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The role of affect in attitudes toward organ donation and donor-relevant decisions

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Abstract
We argue that affect plays a vital role in attitudes toward organ donation and that reluctance to become an organ donor is likely to be related to the experience of affective ambivalence. Assessing the affect associated with organ donation could help to predict donor-relevant decisions. Results of a confirmatory factor analysis on 464 students showed that affective evaluations can be distinguished both from cognitive evaluations and from overall evaluations. As expected, affective evaluations revealed ambivalence (using the 'Griffin' measure of ambivalence) toward organ donation, whereas the two other types of evaluations did not. Results of a follow-up study using logistic regression ($n = 85$), showed that affective evaluations predicted donor-relevant decisions six months later. The present findings support the proposal to include separate affective evaluations in measures of attitudes to organ donation. More general implications for the measurement and structure of attitudes in health related domains are discussed.

Keywords: *Ambivalence, attitudes, organ donation, affect, feelings, structure of attitudes*

Introduction

Given that there is a serious shortage of organ donors worldwide, one would expect public attitudes toward organ donation to be largely negative. Yet the opposite seems to be the case: recent research reveals generally positive attitudes (Brug, van Vugt, van der Borne, Brouwers, & van Hooff, 2000; Cossé & Weisenberger, 2000; Moloney & Walker, 2002;

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Radecki & Jaccard, 1997; Singh, Katz, Beauchamp, & Hannon, 2002). Of course, evidence of a discrepancy between attitude and behavior is nothing new in attitude research (Ajzen, 2000). Two explanations for this finding can be identified. Either attitudes to organ donation do not predict registration behavior, such that people think favorably about organ donation without acting on this positive evaluation; or the attitude as usually measured fails to capture all of the factors that shape the underlying construct. The purpose of the present article is to focus on this latter explanation and to argue that paying more attention to respondents' feelings toward organ donation has the potential to strengthen the attitude–behavior relationship.

Researchers investigating attitudes toward organ donation often rely on conceptions of attitude that focus on cognitive evaluations (e.g., Cossé & Weisenberger, 2000; Hayward & Madill, 2003; Rumsey, Hurford, & Cole, 2003; Skowronski, 1997; Skumanich & Kintsfather, 1996; see for a review Radecki & Jaccard, 1997). Many of these cognitions can in fact be related to feelings. Beliefs such as 'Organs are removed before one is actually dead' and 'Death is declared too soon' are likely to be associated with negative feelings such as fear. On the other hand, altruistic beliefs such as 'Organ donation enhances the lives of others' are likely to be related to positive feelings such as pride. Thus, both positive and negative feelings can be associated with organ donation. Yet, feelings have attracted limited attention in research on attitudes toward organ donation.

Although the importance of affective factors in attitudes toward organ donation has previously been recognized (Goodmonson & Glaudin, 1971; Parisi & Katz, 1986; Sanner, 2002), and despite the fact that it has been argued that affective evaluations of organ donation can be distinguished from cognitive evaluations and that affective evaluations are not always accompanied by cognitive evaluations (Parisi & Katz, 1986), affective evaluations have not been assessed independently from cognitive evaluations. Some researchers have taken measures of affective evaluations but have not analyzed them separately from cognitive evaluations (Parisi & Katz, 1986). Other researchers (Goodmonson & Glaudin, 1971; R.L. Horton & P.J. Horton, 1991; Sanner, 2002; Skowronski, 1997; Yeung, Kong, & Lee, 2000) have assessed evaluations consisting of both affective and cognitive evaluations (e.g., 'I am fearful because I am afraid to compromise my own medical care'), making the resulting score a reflection of both types of evaluations. As things currently stand, threfore, there is little by way of evidence concerning the unique role affective evaluations play in attitudes toward organ donation.

There are several reasons why it might be important to assess affect separately in attitudes toward organ donation. First, there is reason to believe that affect is strongly related to donor-relevant decisions. In a study in which one discrete affective evaluation (anxiety) was included as a predictor, this was found to have the second largest association with intention to donate organs (Reubsat, van der Borne, Brug, Pruyn, & van Hooff, 2001). Furthermore, in research on blood donation (Breckler & Wiggins, 1989; Farley & Stasson, 2003) correlations between self-reported behavior and affective *versus* cognitive evaluations suggest that blood donation behavior was more strongly related to affect than to cognition. This was especially the case in the absence of prior experience with blood donation. Second, there appears to be a general tendency to neglect affective reactions. When people are asked for an evaluation they tend to focus on rational (more cognitive) aspects. This originates from a bias toward *explaining* attitudes in verbal reports (Tesser & Martin, 1996). It is possible that the explicit inclusion of affect in attitudes would provide us with important information that would in turn result in an improvement of the attitude–behavior relationship.

Third, and most importantly, we believe that the lack of behavioral commitment to organ donation may be the result of affective evaluations that are ambivalent. Evidence of ambivalence toward organ donation was found in a study in which affective evaluations and cognitive evaluations were included but not separately assessed (Parisi & Katz, 1986). These authors maintained that ambivalence reduces the readiness to make behavioral commitments in organ donation. Their results showed that people experienced ambivalence in attitudes toward organ donation; both positive and negative evaluations toward organ donation were simultaneously present. However, the nature of this ambivalence was not clear: it might have originated within cognitive and/or affective evaluations, or it might have been between these evaluations (see Maio, Esses, & Bell, 2000).

Ambivalence can be described as the simultaneous presence of positive and negative evaluations of an attitude-object (Eagly & Chaiken, 1998). Research shows that when people experience higher levels of ambivalence (as compared to people with lower levels) the strength of the attitude–behavior relationship is reduced (Conner & Sparks, 2002; Sparks, Conner, James, Shepherd, & Povey, 2001). This approach can be distinguished from the present focus on differences on the level of ambivalence between and within attitude components. Ambivalence can exist between different components of attitudes (e.g., affective–cognitive inconsistency), or within components (e.g., inconsistency within affect). We expected the affective component to be the better predictor of commitment to organ donation, because it reflects the ambivalence people experience when making donor relevant decisions. This is based on the following reasoning.

There are several grounds for anticipating that ambivalence is likely to be greatest in affective evaluations of organ donation. First, various researchers have stressed the importance of affect in decision-making, because it focuses attention on negative or positive affective outcomes of a given action (Damasio, 1994; Frijda, Manstead, & Bem, 2000; Loewenstein, Hsee, Weber, & Welch, 2001; Manstead & Parker, 1995; van der Pligt & De Vries, 1998; Schwarz, 2000). It is precisely the decision making aspect of organ donation (i.e., whether or not to register as a donor) that seems to be problematic. Thus, ambivalence in affective evaluations might account for a lack of ability to make decisions.

Second, positive and negative feelings can be related to both sides of decisions about organ donation. Whereas cognitions about organ donation are presumably shaped by the predominantly positive norms and values associated with donating organs, and are reflected in the positive attitudes toward organ donation found in the literature when using cognitive measures (e.g., Radecki & Jaccard, 1997), organ donation can readily be associated with both positive (pride, relief) and negative (shame, fear) feelings. Thus, there are good reasons to expect ambivalence to be greater within the affective component than in the cognitive component of attitudes to organ donation.

Although not assessed in prior research on attitudes toward organ donation, affective evaluations have frequently been identified in attitude measures (e.g., Breckler, 1984; Breckler & Wiggins, 1989). Crites, Fabrigar, and Petty (1994) created scales to measure cognitive and affective factors separately and applied them to a wide range of topics such as snakes and capital punishment. In general, three evaluative components of attitudes can be distinguished: an overall attitude, a cognitive evaluation, and an affective evaluation (Crites et al., 1994; Giner-Sorolla, 1999; Verplanken, Hofstee, & Janssen, 1998; Trafimow & Sheeran, 1998). It is assumed that attitudes can vary along each of these dimensions (Eagly & Chaiken, 1998). Using various scaling methods, Crites et al. (1994) confirmed that cognitive and affective evaluations could be reliably distinguished from each other.

The present study addresses three issues. First, we investigated whether the distinction between an affective and a cognitive evaluation of attitude can be found in the domain

of organ donation, using affective and cognitive measures that were investigated with respect to their internal consistency and their discriminant and convergent validity (Crites et al., 1994). To distinguish cognitive and affective evaluations reliably, they should not only be different from each other, but also differ from a more general evaluation toward organ donation. This is investigated using structural equation modeling. Second, we investigated whether any observed ambivalence in organ donation attitudes was due primarily to inconsistencies between cognitive and affective evaluations or to inconsistencies within affective or cognitive evaluations. We anticipated that the primary source of any ambivalence would be found within affective evaluations. To determine the level of ambivalence, positive and negative evaluations were assessed separately from each other, resulting in a six-factor model (positive and negative aspects of affective, cognitive, and overall evaluations).

Third, we expected that of the three components of attitude (affective, cognitive, and overall evaluation), it would be the affective evaluation that would be most predictive of organ donor-relevant decisions. We investigated the relationship between attitudinal components and commitment to organ donation in a follow-up study conducted six months after the main study, using a non-systematically selected subsample of the original sample. We expected that affective evaluation as measured at Time 1 would be the primary predictor of behavioral donor-relevant decisions to organ donation measured six months later.

Method

Attitude toward organ donation

Participants. Participants were 464 psychology-students[1] at the University of Amsterdam (71% women and 29% men) who took part in a mass testing session in exchange for course credits. In The Netherlands, citizens are able to register as organ donor. All citizens aged 18 or over should receive a personally addressed registration form on which they can indicate whether they wish to donate organs (a detailed description of the Dutch organ donation registration system can be found in Reubsat, Brug, de Vet, & van den Borne, 2003). According to figures from the Dutch Foundation for Donor Education, as of January, 1, 2001, 37% of the Dutch population of 18 years or older has registered as donors.[2]

Questionnaire. Participants completed a questionnaire to evaluate their attitude toward organ donation. The questionnaire included items intended to assess overall evaluation, affective evaluation, and cognitive evaluation. Each evaluation was represented by eight (four positive and four negative) items. Each item consisted of an unipolar scale on which participants rated the applicability of adjectives toward their evaluation of organ donation,

[1] A sample of Dutch psychology students was used in both studies. This sample is not representative of the general public. However, this does not interfere with the primary purpose of these studies, which was to investigate whether a distinction in components of attitudes can be made in the organ donation domain and whether the inclusion of an affective factor has any additional predictive value.

[2] Both registered and unregistered donors were included in the sample because no differences in the structure of attitudes were expected (i.e., the *structure* of the attitude is not expected to vary as a function of whether a person is unregistered or registered).

ranging from 1 (*not applicable*) to 7 (*extremely applicable*). The adjectives completed the following sentences. For the cognitive evaluation: ''I think organ donation is . . .''. For the affective evaluation: ''Organ donation makes me feel . . .''. For the overall evaluation: ''My overall attitude toward organ donation is . . .''.

Affective and cognitive adjectives were selected on the basis of research that has been found to distinguish between cognitive and affective aspects of attitudes to various topics (Crites et al., 1994). An additional requirement was that the cognitive and affective adjectives should be comparable in terms of extremity and specificity. Extremity refers to the evaluative implications of the adjective with respect to valence. For example, 'anger' is regarded as more extreme than 'senseless'. Specificity refers to the range of situations to which the word can be applied. For instance, 'anger' is appropriate in a smaller range of situations than is 'useless'. For this reason we excluded discrete emotion terms such as sadness and anxiety. Based on a pilot study we selected affective and cognitive terms that were comparable in extremity and specificity, but were applicable to a broad range of topics. Examples of negative items for the overall measure, the affective measure, and the cognitive measure are, respectively: *negative*, *miserable*, and *useless*. All 24 items that were used to assess the six different factors are shown in Table II. Measures of each factor were computed by averaging ratings on the items corresponding to that factor.

To assess ambivalence we calculated the 'Griffin' measure of ambivalence, which is derived from calculating the mean of the positive and negative individual evaluations, and then subtracting the absolute difference between these evaluations from this mean (Ambivalence $= (P+N)/2-|P-N|$, where P denotes the strength of the positive evaluations and N denotes the strength of the negative evaluations; Thompson, Zanna, & Griffin, 1995). One departure from the procedure used by Thompson et al. is that participants were not explicitly requested to disregard their oppositely valenced evaluations when making a given rating.

Procedure. Attitude to organ donation was assessed in the context of a questionnaire investigating six attitude issues. Organ donation was always the second issue. Participants were presented with the attitude object and asked to evaluate it using the adjectives presented. Within components, positive and negative items were presented in a fixed but randomly selected order. The order of the affective and cognitive evaluations was counterbalanced. The overall evaluation was always presented last.

Commitment to organ donation: Six month follow-up

Participants. A subset of the 464 psychology students who took part in the main study participated in an allegedly unrelated study six months later. A substantial period between the attitude assessment and measuring commitment to organ donation was felt to be desirable in order to rule out the possibility that participants were trying to respond consistently with their previous reported attitude when completing behavioral commitment measures. Eighty-five participants signed-up for an unrelated study called 'Give your Opinion', and can therefore be regarded as an unsystematically selected subsample of participants in the main study. They enrolled in exchange for course credits and completed a questionnaire about organ donation (22% men and 78% women).

Because commitment to organ donation is only viable for people who are not against organ donation in principle, we excluded those who were 'principled' non-donors. Seven non-donors indicated that religious or other beliefs prevented them from becoming

an organ donor. We also excluded participants who were already registered as donors. Forty-two participants reported that they were registered as organ donors. Excluding these two groups from the analyses left 36 non-donors. This latter group is referred to as potential donors.

Procedure and questionnaire. Participants were first asked whether being a donor was against their personal beliefs: ''Is consenting to organ donation against your personal (e.g., religious) beliefs?'' Participants replied on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*). Furthermore, they were asked whether they would like to receive more information about organ donation.[3] They could reply either ''yes'', ''no'', or ''don't know''. Finally, participants were given the opportunity to write their name and address in order to be placed on a mailing list to receive regular information about organ donation. Participants who gave their name and address were put in touch with the 'Dutch Foundation for Donor Education' within two weeks of participating in the study.

Results

Attitude toward organ donation

Reliability was satisfactory for all measures (all Cronbach's alphas $\geq$0.75). Removal of the item 'likeable' increased the reliability of the overall positive attitude by 0.10. We therefore removed this item from further analyses. We first report the confirmatory factor analyses, and the fit indices for three nested models. Then we present the mean evaluations and investigate whether positive and negative affective evaluations toward organ donation reflect greater ambivalence than the corresponding cognitive and overall evaluations. Finally, we report the predictive utility of the various attitude components in accounting for the organ donation commitment measure taken six months later.

Confirmatory factor analyses. To assess the independence of affect, we compared the fit of three nested models using confirmatory factor analyses. Latent factors were set to covary freely. A one-factor model describes the data if attitude toward organ donation does not consist of separate overall, cognitive, and affective evaluation components, i.e., all items load on one general attitude factor. The fit of this one-factor model was compared with a three-factor model that describes the attitude as consisting of three factors: overall, cognitive, and affective evaluations. Then the fit of a six-factor model was investigated, consisting of separate positive and negative evaluations for each of the three components. The covariance-matrix was analyzed using LISREL 8.3 (Jöreskog & Sörbom, 1993). Because of the expected non-normality of the data, we report Satorra and Bentler's (1994) chi-square statistic.

The fit-values for the three confirmatory factor analyses are presented in Table I. Inspection of the fit measures showed that a single-factor model did not describe the data well. When we fitted the three-factor model, the fit increased substantially. Moreover, the six-factor model resulted in a fit that is acceptable for present purposes[4]

[3] More indirect measures of registering as organ donor were taken because we anticipated that few people would actually decide to register under laboratory conditions.

[4] A four-factor model, consisting of separate positive and negative affective evaluations, but with the positive and negative evaluations of the cognitive and overall components combined, resulted in fit values that were nearly acceptable: $\chi^2_{SB} = 1009$, Df = 224, RMSEA = 0.086, SRMR = 0.056, AIC = 1113, and AGFI = 0.82. This model could be defended as an alternative to the proposed six-factor model.

Table I. Fit indices for nested sequence of a one, three, and six factor confirmatory factor analysis. The three-factor model combined the positive and negative components, $N = 464$.

Factors	χ^2_{SB}	Df	RMSEA	SRMR	AIC	AGFI
1	4803	230	0.210	0.130	4895	0.46
3	2035	227	0.130	0.080	2133	0.68
6	692	215	0.069	0.046	814	0.87

Note: RMSEA = Root mean square error of approximation, SRMR = Standardized root mean residual, AIC = Akaike's information criterion, AGFI = Adjusted goodness of fit index.

Table II. LISREL factor loadings, standard errors (SE) in parentheses, and completely standardized solution (CSS) for the confirmatory six-factor model (all T values > 2).

	Measure	Variable*	Estimate of factor loading and (SE)	CSS
Positive	Overall	Good	0.77 (0.02)	0.85
		Positive	0.88 (0.02)	0.86
		Pro	1.00 (0.03)	0.85
		Likeable	excluded	
	Affective	Agreeable	1.71 (0.01)	0.92
		Gratifying	1.70 (0.01)	0.92
		Pleasurable	1.39 (0.01)	0.78
		Enjoyable	1.33 (0.02)	0.75
	Cognitive	Safe	0.70 (0.05)	0.51
		Useful	0.56 (0.03)	0.76
		Wise	0.87 (0.03)	0.78
		Healthy	0.84 (0.05)	0.59
Negative	Overall	Dislike	0.66 (0.04)	0.77
		Negative	0.77 (0.04)	0.75
		Anti	0.81 (0.05)	0.79
		Bad	0.74 (0.05)	0.71
	Affective	Nasty	1.30 (0.02)	0.77
		Abominable	1.20 (0.02)	0.79
		Dreary	1.41 (0.01)	0.84
		Miserable	1.33 (0.02)	0.82
	Cognitive	Unhealthy	0.80 (0.05)	0.58
		Improper	0.58 (0.05)	0.67
		Useless	0.52 (0.07)	0.60
		Disadvantageous	0.61 (0.05)	0.60

*Variable names are English translations of Dutch words used in the research.

(Hu & Bentler, 1999). Table II shows the parameter estimates of the adjectives for this six-factor model. The raw estimates of factor loadings show that all items loaded significantly on the proposed factor. Finally, as expected, factor correlations showed that factors with the same valence correlated positively with each other, whereas measures with opposing valences correlated negatively (see Table III).

Based on the confirmatory factor analyses and the comparison of the three nested models, we conclude that affective, cognitive, and overall evaluations should be distinguished from each other. Also, a positive and negative factor for each evaluation can be distinguished. The next question to be considered is how these six factors varied with respect to the evaluation of organ donation.

Mean evaluation differences. Figure 1 presents the mean positive and negative evaluations toward organ donation for the cognitive, affective, and overall evaluation.

Table III. Factor correlations of positive and negative overall, affective, and cognitive evaluations of organ donation.

	Overall attitude		Affective attitude		Cognitive attitude	
	Positive	Negative	Positive	Negative	Positive	Negative
Overall attitude						
Positive	–					
Negative	−0.88	–				
Affective attitude						
Positive	0.42	−0.30	–			
Negative	−0.39	0.47	−0.63	–		
Cognitive attitude						
Positive	0.78	−0.68	0.43	−0.38	–	
Negative	−0.79	0.92	−0.30	0.46	−0.82	–

All p's < 0.01 (two-sided).

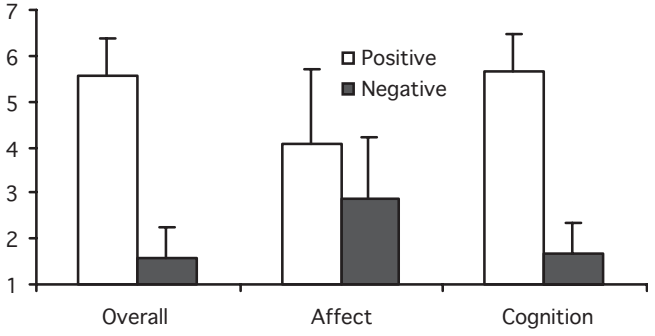

Figure 1. Positive and negative overall evaluations, cognitive evaluations, and affective evaluations of organ donation. Error bars represent SDs.

In a 2 (*valence*: positive, negative) × 3 (*component*: affective, cognitive, and overall) multivariate analysis of variance (MANOVA), with valence and component as repeated measures, we found a main effect of Valence, $F\ (1, 463) = 7108$, $p < 0.01$, reflecting the fact that positive evaluations were seen as more applicable to organ donation than were negative evaluations. Moreover, an interaction between valence and component, $F\ (2, 462) = 1303$, $p < 0.01$, showed that this valence main effect was moderated by type of component, revealing a difference in the effect of valence between the components.

In three separate 2 × 2 MANOVAs we investigated to what extent mean positive and negative evaluations varied as a function of attitude component. In the analysis in which valence (positive, negative) and component (affective, overall) were the factors, there was a significant interaction, $F\ (1, 463) = 2420$, $p < 0.01$. A similar interaction was obtained when the factors were valence (positive, negative) and component (affective, cognitive), $F\ (1, 463) = 2240$, $p < 0.01$. By contrast, there was no significant interaction when the factors were valence (positive, negative) and component (cognitive, overall), $F\ (1, 463) = 2.26$, $p =$ ns. Thus, the pattern of positive and negative affective evaluations differed both from the pattern of positive and negative overall evaluations and from the pattern of positive and negative cognitive evaluations. As expected, the mean cognitive evaluation and the mean overall evaluation were both very positive. The affective evaluation was more mixed, suggestive of a greater ambivalence.

Ambivalence. Mean scores on the 'Griffin' measure of ambivalence for the cognitive, affective, and overall evaluations are shown in Table IV. In a repeated measures MANOVA, with the three attitude components as repeated measures, we confirmed that the components differed in degree of ambivalence, $F\ (2, 462) = 784$, $p < 0.01$. Pairwise comparisons showed that the level of ambivalence on the cognitive measure was considerably lower than the level of ambivalence on the affective measure ($Diff = -2.13$, $SE = 0.06$, $p < 0.01$). Similarly, the level of ambivalence on the overall measure was considerably lower than the level of ambivalence on the affective measure ($Diff = -2.01$, $SE = 0.06$, $p < 0.01$). By contrast, there was no difference in ambivalence between the cognitive and overall measures ($Diff = -0.04$, $SE = 0.04$, $p =$ ns). Thus, the affective evaluation is not only more mixed but also shows the highest level of ambivalence.

Commitment to organ donation: Six month follow-up

We investigated the predictive value of evaluations of organ donation among potential donors. In response to the question about whether they would like to receive more information about registering as an organ donor, five potential donors indicated that they were uncertain. Because this number is too small to be regarded as a separate group, these participants were excluded from the ensuing analysis. Nineteen potential donors indicated that they did not require further information about organ donation, and 12 potential donors indicated that they would like to receive information about organ donation. Inspection of the means (see Table V) showed that potential donors who wanted more information had a more positive evaluation of organ donation six months earlier as compared to those

Table IV. Mean individual ambivalence levels for the overall, affective, and cognitive evaluations of organ donation ($N = 464$). SDs in parentheses.

	Ambivalence level
Overall evaluation	−1.11 (1.12)
Affective evaluation	1.00 (1.25)
Cognitive evaluation	−1.13 (1.12)

Table V. Positive and negative overall, affective, and cognitive evaluations of potential donors as a function of wanting information about organ donation or not. SDs in parentheses.

		More information ($n = 12$)	No information ($n = 19$)
Overall evaluation	Positive	6.50 (0.96)	6.01 (0.82)
	Negative	1.31 (0.70)	1.68 (0.77)
Affective evaluation	Positive	5.42 (1.29)	3.89 (1.42)
	Negative	2.14 (1.47)	3.08 (1.34)
Cognitive evaluation	Positive	5.79 (0.74)	5.30 (0.79)
	Negative	1.39 (0.58)	1.86 (0.85)

Table VI. Positive and negative overall, affective, and cognitive evaluations of potential donors as a function of submitting name and address or not. SDs in parentheses.

		Address ($n = 17$)	No Address ($n = 19$)
Overall evaluation	Positive	6.25	6.12
		(1.06)	(0.80)
	Negative	1.53	1.59
		(0.70)	(0.70)
Affective evaluation	Positive	4.93	4.08
		(1.41)	(1.81)
	Negative	2.45	2.84
		(1.53)	(1.28)
Cognitive evaluation	Positive	5.55	5.50
		(0.92)	(0.89)
	Negative	1.55	1.72
		(0.63)	(0.77)

who did not want more information. This difference was most clear-cut for the affective evaluations. In logistic regression analyses, the dependent variable measuring willingness to receive more information (yes/no) was regressed separately on each of the six attitude measures. Positive affective evaluation was the only significant predictor ($b = 0.97$, $SE = 0.42$, *Wald Statistic* $= 5.40$, $p = 0.02$). A marginally significant trend was also found for the negative affective evaluation ($b = -0.54$, $SE = 0.32$, *Wald Statistic* $= 2.88$, $p = 0.09$). Thus, potential donors who indicated that they wished to receive more information about organ donation possessed a more positive affective evaluation six months earlier than did potential donors who did not want to receive more information.

Potential donors could submit their name and address for entry on a mailing list. Seventeen of the 36 potential donors did so. This includes the five potential donors who indicated that they were uncertain about receiving more information (the first commitment measure). The mean evaluations of potential donors who gave their name and address and those who did not are shown in Table VI. Whether potential donors gave their name and address or not (yes/no) was regressed separately on each attitude measure. The only significant predictor was positive affective evaluation ($b = 0.77$, $SE = 0.35$, *Wald Statistic* $= 4.74$, $p = 0.015$). Thus, those potential donors who submitted their name and address for inclusion in a mailing list had a more positive affective evaluation half a year earlier than did those who did not.

General discussion

We have argued that affect is a conceptually and empirically distinguishable component of attitude toward organ donation, and that affective evaluations of organ donation might be an important determinant of reluctance to commit oneself to organ donation. Our data support the predictions concerning the special role of affect and show that affect differs from both the cognitive and the more general evaluation of organ donation. Next, we showed that the ambivalence toward organ donation observed in previous research (Parisi & Katz, 1986; see also Cacioppo & Gardner, 1993) appears to have its origins in affective evaluation. In our view, the inclusion of a separate affective evaluation provides important information about the source of the previously found ambivalence toward the issue of organ donation. Affective evaluations were also predictive of donor-relevant

decisions six months after the attitude assessment. Thus, affective evaluations seem especially important when trying to predict donor-relevant decisions on the basis of attitudes. It is noteworthy that affective evaluations (but not cognitive and overall evaluations) predicted future donor-relevant decisions. It seems possible that affective evaluations reflect a more personal evaluation of organ donation, whereas cognitive and overall evaluations might primarily reflect societal norms and values about organ donation.

The distinction between cognition and affect has been conceptualized in various ways. Affect can be seen as related to the approach/avoidance dimension, whereas cognition relates to a true/false dimension (Zajonc, 1998). Although we tried to minimize other aspects of the affect–cognition distinction (such as degree of extremity and specificity), we accept that cognitive and affective components are not symmetrical (Damasio, 1994; Loewenstein et al., 2001). Thus the present comparison does not capture all aspects of the difference between cognitive and affective components. For instance, Zajonc (1998) mentions 13 distinctions between affect and cognition, in addition to the one mentioned above. The main benefit of the present approach is that it allowed us to assess a specific aspect of the affect–cognition distinction that could explain the observed findings.

Although cognition and affect have been generally treated as separate components of attitudes, progress in the modeling and measurement of the overall attitude has been modest (Bagozzi, Lee, & Van Loo, 2001). Basically, the overall evaluation can be regarded as a valenced judgment, such as 'like–dislike' (Eagly & Chaiken, 1998). A measure of overall evaluation was included in the present research. We have shown that it can be distinguished from both cognitive and affective evaluations. An ensuing question concerns the structural relationship between these components. Generally, the cognitive and affective components are seen as building-blocks for the overall evaluation (Crites et al., 1994; Trafimow & Sheeran, 1998). However, an equally conceivable relationship is a non-hierarchical one, whereby overall evaluation exists alongside affective and cognitive evaluations. Future research is needed to investigate the conditions under which a hierarchical model is preferable to a non-hierarchical one. To investigate this, a data-set that systematically varies the order of the components is required. Until such evidence is forthcoming, it seems preferable to assume that affect, cognition, and overall attitude are simply different aspects of attitudes.

Ambivalence

We found that the attitude component that had the highest ambivalence was also the most predictive of future donor-relevant decisions. This might at first seem in contrast with previous research, in which it has been found that higher ambivalence relates to a weaker attitude–behavior consistency (Conner & Sparks, 2002; Sparks et al., 2001). In addition, other researchers have found enhanced attitude–behavior consistency among people high in ambivalence (Jonas, Diehl, & Brömer, 1997; Maio, Bell, & Esses, 1996). How can these findings be related to each other? In our view, these seemingly contradictory findings relate to different aspects of the ambivalence issue. On the one hand, there are correlational findings concerning ambivalence and attitude–behavior relationships that indicate reduced attitude–intention consistency for people high in ambivalence (Conner & Sparks, 2002; Sparks et al., 2001). Here, people high and low in ambivalence are compared. On the other hand, there are findings concerning ambivalence and the attitude–behavior relationship in the context of attitude formation or attitude change. These findings indicate increased attitude–intention consistency among people high

in ambivalence (Jonas et al., 1997; Maio et al., 1996). We believe the two processes are not mutually exclusive. People high in ambivalence who generally show reduced attitude–intention consistency might, nevertheless, engage in more systematic elaboration of attitude-relevant information (e.g., when confronted with a persuasive message), with the result that attitudes that are formed on the basis of this more thoughtful processing are more predictive of subsequent behavior.

The present findings with respect to the greater ambivalence found within the affective component should be treated as relating to yet another aspect of the ambivalence issue. We argue that the ambivalence that guides organ donation related decisions is reflected by the affective component. This ambivalence is not apparent from the cognitive attitudinal component, or from the overall component. In accordance with previous research on the level of ambivalence people experience with existing attitudes (Conner & Sparks, 2002; Sparks et al., 2001), we would predict that highly ambivalent (within the affective component) individuals would exhibit less attitude–intention consistency than their less ambivalent counterparts.[5] Thus, ambivalence can operate at different levels (e.g., intra-component ambivalence *versus* intra-individual ambivalence). Consequently, when comparing different effects associated with ambivalence, it is important to take into account the level at which the ambivalence is being assessed.

Finally, our findings give rise to some recommendations for future research. Disentangling cognitive, affective, and overall evaluations enhances the ability to predict donor-relevant decisions on the part of potential donors. This might be especially valuable in health-related domains, where there is often the potential for discrepancies between attitudes and decisions. Furthermore, a selection of adjectives specifically selected for the issue of organ donation could lead to a better fit of the proposed six-factor model. Additionally, using a behavioral index comprising a variety of ways in which attitude to organ donation could be expressed would be likely to result in stronger correlations with behavior (Ajzen & Fishbein, 1977). Next, future research could examine the effects of affective evaluations in the context of established attitude theories that focus on cognitive evaluations and behavioral intentions. Lastly, we would like to recommend separate measures of positive and negative evaluations. Positive and negative evaluations need not be perfectly inversely related. This issue has been raised before (e.g., Cacioppo & Berntson, 1994), and may be especially applicable to affective evaluations.

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[5] In fact, we explored this possibility for positive and negative affective evaluations. Based on a median split we divided people into lower and higher affective ambivalence. As anticipated, there was no significant correlation between attitude and donor-relevant decisions for people higher in affective ambivalence. On the other hand, for people with lower levels of affective ambivalence, the correlations between the two donor-relevant decision measures and the affective evaluations were significant (for wanting more information: positive affective evaluation, $r = 0.67$, $p < 0.01$, negative affective evaluation, $r = -0.65$, $p < 0.01$; for submitting name and address: positive affective evaluation $r = 0.52$, $p < 0.05$, negative affective evaluation, $r = -0.53$, $p < 0.05$).

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