

University of Twente

# **Determinants of existential Death Anxiety**

**A cross-sectional survey study on the effect of age, gender and religious affiliation on Death Anxiety**

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## Abstract

**Objective:** The awareness of the own death represents one of the biggest threats to the human beings, because humans are evolutionary determined to survive. Death Anxiety can therefore mitigate the individual wellbeing. Death Anxiety is a universal phenomenon, but individuals differ in their perceived anxiety level. The aim of the current study was to investigate the relationship between Death Anxiety and socio-demographical factors in a non-clinical sample. **Method:** To clarify if the socio-demographical factors gender, age and religious affiliation are associated with Death Anxiety, a cross-sectional survey study was conducted within a non-clinical sample in the Netherlands. Death Anxiety was measured using a newly composed subscale from the Existential Concerns Questionnaire (ECQ) and the Death attitude profile revised anxiety subscale (DAP-R). Most of the 389 participants were students at the University of Twente in Enschede. In total 254 women and 133 men aged between 19 and 84 years with a Median age of 43.0 years participated in this study. **Results:** The strongest determinant of Death Anxiety was found to be gender. Female participants showed a significant higher level of Death Anxiety in comparison to male participants on both the ECQ ( $t(385) = -3.925, p < .001$ ) and DAP-R subscale ( $t(385) = -3.568, p < .001$ ). Moreover, curve estimation indicated a non-linear, but rather u-shaped association between age and Death Anxiety on the DAP-R subscale ( $B = -.389; p = .026$ ) in comparison to the ECQ subscale ( $B = -.007; p = .777$ ). Participants in their 20ies tended to report a higher level of Death Anxiety, same as participants of an age ranging between 50 and 60 years. No significant association was found between worldview and Death Anxiety as measured by both subscales. **Conclusion:** Women and both younger and older participants reported more Death Anxiety. Worldview is not seemed to be related to Death Anxiety. However, the total explained variation was very low, which means that there can be other variables predicting Death Anxiety.

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# **1.Introduction**

## **1.1.Existential Anxiety**

Human beings are the only species possessing the ability to reflect upon their own death, which makes them aware of their own mortality and vulnerable to feel anxious and threatened concerning their own existence (Tillich, 1952). According to Tillich (1952) existential anxiety refers to the apprehension of meaning of one's own life and death. Accordingly, the individual's state of being is closely connected to their non-being. There are three types of anxiety in which the being is threatened by the non-being, all of which are interwoven. Tillich conceptualizes that the anxiety spins around these three domains of apprehension, which include the fear of fate and death, the fear of emptiness and meaninglessness and the fear of guilt and condemnation.

The fear of fate and death reflects the absolute threat to the human existence and the relative threat to the personal fate of one's self. The second domain, emptiness and meaninglessness, relates to the anxiety of unimportance in life, which is necessary for giving the individual meaning regarding their own existence in the world. The third and last domain, guilt and condemnation, refers to the anxiety of a perceived threat to the human ethical and moral identity. The fear of death and therefore the fear of non-existence reflects the ultimate fear and underlies all other fears.

A higher level of existential anxiety can disrupt the individual's openness towards finding fulfillment in their life and blocks the self-knowledge and knowledge of the world (Tillich, 1952). A higher level of Death Anxiety is also associated with a lower level of subjective wellbeing (Kroshus, Swarthout, & Tibbetts, 1995), physical health problems (Holness & Nethercott, 1989; Turner, Kunches, Gordon, Travers, & Mueller, 1989), general anxiety, depression, negative self-image, neuroticism, low need for achievement, less ego strength and less psychological endurance (Gilliland & Templer, 1985). Moreover, a higher level of Death Anxiety can lead to feelings of losing control, meaninglessness and powerlessness in human beings (Noyes, Stuart, Longley,

Langbehn, & Happel, 2002; Stolorow, 1979; Yalom, 2008). This, in turn can lead to a stagnation of personal fulfillment and happiness in life (Yalom, 2008).

The most common form of existential anxiety represents Death Anxiety. Death Anxiety is therefore a frequently used topic of empirical research on existential issues and a common subject in many philosophical reflections.

### **1.1.2. Existential Death Anxiety**

The biggest threat to our sense of control and our basic instinct to live is the mortality of the human being (Becker, 1973 & Spilka, 2003). The awareness of our own death makes us vulnerable, because it threatens our evolutionary predestination to survive, which forces individuals to cope with their own mortality mostly by denying it (Becker, 1973).

Consequently, a central motivation for human existence and behavior lies in the avoidance of the awareness of the death (Becker, 1973). Death Anxiety is common in the general population. However, most individuals have a sufficiently high level of self-control, making them capable of coping with Death Anxiety by suppressing their thoughts (Kastenbaum, 2003). Nevertheless, according to Kastenbaum (2003) no individual has the ability to suppress the feeling of Death Anxiety completely. Individuals therefore perceive Death Anxiety in general, but differentiate in their perceived anxiety level (Carmel & Mutran, 1997). It is the excessive Death Anxiety that can mitigate the individual functioning in daily life (Niemiec & Schulenberg, 2011).

According to Belsky (1999) Death Anxiety is defined as “the thoughts, fears and emotions about that final event of living that we experience under more normal conditions of life” (Belsky, 1999, p. 368). In accordance with other researchers, Belsky believed that all individuals suffer from Death Anxiety to some degree. Nevertheless, psychologists generally agree that a wide range of factors like gender, age and religious affiliation can influence the degree of perceived Death

Anxiety within individuals (Kastenbaum, 2007; Kastenbaum, 2003). In view of the determinants of Death Anxiety, attitudes towards death are shaped by the social environment, cultural background and philosophical beliefs of the individual. The attitude towards death can influence the mind unconsciously, which is proven to influence the behavior of the individual. However, changing negative attitudes towards death used by interventions and workshops in past studies showed no consistent, successful change in death orientation, which indicates a relative stability in death orientation (Glass & Knott, 1984; Hoelter & Epley, 1979; Hopping, 1977).

Thorson and Powell (1988) identified twelve main aspects of Death Anxiety: concern about an afterlife, fear of a long and slow death, fear of getting diagnosed with cancer, worry about becoming helpless, fear of a painful death, looking forward to a new life, concerns about maintaining control, fear of pain, fear of being shut in a coffin, concerns about the state of the body after burial, dread of having surgery and concerns about what might happen to the body. Eventually, it is not death itself causing Death Anxiety, but rather the loss of control over the body, uncertainty about what happens to the body after death and about what causes the death (Thorson & Powell 1988).

Yalom (1980) illustrated in his book "Existential Psychotherapy" that psychotherapy is in some degree incomplete if it does not include the psychopathological symptoms of Death Anxiety, because this fear is constantly, unconsciously present in the individual and reflects the original source of several anxiety disorders within psychopathology. Studying the determinants of existential Death Anxiety is therefore inevitable for gaining more knowledge about the individual emergence of anxiety disorders in general (Yalom, 1980).

### **1.1.3. Biological, cognitive and psychoanalytical explanations for the development of Death Anxiety**

Different views on the emergence of Death Anxiety can focus on either biological or cognitive origins and consequences. Death Anxiety is associated with fear, dread and uncertainties concerning the future. Physical sensations can be a consequence, including an increased heart rate, stuffy breathing and sweating (Uretsky, 2002).

The study of Death Anxiety reflects a necessary field for empirical research, because the emotions following a state of Death Anxiety cause bodily sensations similar to other well-known anxiety disorders within psychopathology.

Moreover, cognitive behavioral therapy is a utilitarian method for treating existential anxieties like Death Anxiety. It helps people to adapt as closely as possible to their living conditions. Which makes it more advisable to look also at cognitive factors regarding Death Anxiety (van Bruggen, Vos, Bohlmeijer & Glas, 2013).

A cognitive view on the development of existential Death Anxiety is presented by Becker (1973), who considers cognitive abilities responsible for the awareness of one's own mortality. This awareness may then result in a feeling of vulnerability and consciousness that the human body is fallible and not immortal. The individual begins to project these thought on experiences and events in the world, which leads to the assumption that those experiences will inevitably end in death. The result of this assumption is again Death Anxiety and the avoidance of stimuli that are associated with dying. Becker further argues that high levels of Death Anxiety can then facilitate the generation of everyday fears and phobias. Accordingly, the individual tries to deny and forget their death through behavior that regulates their anxiety (Langs, 2004; Meyers, 2009). These regulations can include the acquired need for commitment in a community and external support (Castano, Leidner, Bonacossa, Nikkah, Perrulli & Spencer, 2011).

Looking at the analytical perspective of Death Anxiety, the unconscious mind can facilitate Death Anxiety according to the Freudian approach. Death Anxiety not only refers to the fear of one's own death, but also to the death of significant others in the related environment. According to Freud, fear of death in general can be referred as *thantaphobia*. He views this state of anxiety as not actually the fear of one's own death, since humans do not believe in their own death, especially because no one can experience death more than once. According to Freud, it is rather the unconscious mind trying to deal with unresolved conflicts of the childhood, which in fact is the underlying source of Death Anxiety (Langs, 2004; Meyers, 2009).

Another study showed that several psychosocial factors, like a low level of purpose in life and therefore the feeling of meaningless of one's own existence (Blazer, 1973; Bolt, 1978; Durlak, 1972, 1973), a psychopathology of general anxiety (Gilliland & Templer, 1986; Kupperman & Golden, 1978; Nogas, Schweitzer, & Grumet, 1974) and an external locus of control (Tolar & Reznikoff, 1972; Trent, Glass, & McGee, 1981) facilitate the manifestation of Death Anxiety. According to McDonald and Hilgendorf (1986), also the appropriation of negative death images and a mid-life crisis (Ciernia, 1985) can elicit Death Anxiety.

However, Kastenbaum (2003) advises to focus more on the socio-demographical factors that seem to determine the individually perceived Death Anxiety level.

#### **1.1.4. Socio-demographical determinants of existential Death Anxiety**

Focusing on the determinants of death related anxiety, significant correlations with age and gender are often found. Reviews show that young adults often report a higher level of Death Anxiety and mortality issues in comparison to older people (Kastenbaum, 2003). Specific studies and clinical interviews about fears and phobias show similar results, in which fear of death is the most commonly mentioned fear in young adolescents (Ollendick, Matson, & Helsel, 1985).



Most studies have indicated that Death Anxiety further seems to decrease linearly in relation to age. Teenagers and young adolescents have been reported to perceive the highest level of Death Anxiety, while elderly people ranging from 55 and over reported the lowest level of Death Anxiety (Thorson & Powell, 1984). However, a study by Depaola, Neimeyer, Lupfer, & Fiedler (1994) noted a different finding on the relation between age and Death Anxiety. According to this study, Death Anxiety was perceived, highest in middle adulthood, fewer in young adolescents and lowest in the elderly. However Butler (1963) found a linearly association between age and Death Anxiety in which Death Anxiety was perceived highest by young people, less by middle adulthood and lowest by elderly.

According to Butler (1963) elderly people perceive less Death Anxiety; because they often engage in a 'life-review' to resolve conflicts, find meaning in their life resulting in a relief of anxiety and a more positive death orientation. The development of the 'wisdom model' supports those findings. It suggests that wisdom can help individuals to feel physically and mentally prepared for death by aging and the imminent death, which explains the lower perceived Death Anxiety levels by elderly people (Ardelt, 2000).

Besides age, several variables like gender seem to be relevant for Death Anxiety. Women expressed more Death Anxiety compared to men, because women are more afraid of pain and bodily decomposition during the process of dying. A study by Schumaker, Barraclough, and Vagg (1988) to determine the gender effect on Death Anxiety scores of Malaysian and Australian students showed that women experienced a greater level of Death Anxiety in comparison to men. Furthermore, a study by Suhail and Akram (2002) on Pakistani Muslims supported those findings. This was also supported by the study by Abdel-Khalek (2005) who ascertained that women experienced a significantly higher level of Death Anxiety in comparison to male participants.

Another important socio-demographic factor related to Death Anxiety, according to Greenberg and Pyszczynski, may be the religious affiliation of the individual. Religious affiliation

includes feelings, beliefs and practices that are associated closely with religion (Ho & Ho, 2007). Christianity, Buddhism, Islam and Hinduism are the major world religions (Lutzer, 1994).

Religious affiliation contains three main functions within the society. It first provides shared beliefs, values and norms within a common society (DeSpelder & Strickland, 2002), it also helps individuals in coping with life issues like death in that they provide rules and opportunities on how to live one's life, but also information of what can happen to the individual after death (DeSpelder & Strickland, 2002). The last function of religion plays an important role during life crises, since religious affiliation seems to provide emotional support for individuals during such situations (Richardson, Berman, & Piwowarski, 1983).

However, contradictory conclusions are drawn by different studies on the impact of religion on Death Anxiety. Donahue (1985) described in his meta-analytic review of intrinsic and extrinsic religiousness that several studies regarding the relationship between religious affiliation and Death Anxiety show different findings. Some studies described a positive correlation between religiosity and Death Anxiety, whereas several other studies showed negative or no significant correlations. Nonetheless, most of the studies indicated that Death Anxiety appeared to be lower in people with strong and integral religious views, and greater in people with more expedient religious beliefs (Donahue, 1985).

Harding, Flannelly, Weaver and Costa (2005) also conducted a study to gain information about the influence of religious affiliation on Death Anxiety and death acceptance. Parishioners of an Episcopal church in New York City participated in this survey. Results show a significant effect of the level of religiosity on death acceptance and Death Anxiety. The belief of god's existence and the belief in an afterlife were negatively correlated to Death Anxiety and positively to death acceptance, which indicated a positive effect of religiosity on Death Anxiety. Another study supporting these results conducted by Klug and Sinha (1987–1988) showed a higher death

acceptance level in priests and nuns resulting in a lower Death Anxiety level compared to non-religious individuals.

A prominent theory supporting the influence of personal worldviews and religious affiliation on Death Anxiety levels is provided by the Terror Management Theory (TMT). This theory is based on socio-psychological research of Solomon, Greenberg and Pyszczynski in the 1980s. TMT focuses on reaction patterns (management) that individuals apply when confronted with death awareness and their own mortality (terror) (Pyszczynski, Greenberg & Solomon, 1999).

TMT postulates that there is a discrepancy in the individual between the urge to live and the awareness of their own mortality (Greenberg, Pyszczynski & Solomon, 1986). This causes the individual to deny and push away these thoughts when confronted with death reminders like older people. This leads to the avoidance of awareness of one's own mortality. Individuals confronted with death stimuli engage in defensive mechanisms in which they adopt strategies for reducing the perceived anxiety. Pyszczynski, Greenberg, and Solomon (1999) introduced a dual-process model of proximal and distal defenses, which is necessary for reducing the threat of death and maintaining the psychological wellbeing of the individual. After a person experiences a conscious threat of death the process of proximal defenses directly follows, allowing the individual to deny their own death and mortality through strategies suppressing conscious thoughts of death. It allows the individual to feel a distance to death, which internally reduces Death Anxiety (Pyszczynski et al., 1999).

However, the distal defense mechanism occurs at an unconscious level when confronted with death related stimuli. A 'death- transcending reality' is created to increase the appearance of positive thoughts (Pyszczynski et al., 1999). This death transcending reality promotes a purpose and sense of meaning in life, which covers the unavailability of death for the individual. This mindset can be achieved through a specific belief system and values that support the cultural worldview of the individual. This cultural worldview like religious affiliation reflects a shared perception of

reality providing a sense of stability and comfort for the individual as well as a symbolic immortality such as specific legacy or afterlife. Religious affiliation can then compensate for the lack of control of the individual and therefore buffer Death Anxiety (Kay, Whitson, Gaucher, & Galinsky, 2009).

Many studies investigated socio-demographic the determinants of Death Anxiety, however mostly in American or non-European cultures. Moreover, most of the studies are not contemporary, while religious affiliation may have changed substantially over time within society. The current study therefore tried to fill this gap by conducting a contemporary study related to Death Anxiety in the Netherlands. The aim of this study was to investigate the relationships between Death Anxiety and socio-demographical factors in a non-clinical sample to answer the following research questions:

*Is gender associated with Death Anxiety?*

*Is age associated with Death Anxiety?*

*Is personal worldview associated with Death Anxiety?*

Based on the literature, we expect a higher level of Death Anxiety in women compared to men. Further, with respect to age we cannot clearly expect a linear or non-linear relation with Death Anxiety, because of the controversial literature findings. Finally, with respect to the personal world view, we expect individuals who feel connected to a specific world view like Christianity, Islam or Hinduism to perceive lower Death Anxiety compared to individuals who do not feel connected to any of these world views.

## 2. Methods

### 2.1. Participants and Procedures

Data was used from the cross-sectional survey study in a non-clinical sample by Van Bruggen, Ten Klooster, Westerhof, Vos, De Kleine, Bohlmeijer, & Glas (2017) in which the Existential Concerns Questionnaire (ECQ) was developed. This study was conducted at the University of Twente in the Netherlands. Second-year students in a bachelor psychology course were asked to participate in the study by completing the ECQ questionnaire and other scales including the Death Attitude Profile Revised-Anxiety subscale (DAP-R). The respondents were asked to find two other respondents in their social environment from the age group below thirty and below fifty years of age for participating in this study.

The data was collected via the online survey platform Qualtrics. To ensure responses from the participants and avoid missing item data, the ‘forced response’ option was activated for all questionnaires. Successfully completed questionnaires were then rewarded by course credits for these students. The survey study was approved by the ethical commission of the Faculty of Behavioral, Management and Social sciences (BMS).

After the data collection was completed ( $N=465$ ), 51 respondents were excluded from the analysis because of incomplete data. It was further screened whether participants responded randomly and without serious attention. The response time of the respondents was also registered. Participants who finished the total battery of questionnaires in less than 10 minutes were excluded because most respondents (85.3 %) needed 15 or more minutes to complete the items of the questionnaire successfully. In total 18 of the respondents failed on one of the given test items and 17 respondents finished the total survey in less than 10 minutes.

After excluding those respondents, the final sample consisted of 389 respondents. In total, 143 of the participants were students, with an overrepresentation of female respondents (65 %). The majority of those respondents acquainted with the students were their family members (62.6 %). Moreover, 87.7 % of the respondents reported higher educational degrees. Age ranged from 19 to 84 years with a Median of 43.0 years.

## 2.2. Measures

The battery of questionnaires consisted of six different subsections and questions including socio-demographical questions, life events, depression, Anxiety and Stress Scale–21 (DASS21), the International Personality Item Pool – Neuroticism (IPIP-N), the Intolerance of Uncertainty Scale (IUS) and the Meaning in Life Questionnaire (MLQ). Death Anxiety was measured by two different subscales including the Death Attitude Profile Revised-Anxiety subscale (DAP-R Anxiety) and the ECQ itself. Based on the purpose of the current study, the focus will lie on the socio-demographical questions, the ECQ Death Anxiety subscale and the DAP-R Anxiety subscale.

**The Existential Concerns Questionnaire (ECQ).** The ECQ is a 22-item questionnaire covering anxiety in reaction to guilt, death and meaninglessness, based on the existential anxiety theory by Tillich (1952). The purpose of the ECQ was to cover different concerns related to existential anxiety. The following categorizations of existential concerns are imbedded in five domains: *death*, *meaninglessness*, *guilt*, *social isolation* and *identity*. The domain *death* discerns two aspects of death, which are first the fact that one's own life will end at some unknown moment, and second the threat of the world as an unsafe place in which, at any moment, something life-threatening can happen. Within the ECQ, 7 items measured the construct 'Death Anxiety' with a Cronbach's alpha of .87. Participants could respond to the items on a 5-point Likert-scale ranging from 1 (never) to 5

(always). The mean score ranges between 1 and 5 on this scale, in which 1 indicated the lowest Death Anxiety level and 5 the highest level of Death Anxiety on this subscale.

**Death Attitude Profile Revised-Anxiety subscale (DAP-R Anxiety).** The DAP-R Anxiety subscale is a typical scale used for measuring the attitude with regards to death, like avoidance, acceptance or anxiety (Wong, Reker, & Gesser, 1994). For this study, the Dutch translated seven-item subscale of the DAP-R was used, which was translated by Spenkelink and Doosje (2010). Participants could respond to this on a 5-point Likert-scale ranging from 1 (never) to 5 (always). The sum score ranged between 7 and 35 on this scale, in which 7 indicated the lowest Death Anxiety level and 35 the highest level, with a Cronbach's alpha of .89.

**Socio-demographical questions.** The demographic questions of this study were age, gender, cultural background, level of education and worldview of the participants. The age was calculated from the year of birth. The cultural background was covered by 9 different response options. The level of education was asked by a nominal scale ranging from 1 to 7 (primary school or less; lower vocational education; lower secondary education (e.g., MULO, MAVO); medium secondary vocation (MBO, e.g. MTS, MEAO, MHNO, INAS); 5: higher general education (HBS, Atheneum, Gymnasium, MMS; what is now called HAVO, VWO); higher vocational education (HBO); University (WO).

Moreover, the worldview of the respondents was covered by the question about which philosophy of life the respondents felt most connected to. Participants could respond to this through 6 different response options (Buddhism; Christianity; Hinduism; Humanism; otherwise, namely; Islam) and the option 'I don't feel connected'. Further, an open response option was offered to the participants if none of these options were suitable for their personal life view. Open responses were recoded into atheism or, if suitable, into one of the five religions.

### 2.3. Data Analysis

To gather a general impression of the demographic variables of the respondents (i.e. gender, age, educational level, cultural background & worldview), frequencies, means, standard deviations, minimum and maximum values of the data were computed as appropriate. Moreover, age was computed by subtracting the year of birth from the year of the study (2014). The demographic data is displayed in table 1.

To answer the first research question whether gender is associated with Death Anxiety, the respondents were first separated into two different conditions based on their gender (0 = man; 1= woman). An independent sample t-test was conducted to compare the means between both genders on the ECQ Death Anxiety subscale. This was then repeated with the sum-score of the DAP-R subscale as well.

To answer the second research question whether age is related to Death Anxiety, univariate linear regression-analysis with the dependent variable Death Anxiety and independent variable age was conducted for both Death Anxiety subscales, to estimate the relationship between those two variables. As some studies have indicated that this relation may be non-linear, additional quadratic regression analysis was performed as well.

Finally, to answer the last research question, an independent sample t-test was conducted to estimate whether there is a significant association between worldview and Death Anxiety. For this purpose, the item 'worldview' was recoded into a dummy variable that represented the absence or presence of a worldview with Buddhism; Christianity; Hinduism; Humanism; and Islam being indicative of presence of theistic worldview and 'none' as absence of a theistic worldview. The respondents were therefore split into two different categories, namely the theistic or non-theistic group. To compare the mean scores on Death Anxiety between theism and atheism on the DAP-R and ECQ subscale, a sub-analysis was performed by an independent sample t-test to explore if



respondents with a theistic worldview differ in their Death Anxiety level in comparison to participants with no theistic worldview.

Finally, a multivariate regression analysis was conducted to examine the total explained variance and independent predictive values of the variables gender, age and worldview. In all analyses,  $p$ -values  $< .05$  were considered statistically significant.

### **3. Results**

The results of the socio-demographical data including gender, age, educational level and religious affiliation are displayed in table 1.

In accordance with the literature and the first research question, the results of the independent sample  $t$ -test showed a significant difference between males and females in Death Anxiety on both the ECQ ( $t(385) = -3.925, p < .001$ ) and DAP-R subscale ( $t(385) = -3.568, p < .001$ ). Female participants reported a higher Death Anxiety level in comparison to male respondents on both subscales, which are displayed in table 2.

Furthermore, to test if the variable age was related to Death Anxiety, univariate regression analyses were conducted. Results of this analysis showed no significant linear association between age and Death Anxiety on both the ECQ ( $B = .00; \beta = .018, p = .727$ ) and DAP-R subscale ( $B = -.047; \beta = -.086, p = .089$ ). Therefore, no linear association was found between age and both Death Anxiety subscales, which is displayed in the a curve estimation in figure 1 and figure 2.

**Table 1.** Socio-demographical characteristics of the respondents

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	<b>Total</b> (n = 389)
<b>Gender, n (%)</b>	
Male	133 (34.2)
Female	254 (65.3)
<b>Age in years, M (SD)</b>	40.1 (17.3)
<b>Education, n (%)</b>	
Primary school or less	4 (1.0)
Lower vocational education	14 (3.6)
Lower secondary education	30 (7.7)
Medium secondary education	50 (12.9)
Higher general education	153 (39.3)
Higher vocational education	84 (21.6)
University	54 (13.9)
<b>Religion, n (%)</b>	
'I don't feel connected'	134 (34.45)
Buddhism	20 (5.14)
Christianity	194 (49.87)
Hinduism	0 (0.0)
Humanism	23 (5.91)
Otherwise	6 (1.54)
Islam	12 (3.08)

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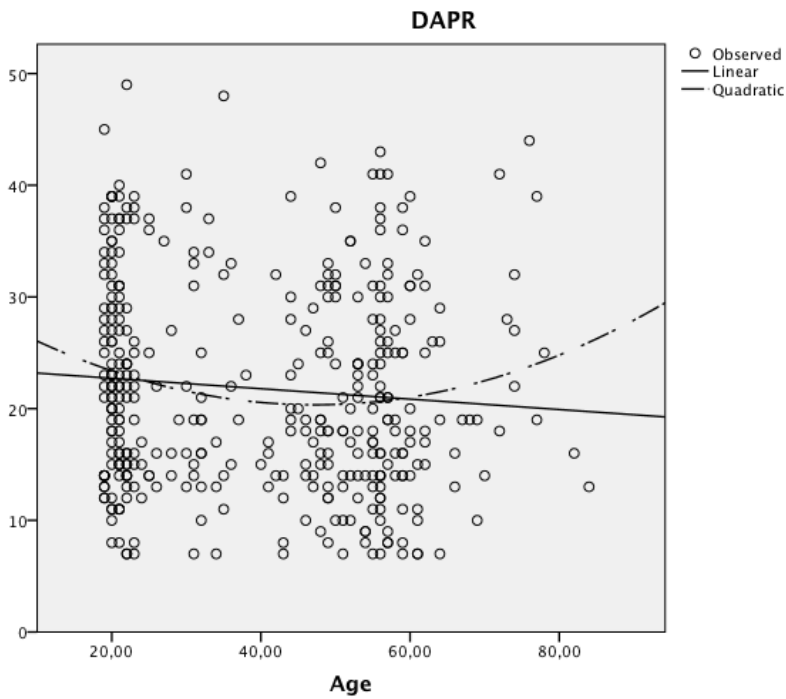
**Table 2.** Mean score of the respondents on two different Death Anxiety subscales

	<b>Male</b>	<b>Female</b>	<b>p</b>
<b>DAPR</b>	19.51 (8.66)	23.02 (9.45) *	< .001
<b>ECQ</b>	1.8 (0.67)	2.1 (0.69) *	< .001

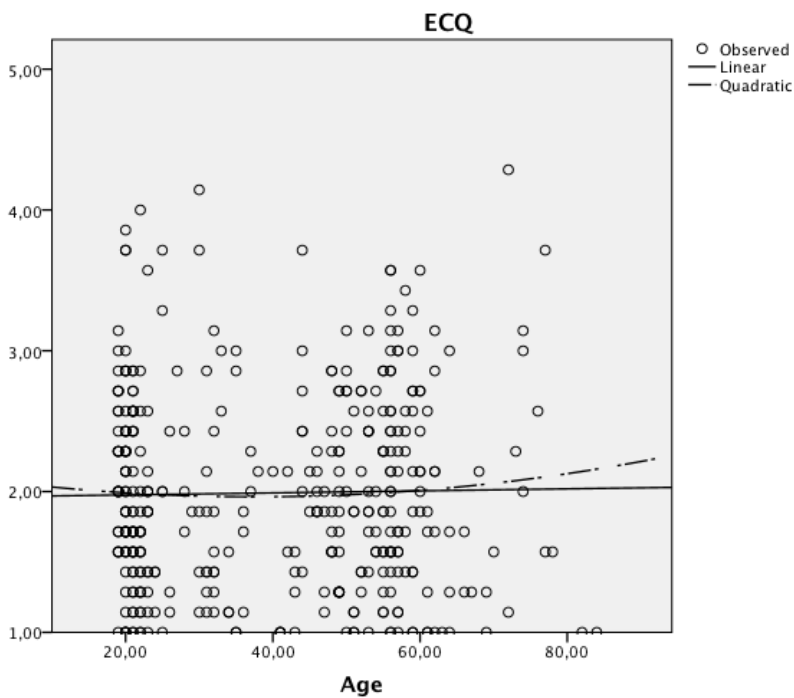
*Note:* Means and standard-deviation of the Independent-Sample t-test of both subscales. DAP-R = Death Attitude Profile Revised-Anxiety subscale; ECQ= Existential Concerns Questionnaire subscale.

This curve estimation did, however, show a u-shaped association between age and Death Anxiety, on the DAP-R subscale ( $B = -.389$ ;  $p = .026$ ) in comparison to the ECQ subscale ( $B = -.007$ ;  $p = .777$ ). Participants on the DAP-R subscale showed a higher Death Anxiety level at the age of 20 and at the ages between 50 and 60, which represents a quadratic association between age and Death Anxiety.

Then an independent sample t-test was conducted to compare the means between theistic participants and atheistic participants on both subscales. The results show no significant association on both the ECQ ( $t(397) = .130$ ,  $p = .897$ ) and DAP-R subscale ( $t(387) = -.095$ ,  $p = .925$ ) and are displayed in table 3. Therefore, no significant difference could be found between theism and atheism on Death Anxiety.



**Figure 1.** Regression analysis with the dependent variable Death Anxiety as measured with the Death Attitude Profile Revised-Anxiety subscale and age as independent variable.



**Figure 2.** Regression analysis with the dependent variable Death Anxiety as measured with the Existential Concerns Questionnaire subscale and age as independent variable.

**Table 3.** Comparison of the mean scores of ‘theistic-worldview’ and ‘atheist-worldview’

	<b>Theism</b>	<b>Atheism</b>	<b>p</b>
<b>DAPR</b>	21.75 (9.3)	21.84 (9.5)	.925
<b>ECQ</b>	1.99 (0.69)	1.99 (0.70)	.897

*Note.* Results of the Independent-Sample t-test. DAP-R= Death Attitude Profile Revised-Anxiety subscale; ECQ= Existential Concerns Questionnaire subscale.

Finally, to examine the total predictive value of the variables gender, age and worldview linear regression analyses were performed. Only gender remained an independent significant predictor of Death Anxiety on the ECQ ( $\beta = .206, p < .001$ ) and DAP-R subscale ( $\beta = .156, p = .003$ ). The total explained variation in Death Anxiety was explained by only 4.1 % and 3.1 % regarding the 3 variables in total, which indicates a low value of explanation on both subscales. The results for both subscales are further displayed in table 4 and 5.

**Table 4.** Multivariate regression analysis with the variables gender, age and worldview

<b>ECQ</b>	<b>B</b>	<b>SE(B)</b>	<b><math>\beta</math></b>	<b>p</b>
<b>Female</b>	.297*	.074	.206	<.001
<b>Age</b>	.002	.002	.060	.251
<b>Worldview</b>	.009	.018	.026	.614

*Note.* ECQ= Existential Concerns Questionnaire subscale.  $R^2 = .041$ ;  $F = 5.46$ ;  $p = .001$

\*Significantly higher ( $p < .05$ )

**Table 5.** Multivariate regression analysis with the variables gender, age and worldview

<b>DAP-R</b>	<b>B</b>	<b>SE(B)</b>	<b><math>\beta</math></b>	<b>p</b>
<b>Female</b>	3.01*	.991	.156	<.003
<b>Age</b>	-.030	.028	-.056	.286
<b>Worldview</b>	.054	.241	.012	.823

*Note* DAP-R= Death Attitude Profile Revised-Anxiety subscale.  $R^2 = .031$ ;  $F = 4.07$ ;  $p = .007$

\*Significantly higher ( $p < .05$ )

## **4. Discussion**

### **4.1. Association between gender and Death Anxiety**

The purpose of this study was to ascertain if specific socio-demographical factors like age, gender and the connection to a specific worldview could determine the incurrence of a higher Death Anxiety level. For this purpose, cross-sectional data of a non-clinical sample was statistically analyzed.

The findings showed a significant association between female gender and Death Anxiety. No significant linear association was found between age and worldview regarding the Death Anxiety score of the participants on both subscales; however, a u-shaped association was found between age and Death Anxiety, on the DAP-R subscale. The total explained variance indicated that gender, age and worldview did not explain much variance, and therefore it can be expected that other variables are more important for the understanding of Death Anxiety.

The results of the current study show that female participants report a higher Death Anxiety level compared to men. The results of this study are therefore in accordance with the literature findings regarding gender and Death Anxiety. Most of the past studies showed a significant association between Death Anxiety and gender. Women reported a higher level of Death Anxiety in most of these studies (Schumaker, Barraclough & Vagg, 1988; Suhail & Akram, 2002; Abdel-Khalek, 2005). According to Schumaker, Barraclough, & Vagg (1988), a possible reason for the difference can be the different implications of death constructed by men and women. Women tend to be more apprehensive about the shortness of life, fear of not being and the disintegration of the body after dying in comparison to men. Therefore, these different interpretations of death can influence the greater perceived fear by women. Moreover, women could differ in their attitude toward death, because women may be more detailed and emotional in their perception of death and therefore more afraid in comparison to men. Other research has also shown that women fear the

pain connected with dying, whereas men report fear of missing out on things after dying (Diggory & Rothman, 1961). Therefore, it is possible that men and women differentiate in their anxiety level based on differently perceived dimension of Death Anxiety. Finally, male expression of feelings can also be influenced through the process of socialization, in which men are not expected to express feelings of anxiety and uncertainty in comparison to women. Expressing those feelings may threaten the image of a strong male role within western cultures (Dattel & Neimeyer 1990). It is therefore possible that men do not actually differ in their Death Anxiety level from women, but are somehow not willing to express those feelings.

In relation to this, reviews have shown that females feel more religiously affiliated than men (Ellis, Hershberger, Field, Wersinger, Pellis & Geary, 2008). This affiliation could be a reason why female respondents report higher Death Anxiety, because several studies found an association between a strong religious affiliation and Death Anxiety (Alexander & Adlerstein, 1960). It would therefore be advisable for future research to conduct moderator analyses, with gender as a moderator between religious affiliation and Death Anxiety.

## **4.2. Association between age and Death Anxiety**

The results of the study show that age was not linearly but rather quadratically related to Death Anxiety. The curve estimation for the DAP-R subscale indicated that participants in the age group around 20 and those between 50 and 60 years of age reported the highest amount of Death Anxiety on this scale. This is not in accordance with the literature, especially considering the findings of Butler's life review process, in which elderly people were found to perceive the lowest amount of Death Anxiety through the realization of their impending death (Butler, 1963). However, Butler further argues that this process is universal and should appear at the age of 60. This could be a possible explanation of the current findings in which elderly participants perceive higher Death



Anxiety in comparison to middle-aged participants, because the age range was limited with only 18 participants of 60 years of age or older. Most of the participants were between 20 and 60 years old, which can indicate that those participants had not started with a life review process, yet. However, the study by Butler was conducted in the sixties, this means that Butler's findings are not accurately comparable with the current findings. In comparison to the past, people tend to live longer nowadays. It could therefore be possible that the time where a life review process begins shifted from 60 years to a posterior age like 70 years within the time.

Another possible explanation why participants ranging from 50 to 60 years of age reported higher Death Anxiety could be the fact that life changes within this age group often emerge. Life changes like getting grandchildren may elicit higher Death Anxiety, because grandparents may feel their own mortality by seeing their children raising their family. Moreover, participants in this situation may feel the urge to spend as much time with their grandchildren and are therefore more aware and scared of their own death, because of missing out the development of their grandchildren. Furthermore, an explanation why participants in this study at the age group of 20, perceived higher level of Death Anxiety might be the fact that people within this age group are not that often confronted with death within their circle of friends and acquaintances in comparison to elderly participants. The uncertainty of death regarding the lack of experiences of death in the own environment could then elicit higher Death Anxiety by younger adolescents.

Moreover, Abrams and Berkow (1990) suggested several explanations for higher Death Anxiety level at the age of 50, especially in women. Women of this age can undergo a mid-life spike, in which they reach the end of their reproduction period and undergo menopause. This can be a possible reason for higher amounts of Death Anxiety in women within this age group, reminding the women that they grow older (Abrams & Berkow, 1990).

### **4.3. Association between religious affiliation and Death Anxiety**

A number of studies have reported conflicting findings on the association between religious affiliation and Death Anxiety. Some studies showed that a higher religious affiliation is negatively correlated with Death Anxiety, whereas others disconfirmed those findings by representing a positive correlation between religiosity and Death Anxiety (Donahue, 1985). The analysis in the current study did not find any association between Death Anxiety and the connection to a specific worldview at all. However, it is important to mention that the intensity of the religious affiliation was not measured. Participants could only state if they felt connected to a specific worldview and not the intensity of their religiousness. Nevertheless, it could be interesting for future research to examine if a distinction was ascertained between very religious participants and not so religious ones, because literature shows that the level of religiosity can in fact influence Death Anxiety (Harding, Flannelly, Weaver & Costa, 2005; Klug & Sinha, 1987–1988).

Moreover, Young and Daniels (1980) conducted a study in which Death Anxiety was also related to reincarnation beliefs of 312 high-school students. The participants in this study were asked to complete the Death Anxiety Scale from Templer (1972) and socio-demographical questions regarding reincarnation. Results of this study showed that participants with a reincarnation status perceived significantly lower Death Anxiety compared to people without this status. It is therefore possible that no significant association could be found between worldview and Death Anxiety, because not all dimensions of religious affiliation were clearly specified or broadly categorized. Moreover, it is possible that the formulation of the question in the current study confused the respondents in answering the question about their connection to a specific worldview, because participants could interpret the word ‘connection’ differently.

However, most of the studies were conducted in America and not in Europe. This may make these studies non-comparable, because Americans are reviewed as generally more religious and

view religion as more important than Europeans (Wike, 2016). Additionally, religious affiliation may have changed over the years within society, with people tending to be more religious in the past in comparison to nowadays. Most of the given literature is, however, based on not contemporary studies, which makes it difficult to compare those findings with the current ones.

#### **4.4. Other possible explanations for the lack of association**

Moreover, according to the Terror Management Theory (TMT), not only a specific worldview, but also self-esteem in an individual influences Death Anxiety. This theory states that individuals confronted with death stimuli engage in so called defensive mechanisms in which they adopt strategies for reducing the perceived anxiety and maintain their psychological wellbeing (Pyszczynski, Greenberg & Solomon, 1999). Not only cultural worldviews like religious beliefs reflect a shared perception of reality that provides a sense of stability and comfort, but also self-esteem.

Self-esteem is another personal attribute that is described within the TMT acting as another important buffer to Death Anxiety. Pollak (1980) argues that Death Anxiety appears lower among individuals with high self-esteem and purpose in life. Self-esteem enhances when the personal worldview is valued and is perceived as relevant to the individual and when one's own life is conducted in accordance with this worldview. If a person is confronted with his or her own death which is called 'Mortality Salience' the need occurs to defend one's own cultural vision. Therefore, keeping up one's own worldview when mortality is salient, maintaining and defending a stable and higher self-esteem for the individual, may buffers death related anxiety (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). A number of studies have indeed found a negative correlation between Death Anxiety and self-esteem (Buzzanga, Miller, Perne, Sander & Davis, 1989; Davis, Bremer, Anderson & Tramill, 1983; Davis, Martin, Wilee & Voorhees, 1978). People with higher

self-esteem therefore perceive less Death Anxiety compared to people with lower self-esteem, which can be another important determinant or moderator to measure.

## **5. Strengths and Limitations**

Several limitations are present in the current study. The recruited student respondents and relatives may not be representative for the general Dutch population. For instance, the representativeness, more than half of the participants reported a higher educational level, which does not represent the average level of education in the Netherlands. Furthermore, the variance in age seemed not diverse enough, because participants older than 60 were under represented in the current study. However, the large sample size of the study did provide high power to detect even small associations.

Moreover, Death Anxiety was measured with two validated instruments, adding to the robustness of the findings.

## 6. Implications

The aim of this study was to examine if the variables age, gender and worldview represented predictors of Death Anxiety. The practical use of this study is the impact on especially Death Anxiety research. Several death studies focused on elderly age groups regarding Death Anxiety, however the current study showed the need for focusing on younger adolescents and people between their 50 and 60 years of age. Another practical use of this study on death anxiety research is to focus on the possible variables responsible for female gender to report higher death anxiety like a mid-life-spike. It would be further advisable to focus on the variable gender as a moderator between religious affiliation and Death Anxiety, because female respondents tend to be more religiously affiliated which could be a possible reason for their higher Death Anxiety perception. Results of the study showed that future research should still focus on gender and age, however further possible predictors like self-esteem, a midlife spike and reincarnation should be also taken into account regarding the low variance of the variables gender, age and religious affiliation. Moreover, the variance in age should be more diverse, by also including more elderly people to ascertain a possible start of a life-review process. It should be also advisable to focus more on religious affiliation by distinguishing between very religious participants and less religious ones to examine if different levels of religious affiliation influences Death Anxiety, as indicated by literature.

## **7. Conclusion**

The study of Death Anxiety reflects an important field of psychopathology, because several anxiety disorders are related to Death Anxiety. Thus examine the possible predictors of Death Anxiety seem beneficial for the development of more effective psychopathological therapy of Death Anxiety.

In conclusion, results of the current study show that female gender was a stable and independent determinant of more death related anxiety. No linearly correlation could be found between age and Death Anxiety, but a u-shaped relationship was discovered which could be a further suggestion to focus more on younger people and those ranging from 50 to 60 years of age during Death Anxiety studies. Finally, no significant association was found between worldview and Death Anxiety.

The total explained variance of age, gender and worldview was low, indicating that those three factors do not explain much about Death Anxiety. It is therefore possible that other predictors are more important for Death Anxiety, or that Death Anxiety is not predictable at all.

For future studies, it would be further advisable to measure self-protective properties like self-esteem in combination with religiosity and reincarnation to cover more dimensions of Death Anxiety.

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