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Development of a scale to measure the attitude toward posthumous organ donation for transplantation in Romania

Andrei Holman^{2,3}

Abstract: All over the world, there is still a great discrepancy between the number of people waiting for an organ transplant and the number of donated organs. In order to reduce this gap, people's attitudes towards posthumous organ donation for transplantation need to be properly assessed, in order to elaborate efficient interventions designed to increase the frequency of consent organ donation from deceased family members. This present article reports the multi-step development of such an attitude measure on Romanian samples. Across three successive studies, we generated a belief-type attitude instrument including statements relevant for the population under scrutiny and investigated and tested its factorial structure. The results of the third study, in which we performed a confirmatory factor analysis on the structure extracted in an exploratory manner in the second, confirm the factorial validity of the instrument. The newly developed scale assessing the attitude toward posthumous organ donation for transplantation in Romania includes four factors: altruism, lack of information, transgression of the sacrality of the donor's body and the relieving of the donor's family suffering.

Key words: organ donation, deceased donors, organ transplantation, attitude, attitudinal beliefs

Introduction

Organ and tissue transplantation has gradually become an effective lifesaving procedure in some organ-failure cases representing the only available medical option. Due to the technological advancements in the field, it has also become a cost-effective intervention, rendering it less restricted to the developed countries and more and more available for residents all over the world. Moreover, its consequences go beyond the medical side, as studies on organ recipients reveal significant enhancements of their quality of life (Griva et al., 2002). Nevertheless, the number of people waiting for an organ greatly surpasses the number of organs that are donated. As the major source of organs available for transplantation is posthumous donation, the increase in the number of organs recovered from deceased donors would reduce their shortage. However, organ procurement from the deceased potential donors is vastly dependent on the consent of their families, which, in many cases, refuse to grant consent for donation. For instance, studies conducted over the last decade in the USA (Sheery et al., 2003), Australia (Opdam & Silvester, 2006) and UK (Barber et al., 2006) reveal that under 50% of the potential donors actually become active donors. According to the 2009 Eurobarometer, Romania ranks close to the bottom of the consent hierarchy, as

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only 34% of the Romanians would agree to donate an organ from a deceased close family member, far below the European mean of 53%.

The attitude toward organ donation and transplantation

As the gap between the number of people on the transplant waiting lists and the number of available organs continues to broaden worldwide, social scientists have been called in for support in order to assist in the advancement of consent figures. Most of the studies on the factors of organ donation consent have focused on the characteristics of the people who could become the protagonists of this decisional situation, as family members ask for a donation decision or as potential donors. Both roles involve a personal positive or negative position on the topic of organ donation, considered either direct (the donation of one's own organs) or indirect (of his/her next of kin). One of the main factors that could affect people's donation decisions is the amount of information they have on the topic. As low donation rates could be due to insufficient public information, several large scale mass media campaigns have targeted this aspect, aiming to increase the level of public awareness and knowledge on the issue of organ donation and transplantation. Nevertheless, information appears to be a necessary but insufficient condition to generate positive donation intentions. For instance, there are high levels of awareness when it comes to the need for organs in Western countries (Horton & Horton, 1991), although the actual donation rates are significantly lower. Moreover, knowledge about the issues related to organ transplantation have proven to be a weak predictor of donation intentions (Morgan, Miller, & Arasaratnam, 2003).

Thus, simply informing people about these issues does not guarantee an increase of the organ donation consent figures. A deeper psychological concept appears to be necessary in order to account for the subjective positive or negative approaches on this issue. The concept employed by most researchers in this respect is that of attitude toward organ donation and transplantation. Across several studies, people's attitudes toward organ donation were found to be significant – albeit generally not very strong – predictors of donation-related behaviors, the most frequently investigated such behavior being signing a donor card (Skumanich & Kintsfather, 1996; Morgan et al., 2002). Yet, the magnitude of the influence that attitudes exert on the actual donation decisions and intentions was found to vary among studies, some results (e.g. Feeley & Servoss, 2005) even revealing null associations between the two. This diversity of findings makes the issue of attitude assessment salient, since at least part of these variations could stem from the differences in the research instruments employed in the evaluation of the participants' attitudes toward organ donation.

The measurement of attitudes toward organ donation and transplantation

While the concept of attitude has been treated as a fundamental psychological landmark in the theoretical modeling of organ donation decisions, its measurement in the various investigations conducted on this topic has been quite heterogeneous. Generally, attitudes towards organ donation have been assessed in three main manners. First, the instruments employed in some studies addressed these attitudes through items that, at least in the light of the complex models mentioned above, actually target people's intentions to donate organs (usually coined as "willingness to donate"), or to agree to organ donation for their next of kin (e.g. Gross et al., 2001; Volk et al., 2010). While the participants' answers to a question such as "how willing would you be to donate any of your organs?" informs us on their personal position toward the issue of donation; their psychological underpinnings are closer to intention than to attitude. The second type of attitudinal assessment is a global one, employing only one item, such as "Do you think organ donation after death can always be justified, never be justified or somewhere in-between?" (Padela et al., 2011, p. 802). This general attitude measure is consonant with the prevalent view on the attitude as involving a global personal evaluation of its object. On the other hand, as van der Berg (2005) and others have noted, it contributes very little to the understanding of the psychological foundation of this negative or positive evaluation. Given the importance of the topic, more complex and detailed instruments are necessary in order to assess people's attitudes toward organ donation (Wang, 2012).

Finally, the attitude toward organ donation has also been investigated through participants' endorsement of a specific set of statements, each of which put forth a particular characteristic of donation and transplantation. This manner of attitudinal assessment is inspired by the expectancy-value model (Fishbein & Ajzen, 1975), which states that the individual's beliefs about the object are at the core of his/her attitude. Consequently, one's attitude can be assessed through his/her overall degree of agreement with the relevant positive and negative statements about the respective issue. For instance, one of the oldest organ donation and transplantation attitude scales, developed by Goodmonson & Glaudin (1971) and used in other successive studies (e.g. Morgan & Miller, 2002), includes items such as "I believe that organ donation is an act of compassion". Other investigations employ study-specific scales, some mixing beliefs with other types of items. For instance, the 3-item instrument used by Morgan et al. (2008) includes both a general evaluative item – "I support the idea of organ donation for transplantation purposes" – and a belief-type item, requiring the participants to express their agreement with the association between organ donation and a positive characteristic – "I view organ donation as a benefit to humanity". Another example is one of the most widely used instruments on this topic, the Organ Donation Attitude Scale (Rumsey, Hurford, & Cole, 2003), which includes items of all three types. Some require the participants to express their agreement with statements

describing characteristics or potential consequences of organ donation (e.g. “I think doctors would try just as hard to save my life whether or not I plan to be an organ donor”), thus revealing the set of beliefs that they endorse on the matter. Others pertain to people’s organ donation intentions and even actual related behavior (for instance, “I have signed an organ donor card”), while some address their global evaluations (“In general, I think that organ donation is a good thing”).

The structure of attitudinal beliefs on organ donation

Some of the investigations conducted so far (e.g. Lopez et al., 2012) have not addressed the issue of the structure of the beliefs revealed as shared by their participants, merely listing them as important factors for the organ donation intentions. Nevertheless, we consider the structure of these beliefs as playing an essential part in the process of explaining people’s actual behavior through their attitudes. Van der Pligt & de Vries (1998) stated an important theoretical argument on this issue. They noticed that merely adopting the expectancy-value model in the development of attitude scales might not be enough, since this model does not take into account the psychological relevance of each statement. In other words, simply collecting the set of beliefs on the respective topic that occur in the population does not guarantee an effective assessment of attitudes, since there might be a large number of such beliefs that are, in fact, unimportant for most people. Consequently, such low-relevance beliefs contribute little to people’s overall attitude toward the object. One manner in which this relevance can be taken into account, besides assessing the importance of each belief for each individual, is to study the structure of the entire set of attitudinal beliefs. By revealing the underlying psychological dimensions that divide the collection of beliefs, the researcher can also differentiate them in terms of relevance. The principle that inspires this analysis is that the most relevant beliefs, those pertaining to important psychological factors, form coherent sets across the entire collection of statements. On the other hand, the isolated beliefs probably lack psychological relevance and play a minor role in the overall attitude.

This type of structural approach has been used in previous studies, employing various classification criteria of beliefs. For instance, Wang (2011) employed a three-factorial approach on attitudinal beliefs according to their motivational underpinnings (utilitarian, ego-defensive and value-expressive). Another criterion, imposed by Parisi & Katz (1986) on the attitudinal beliefs is their valence, asserting a bivariate structure of attitudes toward organ donation and splitting the attitudinal statements in their instrument into positive and negative beliefs. The most frequent manner of structuring beliefs has been that of judging their content domain. Each belief asserts a certain characteristic of organ donation and therefore relates this issue to a certain general topic. For instance, Newton (2011) revealed, across the studies he meta-analyzed, several themes to which the arguments for and against organ donation pertain: religion, death, altruism, the body, etc. Radecki & Jaccard (1997) identifies five categories of organ donation

beliefs: religious, cultural, knowledge, normative and altruistic, while Morgan et al. (2008) investigated the effects of organ donation – related beliefs on the decisions to donate by using an instrument addressing types of beliefs: perceived benefits, beliefs concerning body integrity, “jinx” (superstitions), “ick” (disgust) and medical mistrust.

The cultural relevance of attitudinal beliefs

A final remark in the theoretical argumentation of our study concerns our option to develop the instrument assessing organ donation attitudes by first exploring the beliefs shared by and most relevant to the population under scrutiny. The other, more convenient and, subsequently, more often employed option was to select and adapt a scale already available from the instruments mentioned above, such as the Organ Donation Attitude Scale, or to select sets of items from the previous studies on organ donation attitudes. Yet, the beliefs that underlie attitudes generally have strong cultural variations, and organ donation is no exception in this regard. Moreover, given the multifaceted nature of this attitudinal object, its complex nature in terms of factors and layers of determination, even larger variations between cultural spaces, are to be expected.

The majority of attitude scales addressing organ donation have been developed in the U.S. or Western European countries, especially from Caucasian populations. Studies focused on different cultures have revealed important specificities in the belief structuring people’s attitudes, stemming from various cultural and social factors. For instance, Cheng (1992) states that in many Asian countries, organ transplantation is refuted, being perceived as a Western concept with little personal relevance. Other important determinants of these negative attitudes are the eminence of superstition in the everyday Asian way of life (Woo, 1992) and the intense ancestor worship (Feldman, 1994). Similarly, the African American population in the U.S. has distinct approaches when it comes to organ donation, which are accompanied with lower organ donation consent rates (Jacob Arriola et al., 2008). Acknowledging these culturally - generated specificities, Resnicow et al. (2012) developed an instrument measuring the attitudes of African Americans toward organ donation comprising three factors: barriers, family and racial responsibilities and, respectively, altruism.

The present research

The various aspects stated above highlight the need for culture-specific measures of attitudes towards posthumous organ donation for transplantation and legitimize a belief-based approach in their development, which would allow for a deeper understanding of the psychological underpinnings of people’s positions on this topic. Our aim was to develop such an attitude measure on the Romanian population and to investigate and test its factorial structure. In this purpose, we carried out three successive studies: a pilot study in which the relevant beliefs were collected from the population and two others in which the factorial structure of the

new measure was investigated and, respectively, tested through confirmatory factor analysis.

Study 1: Elicitation of relevant attitudinal beliefs

The purpose of the first study was to develop a measure of posthumous organ donation for transplantation attitudes on the Romanian population, by gathering the evaluative beliefs towards this topic that are most important for the members of this population.

Method

Participants

A total of 112 participants (44 males and 68 females), ranging from 20 to 57 years of age ($M = 35.2$ years, $SD = 8.9$), were recruited from the general population from different regions of the city of Iasi, Romania. 6 (5.4%) had completed only low secondary school, 48 (42.9%) – high school, 45 (40.2%) – higher education, and 13 (11.5%) – postgraduate studies. The instrument was distributed by the author, completed at home by participants and then returned to him in a few days. The participants were ensured that their participation in the study was anonymous and confidential.

Instrument

The participants were required to answer a belief elicitation survey, containing two separate tasks: the first one was to write down at least two arguments in favor of posthumous organ donation for transplantation, and the second required at least two arguments opposing it. For half of the participants, these two tasks were counterbalanced, their order being inverted.

Analysis

We employed content analysis on the corpus of positive and negative arguments collected, by judging their semantic content, grouping those synonymic into common arguments and computing their frequency of occurrence.

Results

Through content analysis, we obtained a set of 49 arguments favoring posthumous organ donation for transplantation and 55 opposing it. In order to ensure the maximum degree of relevance for the population under scrutiny of the statements included in the attitude instrument and following the analysis of the two frequency distributions, a cutoff point of 6 occurrences was imposed on both corpuses. Consequently, the set of 30 arguments (13 favoring posthumous organ donation for transplantation and 17 opposing it) with a frequency of occurrence of at least 6 was selected.

The first version of the attitude scale developed includes these 30 statements, each putting forth a positive and negative presumed characteristic or consequence of posthumous organ donation for transplantation (for instance “Organ transplantation from deceased donors prolongs the life of other persons”, or “Organ transplantation from deceased donors mutilates the body of the latter”).

Study 2: Refinement of the Attitude towards posthumous organ donation for transplantation scale

The purpose of the second study was to refine the scale developed in the pilot study by investigating its latent psychological dimensions through exploratory factor analysis.

Method

Participants

A total of 350 participants (169 males and 181 females), ranging from 18 to 71 years of age ($M = 40.6$ years, $SD = 16.7$), were recruited from the general population from different regions of the city of Iasi, Romania. 24 (6.9%) had completed only low secondary school, 143 (40.9%) – high school, 126 (36%) – higher education, and 57 (16.2%) – postgraduate studies. The participants were ensured that their participation in the study was anonymous and confidential.

Instrument

We used the item pool developed in the pilot study, addressing the attitude towards posthumous organ donation and transplantation. The 30-item measure consists of statements describing positive or negative characteristics or consequences of the issues under scrutiny. The participants were required to indicate the measure they agreed with in each item on a 6-point scale, ranging from *complete disagreement* to *complete agreement*.

Analyses

After exploring the psychometric properties of each item, we examined the factorial structure of the scale by means of principal component analyses. All the analyses were performed after reversing the scores of the items, asserting negative characteristics or consequences of posthumous organ donation and transplantation.

Results

In the first step of the exploratory factor analysis, one item (item 21) was removed from the item pool due to its negative item-total correlation and the fact that its elimination would have increased the internal consistence of the scale.

We submitted the remaining 29 items to an exploratory factor analysis, using the Principal Components extraction method and the Direct Oblimin rotation. This

rotation method was employed because the articulated and interdependent nature of the determinants of organ donation attitudes (e.g. Radecki & Jaccard, 1997) suggests a certain degree of correlation between its factors.

The appropriateness of factor analysis was verified by the Keiser–Meyer–Olkin (KMO) measure of sampling adequacy (.931) and the Bartlett’s test ($p < .001$), both in favor of using this analysis. Also, each item’s measure of sampling adequacy (MSA) was examined. Item 6 had the lowest individual MSA, of 0.86; the overall distribution of MSA values also indicate a good degree of factorability. The item selection for the final version of the scale involved several successive steps. First, we examined the communalities of each item, identifying those with lower communalities than the recommended threshold of .3. One item was removed in this stage of analysis. Second, we examined the eigenvalues of the factors that were extracted. As the fifth factor had an eigenvalue below 1, we found the most appropriate structure for our data to be comprised of four factors. Then, we examined the structure matrix (showing the correlations between each item and each factor) and the pattern matrix (showing the regression coefficients of the items on each of the factors) for the four-factor solution. The items with the highest loadings on each subscale were retained, unless they had high loadings on multiple factors. In these cases, if such loadings (extracted from the pattern matrix) were less than .10 apart, the items were discarded. 19 items were selected for the final scale, all their factor loadings exceeding .50. For each item, the two matrixes yielded the same results in terms of the higher factor coefficient.

The exploratory factor analysis of this 19-item set revealed that the factor eigenvalues prior to rotation of the three dimensions extracted were 6.42, 2.25, 1.08 and 1.03, respectively (5.97, 2.57, 2.28 and 2.67, after rotation). The cumulative common variance accounted for by the three factors was 56.68%, and communalities ranged from 0.42 to 0.77.

The 19-item measure of attitudes towards posthumous organ donation for transplantation, refined across this second study, and the specific factor loadings of each item are presented in Table 1. Factor 1 includes 10 items, factor 2 – 4 items, factor 3 – 3 items and factor 4 is comprised of 2 items. The numeric label of each item corresponds to their order in the initial 30-item set, as emerged from the pilot study. The factor interpretation and labeling will be carried out at the end of the third study, on the final version of the instrument.

Attitude toward posthumous organ donation for transplantation

Table 1. *Items in the refined scale, subscale grouping and loadings on the specific factors*

	Item	Rotated factor loading	
Factor 1	1. Posthumous organ donation offers organ recipients a chance for happiness.	.80	
	13. Organ transplantation from deceased donors saves other lives.	.80	
	7. Organ transplantation from deceased donors offers those in need of an organ a chance for life.	.77	
	20. Organ transplantation from deceased donors prolongs the life of other persons.	.71	
	9. Organ transplantation from deceased donors offers help to the organ recipients' families.	.70	
	4. Organ transplantation from deceased donors is an act of altruism and reciprocal help between people.	.70	
	28. Organ transplantation from deceased donors improves other people's lives.	.61	
	18. Organ transplantation from deceased donors offers organ recipients a chance for a normal life.	.59	
	10. The fact that those in need of organs have the right to live makes organ transplantation from deceased donors necessary.	.57	
	14. Organ transplantation from deceased donors is acceptable, since the deceased no longer need their organs.	.53	
	Factor 2	2. Organ transplantation from deceased donors is useless in many cases, since the retrieved organs are no longer functional.*	.80
		3. Organ transplantation from deceased donors should be refused, because there is a chance that the patient will recover from brain death.*	.72
16. Organ transplantation from deceased donors is useless in many cases, due to the risks of incompatibility between the organs and the recipient's body.*		.59	
6. Organ transplantation from deceased donors has a high risk of transmitting disease from the donor to the recipient.*		.59	
Factor 3		19. Organ transplantation from deceased donors can change the recipient's personality, by transmitting certain traits and behaviors from the deceased.*	.77
	23. Organ transplantation from deceased donors is against God's will.*	.60	
	30. Organ transplantation from deceased donors mutilates the latter's body.*	.60	
Factor 4	29. By consenting to organ transplantation from a deceased relative, his/her family gains a certain relief because a part of the deceased continues to live through the organ recipients.	.86	
	22. Consenting to organ donation from a deceased relative is a good deed through which his/her family can ease their suffering.	.70	

*Note: * indicates reverse scored items*

Study 3. Testing the factorial structure of the Attitude towards posthumous organ donation for transplantation scale

The purpose of the third study was to test the factorial structure of the instrument that emerged from the previous study through confirmatory factor analysis, as well as to document its reliability and homogeneity.

Method

Participants

A total of 315 participants (152 males and 163 females), ranging from 18 to 67 years of age ($M = 37.7$ years, $SD = 15.2$), were recruited from the general population from different regions of the city of Iasi, Romania. 20 (6.3%) had completed only low secondary school, 152 (38.7%) – high school, 109 (34.6%) – higher education, and 34 (10.8%) – postgraduate studies. The participants were ensured that their participation in the study was anonymous and confidential.

Instrument

We used the 19-item version of the newly developed Attitude towards posthumous organ donation for transplantation scale, emerged from the results of the previous study.

Analysis

In order to test the factorial structure of the Attitude towards posthumous organ donation for transplantation scale we first employed– an order confirmatory factor analysis using maximum likelihood estimation via AMOS 18.0. In each factor, one of the target loadings was fixed to 1, while the others were freely estimated, as were factor variances and covariances, as well as measurement error terms. All other parameters were fixed to 0. The model fit was evaluated through the following indexes: chi-square statistic, the Goodness of Fit Index (GFI), the Comparative Fit Index (CFI), adjusted goodness-of-fit statistic (AGFI) and the Root Mean Square Error of Approximation (RMSEA). We also analyzed the squared multiple correlations of each item and the model misspecification indexes – specifically the standardized residuals and the modification indexes. The reliability and homogeneity of the instrument and its subscales were also assessed.

Results

Confirmatory factor analysis

The testing of the four-factor structure yielded results indicating a relatively poor fit of the hypothesized model to the data: $\chi^2_{146} = 313$, $p < .01$; CFI = .89, AGFI = .88. Others, on the other hand, were indicative of a reasonable fit: GFI = .905; RMSEA = .06. In order to account for this relative poor fit, we scrutinized the

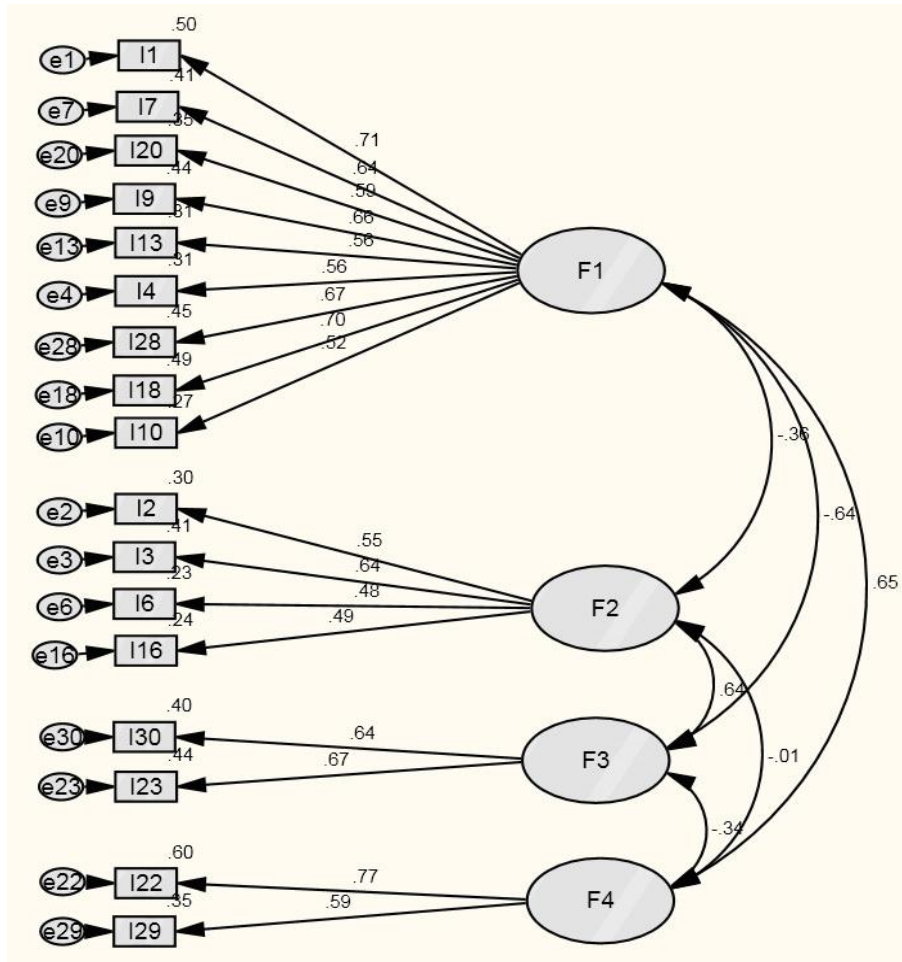
squared multiple correlations of each item, noticing that one of the items (item 19) had a squared multiple correlation of only .07, lower than the recommended threshold of .20. Moreover, its standardized regression weight of .31 is very close to the acceptable limit of .30. In order to increase the adequacy of the model, we decided to exclude these two items, proceeding with a post-hoc approach by re-specifying the model with item 19 excluded.

The model fit results of the second stage of data analysis were: $\chi^2_{129} = 279.25$, $p < .01$; CFI = .90, AGFI = .88, GFI = .909; RMSEA = .061. They indicate an increase in overall model fit, yet the adequacy of the factorial structure remains disputable, especially when focusing on the value of the AGFI parameter. Analyzing the other statistical information available, we noticed that item 14 has a high number of large standardized residual covariances; 6 out of its 17 such covariances were above 2.0. We concluded that the source of this large overlap not accounted for by the factorial model was its wording, specifically the first half of the statement: “Organ transplantation from deceased donors is acceptable”. It probably generates a positive or negative evaluative reaction, followed by a decision concerning the individual’s agreement with it. Consequently, his/her response to this item is decided upon before and instead of taking into consideration the actual argument included in the item and stated in its second half (“...since the deceased no longer need their organs”). Thus, item 14 is more of a general evaluative item, hence its tendency towards statistical contamination with other items in the instrument. Due to its lack of specificity, we decided to exclude it and re-specify the model.

The model fit results of the third stage of the data analysis were: $\chi^2_{113} = 213.93$, $p < .01$; CFI = .927, AGFI = .905, GFI = .928; RMSEA = .053 (with a 90% confidence interval .042 - .064). Taking into account the recommended thresholds of these values (Byrne, 2001), the fact that all estimated parameters were of acceptable magnitude and significant of the .05 level, as well as the absence of any significant modification indexes or standardized residuals, we consider this model to fit in a satisfactory degree to the data. Moreover, estimated factor loadings and factor correlations were similar to the results of the principal component analysis performed in the first study.

The SEM diagram of the standardized estimates of this final model is shown in Figure 1. It displays the squared multiple correlations of each item, the standardized regression weights from each factor to each of the items it underpins, as well as the correlations between the four factors. The numeric label of each item corresponds to their order in the initial 30-item set.

Figure 1. SEM diagram of the standardized estimates of the final model



Reliability and homogeneity

The indexes of reliability and homogeneity (Cronbach’s α and average inter-item correlations) for the Attitude towards posthumous organ donation for transplantation scale and its four factors are presented in Table 2.

Table 2. *Reliability and homogeneity*

	Attitude scale	Factor 1	Factor2	Factor 3	Factor 4
Cronbach's α	.84	.85	.73	.60	.63
Average inter-item correlation	.24	.39	.30	.42	.46
Minimum inter-item correlation	.15	.22	.24	.42	.46
Maximum inter-item correlation	.51	.51	.37	.42	.46

Table 2 reveals acceptable indexes of reliability and homogeneity for the Attitude towards posthumous organ donation for transplantation scale as a whole, as well as for its factors. Since the last two factors only include two items each, the average inter-item correlation is more informative about the internal consistency of these factors than the Cronbach's α statistic. Examining the inter-item correlation matrixes, we found all the correlations to be in the .15 - .50 interval, for each of the four sets of items, thus indicating proper pair-wise associations between them, while the corrected item – total correlations range from .25 to .52.

Discussion

The results of our three successive studies led to the development and factorial validation of a new measure of the Romanian's attitudes towards posthumous organ donation for transplantation. The factorial structure that emerged in the second study was cross-validated by the results of the confirmatory approach performed in the third research stage, which also indicated reasonable psychometric qualities of the scale and its factors.

The final step in the development of our attitude measure is the psychological exploration and subsequent labeling of its factors. The final version of the instrument is displayed in the Appendix. Scrutinizing the contents of the items comprising its first factor, we notice that they refer to the various positive consequences of organ transplantation from deceased donors for the organ recipient: a longer, normal, happier, better life, or life in itself, stated as acts of selfishness help. Thus, this factor can be labeled as "altruism towards those in need of organ transplantation". The high number of items it comprises, at least compared to the other three factors, reflects the multifaceted nature of altruism in the area of organ donation, also remarked by other scholars (e.g. Newton, 2011) in their analysis of the altruistic beliefs revealed across the various studies on this topic. The second factor includes statements that put forth risks of organ transplantation from deceased donors – their potential recovery from the state of brain death and the risk of transmitting diseases –, as well as suspicions of its uselessness (the lack of functionality of the retrieved organs and their incompatibility with the recipient's body). Since modern medical science has eliminated these dangers of

organ donation and transplantation, the beliefs in these risks can be considered as false, generally reflecting one's "lack of information" on these topics.

The next two-item factor concerns two apparently distant aspects: mutilation of the body and defying God's will. Their common underlying psychological ground is the definition of organ transplantation as "transgressing the sacrality of the donor's body". The two items in the final factor describe positive consequences of posthumous organ donation for the donors' families. Specifically, they frame the family members' consent to organ donation as relieving their suffering, as their gesture is a good deed that makes the survival of their next of kin possible through the organ recipient. Thus, this factor can be labeled as "the donor's family suffering relief".

The comparison of the factorial structure extracted in our analysis of the Romanians' attitudes toward posthumous organ donation with the results of the investigations of the relevant types of beliefs in other countries reveals both communalities and specificities. First, the importance of altruism – related beliefs for the people's attitudes towards this issue has been documented across various studies (e.g. Morgan et al., 2003). Altruism has proven to be a significant factor of the Romanians' attitudes as well, manifested through a set of beliefs stating various benefits of organ donation for the organ recipient. Second, several studies have highlighted the influence of the amount of correct knowledge the individual possesses on the topic of organ transplantation on his/her attitudes and intentions related to organ donation. False information, stemming from the individual's personal misconceptions or from the "myths" on organ transplantation transmitted by the mass media (Morgan, 2008), negatively affects these intentions (Conesa et al., 2003). Our results indicate that the beliefs in such erroneous information form a distinctive attitudinal factor in the Romanians' psychological approach on posthumous organ donation for transplantation. Similarly, concerns about body mutilation, in themselves or related to the presumed transgression of divine laws on bodily integrity, have been found to be important predictors of organ donation intentions. The distinctive note of our set of results is the occurrence of a distinct factor referring to the presumed suffering relief in a deceased donor's family members. It may suggest a specific perspective on the organ donation consent as bringing further psychological benefits, beyond those stemming from the display of altruistic behavior, in terms of counterbalancing the emotional distress brought about by the death of a close one. In other words, people's positive attitudes towards donating the organs of the latter could entail the framing of this consent as initiating the process of psychological recovery after their loss.

Further explorations of the psychological underpinnings of the Romanians' attitudes towards posthumous organ donation are possible by focusing on the correlations between factors revealed by the third study. First, they indicate a clear grouping of the four factors on the criterion of their valence, as there are large positive correlations between the positive factors (.65 between factor 1 and 4), as well as between the negative ones (.64 between factor 1 and 3). The latter

association may also pinpoint a causal relationship between factors, as previous studies suggest that the cognitive elements of one's attitudes – one's belief in negative false information on the topic – could mask non-cognitive, more profound motivationally related reactions (Parisi & Katz, 1986). Relevant to the content of our third factor, such deep-layered reactions mentioned and investigated by Morgan et al. (2008) as rationalizations of people's false beliefs about organ transplantation include one's disgust of the idea of body mutilation through organ retrieval (the "ick" factor), as well as one's superstitions related to his/her potential consent to donate their organs (the "jinx" factor). The latter concerns the misfortunes one would bring upon him/herself if consenting to organ donation, which may be seen as related to the second item of our factor, namely the transgression of the divine law. The two dimensions, approached as separate in the study carried out by Morgan et al. (2008), have proven to be strongly associated in the structure of the Romanians' attitude, composing a distinct factor. In turn, such beliefs may make the individual more cognitively permeable to the false negative information about organ transplantation from deceased donors.

The set of correlations between factors also indicate predictable negative relationships between the dimensions belonging to opposing valence sets, with one exception: the practically null relationship (-.01) between the second and the fourth factor. Thus, the endorsement of positive beliefs about posthumous organ donation for transplantation generally entails the rebuttal of the negative arguments. Yet, there are two sets of statements, and the individual can endorse both, although they are opposed in valence. Specifically, people who believe false negative information on this topic can simultaneously recognize the psychological benefits of organ donation consent for the deceased donor's family, although they tend to deny its altruistic connotations.

Limitations and future studies

An important limitation of our investigation relates to the fact that the samples included in the three studies are comprised of residents of only one Romanian city, thus questioning the national representativity of the content of our instrument. Future studies could assess the potential adequacy of our measure to samples extracted from other regions of the country.

Also, the considerations regarding the psychological underpinnings of the four factors remain to be tested in future research, which contribute to the evaluation of the construct validity of our instrument. Similarly, although usually the newly developed instruments assessing organ donation attitudes simultaneously relate them to people's intentions and even behaviors relevant for this issue, our study lacks such analysis, as it is only focused on the development of the attitude scale. Future investigations could also assess the utility of this instrument when it comes to predicting people's intentions to donate their organs, as well as its predictive validity.

Conclusions

A new measure of attitudes towards posthumous organ donation for transplantation was developed across three successive studies on Romanian samples. The factorial analysis performed revealed that its structure is composed of four factors, some similar to the results of other studies on the topic of organ donation beliefs (altruism, lack of information, transgressing the sacrality of the donor's body, the donor's family suffering relief). The last distinct dimension - the donor's family suffering relief by the donation consent – appears to be somewhat specific. The psychological underpinnings of people's answers to this instrument remain to be further investigated. Nevertheless, the fact that its belief-type items only include statements that are relevant to the population investigated recommends it as more appropriate than similar measures developed in other cultural spaces. Moreover, our instrument highlights the key issues that contribute to the Romanians' acceptance or refusal of posthumous organ donation for transplantation and their clustering. Future research is needed in order to evaluate the relationship of this measure to actual intentions and behaviors in the area of organ donation.

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Appendix – The attitude toward posthumous organ donation for transplantation scale

1. Posthumous organ donation offers organ recipients a chance for happiness.
2. Organ transplantation from deceased donors saves other lives.
3. Organ transplantation from deceased donors offers those in need of an organ a chance for life.
4. Organ transplantation from deceased donors prolongs the life of other persons.
5. Organ transplantation from deceased donors offers help to the organ recipients' families.
6. Organ transplantation from deceased donors is an act of altruism and reciprocal help between people.
7. Organ transplantation from deceased donors improves other people's lives.
8. Organ transplantation from deceased donors offers organ recipients a chance for a normal life.
9. The fact that those in need of organs have the right to live makes organ transplantation from deceased donors necessary.
10. Organ transplantation from deceased donors is useless in many cases, since the retrieved organs are no longer functional.*
11. Organ transplantation from deceased donors should be refused, because there is a chance that the patient will recover from brain death.*
12. Organ transplantation from deceased donors is useless in many cases, due to the risks of incompatibility between the organs and the recipient's body.*
13. Organ transplantation from deceased donors has a high risk of transmitting disease from the donor to the recipient.*
14. Organ transplantation from deceased donors is against God's will.*
15. Organ transplantation from deceased donors mutilates the latter's body.*
16. By consenting to organ transplantation from a deceased relative, his/her family gains a certain relief because a part of the deceased continues to live through the organ recipients.
17. Consenting to organ donation from a deceased relative is a good deed through which his/her family can ease their suffering.

*Note: * indicates reverse scored items; factor 1 includes the first 9 items, factor 2 – item 10 to 13, factor 3 – item 14 and item 15, factor 4 – item 16 and item 17.*