



# Posthumous organ donation attitudes, intentions to donate, and organ donor status: Examining the role of the big five personality dimensions and altruism



Erin M. Hill

Department of Psychology, West Chester University, West Chester, Pennsylvania 19383, United States

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## ABSTRACT

The present study examined the role of the big five personality dimensions and altruism in organ donation attitudes (ODA), intentions to register, and organ donor status using a sample of 336 college undergraduates. Participants completed questionnaires that assessed the big five personality dimensions, altruism, ODA, and non-donors completed a question that assessed their intentions to register as an organ donor in the next 3–6 months. In collecting information on organ donor status, participants showed a state-issued ID to a research assistant upon completion of the questionnaire. In terms of the influence of personality, results indicated that agreeableness was significant in predicting ODA and intentions to register. However, the relationship between agreeableness and the organ donation behaviors was explained by the indirect effect of altruism. No other personality variables were significant in the models. Results are discussed with reference to the role of altruism in organ donation and the need to further understand the null findings of conscientiousness in the models. Further research is needed on the interaction between personality and perceptions of organ donation among college students and the general public.

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## 1. Introduction

The current number of individuals on the organ recipient list far outweighs the number of available organs. Posthumous organ donation rates in America remain surprisingly low despite approval of the general public (Healthcare Systems Bureau, 2013). It is clear that broad systemic factors, such as registration methods (e.g., opt-in or opt-out system) largely influence organ donation registration behaviors (Falomir-Pichastor, Berent & Pereira, 2013). However, in the United States, an opt-in rather than opt-out organ donation system exists, and as such, it is pertinent for psychology researchers to examine and understand the individual level factors influencing organ donation attitudes (ODA) and behaviors.

One of the major factors that can influence ODA and behaviors is education and knowledge of organ donation. Knowledge about the organ procurement system and organ donation is predictive of positive attitudes toward organ donation (Wakefield, Watts, Homewood, Meiser & Siminoff, 2010) and organ donor status (Feeley, 2007; Morgan & Miller, 2002b). Furthermore, providing information about organ donation can lead to increased positive perceptions about the process and increased donor behavior (Macy et al., 2014).

There are also various social factors that influence ODA and behaviors. For example, social norms play a significant role in the development of ODA and in the decision to become an organ donor (Feeley,

2007). The theory of planned behavior, a health behavior model that posits that behaviors are determined by intentions, which, in turn, are influenced by attitudes, perceived behavioral control, and subjective norms, has been used as a model for studying ODA and behaviors (e.g., Stephenson et al., 2008). Indeed, an individual's subjective norm – the behaviors and attitudes of their immediate social group and important others – is predictive of organ donation intentions (Rocheleau, 2013; Stephenson et al., 2008) and behaviors (Hyde & White, 2009). Similarly, other research indicates that family members' perceptions can be influential in ODA and registration behaviors (Morgan & Miller, 2002a).

Despite the broad psychosocial factors that have been linked to positive ODA and behaviors, many individuals report significant barriers, which, in turn, inhibit organ donation behaviors. Although some research indicates mixed findings (Falomir-Pichastor et al., 2013), religiosity has been identified as a significant barrier to organ donation for many individuals (Rumsey, Hurford & Cole, 2003; Wakefield, Watts, Homewood, Meiser, & Siminoff, 2010). Additionally, concerns about posthumous bodily integrity and death anxiety have been identified as factors that discourage positive ODA and registration behaviors (Wakefield et al., 2010). Mistrust of the procurement system is a related barrier (Morgan, Harrison, Afifi, Long & Stephenson, 2008); some individuals are skeptical that their body will be treated ethically near the end of life if they are registered as an organ donor (Newton, 2011).

In their reviews of the literature, Falomir-Pichastor et al. (2013) and Feeley (2007) emphasize the complexity of ODA and the various factors

E-mail address: [ehill@wcupa.edu](mailto:ehill@wcupa.edu).

that impact the decision to become an organ donor. Given that personality has been established as an important predictor of various social and health behaviors (Paunonen & Ashton, 2001), it is important to examine it in the context of organ donation. The big five personality dimensions have been studied in relation to various health behaviors (e.g., Booth-Kewley & Vickers, 1994), however, there has been relatively limited attention given to their role in ODA and behaviors (Bekkers, 2006; Demir & Kumkale, 2013). Demir and Kumkale (2013) recently examined various individual factors, including the big five personality dimensions, in ODA, intentions to register, and registration behaviors. While this study found that some of the big five dimensions, including openness, introversion, and conscientiousness, were linked to organ donation intentions, other research in this area has produced mixed results (Bekkers, 2006).

The aim of the present study was to further examine the role of the big five personality dimensions in the context of organ donation, with specific focus on ODA, intentions to register, and organ donor status. In addition to focusing on the big five personality dimensions, altruism was included in the study as it is a personality variable associated with positive ODA and registration behaviors (Wakefield et al., 2010). While organ donation is a socially responsible behavior, it is also widely regarded as an altruistic act (Falomir-Pichastor et al., 2013). Furthermore, given the link between agreeableness and altruism (Zettler & Hillbrig, 2010), the influence of altruism must be considered in the link between the big five personality dimensions and organ donation.

## 2. Method

### 2.1. Participants

Participants were 336 students (114 males, 222 females) from a university in the northeastern United States who took part in the study in completing their research requirement for their Introduction to Psychology course. The data presented in this manuscript are part of a larger study examining individual differences in altruism and well-being. The study took place in classrooms on campus; participants completed the consent form and questionnaire while supervised by a research assistant. After completing the questionnaire, participants showed the supervising research assistant a state-issued ID (e.g., driver's license), which would indicate their organ donor status. At the end of the study, participants were debriefed about the nature of the study and its focus on organ donation. The study was approved by the university's institutional review board.

### 2.2. Measures

#### 2.2.1. Personality

The Big Five Inventory (BFI; John, Donahue & Kentle, 1991) is a 44-item scale that measures the big five personality dimensions: extraversion, conscientiousness, openness to experience, agreeableness, and neuroticism. For each item, participants respond on a Likert scale ranging from (1) "disagree strongly" to (5) "agree strongly". Mean scores for each of the personality dimensions are computed in calculating the scores. In the present study, each of the dimension scales had adequate reliability: extraversion ( $\alpha = .858$ ), openness to experience ( $\alpha = .770$ ), agreeableness ( $\alpha = .747$ ), neuroticism ( $\alpha = .811$ ) and conscientiousness ( $\alpha = .740$ ).

#### 2.2.2. Altruism

The self-report altruism (SRA) scale (Rushton, Chrisjohn & Fekken, 1981) was used to collect information on trait altruism in the present study. The SRA scale includes 14 items describing hypothetical altruistic situations (e.g., I would give directions to someone I don't know). Participants are instructed to indicate how often they would exhibit the behaviors included on the questionnaire using a Likert scale ranging from 0 "never" to 4 "very often". To calculate an overall altruism score,

item scores are summed with a higher score indicating higher levels of altruism. Rushton, Chrisjohn, and Fekken (1981) reported adequate reliability and validity of the scale. In the present study, the scale had excellent internal consistency ( $\alpha = .869$ ).

#### 2.2.3. Organ donation attitudes

Organ donation attitudes were assessed with the Organ Donation Attitudes Scale (ODAS; Rumsey, Hurford, & Cole, 2003). The ODAS is a 20-item questionnaire that includes a series of questions pertaining to demographics, religious views and perceptions, previous organ donation knowledge and experience (loved one donated or having received an organ), as well as attitudinal questions. For the 18 items used to calculate the attitudes score, participants responded to each item on a 4-point Likert scale ranging from (1) "strongly disagree" to (4) "strongly agree". In calculating the final score, the 18 questions are summed. Rumsey et al. (2003) reported adequate validity and reliability for the ODAS, and in the present study, the scale had good internal consistency ( $\alpha = .838$ ).

#### 2.2.4. Intentions to register as an organ donor

In assessing intentions to register, non-donors were asked, "Do you intend to become an organ donor over the next 3–6 months?" with "yes" and "no" as response options.

#### 2.2.5. Organ donor status

In assessing organ donor status, participants were required to show a state ID (e.g., driver's license) upon completion of the questionnaire portion of the study. Based on the organ donor status on their state ID, participants were classified as a current donor or not a donor.

#### 2.2.6. Demographics

In completing the questionnaire, participants indicated their date of birth, ethnicity, and gender.

#### 2.2.7. Statistical approach

Hierarchical regression analyses were used to examine the influence of the big five personality dimensions and altruism in ODA (linear regression), intentions to register (logistic regression; "no" coded as 1, "yes" coded as 2), and organ donor status (logistic regression; non-donor coded as 1, donor coded as 2). The covariates (age and gender) and personality were entered in block one, and altruism in block two. Follow-up mediation analyses were conducted using Preacher and Hayes (2008) bootstrapping estimates of indirect effects. In the results presented, 5000 resamples were conducted with bias corrected and accelerated confidence intervals (BCa CI) reported.

A total of 368 students initially participated in the study. For the ODAS, missing data was not random (Little's MCAR test:  $\chi^2(194) = 317.81, p < .001$ ), and thus, imputation methods were deemed inappropriate (and 20 cases were excluded due to missing ODAS data). Cases with missing data for the organ donor status variable ( $n = 12$ ) were also excluded. Analyses were therefore conducted on a sample of 336 participants, and listwise deletion was applied to the models. Data were examined for regression assumptions, and outliers were identified for altruism and agreeableness. Analyses were conducted with outliers included as well as excluded; because the results did not differ, the results with all data are presented.

## 3. Results

### 3.1. Descriptives and correlations

Participants in the study ranged from age 18 to 43 ( $M = 19.39, SD = 1.93$ ). The majority of the sample was female ( $n = 222, 66.1\%$ ) and identified as White American ( $n = 260, 77.4\%$ ). Descriptive statistics for the continuous variables are presented in Table 1 and bivariate correlations in Table 2. Of note, ODA had a weak positive correlation with

**Table 1**  
Descriptive statistics of organ donation attitudes and personality variables.

Variable	Mean (SD)	Minimum	Maximum
Organ donation attitudes	58.85 (6.88)	41.00	72.00
Conscientiousness	3.61 (.56)	2.00	5.00
Agreeableness	3.97 (.56)	2.11	5.00
Extraversion	3.43 (.76)	1.25	5.00
Neuroticism	2.91 (.76)	1.00	5.00
Openness	3.49 (.62)	1.70	5.00
Altruism	38.87 (9.31)	8.00	56.00

agreeableness ( $r = .192, p < .01$ ) and a moderate positive correlation with altruism ( $r = .369, p < .01$ ). In terms of donor status, 175 (52.1%) were identified as donors, and 161 (47.9%) were identified as non-donors. Among those who completed the registration intentions question ( $n = 149$  out of 161 non-donors), 43 (28.9%) stated that they intended to register as an organ donor in the next 3–6 months, and 106 (71.1%) stated they did not have such intentions. In exploratory logistic regressions, ODA were significantly predictive of both intentions to register,  $\chi^2(1) = 41.49, p < .001, Nagelkerke R^2 = .348$ , and current donor status,  $\chi^2(1) = 125.08, p < .001, Nagelkerke R^2 = .415$ .

### 3.2. Personality and altruism in predicting organ donation attitudes

Table 3 presents the results of the regression of personality and altruism on ODA. Block one of the model, including the covariates and big five personality dimensions, was significant,  $F(7, 326) = 2.94, p = .005, Adj. R^2 = .039$ . In the model, age ( $\beta = .116, p = .034$ ) and agreeableness ( $\beta = .195, p = .001$ ) were both significant predictors. In block two, when altruism was added into the model, the final model was significant,  $F(8, 325) = 7.85, p < .001, Adj. R^2 = .141$ . The change in significance of the model was significant,  $R^2_{change} = .102, p < .001$ . In the final model, age ( $\beta = .114, p = .027$ ) and altruism ( $\beta = .344, p < .001$ ) were significant predictors, and agreeableness was no longer significant ( $\beta = .083, p = .142$ ).

Given the change in significance of agreeableness in the prediction of ODA, the possible indirect effect of altruism in the relationship between agreeableness and ODA was examined. Preacher and Hayes (2008) bootstrapping estimates of indirect effects were employed. The overall model was significant,  $F(2, 329) = 15.04, p < .001, Adj. R^2 = .144$ . Fig. 1 displays the standardized pathway coefficients among the model variables. The indirect effect of altruism in the model was significant, unstandardized  $ab = 1.31, 95\% \text{ BCa CI: } .72, 1.99$ . The total effect of agreeableness on ODA was significant,  $c = .20, p < .001$ , and the direct effect of agreeableness on ODA was non-significant,  $c' = .09, p = .100$ , indicating that the relationship disappeared when altruism was included in the model. In terms of the covariates, age was positively predictive of ODA ( $\beta = .12, p = .016$ ) while gender ( $\beta = -.01, p = .852$ ) was not significant.

**Table 2**  
Bivariate correlations among continuous variables.

Variable	1	2	3	4	5	6
1. Organ donation attitudes						
2. Conscientiousness	.069					
3. Agreeableness	.192**	.285**				
4. Extraversion	-.002	.066	.063			
5. Neuroticism	.019	-.215**	-.111*	-.142**		
6. Openness	.086	.061	.037	.003	.067	
7. Altruism	.369**	.052	.315**	.180**	-.032	.075

\*  $p < .05$ .

\*\*  $p < .01$ .

### 3.3. Personality and altruism in predicting intentions to register as an organ donor

Table 4 presents the hierarchical logistic regression of personality and altruism on organ donor registration intentions (analyses conducted on 149 of 161 non-donors in the sample). Block one of the model, including the covariates and big five personality dimensions was not significant,  $\chi^2(7) = 12.56, p = .084, Nagelkerke R^2 = .116$ . Agreeableness was significantly predictive of intentions to donate even though the block was non-significant, Wald  $\chi^2(1) = 4.52, p = .034$ ; OR = 2.31, 95% CI 1.07–5.01. After including altruism in block two, the overall model was significant,  $\chi^2(8) = 21.53, p = .006, Nagelkerke R^2 = .192$ , and correctly classified 71.1% of cases. In the final model, only altruism was significantly predictive of intentions to become an organ donor, Wald  $\chi^2(1) = 8.14, p = .004$ ; OR = 1.07, 95% CI 1.02–1.12.

A follow-up mediation analysis was conducted to examine the possible indirect effect of altruism in the regression of agreeableness on intentions to register for organ donation. The overall model was significant,  $\chi^2(4) = 19.44, p = .001, Nagelkerke R^2 = .175$ , indicating that the variables had a significant influence on intentions to register. Fig. 2 displays the standardized pathway coefficients among the model variables. The indirect effect of altruism in the model was significant, unstandardized  $ab = .37, 95\% \text{ BCa CI: } .08, .77$ . The total effect of agreeableness on registration intentions was significant,  $c = .57, p = .008$ , and the direct effect of agreeableness on registration intentions was significant,  $c' = .38, p = .086$ , indicating that the relationship between agreeableness and intentions was no longer significant when altruism was included in the model. Neither age ( $\beta = -.53, p = .145$ ) nor gender ( $\beta = .03, p = .896$ ), included in the model as covariates, were significant.

### 3.4. Personality and altruism in predicting organ donor status

A hierarchical logistic regression was conducted to assess the influence of personality and altruism on organ donor status. Block one, including the personality variables and covariates, was not significant,  $\chi^2(7) = 7.86, p = .346, Nagelkerke R^2 = .031$ . The inclusion of altruism in the model did not significantly improve the overall model,  $\chi^2(8) = 9.92, p = .270, Nagelkerke R^2 = .039$ , and the overall model only correctly classified 56.6% of cases. The covariates, personality dimensions, and altruism were not significant in predicting organ donor status.

## 4. Discussion

The present study examined the role of the big five personality dimensions and altruism in ODA, intentions to register and organ donor status. The results indicated that while agreeableness was positively predictive of ODA and intentions to register to be an organ donor, altruism accounted for the relationship between agreeableness and ODA and intentions to register. No other big five personality dimensions were significant in predicting ODA, registration intentions or organ donor status. Although null findings for the big five dimensions are presented in this study, the lack of significance of conscientiousness is particularly noteworthy in considering the promotion and framing of organ donation to college students and the general public.

In the present study, agreeableness was predictive of ODA and intentions. This is unsurprising given previous research highlighting a correlation between agreeableness and prosocial behaviors (Hilbig, Glöckner & Zettler, 2014). However, subsequent analysis of the data indicated that the relationship between agreeableness and ODA was explained by altruism, a personality variable that has been previously linked to positive attitudes toward organ donation (Wakefield et al., 2010). This finding highlights that while agreeableness is an important factor in the link between personality and ODA, the salient role of altruism must be considered in the relationship.

**Table 3**  
Regression of big five dimensions and altruism on organ donation attitudes.

Predictor variable	$\beta$	<i>p</i>	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	<i>F</i>	<i>df</i>	<i>p</i>
Block 1			.244	.059	.039	2.94	7326	.005
Gender	−.007	.901						
Age	.116	.034						
Extraversion	−.004	.947						
Agreeableness	.195	.001						
Neuroticism	.037	.537						
Openness	.066	.236						
Conscientiousness	.007	.898						
Final Model			.402	.162	.141	7.85	8325	<.001
Gender	−.006	.995						
Age	.114	.027						
Extraversion	−.061	.255						
Agreeableness	.083	.142						
Neuroticism	.030	.596						
Openness	.045	.394						
Conscientiousness	.026	.637						
Altruism	.344	<.001						

Altruism emerges in the literature as a predictor of prosocial behaviors (Batson & Powell, 2003) linked to such outcomes, in part, due to the increased feelings of empathy experienced by altruistic individuals. Therefore, it is likely that altruism was linked to more positive attitudes toward organ donation because of elevated empathy. It should be noted though that none of the personality predictors (the big five or altruism) were significant in the organ donor status model, indicating that, in the present study, although altruistic individuals feel more positively about organ donation, the link to registration behavior is not as clear. However, the number of organ donors in this study was higher than previously reported rates of organ donors among young adults (52% vs. 36% in Mocan & Tekin, 2007). Therefore, it is possible that broader systemic factors (e.g., ease of registering at the DMV in the state) or characteristics of the sample (e.g., educated college students) might have weakened the connection between registration and altruism in the present study.

Although the present study largely presents null findings with regard to the link between personality and organ donation, the lack of influence of conscientiousness is an interesting result that merits exploration. This finding is surprising given the link between conscientiousness and a myriad of health behaviors (Bogg & Roberts, 2004), and ODA in a previous study (Demir & Kumkale, 2013). However, Bekkers (2006) reported that conscientiousness was linked to decreased participation in blood and organ donation. Despite the strong connection between conscientiousness and health behaviors (Bogg & Roberts, 2004), the relationship does not seem to translate to the altruistic health behavior examined in the present study – organ donation.

Many of the theories explaining the link between conscientiousness and health purport that individuals elevated in conscientiousness are achievement-oriented and self-disciplined, which in turn relates to the increased engagement in healthy behaviors (Bogg & Roberts, 2004). However, there is an element of conscientiousness that also involves wanting to follow norms and act in socially responsible ways (Roberts et al., 2005). For example, conscientiousness is linked to pro-

environmental behaviors (Gifford & Nilsson, 2014) and it has been connected to body donation for medical and scientific progress (Bolt, Eisinga, Venbrux, Kuks & Gerrits, 2011).

The lack of influence of conscientiousness in ODA then has important implications for how health professionals and other concerned parties frame and promote awareness of organ donation. Currently, organ donation is perceived as largely an altruistic behavior (Falomir-Pichastor et al., 2013). If organ donation was framed as a socially responsible behavior rather than an altruistic choice, it is possible conscientiousness would, in turn, be linked to positive ODA and behaviors. Future experimental research on organ donation framing and its possible interaction with conscientiousness would help to clarify the null findings presented in this study.

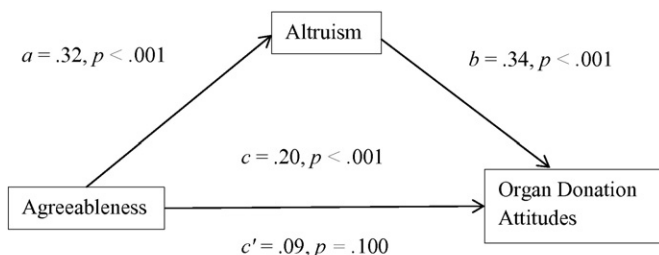
4.1. Limitations

There are limitations in the present study that must be acknowledged. First, the use of an undergraduate student sample limits the generalizability of the findings. However, college students are a popular sample to use in examining ODA and behaviors not only due to their convenience for psychology and health researchers, but because they also represent a large proportion of potential donors due to elevated car accident rates among young adults (Feeley, 2007). Therefore, the lack of generalizability should be considered, but the relevance of this population must also be emphasized.

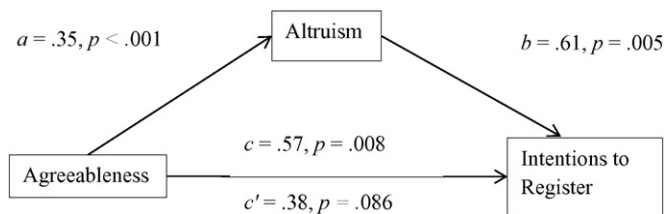
Second, the reliance on self-report for many of the variables in the present study should be noted. Even though personality psychology

**Table 4**  
Regression of big five dimensions and altruism on intentions to register as an organ donor.

Predictor variable	Wald	<i>p</i>	Odds ratio	95% CI	$\chi^2$	<i>p</i>	Nagelkerke <i>R</i> <sup>2</sup>
Block 1					12.56	.084	.116
Gender	.001	.974	1.02	.41–2.52			
Age	1.77	.184	.77	.53–1.13			
Extraversion	.20	.652	1.13	.67–1.91			
Agreeableness	4.52	.034	2.31	1.07–5.01			
Neuroticism	.50	.480	.82	.48–1.41			
Openness	.04	.847	1.07	.54–2.12			
Conscientiousness	1.04	.308	1.40	.73–2.66			
Final Model					21.53	.006	.192
Gender	.05	.831	1.11	.43–2.83			
Age	1.94	.164	.76	.52–1.12			
Extraversion	.17	.677	.89	.50–1.56			
Agreeableness	1.24	.266	1.59	.70–3.61			
Neuroticism	.41	.520	.83	.47–1.46			
Openness	.004	.947	.98	.47–2.01			
Conscientiousness	1.42	.234	1.51	.77–2.97			
Altruism	8.14	.004	1.07	1.02–1.12			



**Fig. 1.** Examining the indirect effect of altruism in the regression of agreeableness on organ donation attitudes.



**Fig. 2.** Examining the indirect effect of altruism in the regression of agreeableness on organ intentions to register as an organ donor (yes = 2, no = 1).

largely relies on the use of self-report questionnaires to assess personality and individual difference variables, it is possible that same-source bias could be impacting the results. For example, the link between altruism and ODA may be attributable to another factor, such as responding to questionnaires in a similar or socially desirable way. The inclusion of an objective assessment (e.g., state IDs to assess organ donor status) can help to mitigate such concerns, but the reliance on self-report remains an important consideration in interpreting the results, especially given the lack of influence of the predictor variables in the organ donor status model.

The correlational nature of the results must also be acknowledged. While the models were structured such that personality and altruism were situated as predictors of organ donation outcomes, the direction of the relationship cannot be confirmed in this cross-sectional study. Future research using longitudinal designs, including following up with non-donors or new drivers about their registration decisions, would be beneficial for better understanding the link between organ donation and personality. It is possible that personality influences attitudes, which in turn, are predictive of registration behaviors. A more comprehensive model considering distal and proximal psychosocial predictors as well as contextual factors (e.g., ease of registration) may be necessary to better understand the impact of personality on organ donation attitudes and behaviors.

## 5. Conclusion

The present study examined the big five personality dimensions and altruism in ODA, intentions to register, and organ donor status. The results indicate that altruism explains the link between agreeableness and ODA and registration intentions. Additionally, even though the present study did not indicate a significant role of personality in organ donation, future research examining how organ donation is typically framed and perceived by potential donors may help to explain why conscientiousness, a personality trait linked to various health behaviors and some prosocial behaviors (Bogg & Roberts, 2004; Bolt, Eisinga, Venbrux, Kuks, & Gerrits, 2011), is not linked to organ donation. Organ donation is complex, influenced by various social and emotional factors, and the role of individual differences remains an important aspect of better understanding this health-relevant behavior.

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