



# When death is a wedding night: a comparison of Sufi, mainstream Muslim, and atheist reactions to mortality salience

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## Abstract

The primary purpose of this study was to test the main claims of terror management theory through an alternative cultural worldview by focusing on Sufism, in which death is seen as a desired state for meeting God (*Vuslat*). Sufism is a mystical and spiritual dimension of Islam, emphasizing the inner search for a direct experience of the Divine through practices such as meditation, devotion, and worship. For this purpose, data were collected from a total of 181 participants, 60 of whom were mainstream Muslims, 60 of whom were atheists, and 61 of whom were Sufis. According to the results of a 2 (condition: mortality salience [MS] vs. dental pain) × 3 (groups: mainstream Muslim, Sufi, atheist) between-subject ANCOVA, MS led to an increase in the level of worldview defense in mainstream Muslims. However, while the level of worldview defense remained unchanged in atheists, it decreased in Sufis after MS. Additionally, in-group identification significantly moderated the effect of MS on worldview defense for mainstream Muslims and atheists; no significant moderation was observed for Sufis. A content analysis of the answers of the participants after MS revealed that positive emotions were more common in Sufis' answers, whereas negative emotions in mainstream Muslims and no emotions in atheists dominated the answers. Sufism, in which the emotional and behavioral dimensions of religiosity predominate, seemed to buffer the sense of terror. The findings highlight the importance of focusing on different religious and cultural lifestyles, such as Sufism, when studying the management of terror.

**Keywords** Atheist · Death awareness · Mortality salience · Religiosity · Sufism · Terror management

Terror management theory (TMT; Greenberg et al., 1986; Pyszczynski et al., 2015) suggests that death awareness is the most important motivational source that determines people's attitudes and behaviors on a universal scale. According to TMT, the awareness of mortality, which leaves people with existential concerns, elicits intense primal fear, which is referred to as terror, in people who have a strong motivation to continue their lives and renders them helpless in the face of this emotion (Greenberg et al., 1990). Explaining how people manage this sense of terror brought about by the awareness of death, TMT suggests that people try to cope with feelings of terror by developing and maintaining

belief in 'cultural worldviews' and gaining self-esteem by conforming to the value standards provided by them (Pyszczynski et al., 2006). Cultural worldviews, defined to include religious beliefs, include a socially constructed system of beliefs and values that offer people the opportunity to be part of something more durable than their physical existence (Greenberg et al., 1990). They offer a sense of meaning, purpose, and continuity while also shaping cultural identity, providing moral frameworks, and acting as defense mechanisms against existential anxiety. Because of the critical role that cultural worldviews play in managing a sense of terror, reminders of death lead people to defend and support them (Greenberg et al., 2020; Pyszczynski et al., 2015).

TMT also suggests that when individuals find ways to cope with the fear of death and the sense of nothingness in a more personal way, they will have less need for a general worldview (Pyszczynski et al., 2015). Personal coping methods refer to strategies that focus on internal values, personal development and self-actualization rather than relying on external group-based meaning systems (Pyszczynski

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et al., 2006). However, as has been demonstrated in numerous studies, coping with the anxiety caused by the feeling of terror in this way is an effective but difficult method for reducing the negative reactions of individuals (e.g. Jonas & Fischer, 2006; Park & Pyszczynski, 2019). The fact that these worldviews, especially religious beliefs, also create a sense of group belonging can be a serious obstacle to individualization, the process of focusing on personal, internal values and self-development, rather than relying on external, group-based belief systems. TMT posits that such personal coping methods are effective in reducing death anxiety and psychological distress (Pyszczynski et al., 2006). The importance of these coping styles is especially evident in the context of Sufism, which emphasizes personal growth and self-actualization. By differentiating between individual and collective coping styles, we emphasize how personal growth and self-actualization, as seen in Sufism, may provide a unique and effective way of addressing the anxiety associated with mortality, independent of group affiliation. It is therefore worth examining how far mainstream forms of religious beliefs, which occupy a special place among cultural worldviews, are suitable for the development of such individual styles. Among the religious belief forms known to be highly diverse, some (e.g., Buddhism) are worthy of examination in terms of the method of solution proposed by TMT (Maheshwari & Mukherjee, 2019; Park & Pyszczynski, 2019). The present study aims to examine Sufism, which might be considered one such form of religious belief. Sufism, with its emphasis on personal growth and self-actualization, has the potential to reduce dependency on cultural worldviews (Frager, 1999). By focusing on inner experiences and personal transformation, Sufism encourages individuals to approach death with a sense of peace and acceptance, which may offer them a means to transcend existential fears (Ayten & Düzgüner, 2017).

The primary aim of this study was to examine whether Sufis exhibit defensive responses to mortality salience (MS). A related secondary aim is to conduct a comparative analysis of Sufis' responses to MS with those of mainstream Muslims and atheists. This dual focus allows for a deeper understanding of both the unique characteristics of Sufis and their differences or similarities with other religious and nonreligious groups. In addition to Sufis, the present study also includes mainstream Muslims who belong to mainstream Islamic belief and who do not have institutional ties to Sufism. The study also collected data from atheists living in the same cultural context, namely, Türkiye, who do not hold any religious beliefs. It has been shown that the vast majority of atheists express that death is nothingness and nonexistent and believe that after death, they and the world will end as if they never exist (Gülfil, 2019). While religions

promise literal immortality to their followers by proposing the existence of an afterlife, such as life in heaven or reincarnation, atheism, by its nature, acknowledges the finality of death and the absence of an afterlife (Greenberg et al., 2020; Jackson et al., 2018). We believe that this choice of samples from the same society has made it possible to locate the phenomenon in a more ecologically relevant context, in which the religious identities of individuals are also shaped in relation to their majority–minority statuses. The present study aimed to compare whether the worldview defense levels of individuals in these three groups differ when their mortality is made salient.

## TMT and different religious beliefs

Many studies have shown that reminding participants of any religion about death leads to worldview defense (Burke et al., 2010; Jackson et al., 2018). Among religions, worldview defensiveness can be in the form of an increase in the level of religiosity or belief in supernatural beings after MS (e.g., Vail et al., 2012), as well as negative evaluations of out-groups and positive evaluations of in-groups (e.g., Newheiser et al., 2015). Although studies generally show that religiosity increases worldview defense after MS, similar to secular worldviews, individuals with different religious orientations (e.g., intrinsic religious orientation) (Jonas & Fischer, 2006) and religious traditions (e.g., Buddhism) (Maheshwari & Mukherjee, 2019) may vary in their level of being affected by MS. On the other hand, studies conducted within the scope of TMT have mostly been conducted in North America, and most of the participants were selected from Judeo-Christian religious traditions (Jackson et al., 2018; Alparslan, 2022; Jong et al., 2012). TMT has been criticized for providing a limited and ethnocentric approach to the function of worldviews, as it does not include the belief systems of non-Western societies and does not even accurately reflect most Western belief systems when viewed in a historical context (Kirkpatrick & Navarrete, 2006). For example, Navarrete and Fessler (2005) argued that the claims of TMT may seem logical to Western readers, but worldviews in other societies may not operate in this way. They argue that TMT's understanding of belief systems is a late 20th-century North American Christian worldview and cannot be seen as a prototype for all cultures. Indeed, a study with Christian and Muslim participants showed that Christians reacted more strongly in defense of their worldview when mortality was made salient, whereas Muslims reacted rather moderately (Van den Bos et al., 2012). In recent years, studies conducted in societies where Buddhist beliefs, which differ significantly from the Judeo-Christian religious tradition, are widespread, have

yielded findings that are not consistent with the claims of TMT (Holbrook & Sousa, 2012; Maheshwari & Mukherjee, 2019). While some of these studies found that MS did not lead to worldview defensiveness (Yen & Cheng, 2010), others reported that it reduced worldview defensiveness among individuals who had meditation training (Park & Pyszczynski, 2019). The fact that Asians are less concerned about death than Western cultures and see death as a natural part of life, along with the existence of a belief in reincarnation, may partially explain the current discrepancy (Yen & Cheng, 2010).

Although TMT has focused mostly on the negative consequences of death awareness, some researchers argue that facing death and feeling death deeply can play a critical role in coping with the fear of death. Cozzolino (2006) suggested that defensive reactions, which may lead to various individual and social problems, are not the only way for people to respond to the fact that they are mortal and that more personal and deeper confrontations with death can produce positive effects (such as personal maturation and growth). TMT researchers have also recognized that under certain conditions, such as a close brush with death, personal growth practices, more intrinsic and individual values, and greater insight into self and life, confronting one's death can lead to positive psychological outcomes (Pyszczynski et al., 2006, 2015). Notably, there may also be positive effects of remembering death in religious traditions that encourage prolonged and intense reflection on one's death for spiritual growth (Pyszczynski et al., 2015).

At this point, the need to capitalize on the diversity of cultural worldviews in world societies comes to the forefront. The fact that different results are obtained in studies conducted on very different religious traditions increases the value of approaches that systematically address these beliefs. Saroglou (2011), who works on the possible universal dimensions of religiosity, proposes four basic dimensions based on the basic psychological functions of religion: believing, bonding, behaving, and belonging. For Saroglou, individual types of religiosity diverge according to differences in individuals' attitudes, cognitions, emotions, and behaviors related to religion. Saroglou (2011) also suggested that a taxonomy of the religious expressions of religious/cultural groups can be obtained through various possible combinations of two of the four dimensions. For example, groups where believing and bonding dominate can be classified as spiritual, those emphasizing believing and belonging as orthodox, and those prioritizing bonding and behaving as ascetic. Building on this framework, Alparslan and Kuşdil (2024) have developed a model suggesting that the nature of the belonging and believing dimensions of religiosity significantly influences responses to worldview threats. Specifically, religiosity characterized by exclusive

belonging and strong belief dimensions is expected to elicit more defensive and negative responses to such threats. In contrast, religiosity with inclusive belonging and strong belief dimensions is anticipated to result in more tolerant and positive reactions.

In the context of the present study, mainstream Muslim religiosity aligns with the orthodox classification, emphasizing exclusive belonging and strong belief dimensions. Conversely, Sufism parallels spiritual classification, with an emphasis on believing and bonding, and reflects inclusive belonging alongside strong belief. On the basis of this distinction, it can be argued that mortality salience increases worldview defense among mainstream Muslims but does not have the same effect on Sufis, who are less likely to respond defensively owing to the inclusive and self-reflective nature of their religiosity.

Sufism within the Islamic religion stands out as an interesting example in terms of its qualities, especially in terms of the bonding-behaving dimensions. As a religious approach that emphasizes the individual internalization of religious beliefs on the one hand and the importance of highly regular behavioral practices on the other hand, Sufism differs from other forms of belief in its intense emphasis on facing death. One of the distinctive aspects of Sufism is also that it considers the individual's affiliation with a Sufi group as one of the basic conditions for the completion of personal development by completing certain predetermined stages.

### **Sufism and the development of personal attitudes toward death**

Sufism has a deep-rooted history dating back to the early periods of Islam. As a mystical and spiritual form of Islam, it presents some significant differences from mainstream Islamic practices (Chittick, 2000; Nicholson, 2018). While mainstream religiosity accounts for a large majority of religiosity in Türkiye, the number of those who follow Sufism is known to be very limited. Although there is no definite information about the number of people following Sufism, some large-scale studies estimate that only 4.3% of the population might belong to any sect or congregation, including Sufism (Metropoll, 2022). Mainstream Islamic belief in Türkiye, which constitutes 94% of the population (Nişancı, 2023), emphasizes certain worship practices and moral norms that are often shaped by religious texts. Sufism, on the other hand, emphasizes the importance of individual spirituality and inner experience (Frager & Fadiman, 2013; Kayıklık, 2011). Sufism, a mystical and spiritual dimension of Islam, differs from mainstream Islamic tradition in several significant ways. First, while mainstream Islamic orientation emphasizes adherence to the Quran and Hadith (prophetic

traditions), Sufism places greater emphasis on the inner, experiential dimension of faith, often through practices such as meditation, chanting, and asceticism. This focus on the inward journey toward God distinguishes Sufism from the more outwardly oriented practices of mainstream Islamic tradition. Furthermore, Sufism incorporates elements of mysticism and esoteric interpretation of religious texts, allowing for a more symbolic and allegorical understanding of Islam. This flexibility in interpretation contrasts with the more literalist approach often found in mainstream Islamic jurisprudence. Additionally, while mainstream Islamic tradition typically operates within established religious institutions and legal frameworks, Sufism often exists outside of formal structures and is organized around spiritual lineages or orders (*tariqas*), with a focus on individual spiritual growth and mentorship by a spiritual guide (*sheikh*). Overall, Sufism represents a unique and diverse aspect of Islamic spirituality, characterized by its emphasis on the inward journey, mystical experiences, and personalized relationship with the Divine, setting it apart from the more institutionalized and outwardly focused aspects of mainstream Islamic tradition (Chittick, 2000; Eraydın, 2016; Nicholson, 2018).

As a Sufi term, death means the destruction of desires and wishes that lead the person toward material delights and bodily pleasures. Therefore, death plays an extremely important role in the discipline of *nafs (self)*, which refers to the practice of understanding, controlling, and maturing one's inner self (Frager, 1999). In Sufi thought, death is considered an opportunity to encounter, meet, and reunite with the loved one. Thus, death is seen as a means that will bring the Sufi, who burns with the love of meeting God, to Allah. It is indicative of such an understanding that Mevlana, one of the early (13th century) Sufis, referred to the day of death as the 'wedding night (*Şeb-i arûs*)' when one is reunited with the beloved. Sufis desire to leave behind this world as soon as possible and meet the true beloved. When viewed in this way, death for Sufis is not a problem to be dealt with but a reality that is desired, longed for, and regularly commemorated (Ayten & Düzgüner, 2017).

In Sufist teaching, contemplating death is an indispensable method for the disciple who embarks on the '*seyr ü sülûk*' (Sufi's spiritual journey) (Frager & Fadiman, 2013). For Sufis, contemplating death is not a dry contemplation of an inevitable death: it also involves imagining and experiencing every detail of it, including one's own funeral, burial, and death ceremony. Some Sufis even try to experience death by personally entering the pit they dig for their own graves. Most Sufi orders require newcomers to contemplate death to discipline their souls and realize their personal spiritual development (Frager, 1999; Kayıklık, 2011). According to Sufi understanding, contemplating death protects one from worldly ambitions, vain desires, and whims

and reminds one of the true purposes of one's existence. In this way, death, which most humans want to forget and avoid, becomes an indispensable part of life for Sufis.

## Sufism as a group-based practice

Sufism has been shaped within different sects over the centuries. These sects are divided into groups that adopt different interpretations and practices of Sufism (Eraydın, 2016). Sufi orders are associations of Sufi disciples who come together under the guidance of a *sheik* based on spiritual camaraderie (Ayten & Düzgüner, 2017; Frager, 1999). Thus, various group dynamics play critical roles in the transmission of Sufi practices and in providing spiritual guidance for new disciples. The *sheik* provides spiritual guidance to the disciples, sharing spiritual experiences and transmitting Sufi teachings. There are also practices of supporting each other and sharing experiences among disciples. Within these group structures, Sufi communities engage in activities such as collective rituals (e.g., *dhikr* sessions) and the sharing of spiritual experiences. Thus, Sufi disciples provide spiritual support to each other and have the opportunity to grow together. This group identity plays a critical role in the transmission of Sufi teachings, practices, and spiritual experiences. This understanding of sects, which continues today, points to the fact that Sufism is also a group-based social experience. However, alongside its group-based nature, Sufism also emphasizes personal and spiritual development, offering a dual framework that combines collective and individual experiences.

TMT posits that individuals manage death anxiety by adhering to cultural worldviews and maintaining self-esteem, which provides a sense of meaning and symbolic immortality (Greenberg et al., 1986). Identification with an in-group plays a critical role in this process, as it offers a psychological buffer against MS by reinforcing cultural worldviews and social connections (Pyszczynski et al., 2015). For mainstream Muslims and atheists, identification with their respective groups is expected to moderate the relationship between MS and worldview defense. Specifically, individuals with high in-group identification are likely to exhibit stronger defensive responses to MS, as the in-group serves as a key source of meaning and security (Hohman & Hogg, 2015). Conversely, those with low in-group identification may exhibit weaker or even reduced defensive responses due to a lack of strong ties to their cultural worldview. In contrast, Sufism emphasizes personal and spiritual development over strict identification with a specific group (Kayıklık, 2011). While group membership (e.g., orders or brotherhood) holds importance in Sufism, the focus on personal growth and self-actualization suggests

that in-group identification may play a less significant role in moderating responses to MS. Instead, Sufis may rely on internalized spiritual practices and personal values to manage death anxiety, leading to a weaker impact of in-group identification on defensive responses. While group membership (e.g., orders or brotherhood) holds importance in Sufism, its focus on individual spiritual practices suggests that in-group identification may play a less significant role in moderating responses to MS. Instead, Sufis may rely on internalized spiritual practices and personal values to manage death anxiety, leading to a weaker impact of in-group identification on defensive responses.

## The current study

The current study aims to examine the role of Sufism in managing individuals' fear of death via a quasi-experimental design. Specifically, it investigates whether Sufis, known for their deep consideration of mortality and the afterlife, exhibit defensive responses (worldview defense) to mortality salience (MS). Additionally, the study explores how Sufis' responses to MS compare to those of mainstream Muslims and atheists in Türkiye. By focusing on differences in worldview defense and group affiliation across these groups, this study seeks to understand the effect of Sufism in the management of death anxiety.

As introduced above, research shows that following MS, individuals respond more positively to those who support their worldview (i.e., in-group members) and more negatively to those who threaten it (i.e., out-group members). Studies with atheists have also revealed that MS leads to worldview defense (Newheiser et al., 2015; Norenzayan et al., 2009). Although there are no studies conducted directly with atheists in Türkiye, considering that atheists, who constitute approximately 1.5% of the country's population (Nişancı, 2023), are a minority group, it can be predicted that they will strongly defend their group identity under threat conditions. The rationale for this expectation stems from both their minority status and the unique social dynamics they experience in Türkiye. As a marginalized group in a predominantly religious society, atheists may develop a heightened awareness of their group identity and a stronger need to defend it when faced with threats, such as MS. The atheist group can also be seen as a very suitable example to test the prediction of TMT that minority groups will be systematically subjected to a threat of belief from the majority (Greenberg & Kosloff, 2008).

In this study, the defensive reactions of atheist, Sufi, and mainstream Muslims are examined by threatening their belief-based worldviews and secular worldviews separately. The threat to the belief-based worldview is directed to the

mainstream Muslims and Sufi groups through the same text, whereas it is directed at the atheist group through a text against atheist beliefs. The secular worldview threat (a foreigner's insults against Türkiye) is carried out with the same text in all three groups. On the basis of the relevant literature, the following hypotheses are proposed: Reminding mainstream Muslims of their mortality (MS condition) is expected to lead to stronger defense of their belief-based and secular worldviews than the control condition (Hypothesis 1). Compared with the control condition, reminding atheist individuals of their mortality (MS condition) is expected to lead to stronger defense of their belief-based and secular worldviews (Hypothesis 2). For Sufis, reminding them of their mortality (MS condition) is expected to lead to a reduction in belief-based and secular worldviews defense compared with the control condition (Hypothesis 3). Unlike mainstream Muslims and atheists, Sufis are predicted to exhibit fewer negative evaluations of criticisms against their worldviews under the mortality salience condition.

This study also examined the emotions that participants experienced while remembering their mortality by using content analyses. By utilizing the answers given to the questions asked in the MS and the neutral salience procedures (which have become a standard practice in research within the scope of TMT), the aim was to explore as many emotions as possible through their content analysis and to identify the emotions experienced by the participants in the three different groups in relation to their death. Thus, the types of emotions (positive, negative, and no) Sufi, mainstream Muslim, and atheist participants associated with their death and how often was addressed. It is predicted that, within the Sufi group, positive emotions will be reported more frequently than negative or no emotions in their responses to the questions asked under the MS condition (Hypothesis 4a). Furthermore, it is predicted that Sufis will report more positive emotions under the MS condition than mainstream Muslims and atheists do (Hypothesis 4b).

In addition to intergroup differences, in-group identification, which is an individual-level variable, is likely to affect the relationship between MS and worldview defense. Research in the field of TMT shows that individuals with strong in-group identification are more likely to engage in worldview defense when faced with thoughts of mortality (Hohman & Hogg, 2015; Tjew-A-Sin & Koole, 2018). This means that when individuals identify strongly with their in-group, death awareness triggers a stronger defense of their cultural worldview. Therefore, in this study, it is expected that, especially for atheists and mainstream Muslims, identification with the in-group will play a moderating role between MS and worldview defense (Hypothesis 5); that is, MS will increase the defense of one's cultural worldview for those who identify with the in-group at high levels and

decrease it for those who identify with the in-group at low levels. On the other hand, although group (i.e., order) membership is important in Sufism, identification is predicted to have a low impact on defensive responses, as this belief system aims at the personal and spiritual development of individuals (Hypothesis 6).

## Method

### Participants

The total sample of the study included 203 participants from Türkiye. Twenty-two of them did not complete the study because they either dropped out or refused to fulfill the conditions of the study. The majority of these participants were Sufis (10) and atheists (7). Data from 5 university students (mainstream Muslims) who reported being affiliated with a specific religious order, including Sufi orders, were excluded from the analyses. The data of a total of 181 participants, including 61 Sufi (males), 60 mainstream Muslims (males), and 60 atheists (39 males and 21 females), were analyzed. The sample size of the study was calculated via the G\*Power 3.1 program. Accordingly, the minimum sample size required to be included in the study for 80% power, 0.05 significance level ( $\alpha$ ), 0.25 effect size, 6 groups and 2 degrees of freedom was found to be 158 in total. The number of participants included in the study meets these criteria and is suitable for the study. The age of the participants ranged from 23 to 63 ( $M=38.09$ ;  $SD=10.55$ ) for Sufis, from 20 to 52 ( $M=22.63$ ;  $SD=4.32$ ) for mainstream Muslims, and from 18 to 61 ( $M=29.15$ ;  $SD=9.59$ ) for atheists. Difficulties in reaching female Sufis made it possible to work only with men. Since the Sufi group consisted of men, it was decided that the mainstream Muslim group, which could be considered a comparison group, would also consist only of men. Although efforts were also made to include only men in the atheist comparison group, the difficulty of reaching individuals from this specific group in Türkiye necessitated the collection of data from women to balance the number of participants across groups.

### Procedure

Participants in the Sufi and atheist groups were reached through purposive sampling and snowball sampling methods. Although many Sufi orders are active in Türkiye (Eraydın, 2016; Kayıklık, 2011), this study was able to collect data only from a single province and three Sufi order groups (Kadiri, Nakşibendi, and Mevlevi). Similarly,

through previously contacted references (e.g., the Atheism Association), individuals who identified themselves as atheists were interviewed, and through them other atheist individuals were reached. To reach mainstream Muslims who were not affiliated with Sufism, a questionnaire was administered to undergraduate students of Bursa Uludağ University Faculty of Theology and Muş Alparslan University Faculty of Theology. A convenience sampling technique was used to reach mainstream Muslims.

The participants were informed that the study was about their perspectives on life, lifestyles, and personality traits and that their participation in the study was voluntary. The participants who volunteered to participate in the study were randomly assigned to one of the experimental (MS) and control (dental pain; DP) groups. The questionnaires were administered to mainstream Muslims participants in classroom settings. Among Sufis, most questionnaires were administered collectively in their lodges, whereas some were administered individually in places such as mosques and school cafeteria. The data of the atheist group were collected in places such as cafes, homes, university gardens, and parks. The time it took the participants to complete the questionnaire varied between 30 and 50 min.

### Materials

The measurement materials are introduced below in order of their application in the study.

**Self-esteem** The participants from both the experimental and control groups were administered the Rosenberg Self-Esteem Scale (Rosenberg, 1965; Çuhadaroğlu, 1986 for the Turkish adaptation) to check their self-esteem levels ('I take a positive attitude toward myself'). The ten-item scale was rated on a 5-point Likert-type scale (1 = not at all appropriate, 5 = completely appropriate). The reliability of the scale was high ( $\alpha=0.86$ ).

**In-group identification** The level of identification of Sufi, mainstream Muslim, and atheist group members with their groups was evaluated with the identification scale developed by Cameron (2004) and adapted into Turkish by Cingöz-Ulu (2008). An example item is 'I have a lot in common with other (in-group members; for Sufi participants: 'with other Sufis'; for mainstream Muslims: 'with other Muslims', and for atheists: 'with other atheists'). This 12-item scale was rated on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree), with high scores indicating a high level of identification with one's social group. In this study, the scale items were adapted and used separately for

the Sufi ( $\alpha = .78$ ), mainstream Muslim ( $\alpha = .67$ ), and atheist ( $\alpha = .80$ ) groups.

**Manipulation of MS** The classic procedure for activating MS was used (Greenberg et al., 1990). In the MS condition, participants were asked to answer two open-ended questions about their mortality: ‘Please briefly describe the emotions that the thoughts of your own death arouse in you’ and ‘Write down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.’ Participants in the control group were asked to answer the same questions, this time considering DP.

**Delay and distraction** Research has shown that the effects of MS manipulation are much stronger when one is not conscious of death thoughts (see Burke et al., 2010). When the thought of death is removed from focal awareness (e.g., delay/distraction tasks following MS manipulation), death awareness is expected to motivate a cultural worldview defense. Accordingly, a 20-item positive (e.g., strong) and negative (e.g., unhappy) affect scale (PANAS, Watson et al., 1988; for the Turkish adaptation, Gençöz, 2000) and a word-search distraction task (Sözen, 2014) were applied to distract the participants in both the experimental and control groups and to check whether there was any change in their emotional state. The participants first completed the PANAS, followed by the distraction task. The word-search distraction task involved a  $10 \times 10$  matrix word search puzzle with neutral words hidden in it.

**Death-thought accessibility** To check whether the MS manipulation was effective, the participants were administered a death-thought accessibility task. For this purpose, Greenberg et al.’s (1994) word fragment completion task with a total of 20 words was used. Seven of the words in this task can be completed either with a word related to death or with a neutral word. For example, COFF\_\_ can be complemented with ‘COFFEE’, a neutral word, or with ‘COFFIN’ (Greenberg et al., 1994). The remaining 13 words could only be completed only as neutral words (such as pen, human, flower, etc.). Similarly, in the Doğulu’s (2017) Turkish version, ‘\_E\_EN’ can be complemented either with ‘KETEN’, a neutral word meaning ‘linen’, or ‘KEFEN’, a word related to death, meaning ‘shroud’. Higher death-thought accessibility in the MS condition than in the control condition would prove the effectiveness of the MS manipulation.

**Worldview defense** The participants’ belief-based and secular worldviews were threatened by reading some essays (see [https://osf.io/3dmbu?view\\_only=d0dbc7dd5b90434db7298f765a3006ee](https://osf.io/3dmbu?view_only=d0dbc7dd5b90434db7298f765a3006ee)). The essays previously used by Ak süit-Çiçek (2008) were designed to threaten religious and

atheist worldviews. In the essay used to threaten the religious worldview of Sufis and mainstream Muslims, the participants were about to reading an essay that was written about what a nonreligious person thought about Muslims. This essay included criticism and insults against Muslims. The main reason for presenting the same essay to both groups is that they are Muslims and Islam reflects their worldview. Although there are differences between mainstream Muslims and Sufis in terms of religious practice and worship, they share the same belief and religious worldview. Atheist participants were provided an essay that was said to have been written by a religious person and contained criticism and insults against atheism. The secular worldview threat was largely based on the essay used by Holbrook and Sousa (2012). The participants were asked to read an essay that was said to have been written by a foreign journalist who had been living in Türkiye for some time and that contained criticisms and insults against Türkiye. The essay, which threatens the secular worldview (worldviews adopted and supported regardless of belief or nonbelief: criticism and insults against Türkiye), was presented to all three groups in the same way. Each time the participants read the worldview threat essay, they were given a 6-item scale (e.g., ‘How much do you like the author?’) (Greenberg et al., 1990, 1994; Çamlı, 2010 for the Turkish adaptation) asking them to indicate whether they agreed or disagreed with the ideas in the text (1 = strongly agree, 9 = strongly disagree). High scores on this measure indicate a high level of belief-based ( $\alpha = 0.74$ ) or secular ( $\alpha = 0.93$ ) worldview defense.

**Demographic information** Finally, the participants were asked questions requiring information on gender, age, education, income level, city, and religious affiliation. Religious affiliation was reported by selecting one of four options (e.g., Muslim, Christian, Jewish, and Atheist). For the participants in the Sufi group, the form also included questions about whether they were affiliated with Sufism or any Sufi order, the duration of their affiliation, and whether they fulfilled the requirements of the order to which they belonged. Similarly, mainstream Muslims were asked whether they were affiliated with religious orders.

## Results

### Descriptive statistics

Descriptive statistics of the quantitative measurement materials used in the study are given in Table 1.

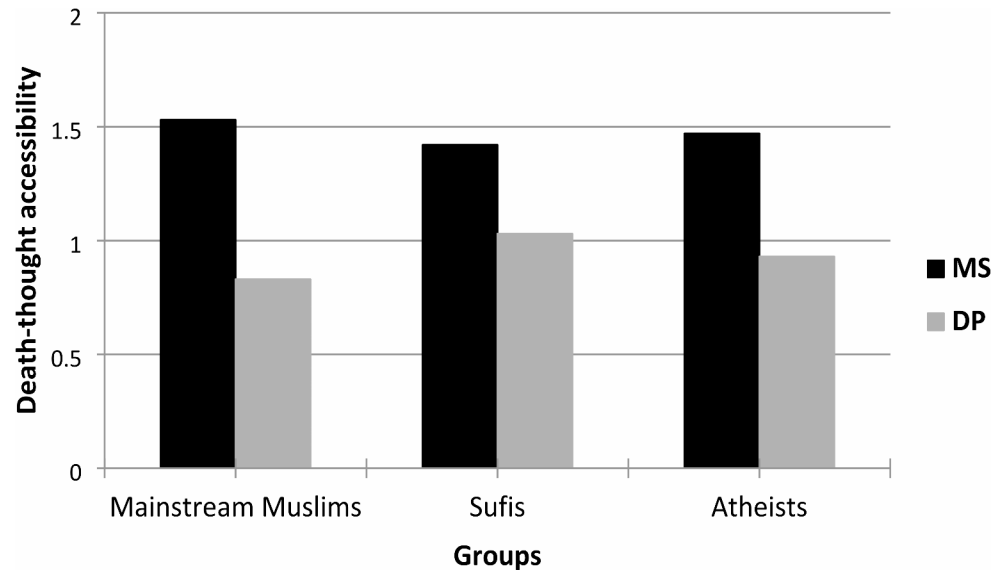
First, a one-way ANOVA was conducted to compare the ages of the participants in the Sufi, mainstream Muslim, and atheist groups. Statistically significant differences were

**Table 1** Descriptive statistics of the variables in the study

	Range	Mainstream Muslims		Sufis		Atheists		F	p
		M	SD	M	SD	M	SD		
Age	18–63	22.63	4.32	38.10	10.55	29.15	9.59	49.16	a<c<b <0.001
Self-esteem	1–5	3.84 (3.92)	0.77 (0.11)	3.63 (3.54)	0.82 (0.11)	3.87 (3.88)	0.77 (0.10)	1.57	0.210
Identification	1–5	4.06 (4.09)	0.47 (0.08)	4.00 (3.96)	0.53 (0.08)	3.61 (3.61)	0.60 (0.07)	12.8	c<a, b <0.001
PANAS-Positive affect	1–5	3.56 (3.57)	0.56 (0.09)	3.51 (3.50)	0.69 (0.09)	3.40 (3.40)	0.66 (0.08)	1.0	0.369
PANAS-Negative affect	1–5	2.24 (2.11)	0.63 (0.11)	2.29 (2.44)	0.78 (0.11)	2.10 (2.08)	0.82 (0.10)	1.1	0.335
Death-thought accessibility	0–7	1.18 (1.20)	0.97 (0.13)	1.23 (1.20)	0.96 (0.14)	1.20 (1.20)	0.95 (0.12)	0.04	0.965
Belief-based worldview defense	1–9	7.14 (7.36)	1.30 (0.15)	7.92 (7.68)	1.17 (0.16)	7.73 (7.76)	0.86 (0.14)	7.93	a<b, c <0.001
Secular worldview defense	1–9	4.59 (4.59)	2.04 (0.28)	5.55 (5.57)	2.27 (0.28)	3.64 (3.65)	1.58 (0.25)	14.0	c<a<b <0.001

Values in parentheses represent estimated marginal means and standard deviations. a=Mainstream Muslims, b=Sufis, c=Atheists

**Fig. 1** Effects of mortality salience and groups on death-thoughts accessibility. Note. MS: Mortality salience; DP: Dental pain



found between the ages of these groups ( $2,178$ ) = 49.16,  $p < .001$ ,  $\eta^2 = 0.356$ : Sufis had the highest average age ( $M = 38.10$ ,  $SD = 10.55$ ), followed by atheists ( $M = 29.15$ ,  $SD = 9.59$ ), and mainstream Muslims had the lowest average age ( $M = 22.63$ ,  $SD = 4.32$ ). Since individuals in different age categories may have different attitudes toward death and death anxiety, the age variable was added as a covariate to the subsequent variance analyses.

Whether there was a difference between the self-esteem and affect levels of mainstream Muslim, Sufi, and atheist participants was tested with one-way ANOVAs. No statistically significant differences were found between the mean scores of self-esteem [ $(2,178) = 1.57$ ,  $p = .210$ ,  $\eta^2 = 0.017$ ], positive affect [ $(2,178) = 1.00$ ,  $p = .369$ ,  $\eta^2 = 0.011$ ], and negative affect [ $(F(2,178) = 1.10$ ,  $p = .335$ ,  $\eta^2 = 0.012$ ] of these groups. These findings suggest that these groups did not differ in terms of self-esteem and affect before the MS manipulation and that the subsequent findings cannot be attributed to differences in self-esteem and affect levels of these groups.

### Manipulation check

To examine the effectiveness of the MS manipulation, a 2 (condition: MS vs. DP)  $\times$  3 (groups: mainstream Muslim, Sufi, atheist) between-subject ANCOVA was conducted with participants' age included as a covariate variable. Only the main effect of MS was significant,  $(1,174) = 15.260$ ,  $p < .001$ ,  $\eta^2 = 0.081$ : Participants in the experimental condition scored higher on death-thought accessibility ( $M = 1.47$ ,  $SD = 1.01$ ) than did participants in the control condition ( $M = 0.93$ ,  $SD = 0.82$ ; see Fig. 1). This result suggests that the MS manipulation was successful, indicating that reminding participants that they were mortal led to an increase in their recall of death-related words. The main effect of group [ $(2,174) = 0.033$ ,  $p = .967$ ,  $\eta^2 = 0.000$ ] and the interaction effect between MS and group [ $(2,174) = 0.414$ ,  $p = .662$ ,  $\eta^2 = 0.005$ ] were not significant.

### Analyses for worldview defenses

**Belief-based worldview defense** For the belief-based worldview defense, a 2 (condition: MS vs. DP)  $\times$  3

(groups: mainstream Muslim, Sufi, atheist) between-subject ANCOVA with age included as a covariate was conducted. There were no main effects of group on the assessment of the belief-based essay [(2,174) = 1.913,  $p = .151$ ,  $\eta^2 = 0.022$ ] or MS [(1,174) = 0.366,  $p = .546$ ,  $\eta^2 = 0.002$ ], indicating that belief-based worldview defense did not differ across groups or conditions.

The interaction between groups and conditions is, however, statistically significant, (2,174) = 4.968,  $p = .008$ ,  $\eta^2 = 0.054$ . Simple main effects tests revealed that mainstream Muslims in the MS condition ( $M = 7.49$ ,  $SD = 1.16$ ) exhibited more religious worldview defenses than those in the DP condition did ( $M = 6.79$ ,  $SD = 1.36$ ), (1,174) = 6.088,  $p = .015$ . This finding supports Hypothesis 1. On the other hand, atheist individuals' atheistic worldview defense levels did not differ between the MS ( $M = 7.85$ ,  $SD = 0.93$ ) and control ( $M = 7.61$ ,  $SD = 0.78$ ) conditions, (1,174) = 0.856,  $p = .401$ . Therefore, Hypothesis 2 was not supported. Sufis who were reminded of their mortality ( $M = 7.62$ ,  $SD = 1.29$ ) presented lower levels of religious worldview defense than those who were not reminded of their mortality ( $M = 8.23$ ,  $SD = 0.94$ ), (1,174) = 4.609,  $p = .033$ , supporting Hypothesis 3. In short, MS increased belief-based worldview defense among mainstream Muslims, decreased it among Sufis, and did not lead to any change among atheists.

**Secular worldview defense** The results of a 2×3 between-subject ANCOVA with age as a covariant on secular worldview defense showed that the main effect of the group was significant, (2,174) = 13.316,  $p < .001$ ,  $\eta^2 = 0.133$ : Sufis exhibited the highest secular worldview defense ( $M = 5.55$ ,  $SD = 2.27$ ), followed by mainstream Muslims ( $M = 4.59$ ,  $SD = 2.04$ ), and atheists exhibited the lowest defensive response ( $M = 3.64$ ,  $SD = 1.58$ ). However, MS did not have a significant main effect, (1,174) = 0.243,  $p = .623$ ,  $\eta^2 =$

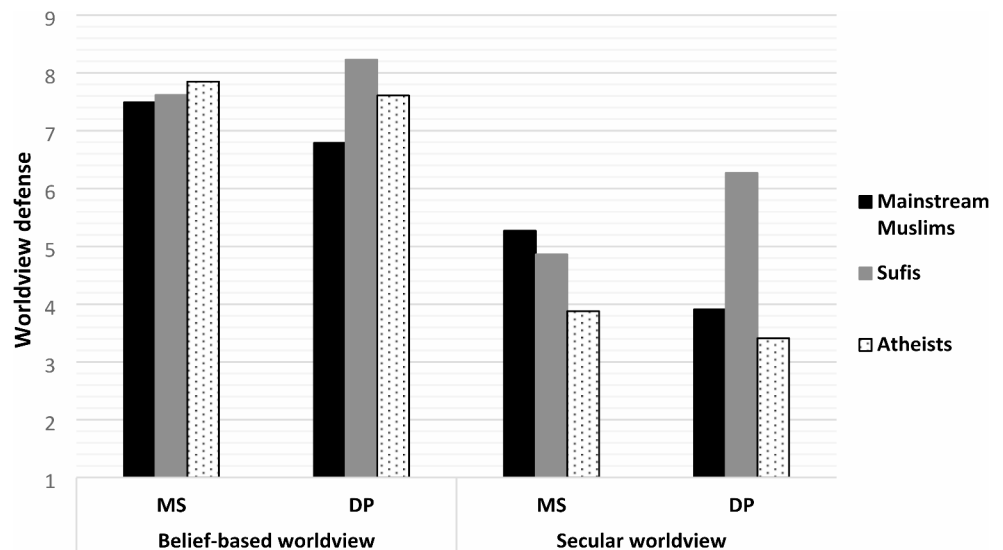
001, indicating that being reminded of death alone did not produce a significant effect (see Fig. 2).

The interaction effect of groups and conditions on participants' secular worldview defense levels was found to be significant, (2,174) = 8.180,  $p < .001$ ,  $\eta^2 = 0.086$ . According to the findings, mainstream Muslims in the MS condition ( $M = 5.27$ ,  $SD = 2.02$ ) had a greater secular worldview defense than did those in the control condition ( $M = 3.91$ ,  $SD = 1.85$ ), (1,174) = 7.526,  $p = .007$ . There was no significant difference between atheist individuals who were reminded of their mortality ( $M = 3.88$ ,  $SD = 1.68$ ) and those who were not reminded of their mortality ( $M = 3.41$ ,  $SD = 1.46$ ) in terms of their level of secular worldview defense, (1,174) = 0.935,  $p = .335$ . In contrast to the other groups, Sufis who were reminded of their mortality ( $M = 4.86$ ,  $SD = 2.31$ ) exhibited less worldview defense than those who were remind of their dental pain ( $M = 6.27$ ,  $SD = 2.03$ ), (1,174) = 8.300,  $p = .004$ . In short, being reminded of their mortality increased secular worldview defense among mainstream Muslims, decreased it among Sufis, and caused no change among atheists.

**Content analyses**

The participants' responses to the initial questions used for the MS and DP salience manipulations were subjected to content analysis. The responses were first screened by the first author, divided into meaningful sections (mostly in the form of subsentences) and screened to determine which emotion was dominant. The emotion identified by the first author was then named and coded. Coding was realized by using a category system based on the PANAS's conceptual framework of the negative (fear, anxiety, sadness, etc.) and positive (relaxation, happiness, excitement, etc.)

**Fig. 2** Effects of mortality salience and groups on the evaluation of belief-based and secular worldview essays and their authors. Note. MS: Mortality salience; DP: Dental pain



categories. In addition to these basic categories, the categories of ambivalent (availability of both negative and positive emotions in the same response), no (i.e., the absence of any emotional response or the lack of detectable positive or negative affect), and unspecified (impossible to categorize) emotions were added to the classification scheme as some of the responses did not fit into the primary (positive or negative) categories (see Table 2 for the categories and sample statements). Finally, a short coding manual explaining the

details of the resulting category system was prepared for the reviewers.

Two judges with expertise in psychology then applied this classification scheme to the whole text material independently. Each expert was asked to provide an opinion about the emotional theme of the (sub)sentences presented in a random order using one of the five categories (negative, positive, ambivalent, no, and unspecified). After the first evaluation round, the judges reached a consensus on 124 out

**Table 2** Category system used in the present study and English translations of sample statements from Sufis, mainstream Muslims, and atheists

Category	Sample statements	
	Mortality salience	Dental pain salience
1. Negative emotions	<p><b>S-46.</b> ‘I think about what I will do when I give an account to Allahu ta’ala... I wonder whether I have won Allah’s approval or not, and I am terrified by these thoughts.’</p> <p><b>MM-2.</b> ‘The feeling of passing away from the world we think we experience as a place of life is frightening...’</p> <p><b>A-51.</b> ‘...I’m afraid of dying. Despite everything, living is a beautiful thing. I want to do useful work until I die. Dying without realizing it is scary. I think about the pain I will cause to my loved ones when I die.’</p>	<p><b>S-19.</b> ‘I think it’s painful.’</p> <p><b>MM-29.</b> ‘Thinking that my tooth hurts would make me fear that the pain would interfere with my daily life.’</p> <p><b>A-29.</b> ‘I feel pain and ache. I feel regret, thinking that I should have taken care earlier. I get worried. I wonder why it hurts.’</p>
2. Positive emotions	<p><b>S-4.</b> ‘Death is not a very scary thing for me. It’s even a new beginning... I look forward to death with great hope and excitement.’</p> <p><b>MM-20.</b> ‘...it is not at all difficult for a believer; in contrast, they should rejoice that it is a ticket for him to heaven.’</p> <p><b>A-7.</b> ‘First, this thought gives me infinite confidence and comfort. I don’t feel afraid. It helps me a great deal to forget my troubles. I feel energized and active. I feel free of regret and guilt. As a result, it makes me feel more comfortable.’</p>	<p><b>S-31.</b> ‘I think it is a pain given by Allah (swt). I think it is a test. I often give thanks. I think it atones for my sins.’</p> <p><b>MM-44.</b> ‘I understand the value of health better. I praise Allah for giving me health.’</p> <p><b>A-25.</b> ‘This relaxes me because I like toothache.’</p>
3. Ambivalent emotions	<p><b>S-5.</b> ‘I am torn between the sadness of leaving my loved ones and the excitement of reuniting with my loved ones. On the one hand, death makes me sad because I am leaving my loved ones, and on the other hand, it makes me excited because I will be reunited with both my loved ones and my Lord.’</p> <p><b>MM-14.</b> ‘...When I think of my death, I often feel fear. Only the prophet is without sin. However, the thought of starting an eternal life also sets my mind at rest...’</p> <p><b>A-12.</b> ‘To disappear completely, to know that just as before I was born I didn’t feel alive, so after I die I won’t go anywhere, I won’t be aware of it, is both comforting, because there is no pain, and frightening because it’s unknown. It’s like emptiness...’</p>	<p><b>S-56.</b> ‘I suffer a great deal materially, but it leads to spiritual growth. I may be more irritable and tense, but I will be more inclined to prayer and worship...’</p>
4. No emotions	<p><b>A-16.</b> ‘I don’t think much about death because I like to live. However, I don’t care because I don’t know what happens after my body dies and I won’t even have consciousness.’</p>	<p><b>S-15.</b> ‘My tooth only hurts, I don’t think about the rest, I have no feelings.’</p> <p><b>MM-30.</b> ‘It doesn’t evoke much emotion right now.’</p> <p><b>A-30.</b> ‘I don’t think anything about this situation because I am not someone who cares about emotions.’</p>
5. Unspecified	<p><b>S-28.</b> ‘The life of this world is pregnant with another life at the door of death. How logical is it to attach the heart to this world that has an end? To be able to give an easy account, it is necessary to fill the ledger well. To be able to die before death, to untie the heart from the world and bind it to the hereafter, to live every breath as if it were our last!... To get rid of the human attribute; to be human, to remain human, to die human!’</p> <p><b>MM-10.</b> ‘It reminds me that I am not permanent in the world, that I need to live my religion in a better way, that I need to continue to do good and increase it, that when I am angry it removes that feeling, that I am in a softer and more emotional state.’</p> <p><b>A-3.</b> ‘I think it’s too early to think about death. I always postpone thinking about it because I find it intrinsically valuable to live. It seems absurd to think about it when there are so many good things to live for all around me.’</p>	<p><b>S-13.</b> ‘That I should miswak<sup>1</sup> when I have a toothache. However, it’s not enough for the pain. In addition, cloves on it, then it’s good for pain or inflammation.’</p> <p><b>MM-37.</b> ‘I have never had a toothache; I don’t know what it feels like.’</p> <p><b>A-28.</b> ‘I believe that pain can be caused by psychological reasons, so if I think a lot about my tooth hurting, it hurts.’</p>

<sup>1</sup>“Miswak” refers to a teeth-cleaning twig, often obtained from the *Salvadora persica* tree, used traditionally in various cultures, especially in Islamic ones, for oral hygiene, as it serves as a natural alternative to toothbrushes and toothpaste

S Sufis; MM mainstream Muslims; A Atheists

of 181 responses (68.5%). Fifty-seven responses for which no consensus could be reached were returned to the experts for additional examination. After this round, there was a consensus on 48 (84%) of the responses, but not on 9 (16%). The analysis produced a high level of interrater agreement (*Cohen's kappa*=0.929;  $p < .001$ ), which was well above the acceptable level (0.67; Mayring, 2014).

As shown in Table 3, while emotions in the MS condition exhibited more diversity across the sample, diversity was considerably lower in the DP condition. In the MS condition, ambivalent emotions accounted for 37.4%, negative emotions accounted for 23.1%, positive emotions accounted for 17.6%, and no emotions accounted for 12.1%. In the DP condition, negative emotions constituted a very high percentage 65.6%.

Fisher's exact chi-square test was applied to determine whether the positive, negative, and no emotions arising from the remembrance of death were related to the group variable. The results revealed that the relationships between the variables were statistically significant ( $X^2 = 37.514$ ;  $p < .001$ ). Sufis reported positive emotions more frequently than other emotions did ( $p < .001$ ). Moreover, Sufis expressed positive emotions ( $p < .001$ ), mainstream Muslims expressed negative emotions ( $p < .001$ ), and atheists expressed no emotions ( $p < .001$ ) more than other emotions did. These findings support Hypotheses 4a and 4b.

Considering the condition under which participants were reminded of dental pain, negative emotions were dominant in all three groups (50%, 73.3%, and 73.3% for Sufis, mainstream Muslims, and atheists, respectively). Among the negative emotions, pain and suffering were the most frequently expressed emotions. Fisher's exact chi-square test was used to analyze whether the positive, negative, and no emotions arising from the remembrance of dental pain were related to the group variable, and the relationship between the variables was not statistically significant ( $X^2 = 2.310$ ;  $p = .751$ ). In the DP condition, negative emotions were expressed the most in all three groups. In parallel with the quantitative findings, the results of the content analyses revealed that positive emotions were more common among Sufis, negative emotions among mainstream Muslims, and no emotions among atheists when reminded of death.

**Moderation analyses**

In the present study, it was hypothesized that in-group identification would moderate the relationship between MS and worldview defense. Specifically, for atheists and mainstream Muslims, individuals with high in-group identification are expected to exhibit stronger worldview defense under MS than those with low in-group identification (Hypothesis 5). In contrast, for Sufis, in-group identification was predicted

**Table 3** Frequencies and percentages of emotion categories

	GROUP											
	Sufis			Mainstream Muslims			Atheists			Total		
	MS	DP	%	MS	DP	%	MS	DP	%	MS	DP	%
Negative emotions	2	15	50	11	22	73.3	8	22	73.3	21	59	65.6
Positive emotions	13	2	6.7	1	4	13.3	2	1	3.3	16	7	7.8
Ambivalent emotions	14	5	16.7	13	0	0	7	0	0	34	5	5.6
No emotions	0	1	3.3	0	1	3.3	11	2	6.7	11	4	4.4
Unspecified	2	7	23.3	5	3	10	2	5	16.7	9	9	16.7
Total	31	30	100	30	30	100	30	30	100	91	90	100

MS Mortality salience; DP Dental pain

to have a weaker moderating effect on this relationship, as Sufism emphasizes personal and spiritual development over strong group affiliation (Hypothesis 6). The analyses were conducted separately for each group to test these hypotheses.

Moderator effect analyses were performed via Process Macro (Hayes, 2013). For the Sufi group, the interaction effect of MS and identification was not statistically significant for either religious or secular worldview defenses ( $b = -0.66$ ,  $SE = 0.57$ ,  $t = -1.16$ ,  $p = .249$ ;  $b = 0.10$ ,  $SE = 1.11$ ,  $t = 0.09$ ,  $p = .931$ , respectively).

For the mainstream Muslim group, both MS ( $b = -0.45$ ,  $SE = 0.22$ ,  $t = -2.06$ ,  $p = .044$ ) and identification ( $b = 0.48$ ,  $SE = 0.11$ ,  $t = 4.40$ ,  $p < .001$ ) had statistically significant main effects on religious worldview defense. Moreover, the interaction between MS and identification was also significant ( $b = -0.47$ ,  $SE = 0.22$ ,  $t = -2.15$ ,  $p = .036$ ). To understand the interaction in more detail, the results of the simple slope analysis were examined. While the relationship between MS and religious worldview defense was significant when the level of identification was high ( $b = -0.91$ ,  $SE = 0.31$ ,  $t = -2.99$ ,  $p = .004$ ), this relationship was not significant when the level of identification was low ( $b = 0.02$ ,  $SE = 0.31$ ,  $t = 0.07$ ,  $p = .940$ ). Accordingly, reminding participants with high levels of identification with the mainstream Muslim group about their mortality led them to defend their religious worldview (see Fig. 3).

The results of the analysis of the atheist group revealed that MS ( $b = -0.19$ ,  $SE = 0.19$ ,  $t = -1.03$ ,  $p = .308$ ) and identification ( $b = 0.06$ ,  $SE = 0.09$ ,  $t = 0.67$ ,  $p = .505$ ) did not have a statistically significant main effect on atheistic worldview defense. However, the interaction between MS and identification was significant ( $b = -0.36$ ,  $SE = 0.18$ ,  $t = -2.02$ ,  $p = .048$ ). The results of the simple slope analysis revealed that the relationship between MS and atheist worldview defense was not significant when the identification level was low ( $b = 0.19$ ,  $SE = 0.26$ ,  $t = 0.71$ ,  $p = .482$ ),

whereas it was significant when the identification level was high ( $b = -0.57$ ,  $SE = 0.26$ ,  $t = -2.15$ ,  $p = .035$ ). As shown in Fig. 4, individuals with high levels of identification with the atheist group exhibited greater atheistic worldview defense when they were reminded of their mortality.

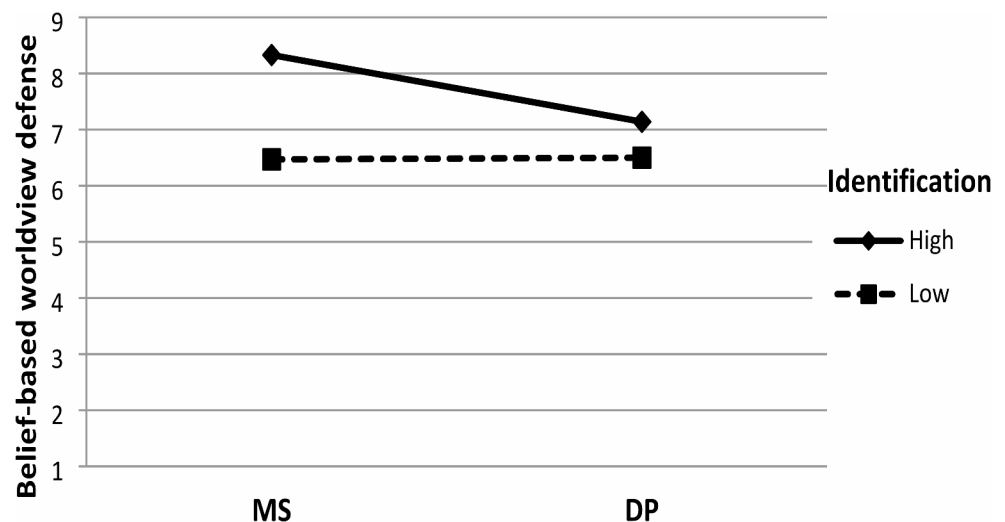
Similarly, MS ( $b = -0.25$ ,  $SE = 0.19$ ,  $t = -1.31$ ,  $p = .194$ ) and identification ( $b = -0.10$ ,  $SE = 0.09$ ,  $t = -1.14$ ,  $p = .260$ ) did not have statistically significant effects on secular worldview defense among atheists. In contrast, the interaction between MS and identification was marginally significant ( $b = 0.33$ ,  $SE = 0.18$ ,  $t = 1.82$ ,  $p = .074$ ). According to the results of the slope analysis, the relationship between MS and secular worldview defense was significant when the identification level was low ( $b = -0.59$ ,  $SE = 0.27$ ,  $t = -2.22$ ,  $p = .031$ ), whereas when the identification level was high, this relationship was not significant ( $b = 0.10$ ,  $SE = 0.27$ ,  $t = 0.36$ ,  $p = .716$ ). As shown in Fig. 4, atheists with low levels of identification with the atheist group exhibited greater secular defense advocacy when they were reminded of their mortality.

Therefore, the results partially supported Hypothesis 5, and Hypothesis 6 was fully supported: while identification plays a moderating role between MS and worldview defense in mainstream Muslim and atheist groups, it does not play such a role in Sufis.

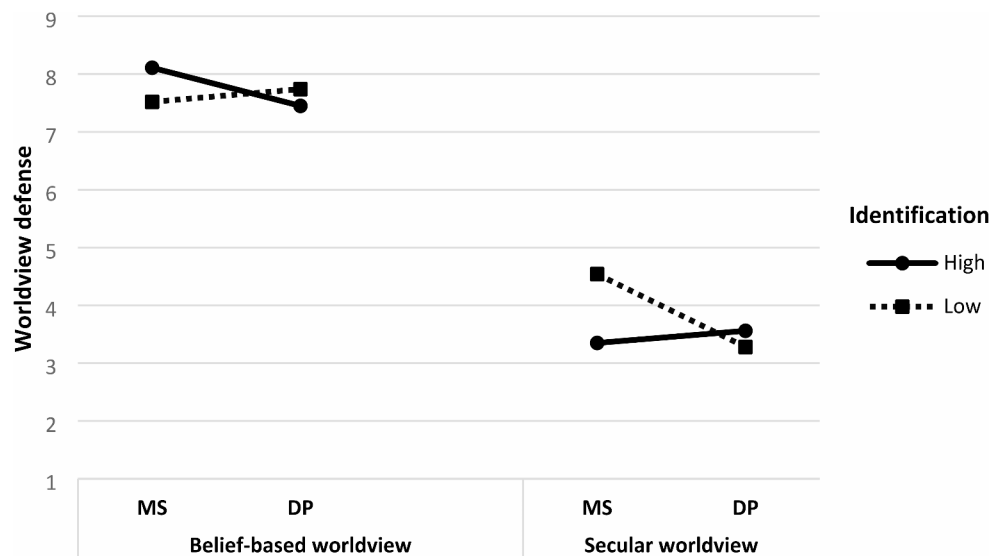
## Discussion

The present study is the first empirical investigation of the role played by Sufism in terror management. Together with Sufis, this study was realized via two other samples from the same societal context in Türkiye: mainstream Muslims and atheists. Therefore, this design allowed a direct comparison between these three groups in relation to the effects

**Fig. 3** The moderating role of identification in the relationship between mortality salience and belief-based worldview defense for the mainstream Muslim group. Note. MS: Mortality salience; DP: Dental pain



**Fig. 4** The moderating role of identification in the relationship between mortality salience and worldview defense for the atheist group. *Note.* MS: Mortality salience; DP: Dental pain



of their group identities in producing worldview defenses when they are threatened.

First, when participants in the mainstream Muslim, atheist, and Sufi groups were reminded of their mortality, their death-thought accessibility scores increased. This finding, which is in line with previous studies (e.g., Greenberg et al., 1994), indicates that the MS manipulation worked successfully in all three groups, some of which have never been studied before (i.e., Sufis). Other findings revealed that, among Sufis, those who were reminded of their mortality exhibited lower levels of belief-based and secular worldview defense responses than those who were not reminded.

The fact that the Sufi lifestyle functions differently in managing existential terror may be due to its most fundamental features. Sufism is a form of religious practice with intense emotional and behavioral aspects (Kayıklık, 2011). Although religious education in Sufism, which requires self-control and various personal growth strategies, is basically behavior-oriented, the entire education process aims to develop an intimate and deep emotional bond with God. Accordingly, it seems that thinking about death activates positive emotions such as peace, excitement, reunion, and hope in Sufis, buffering their worldview defense. The results from the content analyses of the present study also point in the same direction: thinking about one’s own death elicited mostly positive emotions from Sufis.

Perhaps the most important finding from Sufis was the inability of in-group identification to shape the responses to MS. Findings from the moderation analyses showed that worldview (for both secular and belief-based) defenses were not moderated significantly by in-group identification. This suggests that in-group identification was not a significant factor in shaping worldview defenses among Sufis. This finding may be better understood in light of the Sufi perspective on death and self-actualization. Unlike many religious

traditions that emphasize group cohesion and external reinforcement of faith, Sufism places a strong emphasis on internal spiritual development, self-purification, and a direct, personal connection with the divine (Frager & Fadiman, 2013; Kayıklık, 2011). The central tenets of Sufism advocate transcending the *nafs* and material attachments, which may reduce reliance on group-based validation of beliefs. Additionally, Sufi teachings frame death not as an existential threat but as a transition into divine unity, often referred to as the ‘wedding night’, symbolizing reunion with the divine (Ayten & Düzgüner, 2017). This perspective may reduce the need for traditional worldview defenses, as death is embraced with peace rather than fear. Moreover, the findings align with research suggesting that existential anxiety can be mitigated through self-transcendence and personal meaning-making rather than group-based reinforcement (Park & Pyszczynski, 2019; Pyszczynski et al., 2006). Sufism fosters an individualized path toward meaning, where self-growth and inner transformation serve as primary coping mechanisms against existential concerns (Frager, 1999). Given that Sufi practice involves rigorous personal discipline, introspection, and detachment from external social validation, it is plausible that their mortality-related responses are shaped more by personal values and existential acceptance rather than by group identification.

In general, these findings are in line with the claim of Cozzolino (2006), who argued that experiencing death in an authentic and personalizing way can serve individual growth and positive psychological functioning. Considering that contemplation of death in Sufism is important for self-cultivation and purification from bad traits, it is understandable why MS leads to positive outcomes in Sufis with respect to worldview defenses.

On the other hand, MS increased both religious and secular worldview defense responses in the mainstream Muslim

group consisting of theology students. These findings support the MS hypothesis of TMT (Pyszczynski et al., 2015) and coincide with the findings of previous studies using Muslim samples (Aksüt-Çiçek, 2008). Content analyses also revealed that mainstream Muslims experienced negative emotions such as fear, anxiety, and discomfort when they were reminded of their eventual death. Accordingly, thinking about death seemed to evoke negative emotions in mainstream Muslims and increased the level of worldview defense. It was also found that mainstream Muslims with high levels of identification with their belief-based in-groups (Muslims) exhibited more belief-based worldview defense reactions after MS. This finding is in line with other research that points to the importance of identification in terror management (Tjew-A-Sin & Koole, 2018).

A similar set of findings was also reached for atheists for the first time in this study: identification with the in-group moderates the tendency to defend belief-based and secular worldviews in this group. This finding seems significant, especially considering the minority status of atheists in Türkiye. For atheists, reminding them of mortality did not have a significant effect on belief-based worldview defense responses. Consistent with this, when atheists' writings about their deaths were examined via content analysis, no emotions were found to be dominant. It may be that the MS did not lead to a worldview defense, since it evoked no rather than positive or negative emotions in atheists. Since atheist beliefs do not offer individuals immortality, they may not serve a significant function in the management of terror. It can be argued that the association of existence only with this world enables atheists to focus on this world to cope with the fear of death. Another alternative explanation may be related to the fact that the minority position of the atheist group produces a constant threat to their belief system. The possibility that individuals in this group develop insensitivity to such threats over the long term is worth examining (Coleman et al., 2019).

On the other hand, although atheism does not promise literal immortality, the present study showed that MS increased atheistic worldview defense reactions in those who identified with the atheist group at high levels. On the basis of this finding, atheism, as a social group, functions as terror management by providing a sense of symbolic immortality for those who identify with it at high levels. In studies with atheists in which secular worldviews were also considered, it was generally found that secular worldviews protected them against the fear of death (Newheiser et al., 2015; Norenzayan et al., 2009). In contrast to these findings, in the current study, MS did not change atheists' secular worldview defense responses. The main reason for this may be that the secular worldview considered in the current study does not represent the worldview of atheists

in Türkiye. In the present study, an essay criticizing Turkish society was used as the secular worldview. Since Türkiye is a Muslim majority country, atheists may not have perceived these criticisms of Turkish society as a threat to their worldview. In this study, MS was found to lead to secular worldview defense only among those who identified with the atheist group at a low level. Moreover, atheists presented the lowest secular worldview defense response compared with mainstream Muslim and Sufi groups (see Fig. 2).

This study has some limitations. One of them is that the mainstream Muslim and Sufi groups consisted of only male participants. However, some studies on TMT have shown that the effect of MS does not differ between men and women (see Burke et al., 2010). Furthermore, in the present study, no significant gender difference was found in the comparisons made on the atheist sample, of which approximately half consisted of women ( $t=0.62$ ,  $p>.01$  for death-thought accessibility;  $t=0.68$ ,  $p>.01$  for belief-based worldview defense;  $t=1.38$ ,  $p>.01$  for worldview defense). Another limitation is related to age differences across the three groups. To address this, we controlled for age in our analyses. Without controlling for age, the results remained consistent, with only minor changes in significance levels (see [https://osf.io/dm8hu?view\\_only=d0dbc7dd5b90434db7298f765a3006ee](https://osf.io/dm8hu?view_only=d0dbc7dd5b90434db7298f765a3006ee)).

This study was founded on the idea that death is positively evaluated in some forms of religious life and that the thought of death can elicit positive attitudes and behaviors in those individuals. In the present study, Sufism, a religious practice specific to Islam, was found to reduce worldview defense after death awareness. Despite its limitations, this set of findings may contribute to the investigation of the terror management phenomenon, which is claimed to be universal, within the framework of cultural and local differences. Given that most studies on TMT have been conducted in North America and that most of the participants came from Judeo-Christian religious traditions (Jackson et al., 2018; Jong, 2020), such studies are needed to cover the enormous diversity in worldviews.

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**Data availability** Data is available on the OSF: [https://osf.io/7hksf/?view\\_only=d0dbc7dd5b90434db7298f765a3006ee](https://osf.io/7hksf/?view_only=d0dbc7dd5b90434db7298f765a3006ee).

## Declarations

**Ethics statement** All procedures performed in studies involving human participants were approved by the Ethical Committee of Bursa Uludağ University (2019-03).

**Conflict of interest** The authors declare that we have no conflicts of interest.

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