

Does Atheism Hold the Answers?

Testing the Effect of Mortality Salience over a Range of Religiosity

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October 2009

ABSTRACT

Terror Management Theory examines human beings' reactions to an inherent fear of their own inescapable immortality; worldview defence being found to be the standard anxiety buffer displayed as a response to death anxiety. Given that religious and non-religious people differ greatly in their chosen worldviews, which either answer existential worries or consider them unanswerable respectively, it posits that existential anxiety will elicit different responses from people of differing levels of religiosity. For the purpose of this study, levels of religiosity were split along intrinsic and extrinsic lines and the groupings were then compared. The hypotheses presented suggested that firstly, the mortality salience conditioning would produce death anxiety within the participants who would then respond with the anxiety buffer of being dogmatic about their belief systems. The second hypothesis stated that participants with low levels of intrinsic religiosity would display lower levels of dogmatism after the morality salience conditioning which would imply that mortality salience has less of an effect on them. This was hypothesised on the basis that non-religious people have chosen to accept a worldview that does not attempt to subdue feelings of meaningless and insignificance experienced as symptoms of being conscious of one's finite mortality. The results confirmed the first hypothesis that people do respond to death anxiety by taking a dogmatic approach to their belief systems. However, the second hypothesis was not confirmed as high intrinsic scorers scored significantly higher levels of dogmatism *regardless* of the manipulation, meaning that the effects of mortality salience did not differ across levels of religiosity but levels of inherent dogmatism did.

Keywords: terror management theory; religion; atheism; intrinsic; extrinsic; dogmatism

As humans, we have evolved what seems to be a unique ability to examine ourselves as smaller components of the larger universe. We have the cognitive ability to examine critically the world around us as well as ourselves. It is through this capability to be self-aware and self-conscious that humans have become aware of their own inescapable mortality. However, this awareness is also accompanied by our advanced intellectual ability to understand that our most basic instinct and evolutionary purpose is to simply survive. Becker (1973) argued that it is this combination of our sense of mortality with our knowledge of our instinct to survive which leads to an almost paralysing terror. When seen together one can realise that mankind's most basic purpose in life, to survive, is ultimately impossible and that we are destined to, as Frank (1997) puts it, "disappear into nothingness" (p. 557). This perception of an apparently meaningless and seemingly pointless life leaves humans feeling excessively vulnerable and anxious about their finite existence.

Terror Management Theory

Terror management theory attempts to comprehend various human behaviours and motivations concerning existential anxiety: the anxiety experienced by humans upon questioning their meaning in life and their ultimate death. Having evolved to a point where humans are both aware of and terrified of their mortality, terror management theory suggests that a large amount of human behaviour can be explained as attempts to reassure people in the face of this awareness of "living in a largely uncontrollable, perilous universe, where the only certainty is death" (Greenberg, et al., 1990, p. 308). It goes on to say that, certain psychological processes, such as belief formation, have evolved to especially manage the anxiety caused by conscious awareness of our death (Greenberg, Pyszczynski, & Solomon, 1986).

These mostly subconscious 'anxiety-buffers' help people to achieve a sense of purpose and value by embedding them within a cultural context which attributes symbolic meaning to their lives. This cultural context, as explained by Greenberg, Lyon, Pyszczynski, Rosenblatt and Solomon (1989), provides security against existential anxiety in two different ways. Firstly, cultures explain the world as a fair and just place, and secondly, they offer both real and symbolic immortality to those who meet and exceed their standards and values. It is for these two reasons that cultures act as anxiety-buffers through (a) a person's faith in a cultural worldview and its accompanying values and standards, and (b) the self-esteem that is provided by living up to and exceeding said value expectations of the culture. These two

processes provide people with self-worth and purpose and elevate them above the base nature of 'creatureliness' by ascribing them meaning and situating them within a symbolic reality (Cornwell et al., 2001).

What follows from this is the theory that if confronted with their existential anxiety, people will be likely to increase their reliance on the psychological structure (either their cultural beliefs or their self-esteem) that appeases that anxiety. There is strong evidence that increasing a person's accessibility to death thoughts will motivate them to defend their worldview and in doing so will reduce said accessibility (Arndt, Greenberg, Pyszczynski, Simon, & Solomon, 1997).

Most of the research conducted in this field has used very similar methods for inducing mortality salience and testing the effects that it has on people's behaviour. The most common method of inducing mortality salience was developed by Greenberg et al. (1989). Their Mortality Attitudes Personality Survey asks individuals to describe the thoughts and feelings that death arouses within them as well as to explain what they think will happen to them as they physically die. Other methods have involved video footage of fatal accidents (Rosenbloom, 2003), subliminal priming (Arndt et al., 1997) and participation in studies that were conducted in close proximity to funeral homes (Pyszczynski et al., 1996).

Arndt, Cook and Greenberg (2002), in studying the 'cognitive architecture' of terror management, found that timing, imposed cognitive loads, subliminal versus apparent death primes and individual and situational differences all have effects on the accessibility of death-related thoughts and the resultant strength with which worldviews are defended in order to reduce the anxiety caused by the death thought accessibility.

Several studies have tested hypotheses derived from the theory of terror management. The majority have shown that when people become aware of their mortality (by means of the aforementioned methods) they cling to their cultural structures. It has been found that mortality salience instigates more negative reactions to people who undermine the preferred cultural worldview and more positive reactions to others who uphold its values (Greenberg et al., 1989; Greenberg et al., 1990), that it causes people to strongly distinguish themselves from animals and the associated mortal creatureliness (Cornwell et al., 2001), that it initiates conformation to the present, most salient worldview (Renkema, Stapel, & Van Yperen, 2008) and that it causes people to automatically attune themselves to positive affective information (DeWall & Baumeister, 2007). All of these reactions help either to bolster the idea of one's worldview being truthful and meaningful or to increase one's self esteem by establishing oneself as being a worthwhile part of a system of value.

Religion and Terror Management Theory

One factor, though, which research has not thoroughly examined, is religion. This is quite surprising considering that religion could play a very specific role in terror management theory because of its ability to provide existential answers to many human anxieties (Frank, 1977). While “all belief systems ... link individual existence to an absolute, permanently enduring value or a goal transcending not only the individual but society itself” (Frank, 1977, p. 557), religion is a special example because, as well as providing a cohesive group worldview, it also offers humans a way to both physically and symbolically transcend the mortal realm of the physical through, among other things, a belief in an afterlife. Although it remains unclear whether mortality salience actually creates religiousness, there is evidence that it does cause people to strongly protect and defend their already present religious beliefs (Greenberg et al., 1990), that it leads to an increase in the ascription of supernatural agency to events (Norenzaya & Hansen, 2006) and that it increases moral judgement (Greenberg et al., 1989)

Critics such as Fischer and Jonas (2006) argue that the reason much of the research is inconclusive is that the researchers did not distinguish between intrinsic and extrinsic religious orientations as stipulated by Allport and Ross (1967). Extrinsic religiousness is a utilitarian approach to religion, which uses religion as a means to an end, whereas intrinsic religiousness is seeing an honest religious orientation as being the desired end. Using this distinction, Fischer and Jonas (2006) found that only those with high intrinsic scores received any terror management benefits from their beliefs whereas those who had low intrinsic orientations still relied on normal terror management practices. However, their procedure placed the religiosity test after the mortality salience conditioning and therefore the low dependant variable measurements may have been testing participants who have already had the opportunity to ease their anxiety by thinking about their religion.

The Norenzaya and Hansen (2006) study that concerned religion found that mortality salience made people who had prior religious inclinations more likely to believe in supernatural agents, which, being limited to unfamiliar supernatural agents, implies the religious person’s dependence on religious worldviews to defend against existential anxiety. The authors also found that nonreligious people did not display stronger supernatural beliefs after their mortality was made salient, nor did they denigrate supernatural beliefs in an attempt to defend their own secular worldview. This brings up interesting questions about the nonreligious portion of the world’s population; no terror management studies, so far, have looked at these individuals sufficiently.

Norenzaya and Hansen's (2006) discovery, that the nonreligious participants in their sample were not inclined to defend their spiritual beliefs (or lack thereof), leads one to wonder if nonreligious people perhaps function differently to the rest of the population with regards to terror management.

As stated above, all belief systems link individual existence to enduring values which transcend human existence. Atheists, however, do not ascribe to any such transcendental values. For such people there is no easy answer to defeating death and the threat of a finite existence. There is the possibility that influencing the lives of future generations can lead to a form of immortality as one continues to exist in the minds and memories of others (Frank, 1977). Yet this is fallible as those whom one leaves behind are also only mortal and one day they too will cease to exist thereby eradicating any semblance of immortality.

In contrast, transcendental religions and spiritual beliefs offer well-intentioned answers to this predicament. Many religions grant their deserving followers immortality through an afterlife and others, such as Eastern Religions, grant eternal existence and significance to those who merge with the soul of the world through death (Frank, 1977).

Religious beliefs also provide groups and communities of similarly orientated people with a set of standards and values which people are encouraged to meet. When seen in this light, religious beliefs seem to be a well-suited answer to existential anxiety because they meet the requirements of an anxiety-buffer in being a worldview which one can both have faith in and acquire self-esteem from by living up to its standards (of which most religions have many). In its ability to create groups, it also supplies the individual with an environment that supports his or her beliefs, thus validating his or her experiences and existence (Greenberg et al., 1989).

Despite this seemingly perfect answer to the problem of death-induced terror, atheists choose not to subscribe to it for whatever reasoning they may provide. Their worldview offers no solid answers to the questions of existence. If anything, it forces them to acknowledge their finite existence as considerably meaningless in the larger picture of the universe. To accept the theories of evolution – the answer to our existence without the presence of a creator – is to accept that humans are no different from animals, something many people, in the face of their mortality, attempt to refuse in order to reduce their anxiety (Cornwell et al., 2001). It also means that no offer of external, metaphysical or transcendental meaning or significance to survival is given. Aside from socially constructed meaning, all that is left for the purpose of life is its fundamental aim of perpetuating itself. Besides the primordial drive of life to reproduce itself, evolution also explains our human existence as

being microscopic in comparison to the sheer magnitude of time which has gone before our species and which will continue after our demise.

These all seem good enough reasons to suffer considerable existential anxiety, and yet atheists do not seek out transcendental systems of meaning to overcome this anxiety.

Because of this lack of reliance on transcendental meaning in the face of such possible threats, it appears that atheists in, some way, accept the idea that their existence is finite and without any transcendental purpose. Any meaning, which they do wish to ascribe to their existence, must come from themselves or from their social and cultural contexts, as there is no external source for such meaning.

Judging from the research done on terror management theory it is this exact meaninglessness which people try to avoid by seeking meaning behind their existence within their beliefs about reality. It seems unusual then, that atheists accept the lack of this type of meaning while the rest of the human race is attempting to find such meaning. One is then inclined to ask whether there might be something fundamentally different about atheists, which allows them to face such meaninglessness and not be reliant on humankind's most basic anxiety-buffer: religion. Perhaps they rely on other anxiety-buffers which current research has not yet uncovered or it could be that they do not rely on anxiety-buffers at all.

Rationale

Research into terror management theory has uncovered much about human behaviour. However, it has not addressed the population which could be the possible exception to its rules. This population comes in the form of those who have decided to accept both possible insignificance and a lack of provided meaning concerning their existence. These atheists are also willing to acknowledge their basic mortality and their fundamental animalistic nature (Frank, 1977).

This research will take the form of a comparative study that will look into the possible difference in reactions to death anxiety that may be found between religious people and non-religious people. It is based on the hypothesis that non-religious people will not respond as severely to death anxiety as religious people will.

There are several good reasons for examining this possible non-reliance on death anxiety buffers. The first is concerned with the sacrifices humans make in order to avoid death anxiety. Goldenberg, Greenberg, Pyszczynski and Solomon (2000), when studying humankind's tendency to de-animalise themselves, asked what humans sacrifice in their

attempts to escape their existential concerns. They suggested that humans, in their reliance on culture to differentiate themselves from their animal nature, lose a part of what it is to be human. In order to experience being fully alive, one needs to accept that a part of being human is being an animal. Yet both being fully aware of being alive and considering oneself as an animal cause one's mortality to become salient. This in turn causes the terrified reaction, proven common among humans, which initiates their defences of their cultural worldviews, which ultimately distances them from their intrinsically animal nature and the pure experience of being alive.

The second reason is concerned with humankind's reliance on cohesive groups, religious or otherwise. This is important because of the likelihood of ontological anxiety driving people to affiliate strongly with groups that hold a shared belief (Greenberg et al., 1989; Frank, 1977). While any functioning group produces security in solidarity it is, unfortunately, also linked, to contempt and dislike for those who are not part of the in-group (e.g. Schaller, Park, & Faulker, 2003; Van Vugt & Schaller, 2008). Kurzban and Leary (2001) argue that certain prejudicial mechanisms have evolved over the years because of the way that they benefit cohesion and cooperation within large-scale social groups. Kessler and Cohrs (2008) are quoted saying that:

...reliance on conventions, submission to norm systems and the authorities embodying them, and aggression against norm violators has an adaptive value in increasing rates of cooperation in groups and, in turn, enhancing group performance. (p. 75)

If an individual relies on and submits to group conventions and norms, and aggressors against any violations of said conventions and norms, the group will become more cooperative and therefore more efficient (Kessler & Cohrs, 2008). Terror management theory adds another level of understanding to this in so far as mortality salience causes these exact kinds of reactions which could very likely be due to the subconscious knowledge that the group is the best defence they have and therefore they should aim to strengthen it.

Because these cultural and worldview anxiety-buffers are, by nature, fragile social constructions they are reliant upon constant reinforcement and defence against other intruding, oppositional cultures and worldviews (Goldenberg et al., 2000). Hence, perhaps, the fervour with which so many people have died for their religion in an attempt to uphold

and protect a certain anxiety-buffer (their in-group) from possible threats (contrary out-groups) (Greenberg, et al., 1990).

In a world which is, even in today's day and age, still witness to so much conflict fuelled by different worldviews, any heavy reliance on groupings to subdue death anxiety should be of great concern. If terror management can explain conflict as a function of people trying to defend that which protects them from their existential anxiety then the theory has a much greater use than what it is currently performing, especially considering that there has been no practical application of the theory to daily life thus far. This is strange considering that the theory posits that a human's intrinsic fear of death could be the motivation behind a large part if not all of their behaviour (Arndt et al., 1997; Becker, 1973; Greenberg, Pyszczynski, & Solomon, 1986).

The study of the non-religious finds a place here in that it could provide answers to alternative ways of dealing with existential anxiety other than either being reliant on a specific worldview, culture or religion or sacrificing parts of the human experience. It could be a possibility that those who have chosen to accept life as lacking any kind of transcendental meaning have transcended that which terrifies the human race the most: insignificance. If this is the case then surely something can be learnt from this worldview, which could ultimately lead to possible solutions to cultural clashes that have claimed the lives of countless humans over the years.

Considering the aforementioned dangers of being reliant on a static and narrow worldview and the propensity for the fear of death and of insignificance to motivate people to go to extreme measures to defend their worldview, it would seem wise to search for possible answers to the problem of existential anxiety; answers which could potentially lie within the non-believing population. These answers could be identified by comparing the non-believer's reactions to death anxiety to those of a believer.

Specific aims and hypotheses

The aim of this research will be to identify possible differences in existential anxiety between non-religious and religious people as well as between intrinsic and extrinsic religious orientations. An experimental and control group will be used to test the effects of the mortality salience conditioning which will then be compared across the religious orientations of intrinsic and extrinsic religiosity. This study aims to test two main hypotheses.

The first hypothesis expects to find that the experimental group that experiences the mortality salience condition will display higher levels of dogmatism than the control group

that only receives the control questions regarding dental pain. It is predicted that the experimental group will display heightened death anxiety which will be expressed through higher dogmatism scores.

The second hypothesis is that the mortality salience conditioning would have a greater effect on the participants with high levels of intrinsic religiosity than those with low levels of intrinsic religiosity. Thus, it is expected that high levels of religiosity will be related to higher levels of dogmatism as an indication of a stronger defence against death anxiety.

METHODS

Design

From the research, one can see that death anxiety has been studied via the behavioural responses that people exhibit. In other words, defensive behaviour has been shown to prove the existence of death anxiety caused by mortality salience. Hence measuring the level of defensive behaviour will be akin to measuring the level of death anxiety, which can then be compared across levels of religiosity.

The experiment was based on a comparative 2-factorial (experimental groups: mortality salience conditioning vs. dental pain salience conditioning), between subjects design. The dependant variable of worldview defence initiated by death anxiety will be based on participants' levels of dogmatism following the experimental or control condition.

Participants

One hundred and eighty five participants (all between the ages of 18 and 28) were recruited from the University of Cape Town undergraduate population through the Department of Psychology's Student Research Participation Program (SRPP). Participants enlisted from outside the University of Cape Town via social networking sites such as *Facebook* helped to broaden the demographic range of the sample. In order to cover the greatest range of demographics as possible, no exclusion criteria were used. The sample was skewed in that the females greatly outnumbered the males. This was due to the initial nature of the undergraduate population with the psychology classes being populated predominately by females. A power analysis of the sample size revealed a relatively high power of 0.58 for eight groups and a small expected effect size. A full breakdown of participant demographics can be found in Table 1.

Table 1. *Sample Demographics*

| | | Count | Cumulative Count | Percentage | Cumulative Percentage |
|-----------------------|-----------|-------|---------------------|------------|--------------------------|
| Sex | Male | 19 | 19 | 10.33% | 10.33% |
| | Female | 165 | 184 | 89.67% | 100.00% |
| Race | Other | 5 | 5 | 2.72% | 2.72% |
| | Indian | 13 | 18 | 7.07% | 9.78% |
| | Black | 18 | 36 | 9.78% | 19.57% |
| | Coloured | 32 | 68 | 17.39% | 36.96% |
| | White | 116 | 184 | 63.04% | 100.00% |
| Religious Orientation | Hindu | 5 | 5 | 2.72% | 2.72% |
| | Jewish | 6 | 11 | 3.26% | 5.98% |
| | Other | 10 | 21 | 5.43% | 11.41% |
| | Agnostic | 11 | 32 | 5.98% | 17.39% |
| | Muslim | 13 | 45 | 7.07% | 24.46% |
| | Atheist | 23 | 68 | 12.50% | 36.96% |
| | Christian | 116 | 184 | 63.04% | 100.00% |

Materials

Pen-and-paper versions were used of the following tests: the ‘Age-Universal’ I-E scale 12, the Mortality Attitudes Personality Survey and the DOG scale.

The ‘Age-Universal’ I-E scale 12

The ‘Age-Universal’ I-E scale 12, as developed by Maltby (1999) (see Appendix A), was used to obtain a measure of religious orientation. Its 12 items have been shown to accurately measure the discrete constructs of extrinsic and intrinsic religiosity with the scales only sharing 1.7% of variance. Maltby’s amended version is proven to work well within a western setting amongst religious and non-religious persons (Maltby, 1999).

Mortality Attitudes personality survey

The instrument used for the manipulation of mortality salience was the Mortality Attitudes Personality Survey (Greenberg et al., 1989). It consisted of two questions asking the participant to “briefly describe the thoughts and feelings that the thought of your own death arouses in you” and to “jot down, as specifically as possible, what you think will happen to you as you physically die and once you are physically dead”. It has been widely used in many

terror management studies and has been shown to be highly effective in initiating death anxiety (Greenberg et al., 1989; Greenberg et al., 1990).

The control manipulation consisted of parallel questions that were identical to the mortality salience condition except that they asked about the thought of dental pain and the experience of visiting the dentist for an operation. This has proven to be a useful control measure (Schimel et al., 1999).

Distracter task

Many studies have shown that a delay following mortality salience is needed for the development of explicit reactions (Arndt, Cook, & Greenberg, 2002; Arndt et al., 1997). Therefore, a simple word search consisting of four words relating to television (see Appendix B) followed the mortality salience condition.

The Doggone Old Gnu (DOG) scale.

The Doggone Old Gnu (DOG) scale, as developed (and humorously named) by Altemeyer (1996), was used as the dogmatism measure. For this study, it was important to find a defensive behaviour that people at different levels of religiosity would be able to engage with equally. While cultural and worldview defences are individual specific, the engagement with generalised dogmatic behaviour is not. The chosen DOG scale identifies basic dogmatic thinking concerning whichever particular belief system the participant wishes to uphold. This allows for the use of obviously different worldviews and belief systems found across a range of religiosity, thus making it the most useful method of measuring death anxiety reactions in order to answer the research question clearly.

While being a relatively new scale, it has been tested and is shown to be internally consistent, with an alpha of .90 and an inter-item correlation of .22 (Altemeyer, 1996). It is therefore reliable in its measure of dogmatism as well as being a better predictor of dogmatism than the previously used D Scale of Rokeach (1960, as cited in Altemeyer, 2002) (Altemeyer, 2002). The brief question list, set out in 9 point Likert style, asked people to agree or disagree however strongly to statements regarding their particular belief structure such as “There are so many things we have not discovered yet, nobody should be absolutely certain his beliefs are right” and “I am so sure I am right about the important things in life, there is no evidence that could convince me otherwise”. The full list of questions can be found in Appendix C.

Procedure

Participants had the study advertised to them on their SRPP notice board as an analysis of 'projective personality'. Group sizes varied between five and forty depending on the number of participants that signed up for each of the sessions. These sessions were run in classrooms where students were seated individually at desks and were supervised by the primary researcher only.

After signing consent forms, they were assigned to either the control or experimental group depending on which questionnaire they received. The experimenter and the participants were all blind to the assignment, as all the cover sheets of the questionnaires looked alike.

Participants were then asked to complete the pen-and-paper questionnaire in the order that it was presented.

The first section of the questionnaire contained the measurement of religiosity in the form of the dispersed items of the well developed 'Age-Universal' I-E scale 12 among other filler items taken from several other questionnaires associated with personality that matched the format of the I-E scale such as "I take a positive attitude toward myself", "I am able to do things as well as most other people" and "All in all, I am inclined to feel that I am a failure". This was done in an attempt to keep religion from the mind of the participants to avoid possible confounding effects as well as to provide confirmation for the cover story.

The second section contained either the mortality salience or the control manipulation. The mortality salient group was presented with the Mortality Attitudes Personality Survey and the participants in the control condition received the parallel questions regarding dental pain.

The third section included the word search as the distracter item.

The fourth section measured levels of dogmatism using the DOG scale and the final section included demographic questions concerning basic demographics as well as religious orientations. These questions were withheld until the end in order to keep the true purpose of the study hidden and to keep religiosity from the minds of the participants

After the completion of the questionnaire, which took on average between fifteen and twenty minutes to complete, the participants left, having been given a debriefing sheet that clearly explained the true purpose of the study and welcomed further questions. They were also awarded one SRPP credit for their participation.

Analysis

The first analysis examined the internal reliability of the scales as they functioned within the sample. Cronbach's alpha was used to test the inter-item correlations and adjustments to the scales were made as necessary.

The second process tested the first hypothesis that aimed to find the manipulation effective. A single tailed t-test was used to examine the difference between the dogmatism means of the experimental group and control group.

An initial regression analysis was planned to examine the relationship between levels of religiosity to levels of dogmatism (the observable effect of existential anxiety) in testing the second hypothesis that intrinsic religiosity would have a stronger relationship with existential anxiety than extrinsic religiosity. However, an initial analysis of the data revealed a significant positive correlation between intrinsic and extrinsic religiosity, $r=.60$, with 37% of the variance being shared. This was contrary to the literature that regards the two concepts as being discrete constructs that are supposedly negatively correlated (Maltby, 1999). This meant that the separate significant correlations of intrinsic religiosity to dogmatism, $r = .66$, and extrinsic religiosity to dogmatism, $r = .32$, could not be reliably used even though they confirmed the initial hypothesis. This also meant that that progressing with the planned linear regression analysis would prove complicated as the planned range from non-religious through extrinsic to intrinsic would not exist. Some cases, for example, scored high on both extrinsic and intrinsic levels and visa versa.

It was therefore decided to use a 2 x 4 ANOVA to test the hypothesis that the manipulation would have the greatest effect on the participants with high intrinsic levels. The first factor involved the two levels of the experimental groups and the second factor used four groups split along high and low extrinsic and intrinsic lines. The first group, Non-Religious, included low levels of intrinsic and extrinsic religiosity. The Extrinsic group included low levels of intrinsic religiosity and high levels of extrinsic religiosity. The Intrinsic-pure group included high levels of intrinsic religiosity and low levels of extrinsic religiosity and the Intrinsic-mix group included high levels of both intrinsic and extrinsic religiosity. Both scales ran from zero to twelve. Refer to Table 2 for the exact splits.

Table 2. *Religiosity Groupings split along levels of Intrinsic and Extrinsic Religiosity*

| | <i>N</i> | | Intrinsic | Extrinsic |
|----------------|--------------|-----------|-----------|-----------|
| | Experimental | (Control) | | |
| Non-Religious | 31 | (36) | 0-6 | 0-6 |
| Extrinsic | 5 | (14) | 0-6 | 6-12 |
| Intrinsic-pure | 27 | (15) | 7-12 | 0-6 |
| Intrinsic-mix | 31 | (25) | 7-12 | 7-12 |

RESULTS

Internal Consistency

An internal consistency check was performed on all the scales used in order to assess their internal reliability. The extrinsic and intrinsic scales from the 'Age Universal' I-E Scale 12 returned medium to high Cronbach's alphas of .65 and .89 respectively. The DOG scale initially returned a Cronbach's alpha of only 0.58 which was deemed too low to retain the scale as it was. It was therefore decided to exclude questions four and five from the scale based their low inter-correlations of -0.06 and -0.12 respectively. This increased the Cronbach's alpha to a higher 0.65 resulting in all the scales used showing a consistent internal reliability.

Effectiveness of the manipulation

An independent samples t-test, whose assumptions were all upheld, was used to test the first hypothesis that participants who received the experimental mortality salience conditioning would show higher levels of dogmatism than those who did not; in other words, that the manipulation was effective in garnering an anxious response which was in turn dealt with via worldview defence. As the hypothesis is directional, a one-tailed t-test was used. The analysis indicated a significant difference between the experimental and control groups, $t(182) = -2.21$, $p = 0.010$, $d = 0.32$, with the experimental group showing higher levels of dogmatism than the control group that did not receive the manipulation (this is graphically displayed in *Figure 1*). No significant differences were found for either intrinsic or extrinsic scores across the groups (refer to Table 3 for means, stand deviations and t-test results). Thus, the hypothesis was confirmed in that participants who experienced the mortality salience conditioning did react with death and anxiety and therefore clung to their belief systems in order to mitigate that anxiety.

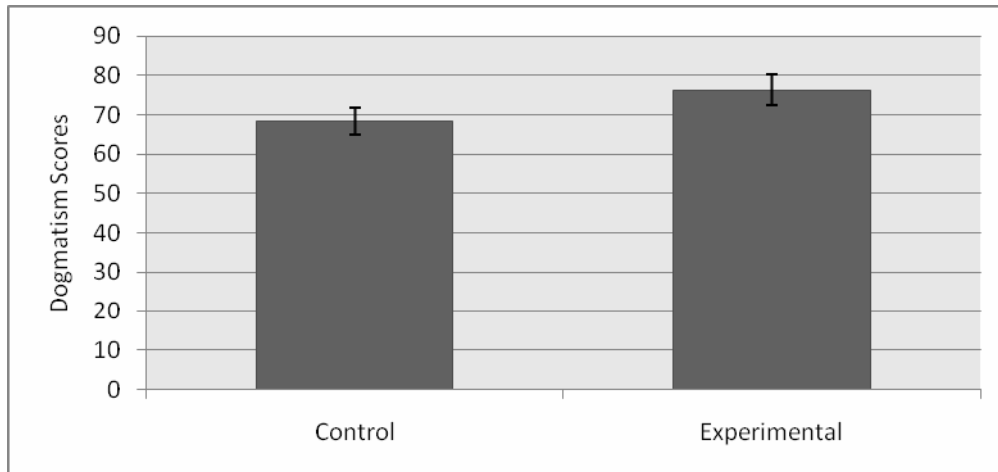


Figure 1. Dogmatism scores across Experimental Groups

Table 3. Between group comparisons on religiosity and dogmatism scores

| | Experimental ($n = 94$) | Control ($n = 90$) | t | p |
|-----------|---------------------------|----------------------|-------|-------|
| | Mean (SD) | Mean (SD) | | |
| Intrinsic | 6.93 (4.08) | 5.73 (4.30) | -0.93 | 0.055 |
| Extrinsic | 4.42 (2.70) | 4.33 (2.67) | -0.21 | 0.837 |
| Dogmatism | 76.34 (23.32) | 68.46 (24.99) | -2.21 | 0.028 |

Within and Between Group Analysis

A 2 x 4 factorial ANOVA was performed on the data to test the second hypothesis that stated that the mortality salience conditioning would have a lesser effect on the two groups displaying low levels of intrinsic religiosity (Non-Religious and Extrinsic) than the two groups with high levels of intrinsic religiosity (Intrinsic-pure and Intrinsic-mix). The experimental and control groups (Factor A with two levels) functioned as the between group variable and the Religiosity Groupings (Factor B with four levels) functioned as the within group variable. Means and standard deviations are reported in Table 4 and graphically displayed in Figure 2. The full ANOVA summary table can be found in Appendix D.

Table 4. Within Group Comparisons

| | n | Experimental Mean (SD) | Control Mean (SD) | F | p |
|----------------|-----|------------------------|-------------------|------|-------|
| Non-Religious | 84 | 59.94 (18.45) | 57.40 (14.89) | 0.32 | 0.572 |
| Extrinsic | 7 | 67.67 (4.16) | 48.75 (3.86) | 1.50 | 0.223 |
| Intrinsic-pure | 67 | 86.71 (20.80) | 86.32 (26.40) | 0.01 | 0.939 |
| Intrinsic-mix | 26 | 86.20 (21.09) | 85.27 (30.30) | 0.01 | 0.908 |

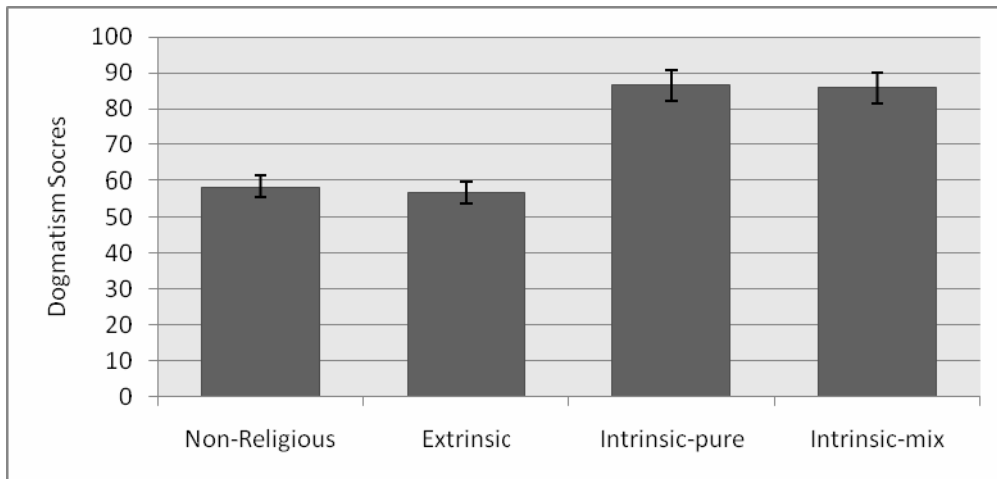


Figure 2. Dogmatism scores across Religiosity Groupings

Levene's test of homogeneity of variance was significant, $F(7, 176) = 2.98, p = 0.006$, however the assumption of uncorrelated means and standard deviations was upheld and therefore the validity of the ANOVA was left unquestioned. Normality assumptions were also upheld.

The ANOVA analysis revealed no significant effect for the interaction between experimental groups and religiosity groups, $F(3, 176) = 0.44, p = 0.723$, nor was there a significant main effect for Factor A, the Experimental Groups, $F(1, 176) = 1.48, p = 0.225$. It is interesting to note that this non-significance was found by the ANOVA where the previous directional t-test showed a significant difference between the experimental and control group. A Tukey's post hoc test, however, did show a significant difference between the experimental and control group ($p = 0.008$), confirming the hypothesis that the mortality salience conditioning increased worldview defence.

There was also a significant main effect for Factor B, the Religiosity Groupings, $F(3, 176) = 27.40, p < 0.001, \eta^2 = 0.32$ (see Figure 3 for a graphical display of the data). As levels of dogmatism increased, levels of intrinsic religiosity also increased. A Tukey's analysis for Factor B (seen in Table 5) showed significant differences between Intrinsic-pure and Non-religious, between Intrinsic-pure and Extrinsic, between Intrinsic-mix and Non-Religious, and between Intrinsic-mix and Extrinsic. In all comparisons, the Intrinsic-mix and Intrinsic-pure groups, which were the groups that had high levels of intrinsic religiosity, scored higher on levels of dogmatism than the Non-Religious and Extrinsic groups which had low levels of intrinsic religiosity. This was, however, irrespective of the manipulation. No differences were found between the low intrinsic groups (Non-religious and Extrinsic) or

between the high intrinsic groups (Intrinsic-pure and Intrinsic-mix). A planned comparison was then run to compare the Non-Religious and Extrinsic groups to the Intrinsic-pure and Intrinsic-mix groups. A significant difference was found between the pairs $F(1, 176) = 35.08$, $p < 0.001$, which confirms that the groups that had high levels of intrinsic religiosity (Intrinsic-pure and Intrinsic-mix) showed higher levels of dogmatism than the groups with low levels of intrinsic religiosity, irrespective of the manipulation.

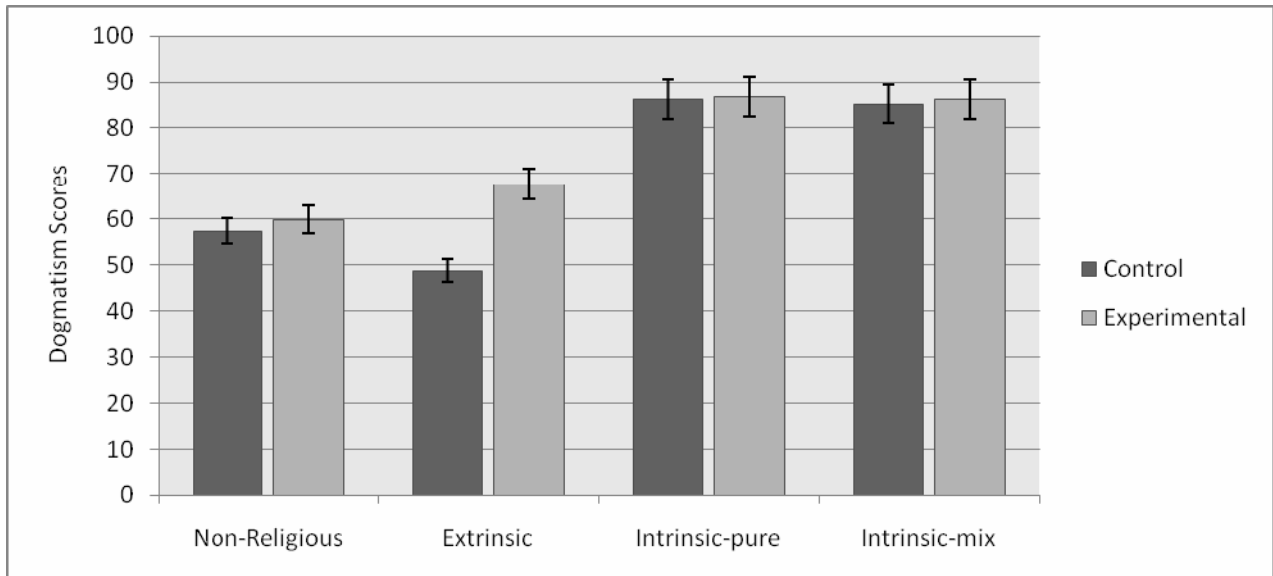


Figure 3. Comparison between Control and Experimental groups

Table 5. Tukey's Analysis on Religiosity Groupings

| | Non-Religious | Extrinsic | Intrinsic-pure | Intrinsic-mix |
|----------------|---------------|-----------|----------------|---------------|
| Non-Religious | | | | |
| Extrinsic | 0.997 | | | |
| Intrinsic-pure | < 0.01 | 0.001 | | |
| Intrinsic-mix | < 0.01 | 0.004 | 0.999 | |

Finally, planned comparisons were then conducted to compare the Religiosity Groupings across the Experimental Groups. This comparison was done in order to test whether the mortality salience conditioning would have a greater effect on the groups displaying high levels of intrinsic religiosity. The comparison was done despite the non-significant interaction effect as a contrast analysis gives greater substantive interpretation of results and greater power for tests of significance (Rosenthal, Rosnow, & B, 2000). Comparisons of the individual Religiosity Groups across the Experimental and Control Groups did not, however, reveal any significant differences (see Table 4) confirming that the differences between the Religiosity Groupings were completely irrespective of the manipulation. Therefore, the

hypothesis that the manipulation would have a greater effect on the high level intrinsic groups (Intrinsic-pure and Intrinsic-mix) had to be rejected.

DISCUSSION

This study wished to examine the possibly different effects of mortality salience over a range of religious orientations. The theory behind this reaction to death anxiety was that of the terror management which states that a person will react to experienced death anxiety by relying on cultural anxiety-buffers. There were two hypotheses investigated by this study.

The first hypothesis expected that the participants who underwent the mortality salience conditioning would display higher levels of dogmatism as a reaction to the death anxiety they experienced via the conditioning. The results confirmed this hypothesis and showed that the Experimental Group that underwent the mortality salience conditioning displayed significantly higher levels of dogmatism than the Control Group who did not. This result confirms the assumption of terror management theory that states that if a person is confronted with their mortality they will respond with worldview defence as a form of anxiety buffering (Greenberg, et al., 1990; Greenberg et al., 1989). In this study, the anxiety-buffer that was offered to the participants as a way to mitigate their death anxiety was the opportunity to align strongly to their belief systems which is what the DOG scale allowed them to do. This shows that the experience of death anxiety causes people to become dogmatic about their already present belief systems. A similar result was found by Greenberg et al. (1989) who discovered that mortality salience caused people to strongly defend their religious beliefs. The option given in the current study, however, was to defend *any* kinds of beliefs and the results were consistent across the Religiosity groupings. Mortality salience created an anxiety in all the participants which caused them to become more dogmatic about their belief systems which was, for them, a way to subscribe strongly to a cultural worldview and its accompanying values and standards.

The second hypothesis tested stated that the mortality salience conditioning would have a greater effect on the participants showing higher levels of intrinsic religiosity than those who scored lower in levels of intrinsic religiosity. The results, however, did not confirm this. Instead, results showed that *all* participants who displayed high levels of intrinsic religiosity, irrespective of the conditioning, displayed generally higher levels of dogmatism. Because there was no difference across the control groups, this difference in dogmatism scores between the high and low intrinsic scorers was a factor of their intrinsic nature and *not*

because of a heightened reaction to the effect of the mortality salience conditioning. One can conclude that religious orientation does not play a factor in the experience of death anxiety. This means that despite the vastly different worldviews that the religious and the non-religious ascribe to, they all experience death anxiety in the same way. Even though the non-religious do not rely on transcendental systems of meaning to attribute value and significance to their lives and even though they accept that their existence is finite, they still experience death anxiety and respond to it in the same way that both intrinsically and extrinsically religious people do.

A possible reason for the high levels of dogmatism seen in the groups that had high intrinsic scores could be a result of their devout ascription to their systems of belief. People who are highly intrinsic believe strongly in their religion, as it is, for them, a way of life and have internalised their religious beliefs, which function as intrinsic parts of their identity (Fischer & Jonas, 2006). The DOG scale allowed the participants to be dogmatic about *any* belief system, and one characteristic of being highly intrinsic is dogmatism about one's religious beliefs. To quote from the Christian Bible, for example, in John 14:6 Jesus says, "I am the Way and the Truth and the Life". For someone who ascribes to the Bible's teaching as a way of living, he or she accepts that the only truth is the one that is found through Jesus Christ, hence their dogmatic approach to their religious beliefs. Non-religious people, on the other hand, do not subscribe to a doctrine of beliefs and they are not held by their faith in a deity to support a certain belief system. Religious people who score high on extrinsic and not intrinsic religiosity also differ from the intrinsic group because their subscription to a certain religion is not their primary life path as it is for intrinsic religious people; hence, they too have no reason to be dogmatic about their beliefs. People who display an extrinsic religiosity use religion for purposes that are more utilitarian and gain social and comfort benefits from being involved with a religious group (Fischer & Jonas, 2006).

It is interesting to note that the finding of this study contradicts some of the findings produced by previous research. Fischer and Jonas (2006) found that participants with high levels of intrinsic religiosity were the only group to not react at all to the mortality salience conditioning. They explained their finding to mean that people who were intrinsically religious used their religion (consciously or not) to mitigate the effects of existential anxiety. This difference between the result of the Fischer and Jonas study (2006) and the current study can be explained, however, via Fischer and Jonas's design, which placed the measure of religiosity after the mortality salience conditioning. This means that the participants had the

opportunity to engage with their belief structures and acquire relief from doing so before being tested for a reaction to the conditioning.

The Fischer and Jonas (2006) study also found that the group with low levels of intrinsic religiosity reacted strongly to the mortality salience conditioning while the extrinsically religious group barely reacted at all. The current study found, instead, that all Religiosity Groupings reacted equally to the mortality salience conditioning which leads one to believe that religious orientation did not play a factor in the process. It is difficult, however, to compare the Fischer and Jonas study successfully with the current study because they found distinctions between extrinsic and intrinsic religiosity where the current study did not.

One last result of the current study worthy of attention was the unexpected correlation between intrinsic and extrinsic religiosity. As the literature states, these two religious orientations are supposed to exist as discrete constructs with the scales that measure them finding negative correlations between the two (Maltby, 1999). The sample used in this study, however, did not display instances of discrete intrinsic or extrinsic religiosity. A possible reason for this could be due to I-E scale not been culturally versatile (Kirkpatrick & Hood, 1990). The majority of religious orientation scales have been developed in the United States of America and hence may not account for cultural differences in approaches to religion that may be found in a South African setting.

CONCLUSION

The purpose of this study was to examine whether religiosity had an effect on the amount of death anxiety experienced by people who had their mortality made salient to them.

What this study has confirmed is the theory of terror management. People who are confronted with the problem of their mortality do experience an anxiety that they attempt to rid themselves of by clinging to their belief systems which help them to find meaning and significance within their lives. Being an atheist or being of different religious orientation, however, does not make a difference to the anxiety experienced. Everyone, from the non-religious, through the extrinsically religious, to the intrinsically religious, all experience this ontological anxiety in the same way, as was displayed by their similar reactions to it. We can thus conclude that religious orientation or religiosity in general does not play a factor in the experience of, or reaction to, death anxiety.

Those who do not have deeply internalised religious beliefs may be generally less dogmatic about their beliefs and worldviews, but they still respond with fear and anxiety in

the face of their mortality and are hence still susceptible to being prejudiced and derogatory towards those who challenge their worldviews.

Atheists and other non-believers may accept that human life is an infinitesimally small blip in the expanse of the universe, but they must do so while still retaining their natural human nature of being fearful of their mortality. Atheism, therefore, does not hold any possible answers to the problem of existential anxiety.

Limitations and Futher Direction

Some limitations of this study include small group sizes for some of the Religiosity Groupings and further studies would obviously wish to address this issue in order to garner a more reliable result. While the power of the sample size was acceptable, a larger sample with a broader demographic would also be preferable. Another limitation which future research would need to address is the possible cultural differences in religious orientation as the Age Universal I-E Scale 12, as developed by Maltby (1999), was clearly not appropriate for this young adult, South African sample possibly because of different cultural and religious practices and orientations between the USA and South Africa.

REFERENCES

- Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, 5, 432-443.
- Altemeyer, B. (1996). Dogmatism. In B. Altemeyer, *The authoritarian specter* (pp. 191-215). Cambridge, MA: Harvard University Press.
- Arndt, J., Cook, A., & Greenberg, J. (2002). Mortality salience and the spreading activation of worldview-relevant constructs: exploring the cognitive architecture of terror management. *Journal of Experimental Psychology*, 131, 307-324.
- Arndt, J., Greenberg, J., Pyszczynski, T., Simon, L., & Solomon, S. (1997). Suppression, accessibility of death-related thoughts, and cultural worldview defense: exploring the psychodynamics of terror management. *Journal of Personality and Social Psychology*, 73, 5-18.
- Becker, E. (1973). *The denial of death*. New York: Free Press.
- Bolt, M. (n.d.). Religious and orientation and death fears. *Review of Religious Research*, 73-76.
- Cornwell, R., Goldenberg, J., Greenberg, J., Kluck, B., Pyszczynski, T., & Solomon, S. (2001). I am not an animal: mortality salience, disgust, and the denial of human creatureliness. *Journal of Experimental Psychology*, 130, 427-435.
- DeWall, C. N., & Baumeister, R. F. (2007). From terror to joy: automatic tuning to positive affective information following mortality salience. *Psychological Science*, 18, 984-990.
- Fischer, P., & Jonas, E. (2006). Terror management and religion: evidence that intrinsic religiousness mitigates worldview defense following mortality salience. *Journal of Personality and Social Psychology*, 91, 553-567.
- Frank, J. D. (1977). Nature and functions of belief systems: humanism and transcendental religion. *American Psychologist*, 555-559.
- Goldenberg, J., Greenberg, J., Pyszczynski, T., & Solomon, S. (2000). Fleeing the body: a terror management perspective on the problem of human corporeality. *Personality and Social Psychology Review*, 4, 200-218.
- Greenberg, J., Kirkland, S., Lyon, D., Pyszczynski, T., Rosenblatt, A., Solomon, S., et al. (1990). Evidence for terror management theory II: the effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology*, 58, 308-318.
- Greenberg, J., Lyon, D., Pyszczynski, T., Rosenblatt, A., & Solomon, S. (1989). Evidence for terror management theory I: the effects of mortality salience on reactions to those who

- violate or uphold cultural values. *Journal of Personality and Social Psychology*, 57, 681-690.
- Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: a terror management theory. In R. F. Baumeister, *Public self and private self* (pp. 189-212). New York: Springer-Verlag.
- Kessler, T., & Cohrs, J. C. (2008). The evolution of authoritarian processes: fostering cooperation in large-scale groups. *Group Dynamics*, 12, 73-84.
- Kirkpatrick, L. A., & Hood, R. W. (1990). Intrinsic-extrinsic religious orientation: The boon or bane of contemporary psychology of religion. *Journal for the Scientific Study of Religion*, 442-462.
- Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatization: the function of social exclusion. *Psychological Bulletin*, 127, 187-208.
- Maltby, J. (1999). The internal structure of a derived, revided, and amended measure of the religious orientation scale: uhe 'age-universal' I-E scale 12. *Social Behaviour and Personality*, 27, 407-412.
- Norenzaya, A., & Hansen, I. (2006). Belief in supernatural agents in the face of death. *Personality and Social Psychology Bulletin*, 174-187.
- Pyszczynski, T., Wicklund, R. A., Floresku, S., Koch, H., Gauch, G., Solomon, S., et al. (1996). Whistling in the dark: exaggerated consensus estimates in response to incidental reminders of mortality. *Psychological Science*, 7, 332-336.
- Renkema, L. J., Stapel, D. A., & Van Yperen, N. W. (2008). Go with the flow: conforming to others in the face of existential threat. *European Journal of Social Psychology*, 38, 747-756.
- Rosenbloom, T. (2003). Sensation seeking and risk taking in mortality salience. *Personality and Individual Differences*, 55, 1809- 1819.
- Rosenthal, R., Rosnow, R. L., & B, R. D. (2000). *Contrasts and effect sizes in behavioral research: A correctional approach*. Cambridge: Cambridge University Press.
- Schaller, M., Park, J. H., & Faulker, J. (2003). Prehistoric dangers and contemporary prejudices. *European Review of Social Psychology*, 14, 105-137.
- Schimel, J., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., Waxmonsky, J., et al. (1999). Stereotypes and terror management: evidence that mortality salience enhances stereotypic thinking and preferences. *Journal of Personality and Social Psychology*, 77, 905-926.
- Van Vugt, M., & Schaller, M. (2008). Evolutionary approaches to group dynamics: an introduction. *Group Dynamics*, 12, 1-6.

APPENDIX A**'Age Universal' I-E Scale 12** (Maltby, 1999)

Responses are scored Yes=2, Unsure=1, and No=0

| Item | Yes | Unsure | No |
|--|-----|--------|----|
| Intrinsic | | | |
| I try hard to live all my life according to my religious beliefs | | | |
| I have often had a strong sense of God's presence | | | |
| My whole approach to life is based on my religion | | | |
| My religion is important because it answers many questions about the meaning of life | | | |
| I enjoy reading about my religion | | | |
| It is important to me to spend time in private thought and prayer | | | |
| Extrinsic-Personal | | | |
| What religion offers me most is comfort in times of trouble and sorrow | | | |
| Prayer is for peace and happiness | | | |
| I pray mainly to gain relief and protection | | | |
| Extrinsic-Social | | | |
| I go to church because it helps me make friends | | | |
| I go to church mainly because I enjoy seeing people I know there | | | |
| I go to church mostly to spend time with my friends | | | |

APPENDIX B

Word Search as Distracter Task

Please find and circle the following words in the block bellow:

BROADCAST

TELEVISION

CHANNEL

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| S | H | Q | Y | Q | D | E | A | T | L |
| I | I | N | H | R | B | J | B | E | W |
| C | H | A | N | N | E | L | Y | L | X |
| P | R | E | O | K | H | F | I | E | L |
| K | M | K | I | L | E | N | S | V | D |
| Z | S | L | E | C | D | C | D | I | G |
| A | B | R | O | A | D | C | A | S | T |
| G | G | U | C | D | O | Y | L | I | O |
| W | K | O | S | U | U | Z | K | O | U |
| U | L | F | A | Y | H | V | W | N | B |

APPENDIX C

The DOG Scale (Altemeyer, 2002)

- X. I may be wrong about some of the little things in life, but I am quite certain I am right about all the BIG issues.
- Y. Someday I will probably think that many of my present ideas were wrong.
 - 1. Anyone who is honestly and truly seeking the truth will end up believing what I believe.
 - 2. There are so many things we have not discovered yet, nobody should be absolutely certain his beliefs are right. R
 - 3. The things I believe in are so completely true, I could never doubt them.
 - 4. I have never discovered a system of beliefs that explains everything to my satisfaction. R
 - 5. It is best to be open to all possibilities and ready to reevaluate all your beliefs. R
 - 6. My opinions are right and will stand the test of time.
 - 7. Flexibility is a real virtue in thinking, since you may well be wrong. R
 - 8. My opinions and beliefs fit together perfectly to make a crystal-clear “picture” of things.
 - 9. There are no discoveries or facts that could possibly make me change my mind about the things that matter most in life.
 - 10. I am a long way from reaching final conclusions about the central issues in life. R
 - 11. The person who is absolutely certain she has the truth will probably never find it. R
 - 12. I am absolutely certain that my ideas about the fundamental issues in life are correct.
 - 13. The people who disagree with me may well turn out to be right. R
 - 14. I am so sure I am right about the important things in life, there is no evidence that could convince me otherwise.
 - 15. If you are “open-minded” about the most important things in life, you will probably reach the wrong conclusions.
 - 16. Twenty years from now, some of my opinions about the important things in life will probably have changed. R
 - 17. “Flexibility in thinking” is another name for being “wishy-washy”.
 - 18. No one knows all the essential truths about the central issues in life. R
 - 19. Someday I will probably realize my present ideas about the BIG issues are wrong.. R
 - 20. People who disagree with me are just plain wrong and often evil as well.

Note. The first two statements (X and Y) are not scored. They familiarize the respondent with the content to follow, but they may be omitted. R indicates that the item is worded in the undogmatic direction, for which the scoring key is reversed. Items are answered in a range of -4 to +4 and converted to 1 to 9 (5 = neutral).

APPENDIX D**ANOVA Summary Table**

| Source | SS | df | MS | <i>F</i> | <i>p</i> (η^2) |
|---------------------|-----------|-----|----------|----------|-----------------------|
| Experimental Groups | 607.50 | 1 | 607.5 | 1.48 | 0.225 (0.008) |
| Religiosity Groups | 33647.00 | 3 | 11215.70 | 27.40 | <0.001 (0.32) |
| Interaction A*B | 542.80 | 3 | 180.90 | 0.44 | 0.723 (0.007) |
| Error | 72053.90 | 176 | 409.4 | | |
| Total | 109014.00 | 183 | | | |