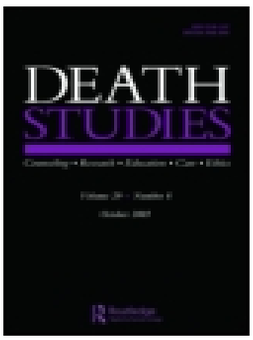

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Mortality salience in professionals witnessing death: The effects of mortality manipulation on doctors' evaluations

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ABSTRACT

This study investigates whether frequently witnessing death leads to desensitization in terms of death anxiety. A total of 163 individuals, comprising 71 doctors from branches with high death rates and 92 doctors from branches where mortality is rarely seen, participated in this study. An experiment was conducted employing a classical version of mortality salience manipulation, which is often used in terror management research, to test the study's hypothesis. The results supported the hypothesis only with regard to altruism-egoism, providing partial support for the effect of desensitization. This subject needs to be studied further.

Introduction

Humans differ from other living creatures in terms of awareness of mortality. This awareness of existence raises significant questions. According to the terror management theory (TMT) (Greenberg, Pyszczynski, & Solomon, 1986; Greenberg et al., 1990; Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), the awareness that death is inevitable creates an anxiety characterized as "terror." For people to be able to maintain their psychological health, the "terror of mortality" must be managed. To attempt to deal with the anxiety induced by thoughts of death, the human cognitive system operates an anxiety buffer comprising three basic components: cultural worldview, self-esteem, and close relationships (Pyszczynski & Kesebir, 2011). Cultural worldview is the central component, constituting the primary source of the self-esteem necessary for an individual to manage his/her death anxiety. Self-esteem and close relationships can protect against anxiety only if cultural worldview has been developed (Greenberg, Solomon, & Pyszczynski, 1997; Pyszczynski & Kesebir, 2011). Therefore, this study focuses solely on cultural worldview to move forward in a more specific manner.

Cultural worldview entails the assumptions and beliefs that are shared by a group of people and provide explanations regarding the nature of existence and reality (Arndt, Solomon, Kasser, & Sheldon, 2004; Pyszczynski & Kesebir, 2011). The culture that instills in an individual the belief that the world is a meaningful, stable, and orderly place allows the individual to manage the anxiety created by awareness of mortality (Greenberg et al., 1990; Greenberg et al., 1992; Landau et al., 2004). By presenting literal and symbolic immortality to individuals, cultural worldview provides a significant resource for dealing with the feeling of nonexistence caused by death. Literal immortality is provided by explanations of infinity rooted in the religious elements of culture, such as life after death, heaven, or reincarnation. Symbolic immortality occurs when one serves a more eternal and greater purpose than personal life goals. In other words, the association with cultural elements such as family, profession, and a national or common goal directly contributes to the individual feeling that they are part of a higher and eternal entity (Arndt, Cook, & Routledge, 2004; Dechesne et al., 2003; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Cultural worldview is formed from standards shared in society, such as cultural norms, religious beliefs, or moral value judgments, and individuals acquire self-esteem by meeting these standards. In this sense, cultural worldview and self-esteem are closely related (Pyszczynski & Kesebir, 2011).

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Several classic TMT studies have shown that the state of mortality salience (MS) activates defense of the cultural worldview (for reviews, see Greenberg et al., 1997; Solomon, Greenberg, & Pyszczynski, 2004). These studies examined cultural worldview variables accepted by a group or society and have become the norm for many people. Examples include patriotism (Belanger, Faber, & Gelfand, 2013), helping (Gailliot, Stillman, Schmeichel, Maner, & Plant, 2008; Jonas, Schimel, Greenberg, & Pyszczynski, 2002), in-group bias (Castano, Yzerbyt, Paladino, & Sacchi, 2002; Greenberg et al., 1990), and conservatism (Burke, Kosloff, & Landau, 2013; Jost, Glaser, Kruglanski, & Sulloway, 2003). In other words, reminding individuals of death has been found to induce higher levels of patriotism, helpfulness, or conservatism. Another function of cultural worldview is to provide self-esteem consistent with the defined standards (Pyszczynski & Kesebir, 2011). As stated above, self-esteem is one component of the anxiety buffer needed to manage terror. TMT studies have shown that being reminded of death induces individual effort to increase self-esteem, as higher self-esteem facilitates managing the terror evoked by awareness of death (for reviews, see Greenberg, Solomon, & Arndt, 2008; Greenberg et al., 1997).

However, what happens when the anxiety buffer is disrupted? According to the anxiety buffer disruption theory (Abdollahi, Pyszczynski, Maxfield, & Luszczynska, 2011; Edmondson et al., 2011; Pyszczynski & Kesebir, 2011), individuals who experience death-related traumatic events may not have the cultural worldview, self-esteem, and close relationships required to adequately cope with the terror related to death anxiety. In these situations, the functionality of the anxiety buffer is lost, and clinical tables such as post-traumatic stress disorder may occur. The anxiety buffer disruption theory is based on the shattered assumption theory of Janoff-Bulman (1992). According to the latter theory, individuals assume that the world they inhabit is meaningful, orderly, fair, and predictable; these beliefs are shattered by experiencing traumatic events, leading them to perceive the world as uncertain, bad, and unpredictable. Studies in different countries suggest that stress induced by trauma, in particular, is related to the anxiety buffer disruption theory (Pyszczynski & Kesebir, 2011).

The effect of death on people is a subject of interest in philosophy. Psychiatrist and philosopher Karl Jaspers (1883–1969) made an original contribution to existentialist philosophy, which he called the "boundary situation" (*grenzsituationen*). This concept describes boundary situations of existence as those that differ from "normal situations" and that the individual cannot change or move beyond (Jaspers, 1970). According to Jaspers, "these situations form the peak of existence or that existence gets a grasp on itself by hitting its own boundaries" (Topakkaya, 2007, p. 146). The overemphasized and most important boundary situation is death. Although death does not represent a boundary situation alone, one's own death or that of a close loved one can be described as a boundary situation. Accordingly, while one's own death entails non-existence, losing a loved one brings loneliness (Jaspers, 1970). It should also be recognized that the concept of death is more pertinent to particular individuals or groups: for example, old people may feel closer to their absolute end, while the threshold of the boundary situation may differ for individuals who are characteristically more susceptible to anxiety. Maxfield, Solomon, Pyszczynski, and Greenberg (2010) reported that variables such as age and neuroticism impacted responses to MS manipulation. In other words, such variables affect how individuals cope with death anxiety. Considering this, our study also focuses on the possible effect of a situational variable on MS manipulation: witnessing death frequently. Although the death of people with whom one has no personal connection is not considered in the context of the boundary situations (Topakkaya, 2007), this study analyzes how does frequently witnessing such deaths affects individuals' perceptions related to "their own death."

One of the basic principles of learning psychology is the effect of habituation. In the general sense, this implies that individuals frequently exposed to a stimulus will respond less to it (see Domjan, 2004). Considering this basic principle, this study hypothesizes that frequently witnessing death would lead to desensitization. According to the TMT, MS causes individuals to approach cultural worldview. We, therefore, expect MS manipulation to be ineffective among professionals (specifically doctors) who frequently witness death.

Method

Participants

This study was conducted at Erciyes University Medical Faculty Hospital, Kayseri, Turkey. The study sample included 163 doctors employed in the hospital, comprising 83 males and 80 females ($Mean_{age} = 28.73$; $SD_{age} = 3.13$; $Min–Max_{age} = 23–45$). Mean duration in the profession was 47.65 months ($SD_{duration} = 35.41$;

$Min–Max_{duration} = 4–252$), and 90 participants were married and 73 were single. A witness group of 71 doctors (36.6% females) who frequently witnessed death ($Mean_{death} = 8.22$; $SD_{death} = 5.40$) was formed, representing branches with high mortality rates (e.g., emergency department, intensive care unit, oncology ward). A non-witness group of 92 doctors (58.7% females) who rarely witnessed death ($Mean_{death} = 0.72$; $SD_{death} = .77$) was formed, representing branches with low mortality rates (e.g., psychiatry, public health, family doctors, pediatric psychiatry, physical therapy and rehabilitation).

Materials and procedure

Approval for the study was granted by the Ethics Committee of Erciyes University, and written informed consent was obtained from all the participants. MS manipulation, which is frequently used in TMT research, was applied in this study. A packet of written questionnaires, including the materials explained below, was delivered to the participating doctors during working hours. It was ensured that the questionnaires are completed as per the experimental procedures. The study was introduced as an examination of the relationships between projective life attitudes, cognitive characteristics, and prosocial behavior. Its true aim was only revealed to participants in a debriefing session immediately after the study was complete. The MS questions and the word search puzzle in the study materials were obtained from the TMT webpage (http://www.tmt.missouri.edu/materials.html, accessed 07.09.2017) and translated into Turkish. The materials used in the study are detailed in the following sections.

Utrecht work engagement scale (UWES)

This 17-item scale was developed by Schaufeli, Salanova, González-Romá, and Bakker (2002) to measure work engagement. The scale was adapted to Turkish by Eryılmaz and Doğan (2012). As in the original scale, a structure of three dimensions – vigor, dedication, and absorption – was reported to be appropriate. In the adaptation studies of the Turkish version, the Cronbach's alpha reliability coefficients were 0.94 for the whole scale, 0.87 for vigor, 0.87 for dedication, and 0.84 for absorption. The UWES was administered before the experimental study to mask the study's true purpose from participants, and the scale scores were not used as variables in the analysis. However, the scores represented additional information about the study groups.

MS manipulation

MS manipulation was applied with two open-ended questions frequently used in TMT studies (Greenberg et al., 1995; Rosenblatt et al., 1989): "*Please briefly describe the emotions that the thought of your own death arouses in you*" and "*Jot down, as specifically as you can, what you think will happen to you as you physically die.*" For the control group, "dental pain" (DP) was substituted for "death" in the two questions (Arndt, Greenberg, Solomon, Pyszczynski, & Schimel, 1999; Landau et al., 2004).

Delay and distraction

Previous TMT studies have shown that MS is more effective when death-related thoughts are removed from the conscious level (for review, see Arndt, Cook, et al., 2004; Pyszczynski, Greenberg, & Solomon, 1999). Therefore, following the manipulation questions, participants were asked to complete a 10×10 word search puzzle.

Measurements of dependent variables

There is a known association between the cultural worldview and the variables of in-group bias (Castano et al., 2002; Greenberg et al., 1990) and helping (e.g., the Scrooge effect: Gailliot et al., 2008; Jonas et al., 2002). Therefore, three scenarios were presented to participants. The first scenario included the modified dictator game (see Forsythe, Horowitz, Savin, & Sefton, 1994; Kahneman, Knetsch, & Thaler, 1986), which has sometimes been used in studies of altruism (e.g., Andreoni &Vesterlund, 2001; Kamas, Preston, & Baum, 2008). This game is based on sharing the money won in a competition with a rival. Altruism is rated according to the difference between the money kept for oneself and the amount given to a rival: a small difference indicates high altruism, whereas a large difference indicates high egoism. In the second scenario, participants were asked what custodial sentence they considered appropriate in the range of 0–120 months for a patient who physically attacked emergency department personnel. Sentence length is considered to reflect the sense of attachment to the professional group (in-group bias). The third scenario considers in-group and out-group altruism: participants were asked how the proceeds from a fund set up for educational development should be shared between charities in and outside Turkey. Similar to the first scenario, altruism was evaluated as the difference between the money allocated to domestic charities (in-group altruism) and that allocated to overseas

charities (out-group altruism). A smaller difference indicates higher out-group altruism.

Results

Analysis of UWES scores

UWES scores were compared between the groups to yield general descriptive information. Before testing the study's hypothesis, both the total scores and the scores for all subdimensions were compared in terms of manipulation to understand whether there were any differences between the experimental and control groups in terms of witnessing death to understand the effect on work engagement. For this purpose, a 2 (MS vs. DP) × 2 (witness vs. non-witness) multivariate analysis of variance was conducted. Wilks' lambda values showed that the witnessing and manipulation groups did not differ significantly in terms of work engagement and its subdimensions.

Hypothesis testing

Before analysis, the data were examined for conformity to parametric tests by using histograms, q-q plots, and Shapiro-Wilk tests. It was found that the dependent variables were not normally distributed ($W = .59$; .77; .84; $p < .05$, respectively). Therefore, the analyses were conducted using non-parametric methods. The descriptive statistics of all the dependent variables for each group are shown in Table 1.

The Mann-Whitney test was applied to compare the MS and DP groups of those who had frequently witnessed death. This analysis found no statistically significant differences between the groups with regard to the three dependent variables (Table 2).

We also applied the Mann-Whitney test to compare the MS and DP groups of those who had not witnessed death. No statistically significant differences between the groups were found for the variables of in-group bias (scenario 2) and out-group altruism (scenario 3). However, for the altruism-egoism variable (scenario 1), the mean score in the MS group (42.18) was significantly lower than that in the DP group (50.82; $p < .05$) (see Table 3, Figure 1). This means that the MS group exhibited higher altruism than the DP group.

Because large differences were found between the scores of the witness and non-witness groups, Mann-Whitney analyses were conducted for all the three variables irrespective of the manipulation. The results showed that there were no significant differences between the groups in terms of the three variables at

Table 1. Descriptive statistics of all the dependent variables.

	Witness group				Non-witness group				Total $N = 163$				
	Mortality salience $N = 35$		Dental pain $N = 36$		Mortality salience $N = 46$		Dental pain $N = 46$				Range		
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	Potential	Actual	Skew
Altruism-egoism (scenario 1)	12.06	39.15	14.56	29.16	7.91	32.94	18.47	40.88	13.25	35.88	(−100)–100	(−100)–100	.98
In-group bias (scenario 2)	56.94	48.48	62.33	54.01	63.24	50.91	67.57	51.42	62.91	50.91	0–120	0–120	−.67
Out-group altruism (scenario 3)	56.29	42.91	49.44	48.99	65.22	36.01	58.48	41.15	57.91	42.03	(−100)–100	(−100)–100	.08

Table 2. Statistics related to the comparisons of those who had witnessed death in the study and control groups.

	Mortality salience $N = 35$		Dental pain $N = 36$			
	Mean rank	Sum of ranks	Mean rank	Sum of ranks	U	*p*
Altruism-egoism (scenario 1)	35.04	1226.5	36.93	1329.5	596.5	.61
In-group bias (scenario 2)	35.90	1256.5	36.10	1299.5	626.5	.97
Out-group altruism (scenario 3)	37.24	1303.5	34.79	1252.5	586.5	.61

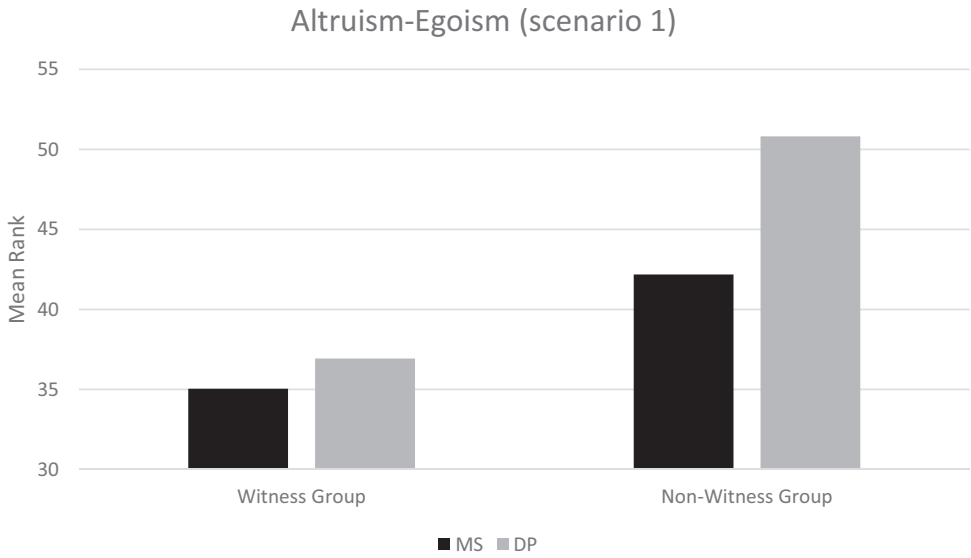

Figure 1. Graph showing that the only statistically significant dependent variable between the groups was altruism-egoism.

Table 3. Statistics related to the comparisons of the study and control groups who had not witnessed death.

	Mortality salience $N = 46$		Dental pain $N = 46$			
	Mean rank	Sum of ranks	Mean rank	Sum of ranks	U	*p*
Altruism-egoism (scenario 1)*	42.18	1940.5	50.82	2337.5	859.5	.04
In-group bias (scenario 2)	46.17	2124	46.83	2154	1043	.90
Out-group altruism (scenario 3)	48.41	2227	44.59	2051	970	.47

*Statistically significant difference between the groups $p < .05$.

the beginning, despite the large differences between the scores (U scores: 3260.50, $p > .05$; 3053.50, $p > .05$; 2936, $p > .05$, respectively).

Discussion

This study hypothesized that witnessing many deaths would create a habituation effect. Accordingly, it was predicted that MS would not be effective, unlike other earlier studies. The hypothesis was partially confirmed in the study's experiment. The MS was directed to a more egotistic allocation in doctors who had not witnessed death working in departments such as psychiatry, physical therapy and rehabilitation, public health, and family medicine. However, there were no significant differences in doctors who closely witnessed a mean of eight deaths in the emergency department and intensive care units. It is a basic principle of cognitive psychology that frequent exposure to a stimulus creates an adaptation effect in the organism and eventually known responses do not occur (see Domjan, 2004). Jasper's conceptualization of boundary situations provides an explanation for the philosophy of this desensitization effect. While death and mortality are boundary situations for most people, those who frequently witness death cease to respond in the same way, as frequent exposure causes the concept of death to become routine and terror to be lost. Our findings for the altruism-egoism scenario support this claim.

However, the study's hypothesis was not supported by the in-group bias and out-group altruism scenario results. That there was no difference in the conditions of witnessing death was consistent with the expectations of the study, but the lack of difference between the non-witness groups was unexpected. Previous relevant studies have shown that in-group bias (Castano et al., 2002; Greenberg et al., 1990) and donating to organizations connected to one's own culture (Jonas et al., 2002) are affected by MS. One possible explanation for this is that the responses given to the

scenarios did not show a normal distribution. Another reason could be that the chosen variables were not sufficiently affected by the terror of death. Although the study's variables have previously been found associated with the cultural worldview, the specific measurement method of personal evaluations of the variables might explain the difference. Another possible explanation is the composition of the control group: although doctors in some branches do not frequently witness death, the participants could nonetheless have been more cognitively prepared than non-medical people due to the nature of the medical profession. They can also be considered to have greater-than-average sources of self-esteem, reducing their need to derive self-esteem from collective outcomes such as those in the second and third scenarios (group benefit). Thus, the group-specific level of death anxiety did not create an effect on collective situations, but there was an effect on personal evaluations in the first scenario. Further studies are needed to reveal the real cause of this.

Another subject is the result of MS manipulation that emerged in the altruism-egoism scenario. Previous studies have reported that a reminder of death causes people to behave more altruistically (Gailliot et al., 2008; Jonas et al., 2002). In studies related to the Scrooge effect, participants have used altruistic behavior as a means to gain societal approval, thereby approaching a cultural worldview. This study's findings are consistent with the related literature and support the Scrooge effect.

Finally, there were some limitations to this study. As the dependent variables' data were not normal distributed, parametric tests could not be used. At this point, some notable differences (although the statistical difference is not reported) in points between the groups should be kept in mind. For example, the stimulus materials may have different connotations for the different participant groups. Further studies with similar groups can be enriched through qualitative interviews or additional measures to examine this situation. For similar reasons, future studies conducted with classic TMT samples would provide more definitive evidence for dependent variable measurements. In addition, this study only considers a desensitization effect, and so provides no direct evidence that doctors who frequently witness death experience less death anxiety or have a more effective coping mechanism. This desensitization process can be clarified in future studies by scrutinizing in more detail the roles of variables such as death anxiety, coping methods, and the anxiety buffer. There is also a need to more clearly reveal the connection between witnessing death and the desensitization effect. Future studies should aim to explore what frequency of witnessing death causes desensitization and the experiences of witnessing death in different professional groups (e.g., police, soldiers, mortuary personnel, and undertakers.").

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