predict people’s willingness to donate their organs upon death (H1). Furthermore, in line with the PWM it is expected that donor prototype favourability and similarity will interact and predict willingness to donate, over and above the contribution of the PWM constructs (H2).

Method

Participants and Procedure
Both studies received ethical approval from the University Research Ethics board prior to commencement. All participants read an information sheet explaining the voluntary, anonymous, and confidential nature of participation and provided informed consent. Participants in both studies were students and community members recruited from South East Queensland, Australia, who had not recorded their organ donation decision on the Australian Organ Donor Registry. Participants in both studies were invited to complete a survey about their willingness to consider organ donation upon death. In Study 1, 210 people (response rate: 25.8%; 81% students, 72% female, age $M = 25.87$ years, $SD = 13.41$ years, range = 17 to 76 years, 82% Caucasian, 42% wanted to donate their organs upon death) participated. Students were recruited from a large metropolitan university via in-class announcements and received course credit. Community participants were recruited via a letter explaining the study and inviting participation from a household member 18 years and over (including a survey and reply paid envelope), placed in their residential mailbox. Both students and community members in Study 1 received entry into a prize draw of four AUD$30-$50 department/music store vouchers.

For Study 2, 307 people (response rate: 57.7%; 74% students, 65% female, age $M = 24.99$ years, $SD = 12.05$ years, range = 17 to 77 years, 83% Caucasian, 54% wanted to donate their organs upon death) participated. Students from a broad range of degree courses (health, business, science, law, psychology) enrolled in an undergraduate psychology unit at a large metropolitan university were recruited via in-class announcements and received course credit for their participation. Community participants were recruited via a snowballing method. A separate sample of students who were ineligible for course credit recruited two community members they knew personally (e.g., neighbours, friends, family) to participate in the study. Students were instructed to recruit community members who were 18 years and older, not a
student, not residing in the same household, and were not related or in a romantic relationship with each other. Students received AUD$5 for each completed questionnaire returned.

Measures

Respondents for both studies completed questions related to their organ donation willingness, attitude, subjective norm, organ donor prototypes and demographics. All items in both studies were scored as 1 (strongly disagree) to 7 (strongly agree), unless stated otherwise.

Willingness. For Study 1, one item assessed willingness to donate organs upon death (Blanton et al., 2001): “I am willing to donate my organs upon death.” For Study 2, consistent with much of the PWM literature, a scenario-based measure of willingness (Blanton et al., 2001; Gibbons, Gerrard, & McCoy, 1995; Gibbons, Gerrard, & Lane, 2003; Spijkerman et al., 2004) with two response options was used. Participants responded to the following scenario and rated the likelihood that they would perform each response option, scored 1 (very unlikely) to 7 (very likely). “Suppose you were reading the newspaper and you saw an article about organ donation which said that Australia has one of the lowest organ donation rates in the world. How likely is it that you would do each of the following: (1) think about being an organ donor upon death, and (2) look for another newspaper article to read.” The two average of the two items formed a willingness scale, $r(299) = .31, p < .001$.

Attitude. Four, 7-point semantic differential format items, including two reverse-scored items, measured attitude toward donating organs upon death (e.g., “For me to donate my organs upon death would be”: good-bad, worthless-valuable). The four items were averaged to form a reliable attitude scale (Study 1 $\alpha = .88$; Study 2 $\alpha = .91$).

Subjective norm. Two items (Gibbons, Gerrard, Blanton, et al., 1998) assessed subjective norm (injunctive norms - similar to measures used in the TRA; Fishbein & Ajzen, 1975) for organ donation upon death (e.g., “Most people who are important to me would
approve of me donating my organs upon death”), $r(208) = .75$, $p < .001$. Study 2 used a three-item measure of subjective norm to better reflect the PWM subjective norm construct that includes both injunctive and descriptive norms (i.e., what others actually do; Gibbons, Gerrard, Blanton, et al., 1998). The injunctive norm items were identical to those used in Study 1 and the descriptive norm item was: “How many of your family members want to donate their organs upon death?” scored 1 (none) to 7 (all). The average of these three items created a reliable subjective norm scale ($\alpha = .79$).

Organ donor prototype favourability. In both studies, participants were first instructed to think about the type of people who donate their organs upon their death. Participants in Study 1 then indicated the extent to which they held favourable, unfavourable, or neutral perceptions of organ donors using a semantic-differential format item (Blanton et al., 2001), ranging from 1 unfavourable to 7 favourable, participants. For Study 2, participants again provided an overall assessment of prototype favourability (e.g., Blanton et al., 2001; Walsh & White, 2007). Two items assessed participants’ perceptions of the favourability of the organ donor image: “In general, how favourably do you view the typical person who donates their organs upon death?” scored 1 (very unfavourably) to 7 (very favourably), and “My view of the type of person who donates their organs upon death is positive” scored 1 (strongly disagree) to 7 (strongly agree). These two items were averaged to form a scale, $r(306) = .63$, $p < .001$.

Organ donor prototype similarity. In Study 1, the extent to which participants perceived they were similar to the typical organ donor was measured with one item (Gibbons & Eggleston, 1996). Participants rated their similarity to the typical organ donor on a scale ranging from 1 similar to me to 7 not at all similar to me. For Study 2, prototype similarity was assessed using two items (Dalley & Buunk, 2009; Gerrard, Gibbons, Brody, Murry, Cleveland, & Wills, 2006; Gibbons & Eggleston, 1996; Lane & Gibbons, 2007; Norman et
The two items were, “In general, how similar are you to the type of person who donates their organs upon death?” scored 1 (not at all similar) to 7 (very similar), and “Do the characteristics that describe the type of person who donates their organs upon their death also describe you?” scored 1 (definitely no) to 7 (definitely yes). The two similarity items were averaged to form a scale, $r(306) = .71$, $p < .001$.

Demographic items. Demographic characteristics including age in years, gender (1 male and 2 female), ethnicity (1 Caucasian and 2 not Caucasian), organ donation preference (1 yes and 2 no/undecided), and respondent type (1 student and 2 community member), were measured.

Data Analysis Strategy

For each study, correlational analyses were conducted initially to examine the relationships between the PWM variables and willingness to donate organs upon death. Hierarchical regression analysis then tested the predictive utility of the PWM in this context. In accordance with the PWM, attitude, subjective norm, donor prototype favourability, and donor prototype similarity were entered in Step 1, followed by the donor prototype favourability and donor prototype similarity interaction in Step 2. All PWM predictor variables were mean centred (deviation score) prior to the creation of the interaction terms (Aiken & West, 1991). Given that both students and community members were sampled, respondent type (student or community member) was initially controlled for at Step 1 of regression analyses. Respondent type was not a significant predictor of willingness in either study and the pattern of results are identical to those reported below; therefore, the analyses reported are those without respondent type at Step 1.

Results

The means, standard deviations, and correlations are presented in Table 1. Subjective norm, followed by attitude were the strongest correlates of willingness to donate organs upon
death in Study 1. In Study 2, attitude, followed by prototype similarity were the strongest correlates of willingness. Regression analysis for Study 1 showed that the model overall explained 49% (48% adjusted) of the variance in people’s willingness to donate their organs upon death. Attitude, subjective norm, and donor prototype similarity (but not donor prototype favourability or the interaction between favourability and similarity) were significant predictors of donation willingness at the final step (Table 2). For Study 2, the model overall explained 41% (40% adjusted) of the variance in donation willingness. At the final step, attitude, subjective norm, donor prototype favourability, donor prototype similarity, and their interaction were all significant predictors of people’s willingness to donate their organs upon death (Table 2).

[Insert Tables 1 and 2 about here]

Discussion

The widening gap between organ demand and supply necessitates continued efforts to understand people’s organ donation decision-making (Schnitzler et al., 2005), particularly in Australia given the low organ donation rates and a paucity of recent Australian research in this context. In view of the potential for the PWM to account for people’s general willingness to donate organs upon death, we provided two tests of the PWM in this context for people who had not recorded their organ donation decision on the donor register. Overall, the PWM explained almost half (49%) of the variance in people’s willingness to donate their organs upon death in Study 1, and 41% of the variance in Study 2 (findings that are comparable to meta-analyses of the amount of variance explained by other social-cognitive models such as the TRA [66%; Sheppard, Hartwick, & Warshaw, 1998] and the Theory of Planned Behaviour [39%; Armitage & Conner, 2001]). In Study 1, H1, but not H2, was partially supported with attitude, subjective norm, and donor prototype similarity predicting organ donation willingness. Given the possibility that these findings were due to measurement
limitations such as the one-item measure of willingness, a second study was conducted with revised measures that were more consistent with PWM research. In Study 2, both H1 and H2 were supported with attitude, subjective norm, donor prototype favourability, donor prototype similarity, and the positive interaction between donor prototype favourability and similarity all significantly predicting people’s willingness to donate their organs upon death.

Together, these results suggest that the PWM may be a useful model to understand people’s decisions to donate organs upon death and future research may do well to consider applying the PWM in other altruistic health contexts such as blood and bone marrow donation (both medical procedures which also involve an element of risk) (Hyde & White, 2009a). Notably, the current study represents a unique contribution to existing organ donation literature by quantitatively exploring the general perceptions of organ donors (c.f., Lauri & Lauri, 2005, who used qualitative methods to explore perceptions of donors) and an important first step in identifying the role of organ donor prototypes in predicting organ donation decisions. Specifically, in both studies, the findings revealed that, when comparing their own characteristics to that of the typical organ donor, people who believed they had more characteristics in common (were more similar) to the typical donor, were more willing to donate. Furthermore, in Study 2, the more favourably people evaluated the typical organ donor, the more willing they were to donate. The contribution of organ donor prototype perceptions suggests that increasing positive perceptions of donors and asking people to consider the favourable characteristics of the type of person who donates their organs upon death (e.g., unselfish, caring, generous, Hyde & White, 2009c; Lauri & Lauri, 2005) may increase people’s willingness to donate. Moreover, highlighting similarities between the characteristics of donors and the general population and encouraging people to engage in such self-comparison processes may also foster willingness for donation.
Consistent with previous organ donation models revealing attitude and subjective norm as important predictors of donation decisions (e.g., Kopfman & Smith, 1996; Morgan et al., 2003), the findings of the current study showed that people who had more positive attitudes toward donation and perceived pressure or support from important others to donate were more willing to donate their organs upon death. The emergence of attitude as a significant predictor of donation willingness suggests that encouraging people to undertake a cost-benefit analysis about posthumous organ donation and providing strategies to increase the perceived benefits and overcome the perceived costs of donation may be worthwhile. To foster normative support for organ donation, the approval of a range of important others for organ donation could also be emphasized and individuals could be asked to consider if other family members are also donors as a way of increasing a sense of support for organ donation within the family context. Instilling a sense of support from family may have the additional benefit of encouraging people to talk to their family about their donation wishes because previous research has shown that family objection or conflict are significant barriers to communicating organ donation wishes (Breitkopf, 2006).

This study has several strengths including two novel tests of the utility of the PWM in predicting organ donation willingness. Limitations of the study, however, deserve comment. With the increasing application of the PWM across diverse decision-making contexts comes an equally diverse measurement of the constructs of the model. It is acknowledged that there are a range of measures used to assess people’s evaluation of the favourability of the prototype image including overall evaluations and separate measures of prototype favourability and similarity (Gibbons & Gerrard, 1995; Blanton et al., 2001). While we provided a preliminary investigation using a measure of general favourability of the typical organ donor, future research could assess the feasibility of other measures of prototype evaluations in this context. Such an examination is particularly important considering the
suggestion by previous researchers that this differential measurement may potentially account for inconsistencies in the performance of the prototype favourability measure across studies (Norman et al., 2007). The one-item measure of willingness in Study 1 is also a limitation and the choice of measurement may have obscured a relationship between donor prototype favourability and willingness; however, this assumption requires future testing.

We focused particularly on people who had not recorded a decision on the donor register and our sample comprised largely younger, student, female, and Caucasian participants. Future research should assess the predictors of organ donation willingness including a greater representation of people who are older, male, not Caucasian, and are not studying as well as people with a range of donation preferences (including sufficiently large separate samples of donors, non-donors, and those undecided about their decision). Overall, the study findings increase our understanding of the impact of people’s perceptions of favourability and similarity of the typical organ donor as contributing to donation willingness and suggest the utility of future applications of the PWM in altruistic health contexts. Given the undisputed social and health priority to bridge the gap between organ supply and demand, it is essential we continue to identify those determinants that may encourage individuals to donate their organs.
References


doi:10.1080/08870440008400299


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doi:10.1016/0277-9536(91)90009-2


Table 1

Bivariate Correlations, Means, and Standard Deviations, for Predictors and Dependent Variable in Study One (N = 210) and Study Two (N = 307)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude</td>
<td>-</td>
<td>.50***</td>
<td>.48***</td>
<td>.46***</td>
<td>.53***</td>
<td>5.97</td>
<td>1.26</td>
</tr>
<tr>
<td>2. Subjective norm</td>
<td>.38***</td>
<td>-</td>
<td>.32***</td>
<td>.38***</td>
<td>.40***</td>
<td>4.42</td>
<td>1.46</td>
</tr>
<tr>
<td>3. Prototype favourability</td>
<td>.42***</td>
<td>.27***</td>
<td>-</td>
<td>.57***</td>
<td>.44***</td>
<td>6.14</td>
<td>1.01</td>
</tr>
<tr>
<td>4. Prototype similarity</td>
<td>.56***</td>
<td>.37***</td>
<td>.45***</td>
<td>-</td>
<td>.50***</td>
<td>4.96</td>
<td>1.20</td>
</tr>
<tr>
<td>5. Willingness</td>
<td>.57***</td>
<td>.58***</td>
<td>.30***</td>
<td>.50***</td>
<td>-</td>
<td>5.26</td>
<td>1.31</td>
</tr>
</tbody>
</table>

**M** 5.95  4.66  6.17  4.70  5.11  -  

**SD** 1.21  1.55  1.13  1.44  1.69  -  

*** p < .001. NB. Study 1 correlations are below the diagonal and Study 2 correlations are above the diagonal.
Table 2
Hierarchical Regression Analysis Predicting Willingness to Donate Organs Upon Death for Study One (N = 210) and Study Two (N = 307)

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Study One</th>
<th></th>
<th>Study Two</th>
<th></th>
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<tr>
<td></td>
<td></td>
<td>Step 1 β</td>
<td>Step 2 β</td>
<td>Step 1 β</td>
<td>Step 2 β</td>
</tr>
<tr>
<td>1.</td>
<td>Attitude</td>
<td>.33***</td>
<td>.34***</td>
<td>.28***</td>
<td>.31***</td>
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<tr>
<td></td>
<td>Subjective norm</td>
<td>.39***</td>
<td>.38***</td>
<td>.14*</td>
<td>.12*</td>
</tr>
<tr>
<td></td>
<td>Prototype favourability</td>
<td>-.03</td>
<td>-.01</td>
<td>.13*</td>
<td>.25***</td>
</tr>
<tr>
<td></td>
<td>Prototype similarity</td>
<td>.18**</td>
<td>.16*</td>
<td>.24***</td>
<td>.24***</td>
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<tr>
<td>2.</td>
<td>Prototype favourability x prototype similarity</td>
<td>.05</td>
<td>.20***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Study 1 (Step 1) $R^2 = .49, p < .001, F (4, 200) = 47.58, p < .001$; (Step 2) $R^2_{\Delta} = .00, p = .411, F_{\Delta} (1, 199) = .68, p = .411$. Study 2 (Step 1) $R^2 = .39, p < .001, F (4, 291) = 45.62, p < .001$; (Step 2) $R^2_{\Delta} = .02, p = .001, F_{\Delta} (1, 290) = 10.94, p = .001$.

*p < .05. **p < .01. ***p < .001.