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Are organ donation communication decisions reasoned or reactive? A test of the utility of an augmented Theory of Planned Behaviour with the Prototype/Willingness Model

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Abstract

Objectives: To explore whether people's organ donation consent decisions occur via a reasoned and/or social reaction pathway.

Design: We examined prospectively students' and community members' decisions to register consent on a donor register and discuss organ donation wishes with family.

Method: Participants completed items assessing Theory of Planned Behaviour (TPB; attitude, subjective norm, perceived behavioural control [PBC]), Prototype/Willingness Model (PWM; donor prototype favourability/similarity, past behaviour), and proposed additional influences (moral norm, self-identity, recipient prototypes) for registering ($n = 339$) and discussing ($n = 315$) intentions/willingness. Participants self-reported their registering ($n = 177$) and discussing ($n = 166$) behaviour 1-month later. The utility of the (1) TPB, (2) PWM, (3) augmented TPB with PWM, and (4) augmented TPB with PWM and extensions, was tested using structural equation modelling for registering and discussing intentions/willingness, and logistic regression for behaviour.

Results: While the TPB proved a more parsimonious model, fit indices suggested that the other proposed models offered viable options, explaining greater variance in communication intentions/willingness. The TPB, augmented TPB with PWM, and extended augmented TPB with PWM best explained registering and discussing decisions. The proposed and revised PWM also proved an adequate fit for discussing decisions. Respondents with stronger intentions (and PBC for registering) had a higher likelihood of registering and discussing.

Conclusions: People's decisions to communicate donation wishes may be better explained via a reasoned pathway (especially for registering); however, discussing involves more reactive elements. The role of moral norm, self-identity, and prototypes as influences predicting communication decisions were highlighted also.

Many studies have identified family consent as the critical link in combating low organ donation rates (e.g., Mathew, 2004; Sheehy et al., 2003; West & Burr, 2002). Despite first person consent legislation, it is the practice that family members are still consulted to confirm donation wishes or give authority when donation wishes are unknown (Rodrigue, Cornell, & Howard, 2006). Therefore, it is crucial to ensure that family members have prior knowledge of their loved one's stated intentions to donate (e.g., a documented decision on a donor register [*registering*] or prior conversation about organ donation wishes [*discussing*]) to increase the likelihood of obtaining family consent for donation (DeJong et al., 1998). Many individuals wishing to donate their organs, however, have not disclosed their wishes to family (McDonald et al., 2007).

Most research aimed at understanding communication of organ donation wishes has used variants of the major social cognitive models (e.g., Theory of Reasoned Action, Theory of Planned Behaviour) which assume that individuals adopt a rational or planned approach to decision making based on their attitudes, perceived normative pressure, control perceptions, and intentions toward the target behaviour (e.g., Bresnahan et al., 2007; Godin, Bélanger-Gravel, Gagné, & Blondeau, 2008). While this reasoned approach may be an accurate reflection of the decision-making process for some people (i.e., those who make deliberate plans to communicate their decision), other people's disclosure of donation wishes may depend on external cues (e.g., another person discussing their donation preference, a TV program with an organ donation segment) or circumstances (e.g., receiving a registration form in the mail).

To account for the potential reactivity in the decision to communicate donation wishes, we propose an augmentation of the Theory of Planned Behaviour (TPB; Ajzen, 1991) with elements of the Prototype/Willingness Model (PWM; Gibbons, Gerrard, Blanton, & Russell, 1998). The TPB reflects the reasoned approach and allows for an examination of the standard TPB constructs to maintain consistency with previous tests of organ donation decision models.

The PWM accounts for spontaneous or reactive decision making but is yet untested in an organ donation context. Augmenting the TPB model with PWM constructs complements the research reported in a few previous studies (e.g., Rivis, Sheeran, & Armitage, 2006) which have established a precedent for successful augmentation of the TPB with PWM constructs in health-related contexts (see Gibbons, Houlihan, & Gerrard, 2009). As such, following an initial separate examination of the predictive utility of the TPB and the PWM, we augmented the TPB with elements of the social reaction pathway from the PWM to examine the extent to which people's decisions to communicate their organ donation wishes occur via reasoned and/or reactive decision-making pathways.

The Theory of Planned Behaviour

The TPB assumes that individuals undertake a rational, systematic, evaluation of the information available to them when considering behavioural performance (Ajzen, 1991). The model specifies people's intentions as the most proximal determinant of behaviour. Intentions, in turn, are influenced by attitude (positive or negative evaluations of performing a behaviour), subjective norm (perceived social pressure to perform or not perform a behaviour), and perceived behavioural control (PBC; perceived ease or difficulty of performing a behaviour; also thought to be a direct predictor of behaviour). Attitude, subjective norm, and PBC are informed by underlying behavioural, normative, and control beliefs, respectively. The TPB has been applied successfully as a predictive decision-making model across a variety of behavioural domains (Armitage & Conner, 2001a) including organ donation (e.g., Godin et al., 2008; Hübner & Kaiser, 2006; Hyde & White, 2009a).

The Prototype/Willingness Model (PWM)

The social reaction pathway in the PWM accounts for behaviours that involve an element of risk and spontaneous decision-making and are largely dependent on situational factors

(Gibbons et al., 1998). In this pathway, people's willingness is the most proximal predictor of their behaviour. Willingness is influenced by attitude (positive or negative evaluation of a behaviour), subjective norm (perceived pressure from others and an evaluation of what important others do), past behaviour, and the actor prototype associated with the behaviour (image of the typical person who performs a behaviour). Prototypes comprise prototype favourability (favourable or unfavourable evaluation of the image) and prototype similarity (an individual's judgement of their similarity to the image), and their interaction (Gibbons et al., 1998). Perceptions of the type of person who donates their organs upon death can be conceptualised as an organ donor prototype (akin to the actor prototype in the PWM). The PWM has been applied successfully to a variety of health-risk and health-promoting behaviours (e.g., Gibbons et al., 1998; Rivis et al., 2006). The PWM has yet to be assessed in an altruistic context despite the potential for altruistic behaviours to involve an element of risk or danger to oneself (e.g., receiving inadequate medical care to hasten the transplantation process, potential conflict with family members; Hyde & White, 2009c) and a degree of spontaneity and responsiveness to unplanned situational factors (e.g., having to make a decision about organ donation unexpectedly when obtaining a learner permit to drive) in decision making.

Additional Influences on Decisions to Communicate Organ Donation Wishes

The few previous studies using the TPB to predict people's decision communication intentions have explained only approximately half of the variance (ranging from 36% to 69%; Hübner & Kaiser, 2006; Hyde & White, 2009a; Park & Smith, 2007). Therefore, we considered three additional influences that may be relevant to people's decisions to communicate their organ donation preference. Moral norm (Ajzen, 1991) encompasses one's own personal moral values that communicating the donation decision is the right thing to do. Self-identity (Stryker, 1968) reflects beliefs about organ donation as an act that is consistent with one's self-concept, and the

importance a person places on this donor role as a part of his or her self-concept. Both moral

norm and self-identity have previously predicted people's intentions to register and/or discuss the

donation decision (Godin et al., 2008; Hübner & Kaiser, 2006; Hyde & White, 2009a). People's

perceptions of organ transplant recipients (i.e., recipient prototype) may impact also on their

decision-making. The effect of the perceived similarity between the person in need and the

potential giver of assistance on helping decisions has long been established in studies examining

altruistic acts (Batson, 1998). It follows that individuals' willingness to register and discuss their

donation wishes, then, may be influenced by their judgements about typical organ donors or

recipients as favourable/unfavourable and similar/dissimilar to the self.

The Present Study

We propose that the decision to register consent on a Donor Register and to discuss one's

donation preference with family may not be entirely reasoned in nature but may often be more

reactive in response to another person's actions or an external situation. Furthermore, we suggest

that people's decisions to communicate their organ donation wishes may be influenced by their

moral norm, self-identity, and organ recipient prototypes. A test of these propositions using four

decision-making models (standard TPB, standard PWM, augmented TPB with PWM, augmented

TPB with PWM and additional influences) was undertaken for each behaviour of registering

consent on a donor register and discussing donation wishes with family.

<div align="center">Method</div>

Participants and Procedure

Upon receipt of ethical approval to conduct the study, participants (students and

community members, $N = 404$) were invited to complete a questionnaire about registering their

consent for organ donation on the Australian Organ Donor Register (AODR) and discussing their

organ donation preference with a partner/family members. Students ($n = 288$; 57.6% response

rate) were recruited from a broad range of degree courses (e.g., health, business, science, law, psychology) at a large metropolitan university in Queensland, Australia via in-class announcements and received course credit (as part of their undergraduate psychology unit) for their participation. Community participants ($n = 116$; 58.0% response rate) were recruited via a snowballing method whereby a separate sample of students (who were ineligible for course-credit) recruited a maximum of two community members they knew personally to complete the questionnaire. Students were instructed to recruit community members who were over the age of 18 years, not a student, did not reside in the same household, and were not related or in a romantic relationship with each other. It was emphasised also that the researchers were interested in the perspective of all community members including those who did not wish to be an organ donor upon death. Students received AUD$5 for each completed questionnaire they returned to the researcher. Student and community respondents at Time 1 provided their contact details on a separate sheet of paper if they consented to be contacted 1 month later for follow-up.

Instructions directed respondents to complete the questions about registering consent only if they a) had not previously recorded their consent for donation on the AODR, or b) had recorded their *intent* prior to July 2005 (on a driver license, donor card, or intent register).[1] Respondents were also directed to complete the questions about discussing donation wishes only if they a) had not previously told a partner or family member their organ donation decision or b) had talked to a family member about organ donation generally but had not specifically stated their donation preference.

At Time 1, participants completing registering questions ($N = 339$) were predominantly Caucasian (84%), female (65%), students (72%) ranging in age from 17 to 77 years ($M = 25.23$ years; $SD = 12.03$ years). Respondents completing discussing questions were mostly Caucasian (85%), female (65%), students (72%) ranging in age from 17 to 77 years ($M = 24.55$ years; $SD =$

11.14 years). Four weeks later (Time 2), 177 participants self-reported their registration

behaviour (age $M = 24.66$, $SD = 11.60$, 69% female) and 166 participants self-reported their

discussion behaviour (age $M = 23.49$, $SD = 9.42$, 70% female), for the preceding month.[2] At the

follow-up, 18 respondents (10%) reported registering their consent for donation on the Australian

Organ Donor Register and 73 participants (43%) reported discussing their donation decision.

Questionnaires completed at both time points were matched via a participant generated code

identifier to preserve anonymity.[3]

Measures

Measures of the TPB predictors (Ajzen, 1991), PWM predictors (Gibbons et al., 1998),

and additional influences (Armitage & Conner, 2001b) were obtained for the target behaviours of

(1) signing a registration form for the Australian Organ Donor Register to indicate your consent

to donate your organs upon death (*registering*) in the next month and/or (2) discussing the

decision to donate (or not donate) your organs upon death with your partner or family members

(*discussing*) in the next month. All items were measured on 7-point response scales (*strongly

disagree*/*strongly agree*) unless otherwise specified. Some negatively-worded items

(subsequently reverse scored) were included to reduce response biases.

Behaviour. Participants reported their registering and discussing behaviour in the 1-month

follow-up period using a one item measure for each behaviour (e.g. "In the past 4 weeks did you

register your consent to donate your organs upon death on the Australian Organ Donor

Register?"), scored 0 *no* and 1 *yes*.

Attitude. Four semantic differential items for each behaviour assessed attitude (e.g. "For

me to discuss my organ donation decision with my partner/family members in the next month

would be": *worthless-valuable*, *good-bad*). Items for each behaviour were averaged to create

reliable scales (registering: α = .90; discussing: α = .93).

Subjective norm. Three items comprised the subjective norm scale[4] for each behaviour (e.g. "Most people who are important to me would approve of me registering my consent in the next month"). These scales were reliable (registering: $\alpha = .87$; discussing: $\alpha = .82$).

Perceived behavioural control (PBC). Two items comprised the PBC scale for each behaviour (e.g. "It would be easy for me to discuss my decision with my partner/family members in the next month"). These PBC items were correlated at $r(339) = .68$, $p < .001$, for registering, and $r(315) = .65$, $p < .001$, for discussing.

Moral norm. Moral norm was measured using four items for each behaviour (e.g., "It is in accordance with my principles to register my consent in the next month"). These items were averaged to create reliable scales (registering: $\alpha = .90$; discussing: $\alpha = .91$).

Self-identity. Three items (e.g., "Being an organ donor is an important part of who I am", scored *definitely no/definitely yes*) measured self-identity. These items were averaged to create a reliable scale ($\alpha = .75$).

Intention. The measure of *intention* to perform registering and discussing behaviour consisted of three items (e.g., "I intend to discuss my donation decision with my partner/family members in the next month"). These items were averaged to form a reliable scale for each behaviour (registering: $\alpha = .89$; discussing: $\alpha = .84$).

Past behaviour. Participants indicated if they had previously registered their intent on their driver licence, donor card, or a donor register or had previously talked about their organ donation preference, both coded as 0 (*no*) and 1 (*yes*).[5]

Organ donor and transplant recipient prototypes. Participants' were provided with the standard description of a prototype (see Gibbons, Gerrard, & Boney McCoy, 1995). Donor and recipient *prototype favourability* were then each assessed using two items (e.g., "My view of the person who donates their organs upon death is positive, scored 1 *strongly disagree* to 7 *strongly*

agree). These items were averaged to form a donor favourability scale, $r(339) = .65$, $p < .001$, and a recipient favourability scale, $r(339) = .62$, $p < .001$. Donor and recipient *prototype similarity* were also each assessed using two items (e.g., "Do the characteristics that describe the type of person who needs an organ transplant also describe you?", scored 1 *definitely no* to 7 *definitely yes*), with items for each prototype averaged to form a donor similarity scale, $r(339) = .73$, $p < .001$, and a recipient similarity scale, $r(339) = .61$, $p < .001$.

Willingness. Willingness to register and discuss the donation decision were assessed using two items for each behaviour (based on Blanton, van den Eijnden, Buunk, Gibbons, & Gerrard, 2001; Gibbons et al., 1995; Gibbons, Gerrard, & Lane, 2003; Spijkerman, van den Eijnden, Vitale, & Engels, 2004). Participants responded to the two scenarios below and rated the likelihood that they would perform each response option, scored 1 *very unlikely* to 7 *very likely*. The willingness items (second item reverse-scored) for each behaviour were correlated at $r(339) = .84$, $p < .001$ (for registering) and $r(315) = .65$, $p < .001$ (for discussing).

- *Willingness to register*: "Suppose you were in a shopping centre and you were walking towards a booth set up where you could sign on as an organ donor". (a) walk over to the booth and sign up as an organ donor, and (b) choose to keep walking past the booth.

- *Willingness to discuss*: "Suppose you were watching television with your family and an advertisement came on for a medical show featuring someone who received an organ transplanted from an organ donor". (a) turn to your family and tell them your organ donation wishes, and (b) decide not to talk about your organ donation wishes.

Demographic measures. For *respondent type*, students and community members participating in the study were coded as 1 (*students*) and 2 (*community*).

Data Analyses

We used Structural Equation Modelling (SEM) via AMOS 6.0 to predict intentions and willingness to perform each of the behaviours of registering and discussing. Respondent type was controlled for in each model and past behaviour was controlled for in the standard TPB model. In line with the theoretical specifications, the TPB variables (and moral norm and self-identity) were allowed to co-vary among themselves and the PWM variables were also allowed to co-vary among themselves. All extended TPB and PWM predictor variables were mean centred (deviation score) prior to the creation of the interaction terms (Aiken & West, 1991; Kline & Dunn, 2000). These centred variables were included in the structural equation models testing the social reaction pathway from the PWM.

Maximum likelihood was used to estimate the parameters of the model. Model fit was determined by the following indicators: chi-square test (non-significant or acceptable if no more than 3 times the degrees of freedom; Kline, 2005), Comparative Fit Index (CFI; >.90), Tucker-Lewis Index (TLI; >.90), Bentler Bonett Normed Fit Index (NFI; > .90),and Root Mean Square Error of Approximation (RMSEA; <.08) (Marsh, Balla, & Hau, 1996). Suggested modification indices to improve model fit were adopted only if their inclusion could be justified by established theory, previous research, or logic. Path coefficients and R^2 values were also inspected to evaluate the predictive power of the model. Moderated multiple regression and simple slopes analysis (Aiken & West, 1991) using mean centred variables was used to further explore any significant interactions in the model. For each communication behaviour, we tested four decision-making models in predicting registering and discussing intention and/or willingness (Figure 1).

[Figure 1]

Results

Descriptive Data

Initial inspection of the correlation matrix revealed that all of the TPB and PWM variables, and their extensions, were correlated significantly with intention and willingness for each behaviour (Table 1). Respondent type was not correlated with intention or willingness to perform either behaviour.[6] The strongest correlates of registering and discussing intentions were subjective norm and moral norm. The strongest correlates of willingness were identity and moral norm (registering) and moral norm and attitude (discussing). Registering intention and willingness ($r = .61$, $p < .001$) and discussing intention and willingness ($r = .48$, $p < .001$) were also correlated significantly. Intention (strongest correlate), PBC, willingness, and past behaviour all correlated significantly with registering and discussing behaviour. Fit indices for the following models are all presented in Table 2. Beta weights for the models not presented in figures are available from the authors upon request.

[Tables 1 and 2]

Predicting Intentions and Willingness to Register Consent on the Donor Register

Model 1 – Standard TPB for registering. The proposed model was a good fit to the data, with no further modification indices suggested. Past registration behaviour informed the standard TPB predictors. The TPB predictors and past registration predicted intentions, explaining 62% of the variance in people's intentions to register consent on the Donor Register.

Model 2 – Standard PWM for registering. The proposed standard PWM was not a good fit to the data. Suggested modification indices (inclusion of a path from past behaviour to willingness) did not improve model fit.

Model 3 – Augmented TPB with PWM for registering. The proposed model was not a good fit to the data. To improve model fit, modification indices suggested the inclusion of a path from past behaviour to willingness, from donor similarity to PBC, and from donor similarity to intention. Past registration behaviour informed the standard TPB predictors and donor prototype

similarity. Donor prototype similarity predicted PBC and intention. The TPB predictors and past

registration predicted intentions (reasoned pathway) and the PWM predictors and past

registration directly informed registering willingness (reactive pathway). The final model

explained 65% and 41% of the variance in people's registering intentions and willingness,

respectively.

Using moderated multiple regression and simple slopes analysis (Aiken & West, 1991),

we explored further the nature of the interaction between donor prototype similarity and

favourability. Regression lines between donor prototype favourability and willingness to register

were examined at the mean level of donor prototype similarity (moderate) and one standard

deviation above (high) and below (low) the mean level of donor prototype similarity. The

strength of the relationship between donor prototype favourability and willingness to register was

found to increase as levels of donor prototype similarity increased. Donor prototype favourability

was a stronger predictor of willingness to register at moderate (β = .19, p = .024) and high (β =

.24, p = .011) levels of donor prototype similarity than at low levels of similarity (β = .09, p =

.381).

Model 4 – Augmented TPB with PWM and extensions for registering. The proposed

model was not a good fit to the data. Modification indices suggested paths from: donor prototype

similarity to PBC, moral norm, self-identity, and registering intention; donor prototype

favourability to moral norm and self-identity; and recipient prototype similarity to moral norm. In

addition to these paths (Figure 2), past registration behaviour informed the standard TPB

predictors and extensions of moral norm and self-identity. The extended TPB predictors (except

attitude), donor prototype similarity, and past registration predicted intentions, explaining 72% of

the variance. Attitude, moral norm, self-identity, and the donor prototype favourability x

similarity interaction predicted registering willingness, and explained 50% of the variance.

[Figure 2]

Predicting Intentions and Willingness to Discuss Donation Wishes with Family

Model 1 – Standard TPB for discussing. The proposed model was a good fit to the data, with no further modification indices suggested. Past discussing behaviour informed the standard TPB predictors, and the TPB predictors directly informed discussing intentions. The model explained 63% of the variance in people's discussing intentions.

Model 2 – Standard PWM for discussing. Both the proposed and revised (including a path from past behaviour to willingness) standard PWM model showed a good fit to the data. Past discussing behaviour informed the PWM variables (except the donor favourability x similarity interaction). Attitude, subjective norm, donor prototype similarity, and past behaviour directly informed willingness, explaining 31% of the variance in discussing willingness.

Model 3 – Augmented TPB with PWM for discussing. The proposed model was not a good fit to the data. Modification indices suggested the addition of a path from past behaviour to willingness, donor prototype favourability to PBC, and donor prototype similarity to intention to improve model fit. In addition to these paths, the revised model showed past behaviour directly influenced the TPB variables and donor similarity. Intention was directly informed by the TPB predictors and donor similarity. Attitude, subjective norm, past behaviour, and donor similarity had a direct influence on willingness. The final model explained 63% and 31% of the variance in people's discussing intentions and willingness, respectively.

Model 4 – Augmented TPB with PWM and extensions for discussing. The proposed model was not a good fit to the data. Modification indices suggested the inclusion of paths from donor prototype favourability to PBC and self-identity, donor prototype similarity to moral norm and self-identity, recipient prototype favourability and moral norm, and past behaviour and willingness. In addition to these paths, the TPB predictors and extensions directly influenced

discussing intention, explaining 69% of the variance via the reasoned pathway (Figure 3).

Attitude, moral norm, past behaviour, donor similarity, and recipient favourability informed

discussing willingness, explaining 33% of the variance in discussing willingness.

[Figure 3]

Predicting Registering and Discussing Behaviour

As shown in Table 3, a test of the utility of *Models 1 to 3* (standard TPB, standard PWM,

and augmented TPB with PWM) in predicting registering and discussing behaviour, revealed that

although willingness successfully classified behavioural performers and non-performers for

registering and discussing (*Model 2*), when the augmented model incorporating intentions was

tested, willingness was no longer a significant predictor (*Model 3*). Instead, consistent with TPB

specifications, people who held stronger intentions (and greater perceptions of control for

registering) to register and discuss were more likely to have registered and discussed their

decision at the follow-up. Intention also accounted for a greater amount of the variation in

classification of respondents who had and had not communicated their decision (44% for

registering and 32% for discussing; *Model 3*) than willingness (*Model 2*).

[Table 3]

Discussion

We explored the extent to which people's decisions register consent on a donor register

(*registering*) or discuss donation wishes with a partner/family member (*discussing*) comprised a

reasoned and/or a reactive behaviour. The proposed additional influences of moral norm, self-

identity, and recipient prototypes as predictors of communication decisions were examined also.

Findings based on the augmented TPB with PWM and extensions (*Model 4*) generally support

the theoretical specifications of the extended TPB (e.g., Godin et al., 2008; Hübner & Kaiser,

2006; Hyde & White, 2009a) but provide less consistent evidence for the PWM. Examination of

model fit indices suggests that, in terms of parsimony, the standard TPB (*Model 1*) is the best fitting model (due to having a smaller number of paths in the model); however, the TPB is not the only model fitting the data for registering and discussing. In addition to the standard TPB for registering, the revised augmented TPB with PWM (*Model 3*) and the revised augmented TPB with PWM and extensions (*Model 4*) each provided a good fit for the data. This latter model (*Model 4*) explained an additional 10% of the variance in registering intentions (compared to the variance explained in the standard TPB), and an additional 9% of the variance in registering willingness (compared to the standard PWM). Similarly, for discussing, the revised augmented TPB with PWM (*Model 3*) and the revised augmented TPB with PWM and extensions (*Model 4*) both provided a good fit for the data. Again, the revised augmented TPB with PWM and extensions (*Model 4*) explained the most amount of variance in people's discussing intentions and willingness, accounting for an additional 6% and 3% of the variation, respectively. In addition, the fit indices for the proposed and revised standard PWM for discussing indicated these models were a good fit to the data (*Model 2*).

Together, the findings suggest that, although the TPB is a parsimonious model, the other proposed models are suitable also as they evidenced adequate fit indices and often accounted for greater proportions of the variance than the standard model. It appears that people's decisions about disclosing their donation wishes are best explained via the reasoned pathway, especially for registering decisions (implied by the inadequate fit of the proposed and revised standard PWM for registering). For discussing, however, the reactive pathway appears important also (i.e., the proposed and revised PWM demonstrated adequate model fit in explaining discussing decisions). The suggestion that registering is a more reasoned decision and discussing involves both reasoned and reactive elements makes intuitive sense. Registering the decision requires sufficient planning to obtain the necessary resources to register correctly (e.g., locating one's health care

card for identification, obtaining a registration form etc). Discussing, on the other hand, still may comprise a reasoned element (e.g., thinking about the content of the conversation); however, it is also likely to be more reactive in nature due to the reliance on the opportunity to have a conversation about donation with another person, or an external cue (e.g., a TV segment) prompting the individual to talk about their donation decision.

These findings point to several strategies that could be adopted in efforts to increase people's communication of their donation decision. To account for both reasoned and reactive elements in decisions to disclose donation wishes, future communication interventions should ensure people undertake a rational decision-making process, particularly for registering, involving a cost-benefit analysis of decision disclosure, and a consideration of others' expectations and their own personal values when forming intentions to disclose their donation wishes. In line with a reasoned approach, people should also be actively engaged in planning how, when, where, and to whom (for discussing) they will disclose their decision (i.e., implementation intentions; Gollwitzer, 1999). Considering the reactive element in decision discussion, people should be encouraged also to take advantage of any unexpected opportunities for communication (e.g., seeing a magazine article about donors or recipients) which may overcome barriers to communicating donation wishes (e.g., difficulty initiating a conversation; McDonald et al., 2007). The emergence of moral norm and self-identity as predictors for both the reasoned and reactive pathways suggests that promoting communication of the donation decision as the 'right thing to do' and encouraging potential donors to make a direct statement about their identity by engaging in donor identity confirming behaviours (e.g., registering and discussing), may be worthwhile strategies.

We aimed also to provide an initial clarification of the influence of organ donor and recipient prototypes on people's communication decisions. Results generally supported a role for

both donor and recipient prototypes; however, their influence varied according to the type of decision-making pathway and communication behaviour. Furthermore, results suggest that organ donor (and recipient) prototype similarity and favourability act independently rather than in an interactive fashion to influence people's communication decisions, a similar finding to other PWM studies (e.g., Rivis et al., 2006). The influence of donor and recipient prototypes via the social reaction pathway may reflect the automatic judgements about the type of people donating or receiving organs (e.g., recipients as unfortunate vs. responsibility for illness; Hyde & White, 2009b; Rodrigue et al., 1998), whereas the impact of these prototypes via the reasoned pathway may account for a more considered viewpoint of donors and recipients (e.g., recognition of possible similarities between the individual and other donors or recipients; Batson, 1998). Any such preliminary correlational findings, however, should be validated in experimental paradigms. The use of experimental paradigms will enable examination of whether correlational (e.g., survey) approaches favour a rational perspective whereas experimental approaches, allowing for more spontaneous actions, may instead facilitate support for a reactive decision-making pathway. It should be noted also that the variation in findings may be due to the measure of willingness adopted in the current study as reflecting likelihood rather than willingness as there are a variety of ways in which willingness has been measured in the PWM (see e.g., Gibbons et al., 2003; Gibbons, Gerrard, Lane, Mahler, & Kulik, 2005). In addition, the measure of willingness adopted in the current study was used primarily to reflect the potential reactive aspect of people's donation communication decision making and did not include an overt risk component in the measure unlike other PWM studies assessing health-risk behaviours (e.g., Gibbons et al., 1995; Rivis et al., 2006). However, there are some perceived risks that have been identified in organ donation communication decision-making such as receiving improper medical care if an affirmative donation decision has been recorded (e.g., Hyde & White, 2007), creating distress or

conflict if others disagree with the donation preference (e.g., Radecki & Jaccard, 1999), and having to justify or defend the donation decision (e.g., Breitkopf, 2006).

Nevertheless, these initial findings of a potential role for donor and recipient prototypes suggest that it may be worthwhile emphasizing the similarity in values and motives between organ donors and the general population and reminding people they are more likely to need an organ than to donate one to instil a sense of similarity to organ recipients. Furthermore, results suggest the need for strategies to reduce associations of recipients with negative images (e.g., recipients as undeserving) and actively promote the altruistic spirit of giving on the basis of need for medical treatment rather than perceived responsibility for illness. There may be some worth also in considering the role of a recipient prototype in people's decision-making for other health-related behaviours also (e.g., blood or bone marrow donation).

While this study has several strengths including a prospective assessment of behaviour and a novel examination of donor and recipient prototypes as predictors of people's health communication decisions, results should be consider in light of study limitations. These limitations include the primarily female, student, and Caucasian sample enrolled in a psychology unit. Having a broader representation of males, community members, and non-Caucasian participants, and students enrolled in the full range of degree options in future research will help to increase the generalisability of results. Additional limitations include the screening method used to obtain only those participants who had not previously registered consent or discussed their donation preference with family, and the use of snowballing as a recruitment method for community participants. A future focus on those who have not previously communicated their decision in any way and the use of a less potentially biased recruitment method may assist in removing any possible influence of past communication of donation wishes. Overall, the results of this study support an augmentation of the TPB with PWM constructs, with extensions of moral

norm, self-identity, and recipient prototypes, in explaining decisions to disclose donation wishes. Communication decisions appeared to be better explained via the reasoned pathway, especially for registering; however, people should still be encouraged to capitalise on unexpected opportunities or circumstances facilitating decision disclosure, particularly for discussing their donation wishes. Continued examination of the mechanisms by which people are motivated to communicate their organ donation wishes is crucial to facilitate the organ donation consent process and ensure that potential donors become actual donors.

Footnotes

1. Prior to July 2005, organ donation wishes were able to be recorded on the driver license, donor card, or a register of intent in Australia. After July 2005, all previous methods of recording donation wishes were abolished and the register of intent became the only nationally recognised register of consent for organ donation (the Australian Organ Donor Register). Consequently, people who have registered via one of the older methods are required to re-register their consent on the register.

2. Due to some respondents having previously performed one of the communication behaviours (i.e., registering or discussing) or having not previously performed either of the communication behaviours, there was some overlap between the samples of respondents completing the questions about registering and discussing at both time points. At Time 1, 296 participants completed both sets of questions about registering and discussing. At Time 2, 151 participants completed both sets of questions about registering and discussing behaviour.

3. No significant differences were found on the Time 1 measures between respondents completing the first questionnaire and respondents completing questionnaires at both time points, $F(18, 277) = .98$, $p = .487$.

4. The measure of subjective norm used in the Prototype/Willingness model incorporates a descriptive norm component. For the purposes of this study, however, the subjective norm measure was consistent with that used in the TPB.

5. Past behaviour was statistically controlled for to account for any influence of people's previous recording of their intent to donate on the donor intent register, driver licence, or donor card (all methods which have since been phased out – see Footnote 1), especially since those who had previously registered their intent on the register are required to strengthen their decision to one of consent by re-registering (as the intent register has been converted to a

consent register). We wished also to control for any effects of past discussion about organ donation generally as we have found in past studies that participants claiming to have discussed their organ donation decision have in fact only talked about organ donation in general (and not their actual donation decision).

6. Analyses were conducted also without the inclusion of community participants and a similar pattern of results was obtained. As such, we retained the community participants in analyses and controlled for respondent type.

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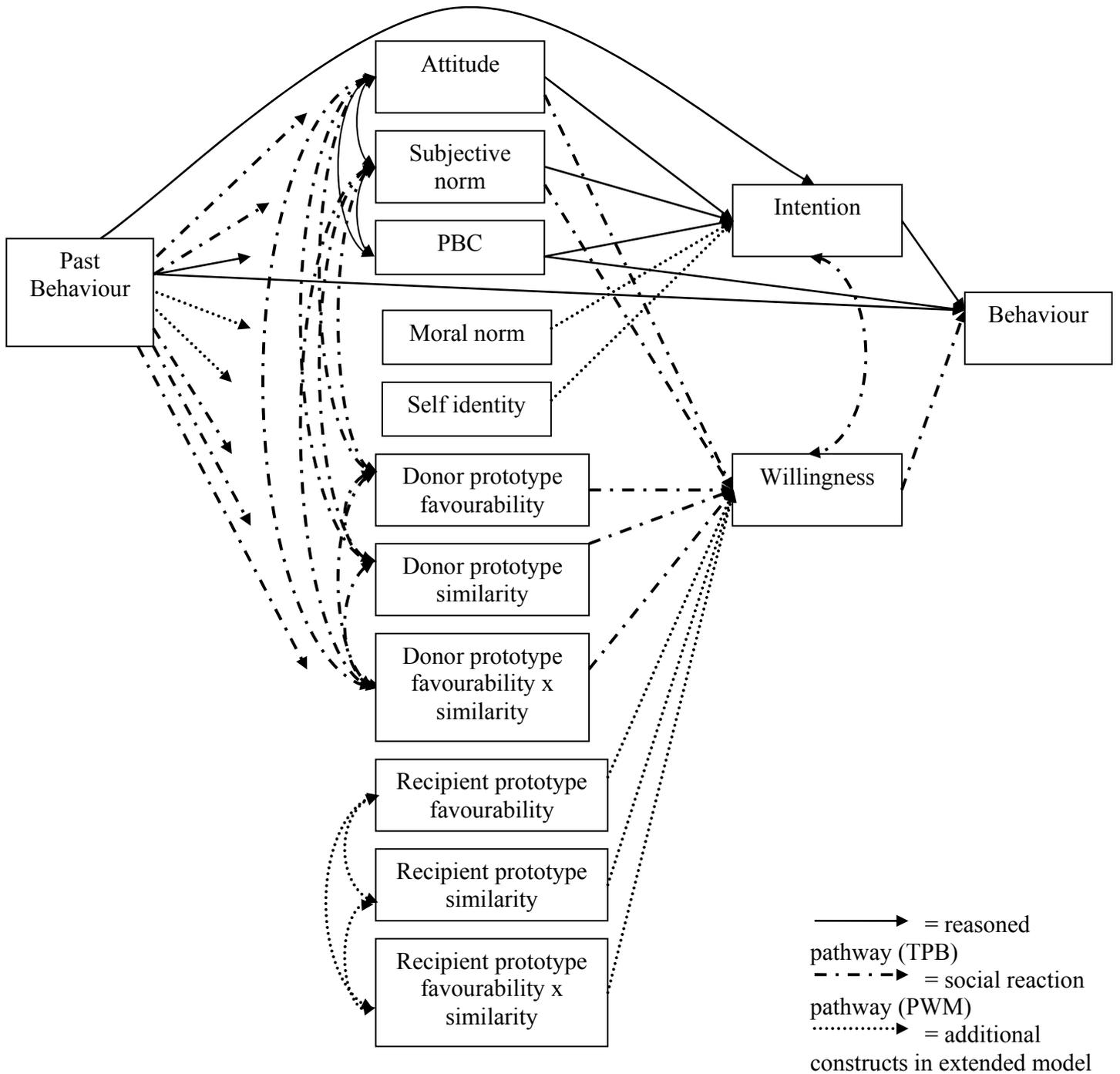
Figure 1. Proposed augmented Theory of Planned Behaviour with Prototype/Willingness Model

constructs (social reaction pathway) including additional variables
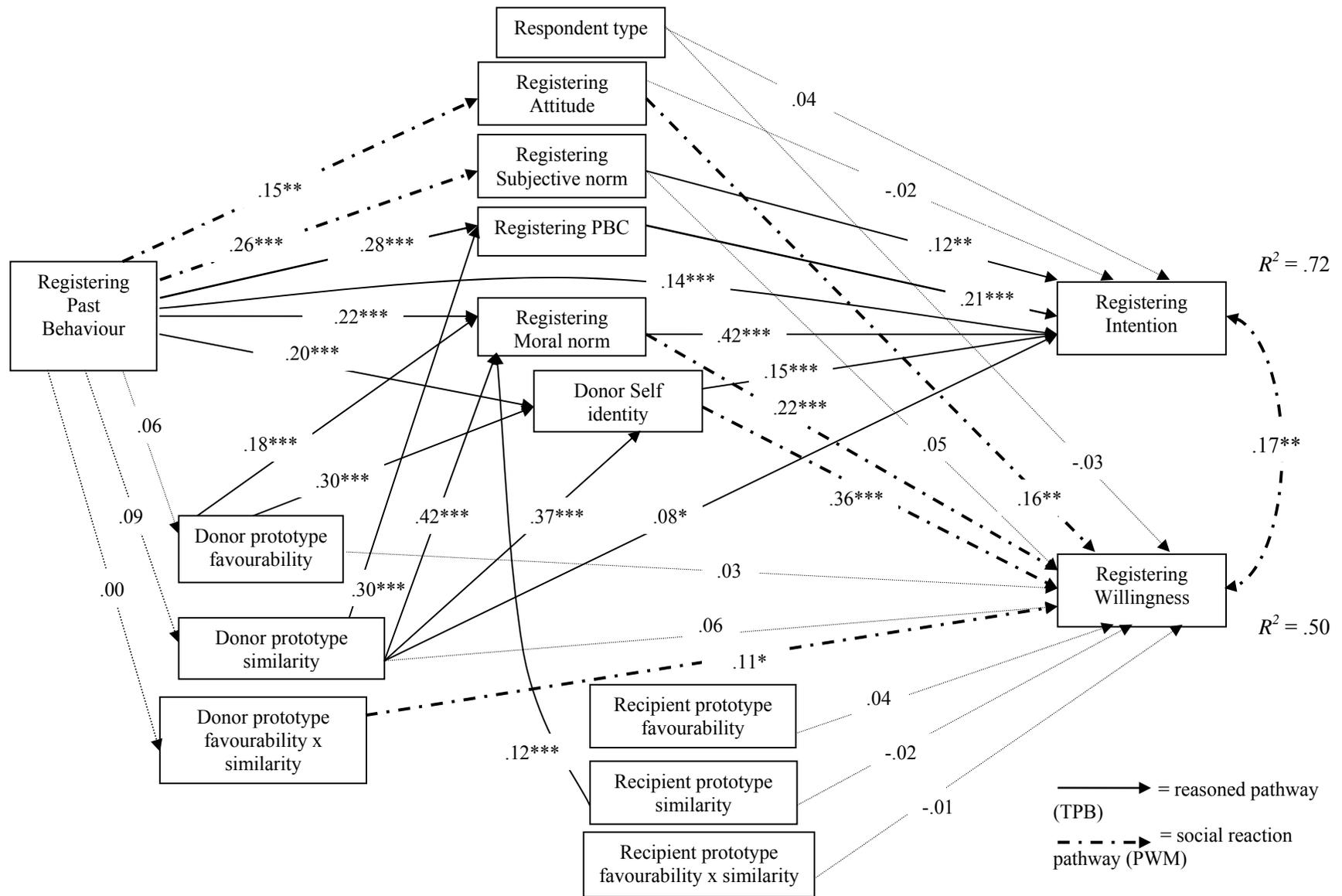
Figure 2. Revised augmented TPB with PWM constructs (Model 4) extended with moral norm, self-identity, and recipient prototypes ($N = 339$) predicting registering intentions and willingness. *$p < .05$. **$p < .01$. ***$p < .001$.
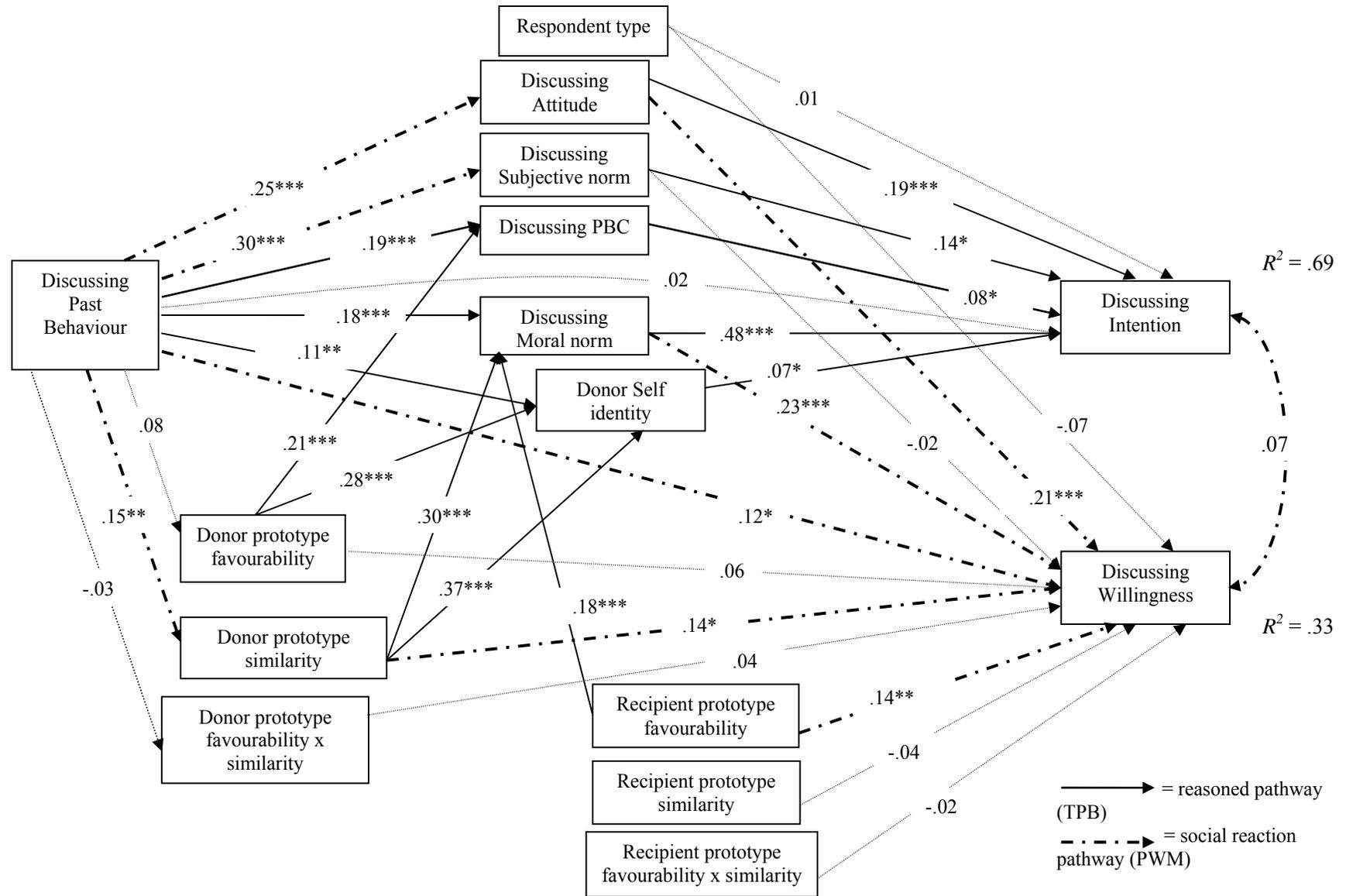
Figure 3. Revised augmented TPB with PWM constructs (Model 4) extended with moral norm, self-identity, and recipient prototypes ($N = 315$) predicting discussing intentions and willingness. $*p < .05$. $**p < .01$. $***p < .001$.

Table 1

Bivariate Correlations, Means and Standard Deviations amongst Predictor and Dependent Variables for Registering and Discussing

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	*M*	*SD*
1. Respondent type[a]	-	-.03	.06	.04	.05	-.13*	-.13*	-.21***	.18***	.08	.10	.06	-.06	.11	a	a
2. Attitude	-.06	-	.56***	.51***	.63***	.53***	.46***	.52***	.20***	.35***	.17**	.55***	.54***	.28***	5.38	1.52
3. Subjective norm	.02	.67***	-	.65***	.76***	.48***	.45***	.39***	.22***	.27***	.29***	.70***	.51***	.29***	4.33	1.46
4. PBC	-.09	.55***	.67***	-	.66***	.39***	.31***	.24***	.15**	.23***	.30***	.67***	.40***	.35***	5.15	1.67
5. Moral norm	.05	.65***	.81***	.64***	-	.60***	.55***	.46***	.25***	.32***	.27***	.80***	.61***	.38***	4.33	1.60
6. Self-identity	-.08	.43***	.38***	.35***	.46***	-	.55***	.53***	.10	.26***	.26***	.57***	.63***	.18*	4.88	1.39
7. Donor similarity	-.09	.39***	.41***	.25***	.42***	.55***	-	.55***	.14**	.28***	.10	.50***	.48***	.36***	5.01	1.23
8. Donor favourability	-.17**	.42***	.34***	.31***	.39***	.51***	.55***	-	.09	.37***	.08	.37***	.41***	.26***	6.18	.98
9. Recipient similarity	.20***	.17**	.17**	.08	.23***	.08	.15**	.09	-	.33***	.05	.25***	.14**	-.01	3.24	1.57
10. Recipient favourability	.10	.28***	.26***	.15**	.31***	.25***	.28***	.36***	.33***	-	.08	.26***	.28***	.09	5.36	1.17
11. Past behaviour[a]	.02	.26***	.31***	.20***	.24***	.20***	.16***	.10	.09	.11*	-	.39***	.23***	.17*	a	a
12. Intention	.01	.68***	.74***	.62***	.81***	.46***	.43***	.35***	.23***	.25***	.26***	-	.61***	.41***	3.78	1.81
13. Willingness	-.08	.48***	.44***	.40***	.49***	.39***	.39***	.35***	.11*	.31***	.26***	.48***	-	.30***	4.18	2.04
14.Behaviour[a]	-.15	.31***	.46***	.32***	.42***	.26***	.32***	.22**	.05	.12	.20**	.48***	.29***	-	a	a
M	a	4.61	4.60	5.10	4.40	4.89	5.03	6.19	3.26	5.36	a	4.22	4.78	a	-	
SD	a	.74	1.33	1.54	1.51	1.38	1.22	.97	1.62	1.17	a	1.68	1.70	a	-	

Note. *p < .05. **p < .01. ***p < .001. Correlations, means and standard deviations above the diagonal are for registering; correlations, means and standard deviations below the diagonal are for discussing. [a] Dichotomous measure. PBC = Perceived behavioural control

Table 2

Goodness of Fit Test Results and Squared Multiple Correlations for Each Model Predicting Registering and Discussing Decisions

Model	$\chi 2$ (d.f.)	p	CFI	TLI	NFI	RMSEA	R^2(Int)	R^2(Wil)
Registering (*N* = 339)								
1. Proposed Standard TPB	6.597 (4)	.159	.996	.986	.991	.044	.617	
2. Proposed Standard PWM	34.363 (7)	.000	.963	.852	.955	.108		.408
Revised Standard PWM	29.286 (6)	.000	.968	.853	.962	.107		.417
3. Proposed Augmented TPB with PWM	102.817 (15)	.000	.934	.802	.936	.132	.588	.353
Revised Augmented TPB with PWM	36.981 (12)	.000	.981	.930	.973	.078	.648	.410
4. Proposed Augmented TPB with PWM, extended	456.565 (58)	.000	.822	.677	.805	.143	.716	.320
Revised Augmented TPB with PWM, extended	91.465 (42)	.000	.978	.945	.961	059	.721	.495
Discussing (*N* = 315)								
1. Proposed Standard TPB	8.083 (4)	.089	.994	.979	.989	.057	.626	
2. Proposed Standard PWM	21.286 (7)	.003	.978	.911	.968	.081		.302
Revised Standard PWM	15.740 (6)	.015	.985	.930	.977	.072		.314
3. Proposed Augmented TPB with PWM	72.081 (15)	.000	.951	.853	.940	.110	.604	.270

Revised Augmented TPB with PWM	27.073 (12)	.008	.987	.952	.978	.063	.631	.311
4. Proposed Augmented TPB with PWM, extended	331.534 (58)	.000	.858	.743	.837	.123	.695	.246
Revised Augmented TPB with PWM, extended	94.377 (39)	.000	.971	.923	.954	.067	.686	.327

Note. Model fit was determined by the following indicators: chi-square test (non-significant or acceptable if no more than 3 times the degrees of freedom; Kline, 2005), Comparative Fit Index (CFI; > .90), Tucker-Lewis Index (TLI; > .90), Bentler Bonett normed fit index (NFI; > .90), Root Mean Square Error of Approximation (RMSEA; < .08 or < .06) (Marsh, Balla, & Hau, 1996), Int = Intention, Wil = Willingness.

Table 3

Logistic Regressions Predicting Registering (N = 177) and Discussing Behaviour (N = 166)

Variable		Registering						Discussing				
	B	SE	Wald	Exp (B)	95% CI Exp (B)		B	SE	Wald	Exp (B)	95% CI Exp (B)	
					Lower	Upper					Lower	Upper
Standard TPB (Model 1)												
Intention	.75	.29	7.01**	2.13	1.22	3.72	.61	.14	17.62***	1.83	1.38	2.43
PBC	.89	.42	4.38*	2.42	1.06	5.55	.14	.15	.86	1.15	.86	1.53
Past behaviour	-1.22	.75	2.67	.29	.07	1.28	.45	.37	1.53	1.57	.77	3.22
	Model χ^2 (3, N = 177) = 41.35, p < .001, Nagelkerke R^2 = .43						Model χ^2 (3, N = 166) = 43.61, p < .001, Nagelkerke R^2 = .31					
Standard PWM (Model 2)												
Willingess	.73	.22	10.96***	2.08	1.35	3.20	.36	.11	10.07**	1.43	1.15	1.78
Past behaviour	.33	.62	.28	1.39	.41	.47	.69	.34	4.17*	1.99	1.03	3.84
	Model χ^2 (2, N = 166) = 20.51, p < .001, Nagelkerke R^2 = .23						Model χ^2 (2, N = 166) = 18.68, p < .001, Nagelkerke R^2 = .14					
Augmented TPB with PWM (Model 3)												
Intention	.64	.31	4.16*	1.89	1.03	3.50	.57	.15	14.93***	1.76	1.32	2.35
PBC	.83	.43	3.81*	2.30	1.00	5.31	.11	.15	.58	1.12	.84	1.50
Willingness	.23	.26	.79	1.26	.76	2.10	.18	.13	1.88	1.20	.93	1.54

| Past behaviour | -1.21 | .76 | 2.57 | | .28 | .07 | 1.31 | | .38 | .37 | 1.07 | 1.47 | .71 | 3.03 |

Model χ^2 (4, N = 177) = 42.19, p < .001, Nagelkerke R^2 = .44   Model χ^2 (4, N = 166) = 45.52, p < .001, Nagelkerke R^2 = .32

Note. *p < .05. **p < .01. ***p < .001. PBC = Perceived behavioural control