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The Psychometric Properties of Death Obsession Scale in Freshman Undergraduate Students

Gholamreza Rajabi

Department of Counseling, Shahid Chamran University of Ahwaz, Iran

Abstract: The validation, reliability and factor structure of the Death Obsession Scale (DOS) among freshman undergraduate students in Shahid Chamran University of Ahwaz investigated in present study s included 200 freshman undergraduate students (140 males and 60 females) which were selected randomly. The DOS reliability by Cronbach's alpha statistics was 0.91 that indicate its high internal consistency. All items correlations with total score were significant, which supported its item and content validity. The DOS concurrent validity coefficient measured with Padua obsessive-compulsion inventory and was been significant (r = 0.43) also, DOS construct validity was determined via principal component analysis (Promax Rotation) that resulted in two-factors solutions (death rumination and dominance and death idea worry), that account for 53% of the variance and confirmatory factor analysis confirmed two-factor model. There is a significant gender difference in student sample too. Finally, the results confirmed DOS reliability and validity as a useful tool for both of research and clinical goals among normal and abnormal population.

INTRODUCTION

Death is the end of the life for any biological organism. Death may refer to the end of life as either an event or condition. Many factors can cause or contribute to an organism's death, including predation, disease, habitat destruction, senescence, malnutrition and accidents or physical injury. However, the principal causes of human death in developed countries are diseases related to aging (Kastenbaum, 2006). Hence, death related traditions and beliefs are an important part of human culture and central to many religions worldwide.

Death is nodal part of the process of natural selection and it is ubiquitous. Every human being will die and death is an inevitable part of human life. The fear of death is a universal phenomenon. No matter were you go in the world, you will always find large numbers of people who are afraid of dying. The reason for fearing death is obvious: Death is the greatest mystery of all.

There is good reason to hypothesize that almost all human beings hate death and fear it. This hate and fear, or any other negative emotion, can be traced back to the oldest known recorded history, that of Egypt. According to Zandee (1960, cited in Abdel-Khalek and Lester, 2003), ancient Egyptians considered death as an enemy. Although they appreciated their mortal lives with all its delights, they spent a good portion of their lives preparing themselves for an assured future in the next world (Strouhal, 1992, cited in Abdel-Khalek and Lester,

2003). Life prolongation and renewal were salient themes not only in The Book of the Dead, but throughout the ancient Egyptian culture (Kastenbaum and Casta, 1977). Also, a preoccupation with death features in all religious and religious individuals are thought to use interpretations of death to provide meaning to their live. Another reason many people find death so terrifying is the fact we have to face it alone. Even if are surrounded by hundreds of people when you die, you must still pass through death by yourself.

However, following the aftermath of World War II, thanatology emerged as a specialty for scientific inquiry and as a respectable interdisciplinary field of study. Here indicated that death distress or a negative attitude toward death is associated with different emotional states, mainly anxiety and fear. The academic research literature on death-related topics is dominated by studies purporting to investigate death anxiety (Kastenbaum, 1987). In the last half century, an extensive body of empirical work has emerged about the nature, structure, correlates and assessment of death anxiety (Kastenbaum and Costa, 1977; Neimeyer et al., 2004; Rajabi and Bahrani, 2001).

Depression is another important feature in death distress. Death depression is a sort of sadness that reflecting associated with one's own death, the death of others and the concept of death more generally (Templer et al., 2001-2002). Depression in connection with death is the forth stage of Kubler-Ross s stages of dying and clinicians have reported their clinical impression that there is a stage or a strong element of

depression in the dying process (Templer *et al.*, 1990, cited in Abdel-Khalek *et al.*, 2006).

Another component of death distress is death obsession which is repetitive thoughts or rumination, persistent ideas, or intrusive images that are centered around the death of self or significant others. At the extreme pole of the death obsession continuum, the individuals become obsessed with the notion of death (Abdel-Khalek, 1998). Abdel Khalek (1998, cited in Maltby and Day, 2000a) introduced the death obsession scale developed among Egyptian undergraduate students, which is designed to measure a preoccupation, impulses and persistent ideas regarding death. This scale was developed to complement research areas which have investigated death anxiety and death depression and is thought to provide a third component to a general concept of death distress.

Maltby and Day (2000a) used the DOS among English-speaking samples. They identified three factors: (1) death rumination (items 3, 4, 5, 7, 8, 9, 10 and 12), (2) death dominance (items 1, 2, 6 and 15) and (3) idea repetition (items 11, 13 and 14). Cronbach's alpha reliabilities statistics obtained 0.90 or above for each of the subscales for both samples: death rumination (0.92 student and 0.90 older adults), death dominance (0.90 students and 0.91 older adults) and death idea repetition (0.92 students and 0.91 older adults). Maltby and Day (2000a) showed that the DOS is significantly positively correlated with death anxiety, death depression, obsession, anxiety, depression and neuroticism as concurrent validity.

Maltby and Day (2000b) showed significant correlations between the DOS and intrinsic orientation toward religion (negative) and extrinsic-social orientation toward religion (positive). Three factors were extracted in a Spanish sample: Death rumination, Death brooding and sudden death dominance (Tomas-Sabado and Gomez-Benito, 2002-2003). Furthermore, (Abdel-Khalek *et al.*, 2006) the factor analysis of the Death Obsession Scale (DOS) 15 items among the Palestinian sample yielded one salient factor for women (General death obsession, 52.48% of the total variance) and three salient factors for men (Death rumination, Death dominance and Death idea repetition, 64.48% of the total variance).

The Cronbach's s alpha reliabilities of the DOS 15-item were 0.96 and 0.91 for the Kuwaiti and American participants, respectively (Abdel-Khalek and Lester, 2003). A general factor of death obsession disclosed in the Kuwaiti sample (62.8% of variance) and two salient factors (death rumination and death dominance and repetition) in the American sample (59.2% of the total variance).

Cronbach's alpha reliabilities of the DOS among Egyptian undergraduates were 0.90 to 0.91 and 1-week test-retest reliabilities were 0.91, 0.92 and 0.92 for males, females and combined group of males and females, respectively, denoting both high internal consistency and stability (Abdel-Khalek, 1998).

Among American and Arabic undergraduates, the DOS correlated significantly with anxiety, obsession-compulsion and pessimism positively and with optimism negatively (Abdel-Khalek and Lester, 2002). In another study, Abdel-Khalek (2002) found that Cronbach's alpha reliabilities statistics ranged from 0.83 to 0.94 among seven groups of Egyptian normal (non-clinical), anxiety disordered, schizophrenics (males and females) and substance abused (males only). Also, he found that both genders with anxiety disorder had higher and significant means than five others groups. Therefore, the aim of the present investigation was two fold: (1) to study the psychometric properties (Cronbach's s alpha reliability and concurrent validity) of the DOS among Iranian undergraduate students and (2) to explore the factorial structure of its version in Persian language.

MATERIALS AND METHODS

Participants: Participants of the present study were all freshman undergraduate students in Shahid Chamran university of Ahwaz. The sample consisted of 200 undergraduate in academic different courses (140 males (70%) and 60 (30%) females) that were randomly selected from university dormitories. Their ages ranged from 18 to 23 years (Mean = 19.52, SD = 1.29).

Instrument: The DOS is a 15-item self-report measure devised by Abdel-Khalek (1998), which was translated into Persian. The new Persian text was sent to one translator, who was requested to back translate it into English. Each item evaluated to determine whether the precise meaning of the items in the original version had been successfully conveyed. All the back translations conveyed by English version of the scale. Participants had to be responded in one each item is rated on of the five-point Likert scale ranging from no (1) to very much (5). The scoring range for DOS was 15 to 75, with higher scores denoting higher death obsession. The Death Obsession Scale (DOS) along with the Padua obsessive-compulsion questionnaire were administered anonymously to students in their dormitory rooms by the educated the testers. All participants responded voluntarily and without worry. Also, the DOS and the Padua were administered in Farsi language.

Abdel-Khalek *et al.* (2006) ranged alpha reliabilities of the total scale of the 15 DOS items from 0.92, 0.91 to 0.93 for men and women, respectively, which shows its high internal consistency. Alpha reliability of the total scale of the 15 items for DOS was 0.90, 0.89 and 0.93 for women and men; 0.87 and 0.81 for the first and the second extracted factors, respectively, that indicate its high internal consistency too (Table 4). Also, concurrent validity coefficient between DOS and Padua obsession-compulsion questionnaire was statistically significant ($r = 0.56$, n = 68, $p \leq 0.0001$)

RESULTS

Present study describes the findings of statistical analysis's carried out to finalist DOS and to checking its reliability and validity via SPSS.13 software.

Item analysis: Item analysis for the DOS was performed by item-total correlation technique application. The correlations of 15 items for DOS with total score were found highly significant as indicated in Table 1. The results showed that all items correlated with total DOS score and were significant at $p \leq 0.0001$. Table 1 shows that mean and standard deviation scores on the DOS are 32 and 11.65, respectively. Also, Mean scores on each item was used that means for the highest and lowest is 3 (I fail to dismiss the notion of death from my mind) and 8 (The idea of death overcomes me), respectively.

Construct validity: Table 2 presents the DOS factor structure (Principal Component Analysis with Promax Rotation) among Iranian freshman undergraduate students. Items with factor loading of at least 40 were used to determine each factor and were included in the scale. The results showed that factor 1 had an Eigen value of 6.59 and this explained 43.96 of the total variance. The loading range from 0.40 to 0.86. It could be labeled Death Rumination and Dominance. The highest two loadings in this factor were 3 (I fail to dismiss the notion of death from my mind) and 4 (Thinking about death preoccupies me) items, respectively. Factor 2 had an Eigen value of 1.35 and this explained 9.03 of the total variance, respectively. It was labeled Death Idea Worry and has the highest loadings, respectively, with items 11 (I fear to be dominated by the idea of death) and 9 (I have exaggerated concern with the idea of death). The loading range from 0.46 to 0.85. Total variance explained by the two factors was 53%.

Confirmatory factor analysis: Floyed and Widaman (1995) suggested that exploratory factor analysis is most

Table 1: Item analysis of the Death Obsession Scale (DBS) (n = 200, Items = 15)

Factor	Item content	Mean±SD	r_{tt}
1	Same questions about death come to my mind which I am unable to answer	2.57±1.27	0.44*
2	The idea that I will die dominates me	1.98±1.18	0.65*
3	I fail to dismiss the notion of death from my mind	3.06±1.34	0.65*
4	Thinking about death preoccupies me	2.22±1.17	0.76*
5	I find it greatly difficult to get rid of thoughts about death	1.95±1.10	0.71*
6	I recall alarming and painful aspects of death	2.46±1.23	0.68*
7	I feel I am compelled to think about death	2.32±1.32	0.65*
8	The idea of death overcomes me	1.56±0.97	0.65*
9	I have exaggerated concern with the idea of death	1.72±0.99	0.67*
10	I find myself rushing to think about death	1.90±1.15	0.68*
11	I fear to be dominated by the idea of death	1.97±1.20	0.53*
12	I think about death continuously	1.97±1.16	0.67*
13	Thinking about death causes me much tension	2.03±1.15	0.69*
14	The recurrence of the idea of the death annoys me	1.76±1.05	0.73*
15	A feeling that I will die suddenly overtakes me	2.57±1.45	0.64*
Total		32.00±11.65	-

*$p \leq 0.0001$

appropriate in the initial stages of model development whereas confirmatory factor analysis provides a more powerful tool in the second stage of research when a model has already been established. A confirmatory factor analysis using maximum likelihood estimation was conducted on the data from all participants in the scale. Two models of death obsession were tested. As no single universally accepted criterion exists to judge model fit several widely accepted goodness-of-fit indices were computed (Table 3). While frequently reported, the χ^2 statistic was not used in evaluation of model fit as it is known to be strongly dependent on sample size (Marsh *et al.*, 1988). The main criteria used to judge model fit included Bentlers (1990) Comparative Fit Index (CFI), (GFI), Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), (PMR).

The one-factor model showed a poor fit overall ($\chi^2 = 247.08$, df = 90, $p \leq .0001$, RMSEA = 0.09, CFI = 0.87, NFI = 0.81, GFI = 0.83 and PMR = 0.03). The two-factor model exhibited a good fit specified a death rumination and dominance and death idea worry factor ($\chi^2 = 108.19$, df = 86, p = 0.05, RMSEA = 0.03, CFI = 0.98, NFI = 0.91, GFI = 0.93 and PMR = 0.09). Regression weights for the 9 items on their death rumination and dominance

Table 2: Promax rotated principal components of the Death Obsession Scale (DBS)

Factor	The death obsession scale items	Factors 1	Factors 2
1	Same questions about death come to my mind which I am unable to answer	0.00	0.46*
2	The idea that I will die dominates me.	0.64*	0.05
3	I fail to dismiss the notion of death from my mind.	0.86*	-0.19
4	Thinking about death preoccupies me.	0.82*	0.00
5	I find it greatly difficult to get rid of thoughts about death.	0.70*	0.08
6	I recall alarming and painful aspects of death.	0.68*	0.04
7	I feel I am compelled to think about death.d	0.74*	-0.06
8	The idea of death overcomes me.	0.40*	0.35
9	I have exaggerated concern with the idea of death.	-0.02	0.84*
10	I find myself rushing to think about death.	0.31	0.48*
11	I fear to be dominated by the idea of death.	-0.22	0.85*
12	I think about death continuously.	0.71*	0.01
13	Thinking about death causes me much tension.	0.07	0.74*
14	The recurrence of the idea of the death annoys me	0.09	0.78*
15	A feeling that I will die suddenly overtakes me	0.59*	0.07
Eigen values		6.59	1.35
% of variance 43.96			9.03
Total variance (%)		53.00	

*Item retained in the scale

Table 3: Correlation coefficients between DOS and its subscales (n = 200)

Scales	DR and D	DIW	DOS
DR and D	-	0.66*	0.95*
DIW		-	0.86*

DR: Death Rumination D: Dominance, DIW: Death Idea Worry, DOS: Death Obsession Scale; *p ≤ 0.0001

Table 4: Internal consistency coefficients of Death Obsession Scale (n = 200)

Scales	Cronbach's s alpha
Death Obsession Scale (DBS)	0.90
Death Rumination (DR) and Dominance (D)	0.87
Death Idea Worry (DIW)	0.81

Table 5: Means, standard deviations and t-values of DOS and its factors for males (n = 140) and females (n = 60) separately

Scales	Group	Mean±SD	t-value
DOS	Males	30.90±10.99	-2.06*
	Females	34.58±12.80	
DR and D	Males	19.46±7.57	-1.67
	Females	21.46±8.22	NS
DIW	Males	11.43±4.54	
	Females	13.11±5.58	-2.23*

df = 198, * p ≤ 0.05

average, ranging from to and for the 6 items death idea worry average, ranging from to, respectively.

Construct validity: As Table 3 shows, the construct validity of DOS was further by computing correlation between total DOS score and the empirically determined two subscales which were found to be significantly correlated with total score. The correlation between DOS score and subscales of death rumination and dominance and death idea worry were 0.95 and 0.86 (p = 0.0001), respectively. Also, the correlation between death rumination and dominance and death idea worry was 0.66 (p ≤ 0.0001).

Internal consistency: In order to examine the internal consistency for the Persian version of the DOS-15, Cronbach's s alpha were calculated for total 15 items and two extracted factors of DOS. Based on Table 4, the alpha coefficients for total 15 items were 0.90 and for two extracted factors of DOS 0.87 and 0.81, respectively. These findings indicated that the Farsi version of the DOS-15 is internally consistent (Table 4).

In order to exploration of the possible gender differences on the DOS and its subscales, a t-value was used. Table 5 show mean scores and standard deviations for males (Mean = 30.90, SD = 10.99) and females (Mean = 34.58, SD = 12.80) on DOS. This finding shows that there is a significant difference in the DOS between male and female students (t = -2.06, df = 198, p ≤ 0.05). Also, there is significant difference death idea worry subscale between male and female students (t = -2.23, df = 198, p ≤ 0.05), while the data indicated a non-significant difference in death rumination and dominance subscale among them (t = -1.67, df = 198, p = ns).

DISCUSSION

Present studies were conducted to investigation reliability and both of concurrent and construct validity of DOS in an Iranian university student's sample. The DOS reliability was determined by internal consistency method. Findings indicated that DOS reliability o had high alpha reliabilities in Iranian sample. Based on this criterion (Kline, 1993), it is safe to conclude that the DOS has high internal consistency. This finding is consistent with last-mentioned results and all items correlated with total DOS score and were significant for university student sample. These findings are exclusively consistent with earlier results on the DOS (Abdel-Khalek *et al.*, 2006; Abdel-Khalek, 1998; Maltby and Day, 2000a; Abdel-Khalek and Lester, 2002, 2003; Toma-Sabado and Gomez-Benito, 2002, 2003). The significant item correlations denoted that the item content of the DOS contributes to total scale. These correlations can be viewed as a measure of item validity and content validity.

The factor analysis of the inter-correlations between the DOS items among the university students sample yield two salient factors: Death Rumination and Dominance (DRD) and Death Idea Worry (DIW). The DRD subscale ranged loadings from 0.40 to 0.86 and accounted for 43.96% of variation, while DIW subscale ranged from 0.46 to 0.85 and accounted for 9.03% variation of death obsession.

Interestingly that the two salient factors in student sample replicated the first and second salient factors which have been disclosed in Palestinian men (Abdel-Khalek *et al.*, 2006) and in an American undergraduate students samples (Abdel-Khalek and Lester, 2003). Also, the two factors replicated the same factors in the original study on the DOS among Egyptians (Abdel-Khalek, 1998), as well as the same factors in both English university and adult samples (Maltby and Day, 2000b). Furthermore, three salient factors in a Spanish sample are consistent with two factors in the present sample (Toma-Sabado and Gomez-Benito, 2002-2003).

Several reasons are to be considered as the sources of differences in the factorial structure of the DOS in different samples. These differences may be due to the capricious nature of the exploratory factor analysis, as well as the random sampling fluctuations, or they may be due to cultural differences. It is also worth nothing that the different rotation techniques (orthogonal vs. oblique) might responsible for differences in the factorial structure of the DOS in various samples. However, the DOS is in a greater need of applying the confirmatory factor analysis. Because of this discrepancy in the factor structure of the DOS across countries, researchers cannot depend on the factor scores. The DOS demonstrates concurrent validity with of the Padua obsessive-compulsion inventory, denoting that measure each two a unity structure. The significant gender-related difference on the DOS total scores in the present Iranian students ample was congruent with pervious findings on Palestinian (Abdel-Khalek, 1998; Abdel-Khalek *et al.*, 2006) and Kuwaiti (Abdel-Khalek and Lister, 2003) samples, who reported that females scored significantly higher than males on the total DOS. However, present gender differences are contradicted with previous investigations such as Syrian (Abdel-Khalek and Saleh, 1999), Spanish (Tomas-Sabado and Gomez-Bineto, 2002-2003), American (Abdel-Khalek and Lister, 2003), British (Maltby and Day, 2000b; Abdel-Khalek, 1998). Accordingly, the DSO appears to be a useful instrument for clinical and research settings for differentiating between normal and abnormal population in critical situations.

REFERENCES

Abdel-Khalek, A.M, 1998. The structure and measurement of death obsession. Personality Indiv. Diff., 24: 159-165.

Abdel-Khalek, A. M. and G. Saleh, 1999. Death concern: A comparative study on Syrian samples. Derasat Nafseyah, 9: 177-189.

Abdel-Khalek, A.M., 2002. The Kuwait university scale: Psychometric properties. Psycho. Rep., 87: 478-492.

Abdel-Khalek, A.M. and D. Lester, 2002. Can personality predict suicidal. A study in two cultures. Int. J. Soc. Psych., 48: 231-239.

Abdel-Khalek, A.M. and D. Lester, 2003. Death obsession in Kuwaiti and American college students. Death Stud., 27: 541-553.

Abdel-Khalek, A.M., N.S. Al-Arja and T. Abdalla, 2006. Death obsession in Palestinians. Death Stud., 30: 203-215.

Floyd, F.J. and K.F. Widaman, 1995. Factor analysis in the development and refinement of clinical assessment instruments. Psych. Asse., 7: 286-299.

Kastenbaum, R. and P.T.Jr. Casta, 1977. Psychological perspectives on death. Annual Rev. Psych.,28: 225-249.

Kastenbaum, R., 1987. Death-Related Anxiety. In: Anxiety and Stress Disorder: Cognitive-Behavioral Assessment and Treatment, Michelson, L. and L.M. Ascher (Eds.). Guilford Press, New York, pp: 425-441.

Kastenbaum, R., 1993. Reconstructing death in postmodern society. Omega J. Death Dying, 27: 75-89.

Kastenbaum, R. and D. Denny-Brown, 2000. The Psychology of Death. 3rd Edn., Springer, New York.

Kastenbaum, R., 2006. Definition of death. http://www.Deathreference.com/DaEm/Definitions-of-Death.html.

Kline, P., 1993. The New Psychometrics: Science, Psychology and Psychometrics. 1st Edn., Routledge, London.

Knight, K.H. and M.H. Elfenbein, 1996. Relationship of death anxiety/fear to health-seeking beliefs and behaviors. Death Stud., 20: 23-31.

Maltby, J. and L. Day, 2000a. Religious orientation and death obsession. J. Genet. Psych., 161: 122-124.

Maltby, J. and L. Day, 2000b. The reliability and validity of the Death Obsession Scale among English university and adult samples. Perso. Indiv. Diff., 28: 695-700.

Marsh, H.W., J.R. Balla and R.P. McDonald, 1988. Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. Psychol. Bull., 103: 391-410.

Neimeyer, R.A., 1994. Death Anxiety Handbook: Research, Instrumentation, and Application. 1st Edn., Taylor and Francis, Bristol.

Neimeyer, R.A., J. Wittkowski and R.P. Moser, 2004. Psychological research on death attitudes: An overview and evaluation. Death Stud., 28: 309-340.

Rajabi, G.R. and M. Bahrani, 2001. Item factor analysis of the death anxiety scale. Quar. J. Psych., 5-4: 331-344.

Strouhal, E., 1992. Life of the Egyptians. 1st Edn., University of Oklahoma Press, Norman.

Templer, D.I., M. Harville, S. Hutton, R. Underwood, M. Tomeo, M. Russell, D. Mitroff and H. Arikawa, 2001-2002. Death depression scale-revised. Omega J. Death Dying, 44: 105-112.

Templer, D.I., M. Lavoie, H. Chalgujian and S. Thomas-Dobson, 1990. The measurement of death depression. J. Clin. Psycho., 46: 834-839.

Tomas-Sabado, J. and J. Gomez-Bineto, 2002-2003. Psychometric properties of the Spanish adaptation of the Death Obsession Scale (DOS). Omega J. Death Dying, 46: 263-272.

Zandee, J., 1960. Death as an Enemy According to Ancient Egyptians. 1st Edn., Leiden, Brill, Netherlands.