UNIVERSITY OF TWENTE.

Bachelor Thesis

Faculty of Behavioural,
Management & Social Sciences

Worldview and Existential Anxiety

Cross-sectional survey study about the hypothesized relation of worldview and existential anxiety

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Abstract

Existential anxiety (EA) is a construct which describes anxieties in several domains, such as meaninglessness and death anxiety, and which has been subject of several studies. Based on data derived from a study about a tool for measuring EA according to the definition of van Bruggen et al. (2017), several hypotheses are set up and analyzed in a cross-sectional survey study. Mainly, this thesis aimed to clarify whether a relation exists between one's worldview and the amount of EA that the person is experiencing. Additionally, variables like age and gender are studied in relation to both worldview and EA. The analysis of data from 389 participants revealed that women experience more EA than men, and that older people experience more EA than younger ones. Furthermore, older people are more often affiliated towards a religious worldview than younger people. However, the main question whether there is a relation between a person's worldview and EA could not be substantiated. Furthermore, no moderation of the variables age and gender on the relation between worldview and EA could be detected. These findings are discussed in relationship to literature about EA. For future research it might for example be interesting to also analyze the influence of a religious worldview on EA, thus studying a possible causal relationship by using an experimental design. However, while different variables might be relevant for understanding EA, more research is needed to understand their interconnectedness.

Keywords: worldview, existential anxiety, religious worldview, age, gender, moderation

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1. Introduction

While Tillich (1952) labelled the time he lived in as an "age of anxiety" (p. 35), anxiety is nowadays still among the most prevalent forms of psychological distress (Duchesne & Ratelle, 2016; Costello, Egger & Angold, 2005) and is also co-occurring with other psychological disorders such as depression (Chu, Merson, Zandberg, & Margaret, 2012). Anxiety itself can be referred to as pathological if a person's reaction to an anxiety-eliciting situation is exaggerated and unrealistic, for example the person is experiencing panic attacks which can limit him or her severely in everyday functioning (Kessler et al., 2006). Experiencing pathological anxiety impedes regular cognitive functioning, causing the regulatory system to fail (Kim at al., 2011). In subsequent sections, the most important concepts related to existential anxiety are introduced and relations between them are explained on the basis of previous research. For these relationships a model is set up to give a better overview, which is presented in a later section. In the following section the concept of existential anxiety is specified and related to this thesis.

While contemplating about existential questions is seen as a central part of the human nature, for some individuals these questions can give rise to severe anxiety (Weems, Russel, Neill, Berman & Scott, 2016; Weems, Costa, Dehon & Berman, 2004). Anxiety that is mainly focused on the ultimate meaning of life and death is called existential anxiety (EA; Weems et al., 2004). EA has been the subject of much research, especially because it provides the opportunity to understand human behavior in situations when they are confronted with unexpected life events (van Bruggen, Vos, Westerhof, Bohlmeijer & Glas, 2015). Tillich (1952) defined three main domains of EA, which will be explained in the following section. The first domain concerns fate and death, which until now received most empirical attention (Berman, Weems & Stickle, 2006; van Bruggen at al., 2015). It refers to experiencing anxiety when one is aware of the inevitability of death (Momtaz, Haron, Ibrahim & Hamid, 2015). The second domain is about emptiness and meaninglessness, thus the fear of living a life without meaning (Berman, Weems & Stickle, 2006). According to Berman, Weems and Stickle (2006) meaningless is "about the loss of the significance of life, the future, the world, and everything" (p. 2). The third domain of EA focuses on guilt and condemnation, thus threats to the own moral identity (Berman, Weems & Stickle, 2006). Tillich (1952) defines guilt as arising from the fear that the own behavior is not in accordance with one's own expectations and condemnation as the fear of the own life not meeting certain universal

standards. In addition to those three domains, McBride (2011) states that in current psychological research two other domains are often included in the construct of EA: isolation and identity. Van Bruggen et al. (2017) also included those two additional domains in their development of a new questionnaire for EA, which is included in this research. They describe isolation as *social isolation* and state that this entails the feeling of not being connected to others and "being unable to fully share the perspective of another person" (p. 2). Identity is described by van Bruggen et al. (2017) as experiencing discrepancies between how the world sees you and how you see yourself, which is based on not knowing yourself properly. As depicted above, differences in interpretation of EA, for example about the number of included constructs, are common in literature. In this thesis, however, the definition and number of constructs of van Bruggen et al. (2017) is used.

In order to understand what is meant with EA as a more abstract form of anxiety, it is often differentiated between the terms fear and anxiety. For example, Tillich (1952) makes a clear distinction between the concepts of fear and anxiety (as cited in Weems et al. 2004). The difference, he claims, is that fear is a reaction to a certain object that one can act upon and that is encountered in everyday life. In anxiety this is different, as it is not elicited by an object. The Danish philosopher Kierkegaard (1843, 1954) was the first to make this differentiation and described anxiety as a free-floating experience (van Bruggen, N. d.). Although the terms fear and anxiety are closely related as they have the same ontological root and are both commonly used to refer to everyday fears, in this paper the term EA is used to refer to a more abstract and deep anxiety that concerns the meaning of life and death.

In order to further elaborate on this topic, a famous theory strongly related to EA is introduced: the *Terror Management Theory* (TMT, Solomon, Greenberg, & Pyszczynski, 1991). Schimel, Hayes, Williams and Jahrig (2007) describe this theory and state that humans in comparison to animals have sophisticated intellectual abilities, which makes us understand that death is inevitably tied to living. With this awareness a severe potential for terror and anxiety is created and in order to function properly we must find a way to reduce this anxiety. In order to do this, humans develop certain buffers against anxiety, including worldviews and self-esteem (Schimel et al., 2007). Some literature suggests that even money can function as buffer for death anxiety (Zaleskiewicz, Gasiorowska, Kesebir, Luszczynska & Pyszczynski, 2013), which, however, is out of the scope of this thesis. In the following, the construct of *worldview* is discussed in more detail.

The term *worldview* itself can be traced back to Kant (in German: Weltanschauung) and is nowadays closely related to the term *philosophy* (Vidal, 2008). Vidal (2008) states that it is used to depict a certain personal point of view, with which we can create an own picture of the world. He argues that in order for understanding the real world, from an evolutionary, psychological and sociological perspective, a person *needs* a worldview. Furthermore, having a worldview is found to increase general well-being along with psychological benefits, such as the fostering of feelings like hope and the sense of a meaningful life.

Examples of worldviews are a religious or a scientific one. The focus of this paper, however, lies on religious worldviews, as Levin, Taylor and Chatters (1994) found that "participation in religious communities provides members with a framework for deriving meaning from life experiences" which can, as explained above, function as a buffer against anxiety. Research on the link between holding a religious worldview and EA, however, shows mixed results. It is for example indicated that the strength of believing buffers against anxiety, "rather than religiousness per se" (Wink & Scott, 2005, p. 2). Still, some research suggests that a worldview in which religion promises death transcendence might function as a buffer against death anxiety (Schimel et al., 2007; Greenberg et al., 1992). Another type of worldview is for example a humanistic one (Schaeffer & Heath, 1982). "Humanism begins and ends with man" (p. 2) and instead of holding god's laws as an objective standard, as it is for example in Christianity, in Humanism, man is his or her own standard (Schaeffer & Heath, 1982). Recent studies suggest that Humanism can even replace religious beliefs as origin of comfort and meaning (Farias, Newheiser, Kahane & de Toledo, 2013) and thus also buffer against anxiety (Rutjens, van der Pligt & van Harreveld, 2009). Although research on EA related to Humanism is sparse, a buffering function of a worldview for experiencing EA can be supposed.

Another important distinction of terms is discussed in this section, as it might possibly influence the buffering function of worldview on EA: the differentiation between literal or symbolic afterlife. This distinction is also described in the TMT (Solomon, Greenberg, & Pyszczynski, 1991). While a literal afterlife suggests that after the death of the body an immortal soul remains, a symbolic afterlife contains the notion that after the death of a person something of that person can remain. This can be something material, for example something that a person built; or something like the person's worldview, that remains after the death and extends beyond the person self – that is lasting longer, maybe even into eternity.

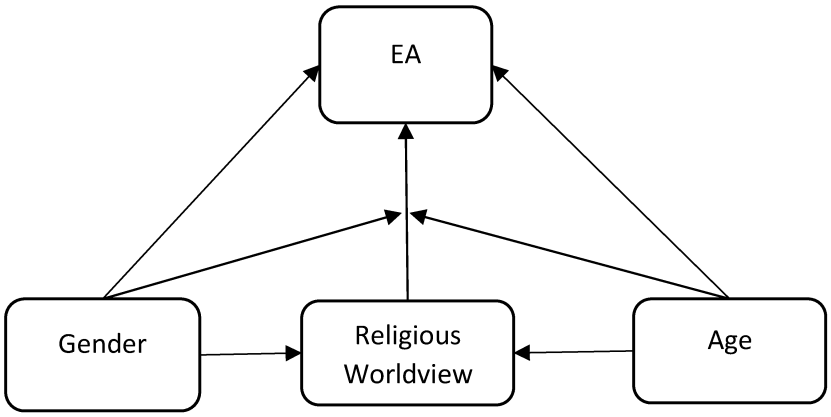

Figure 1. Conceptual Model of Variables supposed to having a relation to EA. (From left to right: Gender, Religious Worldview and Age.)

One factor influencing EA might thus be the holding of a religious or humanistic worldview, which, however, itself might be influenced by several variables. That relation is expressed in figure 1. Gender and age are examples of variables that were studied in relation to EA in former research. As Miller and Hoffmann argued (1995), "gender differences in religion are well known" (p. 2). More specifically they state that there is consistent evidence that women are more religious than men. This was indicated in their study about affiliation to Christianity. Miller and Hoffmann (1995) found this to be expressed by showing "more interest in religion", by having "stronger personal religious commitment" and by going to the church more often (p. 3). These findings were also indicated by Levin, Taylor and Chatters (1994) and more recently by Kennedy and Reid (2009).

Another variable which might influence a religious worldview is age. Older people more often than younger people profit from religious beliefs as a means of coping, as Davie and Vincent found (1998). More recent research suggests the same trend: "People tend to become more religious as they get older" (McFadden, 2005, p. 423). Argue, Johnson and White (1999) found the increase in holding religious beliefs with increasing age as being significant, with the greatest increase between the ages 18 and 30. Furthermore, they found that this age effect is "significantly stronger for Catholics than Protestants" (p. 2).

As the connection between EA and a religious worldview was already discussed above, the question arises whether there are any other constructs influencing EA. In the following, the influence of age and gender on EA are explained respectively. As EA among other concepts deals

with the acceptance of death, it is interesting to consider this matter from the viewpoint of older people who, objectively, are closer to death (Momtaz et al., 2015). It could thus be hypothesized that death anxiety might increase when faced with the certainty of the ending of the life. Research, however, suggests the opposite. With increasing age one's death anxiety decreases – possibly due to the fact that later in life the inevitability of the own death is accepted (De Raedt, Koster & Ryckewaert, 2013). Age related differences might thus be expected also in this study, specifically the finding that as age increases, EA decreases.

With regards to gender and EA, research suggests that differences in gender and experienced death anxiety can be found. Eschbaugh and Henninger (2013) for example found that in a cohort of students, females experience greater levels of death anxiety than males. Fortner and Neimeyer (1999) substantiate this finding by claiming that death anxiety is higher in females than in males, which, however, is not found to be true in elderly people. Interesting to note are the results of the study conducted by Russac, Gatliff, Reece and Spottswood (2007). They found that death anxiety peaks in both genders around the age of 20, and only in women again around the age of 50. However, research on this trend when regarding the whole construct of EA is still sparse. The preceding argument is even more reason to examine that relation in this study. Still, the variables age and gender might not only influence the religious worldview or EA itself, but also possibly the relation between religious worldview and EA. Age and gender could thus moderate the relationship between religious worldview and EA. However, as research on this specific relationship is lacking, no direction can be hypothesized for that moderation.

The construct of EA in relation to the worldview of a person is thus the focus of this thesis – which might both be influenced or moderated by for example gender or age. Several hypotheses are set up on basis of the previously reviewed literature, which are described at the end of this section.

Most research on EA has until now focussed specifically on death anxiety. However, when regarding the whole construct of EA, research still is sparse. The fact that not much research has been conducted yet on the role of gender as well as on age differences in relation to EA is even more reason for considering this research as important. A possible benefit for mental health institutions, and in turn their patients, could for example arise from this. The treatment of patients with a diagnosed anxiety disorder could be improved as the disorder is better understood, when including variables like age and gender. Yonkers and Gurguis (1995) already considered this as

important when "analyzing causes for asymmetrical expression of anxiety disorders in men and women" (p. 113).

Additionally, much research on EA was conducted a long time ago (see for example Greenberg et al., 1992; Davie, & Vincent, 1998; Argue, Johnson & White, 1999). The scientific value of this research thus also lies in conducting research in these areas again to see whether any changes can be detected. Finally, it can be noted that the majority of research on this topic took place in the United States. However, when comparing polls from the United States to European countries, large differences in religious worldviews can be found. In a study by Geertz and Markússon (2010) it is indicated that in the U.S. 73% of the interviewees reported to believe in god, while in European countries that amount lies between 62% in Italy and 27% in France. Also Farias et al. (2013) argue that in many Western countries religiosity in general is decreasing. Consequently, these findings are a good implication for conducting research on this topic in another country and even on other continents than America. All elaborations from above narrow down to the following research question for this thesis:

To what extent is there a relation between a person's worldview and existential anxiety?

Additionally, five sub questions are examined:

1. *To what extent is age related to EA?*
2. *To what extent is gender related to EA?*
3. *To what extent is there a relation between age and a person's worldview?*
4. *To what extent is there a relation between gender and a person's worldview?*
5. *To what extent do age and gender moderate the relation between a person's worldview and the experienced level of EA?*

The following six hypotheses are set up, on the basis of the literature review:

1. As age increases, EA decreases.
2. Females experience more EA than males.
3. With increasing age, more people feel affinity towards a religious worldview.
4. Females more frequently feel connected to a religious worldview than men.
5. When holding a religious worldview, less EA is experienced.
6. Age and gender influence the relationship between worldview and EA.

2. Methods

2.1 Participants and Procedure

For analyzing the different constructs, data from the online cross-sectional survey study of van Bruggen et al. (2017) are used, who developed and analyzed an instrument measuring EA: The Existential Concerns Questionnaire (ECQ). In this questionnaire five theoretical domains of EA were measured: death, meaninglessness, guilt, social isolation and identity. The dataset contained information on non-clinical participants and their responses to the questionnaire and other questions. The data were collected in autumn 2014.

In total, the responses of 389 adults could be used for analysis, after some were excluded (for further elaboration on that process see van Bruggen et al, 2017). 146 of the participants were bachelor students, who were studying psychology and received credits for participating in this study. They were asked to fill in the questionnaire and find two acquaintances or relatives to fill it in as well, which lead to a fairly high proportion of family members in the sample, namely 62.6%. These two other participants should fit into the age groups of older than 30 years and older than 50 years, respectively. The age ranged from 19 to 84 years, with a median of 43 years. The distribution of participants over the age range was spread, however, three peaks could be found around the age of students and the age groups of around 30 and 55 years.

Two participants did not want to answer the question about their gender, the answers of the other 387 participants showed that 133 men (34.2%) and 254 women (65.3%) were participating. The cultural background of the participants was answered with 47.3% being Dutch and 45.8% German, which could be explained by the fact that the University where most respondents studied was located in the Netherlands close to the German border. The next biggest percentage of cultural background after Germany was Turkey, with a percentage of 2.8%.

2.2 Measures

In order to assess the participants' gender in the questionnaire, a closed question was asked: 'Are you male or female?' Then the respondents could indicate the one or the other by ticking either 'male', 'female' or 'I do not want to answer this question'. For determining the age of the participants, an open option was provided to indicate age. To assess what worldview the participants felt connected with, one question was asked: 'What worldview do you feel the most connected with?' Different options for answering that question were provided: 'Buddhism', 'Christianity', 'Hinduism', 'Humanism', 'Islam', 'Something other, namely:', and 'I do not feel connected to any worldview'. For later analysis, two dummy variables were created. One divides the responses to worldview into non–affiliated (1) and affiliated (0), and one divides them it into Christianity (1) and everything else (0). 66.8% of the participants indicated to be affiliated with a worldview, while 33.2% were not. Specifically, 51.4% indicated to be affiliated to Christianity and 48.6% were not.

The ECQ consisted of 25 items about the five domains of EA, however, three items were excluded due to extreme responses and low item-total correlations. As van Bruggen et al. (2017) found EA to be basically unidimensional, scoring high on the items of the ECQ is seen as an indicator for general EA. It can thus be said that the higher the score, the more EA is experienced. Example items for general EA are: "I worry about the meaning of life" and "It frightens me when I realize how many choices life offers". The items could be answered by indicating how much the displayed item applied to them on a five-point Likert scale. For an overview of all items of the ECQ see table 5 in Appendix A. Cronbach's alpha was calculated for the total ECQ, indicating good internal consistency with an alpha value of .92

Additionally, the survey involved five scales to assess different constructs: the *Depression, Anxiety and Stress Scale-21,* the *International Personality Item Pool – Neuroticism,* the *Intolerance of Uncertainty Scale*, the *Death attitude profile revised – anxiety subscale* and the *Meaning in Life Questionnaire,* which were not used in the current study.

2.3 Analysis.

Preliminary Analyses. Several preliminary analyses were conducted on the set of data described above, before the actual analyses could start. For all analyses that are conducted in this thesis, the newest version of the program Statistical Package for Social Sciences (SPSS) v24 (IBM 2016) was used.

One of those was consistency analysis for the total ECQ, which can be found in the previous section (2.2 Measures). Furthermore, frequency analyses were conducted on different variables in order to see whether any errors in the data could be detected – which was not the case.

After that, the distribution of scores was analyzed as for some analyses a normal distribution is assumed. Due to the large sample size no statistical distribution test was used, instead histograms of the important variables were created and analyzed along with the skewness and kurtosis values of the curves. For determining whether the ECQ lies in an acceptable range, cut-off scores are set up: if the values for skewness are smaller than -1 or larger than 1 one cannot speak of a normal distribution. The skewness values for the whole ECQ was .649, meaning that the curve was moderately skewed. For the kurtosis values also cut-off scores are set up: if the value is larger than 3 or smaller than -3 one cannot infer that the data are normally distributed. The analysis of the ECQ yielded a kurtosis value of .251, meaning that it still falls in the range of a normal distribution – as also the skewness values indicate. The outcomes of analyzing the skewness and kurtosis values indicated that a use of parametric tests for all analyses was justified.

Analyses. In this section each analysis which was conducted is explained shortly, along with the hypothesis that underlies it. In order to see whether there is a relation between age and EA, a linear regression was conducted. The participants' score on the ECQ was the dependent, and age the independent variable. To examine the relation between gender and EA, an independent sample t-test was conducted, comparing the mean scores of both groups (male and female). Cohen's d was calculated afterwards as a measure of effect size to properly compare the means of both groups. Cohen's d values around $d = 0.2$ are considered to be small, around $d = 0.5$ moderate and around $d = 0.8$ large effects (Cohen, 1992). For assessing the relation between age and worldview, a t-test comparing the mean ages between the different groups derived from the dummy variables was conducted. Again, Cohen's d was calculated. A Chi square test was conducted to see whether a relation between gender and affiliation to religious worldview could be found. That procedure was repeated with the other dummy variable, affiliation to Christianity versus all other affiliations. To assess the relation between worldview and EA, a t-test was conducted. Still, that relation could also be moderated by age and gender, as worked out in the introduction. Thus, moderation analyses were conducted. To find a possible interaction effect, two separate regression analyses were conducted with EA as dependent variable and worldview, age and the interaction variable of worldview and age as independent variables. An interaction variable is one variable made up of two variables that are multiplied by each other. The independent variables were not centered for this process. The same analysis was repeated for gender as a possible moderator. Finally, the analyses of moderation were conducted again with the dummy variable Christianity vs. all other affiliations. In order to see whether a relationship is significant, often the p value is given. The smaller the p value, the more the results indicate that the null hypothesis can be rejected and the alternative hypothesis can be accepted – thus the hypotheses that were set up in the introduction. A result is significant if the p value is smaller or equal to the value of α, the significance level, which is in this thesis set to .05. To gain a better overview of all results the model from the introduction is given again at the end of section 3.6, followed by a figure in section 3.7 depicting the results of the last moderation analysis with Christianity, gender and EA.

3. Results

3.1 To what extent is age related to EA?

To answer this question, a linear regression was conducted. The first hypothesis reads: As age increases, EA decreases. The analysis substantiated the hypothesis, as a significant relation between age and EA was found: $F(1, 387) = 6.329$, $p = .012$. More specifically, $B = 2.12$, $SE(B) = 0.073$, $\beta = -0.127$ was found, indicating a weak negative relation, which is shown in Figure 2.

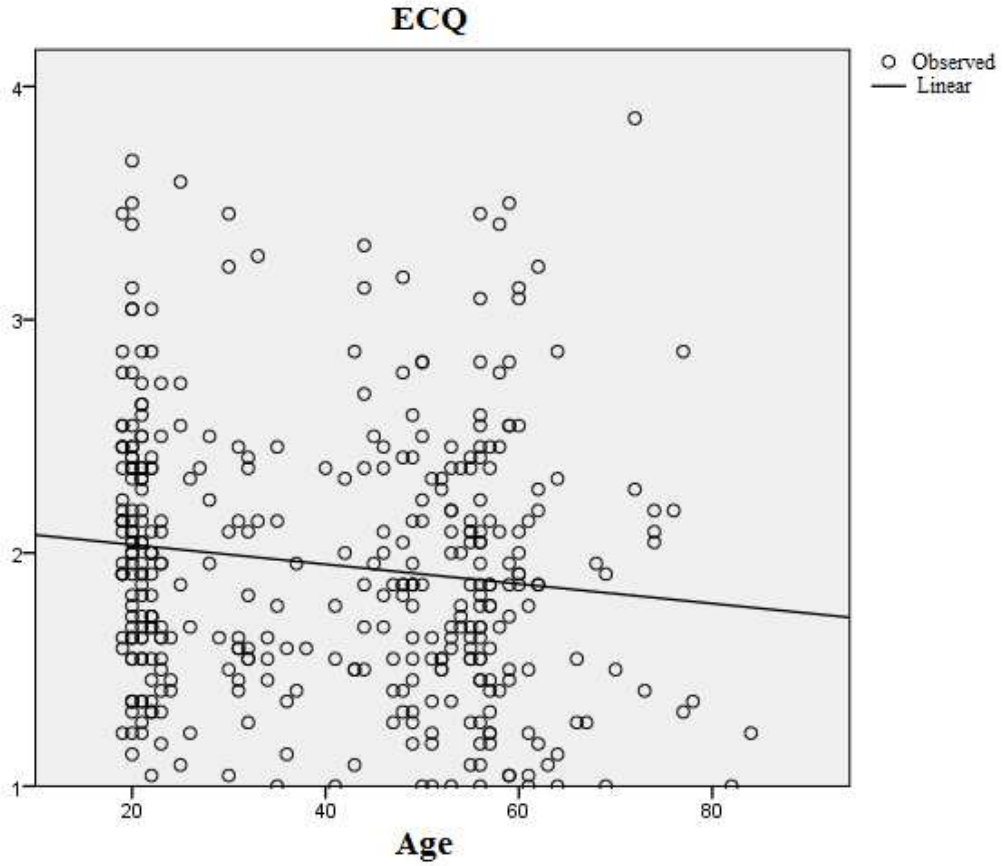

Figure 2. Scatterplot of Age and EA with the regression line.

3.2 To what extent is gender related to EA?

On the basis of literature it was assumed that females would experience more EA than men. For the second hypothesis an independent sample t-test was calculated, indicating that the means of both groups were significantly different: $t(385) = -5.04$, $p < .001$. While males had a mean score

of 1.75 (*SD* = 0.53) on the ECQ, the women's mean score is significantly higher: 2.05 (*SD* = 0.57). The second hypothesis is thus accepted. As additional analysis, Cohen's d is calculated to compare the means of both groups. A Cohen's d of d = -0.55 was found, indicating a moderate effect.

3.3 To what extent is there a relation between age and a person's worldview?

The third hypothesis stated that with increasing age, more people feel committed towards a religious worldview. The findings of the conducted t-test support this hypothesis: $t(387) = -4.65$, $p < .001$. The mean age of the people affiliated with a religious worldview was 42.85 (*SD* = 17.46), while the mean age for non-affiliated persons was 34.41 (*SD* = 15.49). Cohen's d yielded a value of $d = 0.51$, which indicates a moderate effect.

The same procedure was repeated with the other dummy variable, Christianity versus every other affiliation. The t-test indicated that there is a relation between age and the affiliation for Christianity or every other affiliation: $t(387) = 4.79$, $p < .001$. The mean age for believing in Christianity was 44.24 (*SD* = 17.50), while the mean age for all other affiliations was 36.09 (*SD* = 16.12). The Cohen's d for these means was d = 0.48, also indicating a moderate effect.

3.4 To what extent is there a relation between gender and a person's worldview?

In order to answer this question, a Chi square test was conducted. The fourth hypothesis stated that females more frequently feel connected to a religious worldview than men. However, being affiliated to a worldview did not differ by gender: X^2 (2, 389) = 2.66, p = .265. In detail, 175 of the 254 females were affiliated with a worldview (68.9%) and 83 of the 133 men (62.4%). This analysis was conducted again, with the other dummy variable: Christianity vs. all other worldviews. The Chi square test indicated that there is no significant relation between gender and affiliation to Christianity or all other worldviews: X^2 (2, 389) = 2.62, p = .184. 45.9% of the men indicated affiliation to Christianity as did 49.6% of the women. These values indicate that for this sample no relation between gender and affiliation to Christianity could be found.

3.5 To what extent is there a relation between a person's worldview and existential anxiety?

For the fifth hypothesis it was supposed that holding a religious worldview would be associated with less EA. However, the results of the conducted t-test indicated that there is no direct relation between EA and affiliation towards a worldview ($t(387) = 0.25$, $p = .803$). The t-test was conducted again with the dummy variable Christianity vs. all other worldviews ($t(387) = -0.71$, $p = .479$), which also indicated that no significant relation was found.

3.6 To what extend do age and gender moderate the relationship between worldview and EA

Still, this relation could be moderated by age and gender, as stated in the introduction. To assess whether an interaction effect is present, two separate regression analyses were conducted. In the first analysis, the dependent variable was EA, and the independent variables were the affiliated vs. non-affiliated dummy worldview variable, age and an interaction term variable of worldview and age. For the interaction, the analysis indicated non-significance with a p value of .286 (see table 1 for detailed statistics).

Table 1

Values of the moderation analysis with ECQ as the dependent variable, worldview as predictor, age as moderator and the interaction term

	B	*SE(B)*	β	*t*	*p*
Not affiliated to a worldview	0.129	0.154	.107	0.839	.402
Age	-0.003	0.002	-.096	-1.575	.116
Interaction	-0.004	0.004	-.132	-1.069	.286

Note. Values of the model summary are $R^2 = 0.02$, $F(3, 385) = 2.52$, $p = .057$.

The second regression analysis was conducted in the same way, but age was replaced by gender. Thus gender, worldview and the interaction variable of gender and worldview were independent variables. In this case also non-significance was indicated with a p value of .125 (see table 2).

Table 2

Values of the moderation analysis with ECQ as the dependent variable, worldview as predictor, gender as moderator and the interaction term

	B	*SE(B)*	β	*t*	*p*
Not affiliated to a worldview	-0.274	0.211	-.226	-1.299	.195
Male gender	0.223	0.072	.189	3.105	.002
Interaction	0.190	0.124	.269	1,539	.125

Note. Values of the model summary are $R^2 = 0.07$, $F(3, 385) = 8.88$, $p < .001$.

The same process was repeated with the other dummy variable. The first regression analysis was conducted to analyze the possible interaction effect of Christianity and age. However, no significance was found with a p value of .750. The results are depicted in detail in table 3.

Table 3

Values of the moderation analysis with ECQ as the dependent variable, Christianity as predictor, age as moderator and the interaction term

	B	*SE(B)*	β	*t*	*p*
Affiliated to Christianity	0.037	0.150	.032	0.244	.807
Age	-0.004	0.003	-.108	-1.426	.155
Interaction	-0.001	0.003	-.049	-0.318	.750

Note. Values of the model summary are $R^2 = 0.02$, $F(3, 385) = 2.14$, $p = .095$.

The interaction analysis conducted with Christianity and gender indicated a slight tendency towards significance with a p value of .063. Still, it is slightly larger than .05 and thus non-significant (see table 4).

Table 4

Values of the moderation analysis with ECQ as the dependent variable, Christianity as predictor, gender as moderator and the interaction term

	B	*SE(B)*	β	*t*	*p*
Affiliated to Christianity	0.307	0.202	.268	1.519	.130
Male gender	0.394	0.082	.334	4.829	<.001
Interaction	-0.217	0.116	-.345	-1.865	.063

Note. Values of the model summary are $R^2 = 0.07$, $F(3, 385) = 9.47$, $p < .001$.

To gain a better overview over the significance or non-significance of all conducted analyses, the model presented in the introduction is given again, split up to two different figures. In Figure 3 all p values of analyses with the dummy variable affiliation towards a religious worldview vs. no affiliation to a religious worldview are presented, while in Figure 4 the same is true for the variable affiliation to Christianity vs. all other affiliations.

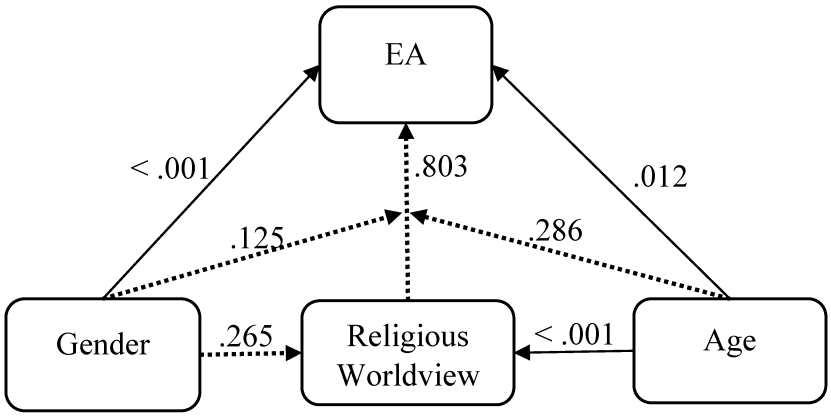

Figure 3. Model of Variables supposed to having a relation to EA depicted with p values and the affiliation vs. no affiliation variable. Dotted lines are non-significant.

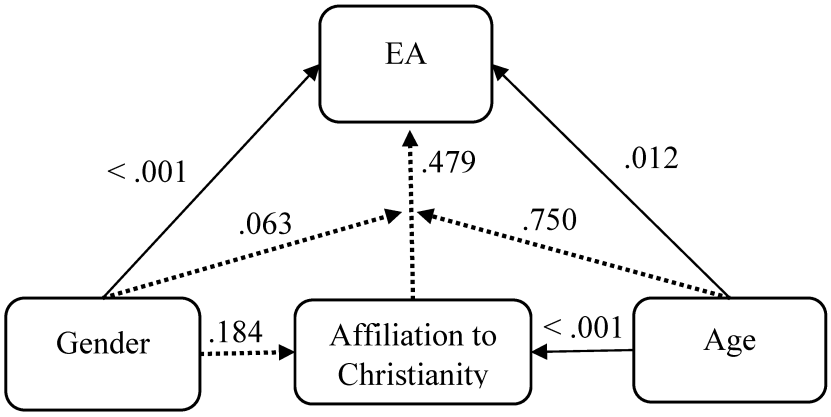

Figure 4. Model of Variables supposed to having a relation to EA depicted with p values and the Christianity vs. all other affiliations variable. Dotted lines are non-significant.

In the following section a figure is presented of the moderation analysis that was conducted last, the one analyzing the interaction of gender, affiliation to Christianity and EA. That relation is also depicted in Figure 4 with a dotted line, next to which the p value of .063 is indicated.

3.7 The interaction of affiliation to Christianity, gender and EA

To depict the implication of the findings a figure was created, to see the tendency towards significance which was found for women affiliated to Christianity (see Figure 5). In the figure several things can be noted. When comparing women and men not affiliated to Christianity the ECQ score is notably higher in women, which slightly differs when looking at the distribution of men and women affiliated to Christianity. Here it can be seen that the ECQ score of men is slightly higher than in the not-affiliated group, while the ECQ score of women is notably lower. These findings implicate that for women affiliation to Christianity might be related to experiencing less EA. The interpretation of this finding is described in the discussion in more detail.

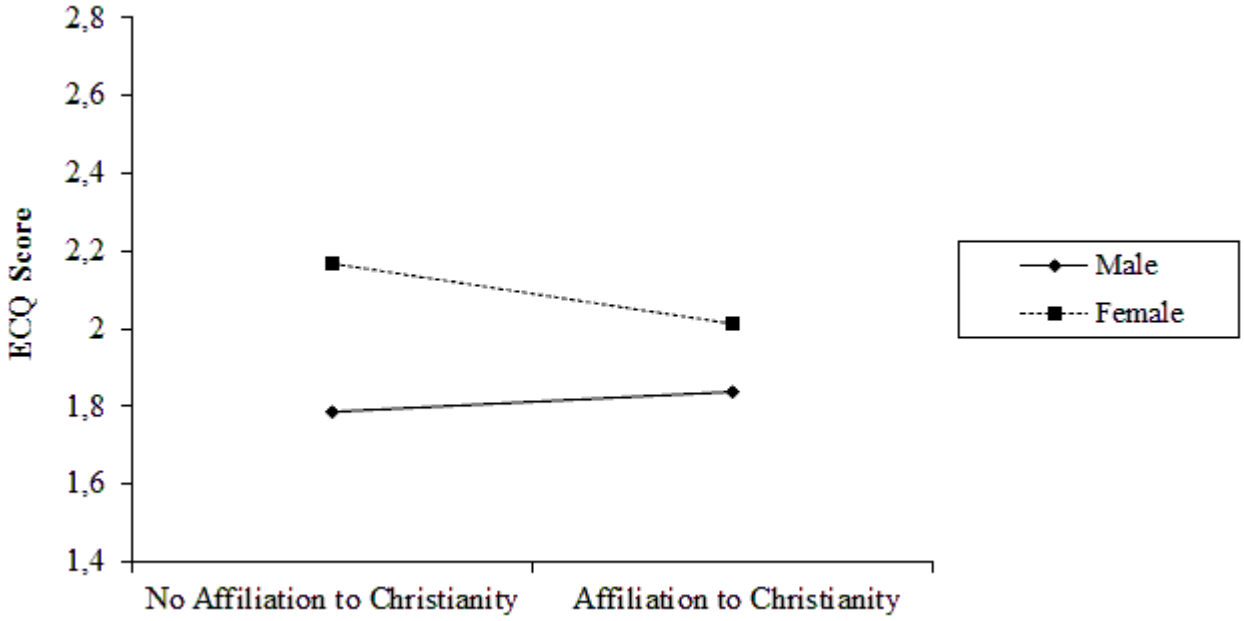

Figure 5. Hypothesized interaction of gender on the relation between affiliation to Christianity and the score on the ECQ.

4. Discussion

4.1 Interpretation of results

The aim of this study was to examine whether there is a relation between a persons' worldview and the degree of EA that a person is experiencing. It was found that EA is related to age and gender, and that holding a worldview is related to age. No relation was found between a person's worldview and gender and worldview and EA. Furthermore, the moderation analyses indicated that age and gender do not moderate the relation between worldview and EA and Christianity and EA. However, a tendency towards significance was found for gender, tending towards a negative association between Christianity and EA for women, not for men. In this section, the results are interpreted with reference to the literature. After that, limitations of this research are discussed and implications for future research are presented.

The analysis indicated that the expected negative relationship between age and EA could be substantiated. There are several studies supporting the hypothesis that EA declines with increasing age. However, there are also studies which suggests a contradicting trend. Such a finding is for example reported in research by Berman, Weems and Stickle (2006), who stated that especially in adolescence, a time where a person is struggling to find their own identity and purpose, existential concerns become increasingly prevalent. As in general linear relationships can be found in research, the regression was plotted in the results section. The regression line indicates that among these participants EA decreases with ongoing age, as it was hypothesized previously. Still, from the beta value can be derived that the found relation is a weak one, which might further support the different age peaks indicated in literature.

The second hypothesis was concerned with the question whether females experience more EA than men. The results support that hypothesis, indicating a significant and moderate effect. Different sources of literature support this trend, as already depicted in the introduction. The notion that women are simply more controlled by emotions rather than rationality in comparison to men, is already rooted in general beliefs for a very long time (Greenberg, Koole & Pyszczynski, 2004). Furthermore, studies support this belief for example with general findings by Albert, Chae, Rexrode, Manson and Kawachi (2005), who stated that anxiety is twice as high among women. With regards to the construct of EA it was for example found by Depaola, Griffin, Young and Neimeyer (2003) that women score higher on measures of death anxiety than men. The findings in

this sample are thus consistent with the overall findings in common literature.

Regarding the third hypothesis the analysis confirmed that religious respondents were significantly older than non-religious respondents. Also for affiliation to Christianity this trend is found to be significant. Still, it is not without difficulty to interpret these results properly. On the one hand it could mean that people become more religious as they get older, while on the other hand old people could nowadays be more religious than the younger ones - which is however not possible to infer with a cross-sectional design. If, however, research was conducted with a longitudinal design, the findings might indicate whether with increasing age affiliation to a worldview also increases.

No relation between gender and the affiliation to a religious worldview was found, thus could the fourth hypothesis not be substantiated. Also when looking at the relation between affiliation to Christianity and gender this was not significant. As hypothesized in the introduction, however, the finding that more women are religious than men is often depicted as "one of the most consistent (…) in sociology of religion" (DeVaus & McAllister, 1987, p. 472). Still, there are few attempts to find something out about the reasons or causes for this finding (DeVaus & McAllister, 1987). One possibility that no relation between gender and affiliation to a religious worldview was found could be the fact that in the survey a very general measure of affiliation was used – either affiliation or no affiliation. Women and men, however, may differ in for example the exercise of religious behavior as Miller and Hoffmann (1995) found. Women show "more interest in religion", have "stronger personal religious commitment" and go to church more often (p. 3), which Miller and Hoffmann interpreted as having a stronger religious commitment (1995). One possible reason for not finding a relation between affiliation to a religious worldview and gender might thus be caused by the fact that the measure of religious affiliation that was used here was rather broad.

The fifth hypothesis was concerned with the possible relation between holding a religious worldview and experiencing EA, for which, however, no significant relation was found. The same applied to affiliation to Christianity and EA. In literature, however, this relation often seems to be found. Greenberg, Koole and Pyszczynski (2004) define religion as "whatever a person does to deal with existential questions" (p. 145) and also stress that it might buffer against EA as it can offer answers to someone struggling with existential questions. Still, in this sample no such association was found. One possible explanation for this could be derived from Bivins (2008), who stresses that religion itself encompasses *fearful qualities* – referring for example to hellfire,

demonology, sins and damnation in conservative Christians, even entitling conservative religion as "Religion of Fear". Even on a more basic level, religiosity might evoke the potential for fear and only relieve someone of it if one has a very *high degree* of religiosity.

The degree of religiosity was already mentioned in the introduction and seems to be an important aspect to studying worldviews in general. Templer (1972) for example stated that the stronger the religious commitment of a person is, the less death anxiety that person is experiencing. The religious commitment in that study was defined in terms of interpreting the Bible literally and being certain of life after death. Weber, Pargament, Kunik, Lomax and Stanley (2012) support these findings and also stress that "greater certainty in one's belief system is associated with greater psychological health" (p. 1). Differences in believers and nonbelievers with regards to psychological distress indicated mixed results (Weber et al., 2012). As the measure of religiosity in this study was however a 'black-or-white' one, interpretation of the results is hindered. In section 4.2 this problem is discussed in more detail.

For the last hypothesis, the question whether age and gender influence the relationship between worldview and EA, no significance could be indicated in the moderation analyses. As for these moderations no literature was found, it is difficult to put this in a greater frame of research. Still, it needs to be mentioned that the last moderation analysis indicated a tendency towards significance. While it was found that women affiliated to Christianity experience less EA than women not affiliated to Christianity, it is difficult to give an appropriate interpretation for this as no causality can be inferred. However, a possible interpretation for this might be that religion is more helpful as a buffer for EA for female respondents who are affiliated to Christianity than for non-Christian women and male respondents – which would be an interesting finding. There are several gender differences in religiosity and religious practice indicated in literature, among them one which might explain the finding from above. The finding that women score higher on intrinsic religiosity than men was also found to be related to better psychological adjustment (Mileysky & Levitt, 2004) – possibly also adjustment to situations in which EA is experienced. These findings might thus be a cause for less EA in females affiliated to Christianity.

4.2 Implications and suggestions for further research

One limitation of this study can be found in the fact that only the affiliation to a worldview was measured, not the strength of that affiliation. As already quoted in the introduction, Wink and Scott (2005) found with regards to death anxiety that individuals that score moderately on religiousness feared death the most, thus significantly more than people who scored either high or low on religiousness. This depicts the importance of measuring the *degree* of religiosity, thus how much one feels affiliated towards a certain worldview. This degree can even influence the amount of EA (or one aspect of it) that one experiences. It could be supposed that the results of the analyses might have been different and also better generalizable if it was asked for the strength of affiliation.

Furthermore, it needs to be mentioned that no distinction was made in the survey between atheism and agnosticism. While according to Geertz and Markússon (2010) atheism is believing that no God exists, agnosticism is simply being skeptical about the existence of God. O'Connel and Skevington (2010) furthermore stress that agnostics are persons who are more spiritual than atheists, but still do not count as being religious. They found agnostics to have slightly better personal relations and more social support than atheists, and that more people are agnostics than atheists. However, it is up to discussion whether this differentiation in the survey would have yielded different results.

The importance of differentiating between degree and simple affiliation to a worldview also relates to the hypothesis that was set up regarding gender and worldview. In the introduction it was stated that women are more religious than men (see for example Miller and Hoffmann, 1995), which can be found in literature most of the time. The difference between "more women are religious" and "women are more religious" should thus be considered as important, also regarding this thesis. Analyses were conducted to find whether more women are religious than men, as purely the affiliation was measured in the survey, not the strength of that affiliation. If a differentiation in strength of affiliation indeed was made, a relation between gender and affiliation to a worldview could have been found.

As in this thesis only the cross-sectional relationships between constructs were analyzed, no causality from one variable on the other could be established. This was not possible, as it would require an experimental design. For future studies, it would thus be especially interesting to analyze the possible influence of religious worldviews on EA. As it is however not without difficulty to set

up an experimental design for religious affiliation, another possibility for obtaining more detailed results is the setting up of a longitudinal study. Measuring religious affiliation over time might not hold the possibility of causal inferences, but still could the results be more detailed, and give insight into the intrapersonal changes over time.

Another interesting implication for research on death anxiety concerns religion as a buffer for death anxiety, because of the death transcendence it provides. Additionally to what was mentioned in the introduction, religion might promote self-transcendence – thus the drive to "pursue some higher purpose or cause" (Greenberg, Koole & Pyszczynski, 2004, p.156). With regards to death anxiety and religion the TMT (Solomon, Greenberg, & Pyszczynski, 1991) needs to be mentioned again, which was already described in the introduction. Also according to the TMT, religion serves as a buffer for death anxiety because of the literal afterlife it offers (Vail, Rothschild, Weise, Solomon, Pyszczynski & Greenberg, 2010). It would be interesting, however, to analyze whether a hypothesis of the general buffering function of religion on the whole construct of EA could be substantiated.

Furthermore, it might be interesting to study the moderating influence of gender on the relationship between affiliation to Christianity and EA. If it was for example asked for the strength of affiliation to Christianity instead of affiliation only, a significant moderation might be found.

Concluding, it can be said that some common findings in literature can also be found back in this research, such as that women and older people experience more EA and that older people are more often holding a religious worldview than younger people. However, some common findings could not be substantiated here, which is even more reason to study these relations in future research. One interesting contribution of this thesis is furthermore the fact that the moderation analyses did not indicate significance while when looking at literature this significance might be supposed. The non-significance in this analyses however indicates that these relations should be treated with caution and that more research, maybe in a longitudinal or experimental design, might be wise.

While having a worldview contributes a great deal to psychological health, it is also supposed to be a buffer against existential concerns. Especially for religious worldviews this trend has been found and can also be supposed for humanistic and even atheistic worldviews. As also age and gender are related to experiencing existential anxiety, more research is needed to clarify the underlying relations between these constructs. Particularly in times of increasing numbers of

individuals diagnosed with pathological anxiety it is of importance to learn about constructs or concepts of thought that might lead to alleviation of the experience of EA.

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6. Appendices

Appendix A

Table 5

Pattern Matrix of Factor Loadings Resulting from Principal Component Analysis with Oblimin Rotation

Item	**Factor**		
	General EA	Death anxiety	Avoidance
1. The question of whether life has meaning makes me anxious.	.57		
2. It frightens me when I realize how many choices life offers.	.59		
3. I worry about not being at home in the world, as if I do not belong here.	.77		
5. Existence feels threatening to me, as if at any moment something terrible could happen to me.	.44	.41	
6. It frightens me that at some point in time I will be dead.		.85	
7. I worry about the meaning of life.	.69		
8. I try to forget that all my choices have consequences.			.55
9. I get anxious because of losing touch with myself.	.68		
10. I struggle with the feeling that in the end I am on my own in life.	.64		
12. It makes me anxious that my life is passing by.		.80	
13. When the question of whether life has meaning enters my mind, I try to think quickly about something else.			.65
14. I worry about not living the life that I could live.	.67		

Item	**Factor**		
	General EA	Death Anxiety	Avoidance
16. The awareness that other people will never know me at the deepest level frightens me.	.69		
17. I worry that, out of the blue, something terrible might happen to me.		.65	
18. I try to push away the thought that life will end.		.50	.57
19. It frightens me that things I once considered important seem meaningless when I look back on them.	.50		
20. I am afraid that I do not get out of life what is in it.	.67		
21. I try to avoid the question of who I really am.			.71
22. I have the anxious feeling that there is a gap between me and other people.	.76		
23. I become anxious when I realize how vulnerable my body is to the dangers of life.		.62	
24. I worry about having to let go of everything at the moment of my death.		.71	
25. I am afraid that I will never know myself at the deepest level.	.56		

Note. Factor loadings below .3 were suppressed. Items of the scale were translated into English using a forward backward procedure with two independent bilingual translators. Adapted from "The Existential Concerns Questionnaire (ECQ) - Development and Initial Validation of a New Existential Anxiety Scale in a Nonclinical and Clinical Sample" by V. van Bruggen, P. ten Klooster, G. Westerhof, J. Vos, E. de Kleine, E. Bohlmeijer and G. Glas, 2017, *Journal of Clinical Psychology, 12(1)* p. 6. Copyright 2017 by Wiley Periodicals. Adapted with permission.