Cardiff Metropolitan University

Prifysgol Fetropolitan Caerdydd

B.Sc. (Hons) Psychology

Final Year Project

Mortality Awareness in Mid-life:
The role of openness to experience and trait mindfulness

2018

Dissertation submitted in partial fulfilment of the requirements of Cardiff Metropolitan University for the degree of Bachelor of Science
DECLARATION

The following statement must be included, together with a space for signature. This must be signed before the report is submitted to Registry.

DECLARATION

I hereby declare that this dissertation is the result of my own independent investigation under the supervision of my tutor. The various sources to which I am indebted are clearly indicated. This dissertation has not been accepted in substance for any other degree, and is not being submitted concurrently for any other degree.
ACKNOWLEDGEMENTS

I would like to thank my supervisor, for her guidance and support. I would also like to thank everyone who distributed my survey to their contacts and to those who participated in the study.
ABSTRACT

The current study measured the predictive value of trait mindfulness and openness to experience on different facets of mortality awareness in a middle-aged sample. Most research on mortality awareness have focused on negative aspects such as avoidance and anxiety. However, trait mindfulness and openness to experience have been found to buffer against negative aspects of mortality awareness. Participants were middle aged men and women between the ages of 40 and 65. Using a quantitative method, participants completed three self-report questionnaires which measured their trait mindfulness, openness to experience and five facets of mortality awareness; acceptance, disengagement, legacy, fearfulness and disempowerment. It was hypothesised that trait mindfulness would predict an acceptance towards mortality and would negatively predict fearfulness, disengagement and disempowerment. Openness to experience was hypothesised to predict a need for legacy formation. The results indicated that high trait mindfulness did not predict mortality acceptance but did predict a willingness to engage with thoughts about mortality. Openness to experience was predictive of legacy formation and high fearfulness of mortality as well as avoidance and disempowerment. The results indicated that those who are open to experience may use legacy formation as a mechanism to avoid negative feelings about mortality. Future research should explore what forms of legacy creation reduce negative feelings and encourage meaning in life in the face of mortality.
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declaration</td>
<td>i</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>ii</td>
</tr>
<tr>
<td>Abstract</td>
<td>iii</td>
</tr>
<tr>
<td>Contents</td>
<td>iv</td>
</tr>
<tr>
<td>1.0 Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Middle Age</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Mortality Awareness</td>
<td>2</td>
</tr>
<tr>
<td>1.3 Trait Mindfulness</td>
<td>5</td>
</tr>
<tr>
<td>1.4 Openness to Experience</td>
<td>6</td>
</tr>
<tr>
<td>1.5 Rationale and Aim</td>
<td>8</td>
</tr>
<tr>
<td>2.0 Method</td>
<td>9</td>
</tr>
<tr>
<td>2.1 Design</td>
<td>9</td>
</tr>
<tr>
<td>2.2 Participants</td>
<td>9</td>
</tr>
<tr>
<td>2.3 Materials</td>
<td>9</td>
</tr>
<tr>
<td>2.4 Ethics</td>
<td>11</td>
</tr>
<tr>
<td>2.5 Procedure</td>
<td>11</td>
</tr>
<tr>
<td>2.6 Method of Analysis</td>
<td>12</td>
</tr>
<tr>
<td>3.0 Results</td>
<td>13</td>
</tr>
<tr>
<td>3.1 Pearson Correlation Coefficient</td>
<td>13</td>
</tr>
<tr>
<td>3.2 Multiple Regressions</td>
<td>13</td>
</tr>
<tr>
<td>4.0 Discussion</td>
<td>17</td>
</tr>
<tr>
<td>4.1 Overview</td>
<td>17</td>
</tr>
<tr>
<td>4.2 Findings</td>
<td>18</td>
</tr>
<tr>
<td>4.3 Limitations</td>
<td>21</td>
</tr>
<tr>
<td>4.4 Future Research</td>
<td>21</td>
</tr>
<tr>
<td>4.5 Conclusion</td>
<td>21</td>
</tr>
<tr>
<td>5.0 References</td>
<td>23</td>
</tr>
<tr>
<td>6.0 Word Count</td>
<td>30</td>
</tr>
</tbody>
</table>
List of Tables

Table 1. Pearson correlation coefficients........................................ 14
Table 2. Regression coefficients of Mortality Awareness Facets and
        Mindfulness and Openness.............................................. 16
1.0 Introduction

Awareness of mortality is unique to humans. Although, every animal dies, humans are the only ones who know it will happen one day. This awareness can engender feelings of fear and anxiety (Pyszczynski, Greenberg & Sheldon, 1999) or it can encourage a sense of meaning and authenticity in life (Wong & Tomer, 2011). It has been suggested that midlife is a time when mortality awareness starts to emerge, however, there is a lack of research in death awareness using a middle age sample (Hong et al. 2017). Although some research shows a decline in fear of death from midlife to old age (Fortner & Neimeyer, 1999) very few studies have explored different facets of death awareness in midlife (Neimeyer, Wittowski & Moser, 2004; Suhail & Akram, 2002).

1.1 Middle Age

Midlife is considered to be between the ages of 40 and 65 years of age (Lachman, Lewkowicz, Marcus & Peng, 1994). Lachman, Teshale & Agigoroaei (2015) characterize middle age as a time of balancing losses and growth, taking care of younger and older generations and connecting past and future periods of life. Furthermore, midlife is when the realization emerges that although there is still time to achieve goals, this time is becoming limited (Lachman, 2004). Midlife is a time when people have greater control in their lives and may be at the peak of their productivity and social responsibility (Lachman et al. 1994). However, it is in this time that the first signs of physical and cognitive decline start. Research suggests that cognitive abilities such as reasoning and memory can start showing signs of decline from the age of 45 (Singh-Manoux et al. 2012). Similarly, physical ability has been shown to decline from the age of 50 years old (Hall et al. 2017). Experiences of middle age are diverse, however, it is common for middle age adults to be involved in multiple roles such as being a parent, spouse and worker (Lachman, 2004). Some even become involved in the
care of elderly parents and have become known as the “sandwich generation.” This refers to being tasked with taking care of younger and older generations simultaneously (Spitze et al, 1994). Furthermore, middle age is the time where people are more likely than younger adults to experience a death of one or both parents (Leopold & Lechner, 2015). According to Marshall (2004) this can be a transitory experience which brings personal mortality into awareness.

As people reach midlife they realise that they most likely have less time left than the time they have had. Cate & John (2007) found that there was an increased sense of a limited time perspective in women aged 40 to 60. However, this perception of shortened time did not influence their outlook towards future opportunities. According to Socioemotional selectivity theory (SST; Carstensen, 2006) as people become aware of their limited time they move their attention towards seeking goals which are socially meaningful. McAdams, De St Aubin & Logan (1993) found that concerns for generativity, emerges in midlife. Doka (2015) notes that generativity allows people to create significant lives to be remembered in the face of eventual mortality. However, not much is known about mortality awareness in midlife (Hong et al. 2017). Mortality anxiety has been found to peak in the 20’s and decline as people get older (Chopik, 2017, Russac et al, 2007, Cicerelli, 2002). Russac et al. (2007) found a peak in death anxiety for women in their fifties with research from Pakistan finding that midlife adults were more anxious about their mortality than young people (Suhail & Akram, 2002). Suhail & Akram (2002) suggested that this was due to concerns about having responsibilities towards others and the impact of not knowing how much time is left to take care of these responsibilities.
1.2 Mortality Awareness

Majority of research into mortality awareness focuses on the negative aspects (Neimeyer, Wittowski & Moser, 2004). Wong, Reker & Gesser (1994) tried to reconcile this by developing the Death Attitudes Profile- Revised. They expanded on mortality acceptance, however, acceptance was strongly related to religion. In response to the lack of secular and multidimensional measures of mortality awareness Levasseur, McDermott & Lafreniere (2015) developed the Multidimensional Mortality Awareness Measure (MMAM). This measure extends the concept of mortality awareness to include five dimensions of positive and negative awareness of mortality. These are acceptance, legacy, fearfulness, disengagement and disempowerment.

Mortality fearfulness refers to the anxiety felt when thinking about personal mortality (Levasseur, McDermott & Lafreniere, 2015). Feeling anxious about death is a normal human response (Furer & Walker, 2008). However, this fear can lead to denial and suppression. Avoiding mortality concerns can lead people to neglect their health, end-of-life planning (Carr & Khodyakov, 2007) and stop them from living an authentic and meaningful life (Wong & Tomer, 2011). According to Terror Management Theory (TMT) the knowledge of mortality is too much for humans to cope with and that much of human behaviour is an attempt to suppress this awareness (Solomon, Greenberg & Pyszczniski, 1991). According to Solomon, Greenberg & Pyszczniski (1991) when people are confronted with reminders of mortality they try to boost their self-esteem through engaging with social beliefs and norms which offer them literal and symbolic immortality. Experimental research shows that after brief reminders of mortality, referred to as mortality salience tasks, participants have been shown to favour ingroups and show hostility towards outgroups (Arndt, Greenberg, Schimel, Pyszczynski, & Solomon, 2002), take part in risky behaviour and increase consumption of alcohol (Kasser & Sheldon, 2000). When mortality awareness is not suppressed through these
defence mechanisms it may also engender feelings of hopelessness and depression (Templer et al. 2002). Feelings that life is pointless in the face of mortality can cause people to feel disempowered and lack a sense of meaning in life (Levasseur, McDermott & Lafreniere, 2015).

However, mortality awareness can also enhance meaning in life (Wong & Tomer, 2011). When mortality becomes undeniable through a traumatic or near-death experience, some individuals experience a positive shift towards intrinsic values gaining greater meaning in life, stronger relationships and more focused priorities (Tedeschi & Calhoun, 1996). Studies where participants are presented with a scenario in which they imagine dying followed by a specific reflection on their mortality have had similar results. After reflection participants have been found to be more grateful (Frias, Watkins, Webber & Froh, 2011), less greedy (Cozzolino, Staples, Meyers & Samboceti, 2004) and more likely to donate blood (Blackie & Cozzolino, 2011). Cozzolino, Blackie & Myers assert that a willingness to engage with thoughts about mortality can lead to self-actualization and greater purpose in life. Vail et al (2012) found that contemplating mortality led participants to focus on making healthier choices, personal growth and building better communities.

Carstensen (2006) asserted that the awareness that time is limited can lead people to pursue emotionally meaningful and socially connected goals. This time limited perspective leads to generative behaviour that will benefit others and create a legacy that will continue beyond death (Levasseur, McDermott & Lafreniere, 2015). Hunter (2007) notes that people receive and leave legacy’s unintentionally, however, some people are active and deliberate in what they intend to leave behind. Legacies can be intended for close relations or the greater good (Newton & Jones, 2016). McAdams, De St Aubin & Logan (1993) hold that as people move closer towards old age they turn their attention to assisting future generations through creative and charitable actions. Cox, Wilt, Olson & McAdams (2010) found that high scores
on generativity were negatively related to feelings of anxiety, depression and helplessness. This suggests that generativity buffers the fear of death by giving people a sense that a part of the self will continue beyond death (Maxfield et al. 2014). Acceptance of mortality as an inevitability is in line with Buddhist philosophy which holds that accepting the impermanence of life and decay leads to greater appreciation of life, allowing people to live mindfully and openly in the present (Masel, Schur & Watzke, 2012). People who score higher in trait mindfulness and openness to experience have been found to respond less defensively to reminders of mortality (Niemeic et al. 2010).

1.3 Trait Mindfulness

Trait mindfulness is the innate ability to be fully aware, attentive and non-judgemental of the present moment in everyday life and can be present regardless of meditation training (Kabat-Zinn, 2003; Brown & Ryan, 2003). Brown & Ryan (2003) note that individuals who are high in trait mindfulness experience the present moment with clarity and sensitivity, while the attention given by those with low trait mindfulness can be mindless and automatic. Research by Niemiec et al. (2010) measured trait mindfulness in participants exposed to a brief mortality reminder and found that participants higher in trait mindfulness did not engage in the defensive responses predicted by TMT. After being exposed to a mortality salience task, participants were asked to write about their feelings towards their own mortality. The researchers noted that high mindfulness participants spent a longer time writing and did not suppress death-thoughts immediately after being exposed to them. Niemiec et al. (2010) suggested that it was mindful participant’s willingness to engage with thoughts of mortality which explained the lack of defensive reactions. There has not been a lot of research on the effects of mindfulness on mortality awareness, however, research from a doctoral dissertation measured trait mindfulness and existential anxiety. Geiger (2014) measured participants levels of existential anxiety, which refers to feelings that life is meaningless and unfulfilling.
The research found that participants who scored high on trait mindfulness had lower existential anxiety than less mindful participants. This indicated that those who were more mindful found life meaningful and fulfilling. The research by Niemiec et al. (2010) and Geiger (2014) suggest that trait mindfulness plays a role in more accepting awareness of mortality. Therefore, mindfulness should reduce avoidance, fearfulness and feelings of disempowerment in relation to mortality awareness.

1.4 Openness to Experience

Openness to experience is one of the Big Five Personality traits (McCrae & Costa, 1987). According to McCrae & Costa (1987) people with this trait tend to be more imaginative, curious and flexible in their behaviour. Additionally, they tend to be less conformist towards traditional and cultural norms leaving them open to new and norm challenging experiences (Feist & Brady, 2004). Enjoyment of abstract art has also been associated with openness to experience suggesting that this trait is comfortable with concepts which may be unfamiliar and lack a clear structure (Feist & Brady, 2004). Whereas people who score low on openness to experience tend to be more closed-minded to new experiences and struggle to tolerate ambiguity (Duriez, 2003). Closed-mindedness is also associated with having a literal approach to religion (Duriez, 2003). Having a literal approach to religion means that people believe religious teachings as they are presented and do not view them as figurative and open to interpretation (Duriez, Fontaine and Hutsebaut, 2000). Dezutter et al (2008) found that participants who had a literal approach to religion were more fearful of mortality and avoided mortality related cognitions. Routledge, Ardnt & Sheldon (2004) found by encouraging open-mindedness through a creative task, participants were less likely to engage in the defensive responses predicted by TMT after being exposed to a mortality salience task. Similarly, Boyd, Morris & Goldenberg (2017) found that participants high in openness to experience responded less defensively to death reminders. The researchers suggested that it
was participants’ curiosity to the novel experience of death which facilitated a mortality accepting response. Furthermore, research by Prentice, Kasser & Sheldon (2017) found that when reminded of death over a length of time those with high openness to experience responded positively by placing more value on intrinsic life goals after the reminder than those who scored low on openness. This suggests that for people high on openness to experience reflecting on their mortality can create a change in their goal orientation leading them to more generative goals. This supports Cox, Wilt, Olson & McAdams (2010) finding that highly generative people score higher on openness to experience. This suggests that when openness to experience is high a more generative response to mortality awareness could be expected. Leaving behind a legacy through generative and creative work affords a person a sense of life beyond death, where the effects of their work will live beyond them (Doka, 2015). Although legacy creation is considered to be less altruistic and more about promoting a favourable impression of the self beyond death, generativity and legacy are both concerned with gaining symbolic immortality through work which would benefit others (Hunter & Rowles, 2005). This symbolic immortality provides a buffer against the negative awareness mortality can evoke. As creating a symbolic immortality is one of the mechanisms by which people can avoid the finality of mortality those in openness to experience may not necessarily be unafraid or avoidant of death thoughts but have rather found an outlet through generative work for the concern mortality awareness evokes. As TMT suggests in order to reduce the fear of death people engage in cultural norms which offer a symbolic immortality, something that lives on beyond the person. However, TMT predicts that these attempts to create symbolic immortality come at the expense of groups, people and ideas which challenge the subscribed to worldview. Although, as indicated by Prentice, Kasser & Sheldon (2017) those high in openness to experience may fulfil their need for symbolic immortality in ways which are positive for the self and the community.
1.5 Rationale and Aim

Lachman (2015) notes that there is a general lack of inclusion of midlife adults in the literature. Therefore, the current research uses a middle age sample as this is a time when mortality awareness is likely to develop (Lachman, 2014). The research is to measure how individual differences relate to aspects of mortality awareness in midlife. Understanding how individual differences can facilitate positive acceptance of mortality can be useful to practitioners working with people with high death anxiety or people in midlife who struggle to find meaning and fulfilment in their lives. As trait mindfulness relates to a willingness to engage with thoughts about mortality it is hypothesised that high scores on trait mindfulness will predict acceptance of mortality (Niemiec et al. 2010). Therefore, it is hypothesised that low levels of mindfulness will predict fearfulness, disengagement and disempowerment. In line with previous research (Cox, Wilt, Olson & McAdam, 2010) which found that openness to experience correlates with generativity and that people high in openness to experience respond to mortality reminders by increasing intrinsic goal motivation (Prentice, Kasser & Sheldon) it is hypothesized that openness to experience will predict a legacy response to mortality awareness. However, due to legacy formation being a mechanism by which people try to create a symbolic immortality it is unknown whether high openness to experience will negatively or positively predict fearfulness, disempowerment and disengagement.
2. **Method**

2.1 **Design**

The study used a quantitative design. The criterion variables for the study were the five facets of mortality awareness (M-Acceptance, M-Legacy, M-Disengagement, M-Disempowerment and M-Fearfulness) and the predictor variables were trait mindfulness and openness to experience.

2.2 **Participants**

The sample consisted of 94 participants of which 56 were female between the ages of 40 to 65 years old ($M=52.22$, $SD=6.97$). Participants were a self-selecting, convenience sample recruited through social media sites.

2.3 **Materials**

To explore the predictive value of trait mindfulness and openness to experience on mortality awareness participants were asked to fill out three questionnaires. The different facets of mortality awareness were measured by the Multidimensional Mortality Awareness Measure (Levasseur, McDermott & Lafreniere, 2015). Trait mindfulness was measured using the Mindfulness Attention and Awareness Scale (Brown & Ryan, 2003) and openness to experience was measured using 10-items on openness to experience from the Big Five Inventory (John & Srivastava, 1999). The survey was created using Qualtrics which is an online software programme for creating and distributing surveys.

*Mortality Awareness:* Multidimensional Mortality Awareness Measure (Levasseur, McDermott & Lafreniere, 2015) was used to measure mortality awareness. It comprises of 36 items which measure 5 facets of mortality awareness; M-Legacy, M-Acceptance, M-Fearfulness, M-Disempowerment and M-Disengagement. High scores on M-Legacy show
that mortality awareness creates a desire to engage in activities and create things by which to be remembered by after death, example item: “I would like to create something to outlive me.” The subscale has 10-items which showed a good internal reliability ($\alpha=.87$). Scoring high on M-Acceptance indicates a willingness to acknowledgement that life comes to an end, item example: “I accept that I cannot live forever.” There are 5 items with internal reliability for this subscale being acceptable ($\alpha=.78$). High scores on M-Fearfulness suggest that thoughts about mortality elicit feelings of anxiety, dread and fear, example item: “Thinking about death paralyses me.” Scoring high on M-Disempowerment shows that feelings of insignificance and vulnerability are caused by the thought of death, item example “Life is futile”. M-Fearfulness consisted of 10 items which showed good internal reliability ($\alpha=.86$). High scores on M-Disengagement indicates an unwillingness to think about mortality and a sense of immortality, item example: “I think of death as something that is far away and that will not happen to me.” Responses are made on a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). This consisted of 5 items which with lower internal reliability ($\alpha=.59$).

**Trait Mindfulness:** Mindfulness Attention and Awareness Scale (Brown & Ryan, 2003) was used to measure mindfulness. The scale is a single factor 15-item questionnaire which measures levels of trait mindfulness. The scales consist of questions which ask the participant to indicate how much they agree with statements indicating low attentiveness to everyday experiences “I find myself doing things without paying attention.” Responses are made on a 6- point Likert scale ranging from 1 (Almost Always) to 6 (Almost never). Higher scores indicate higher trait mindfulness and lower scores indicate lower trait mindfulness. The scale shows a good internal reliability ($\alpha=0.89$).

**Openness to Experience:** Big Five Inventory (John & Srivastava, 1999) is a 44-item questionnaire which measures the Big Five Personality Traits. For the study only the 10-items
measuring Openness to Experience were used. Items include “I see myself as someone who is curious about many different things.” Responses are made on a 5-point likert scale ranging from Disagree strongly to Agree Strongly. High scores on each item indicate a high level of openness to experience. The items showed good internal reliability ($\alpha=0.86$).

2.4 Ethics

Before collecting data ethical approval was gained from the university’s ethics panel. Although, no adverse effects were expected from the study, thinking about mortality may be upsetting for some. Participants were informed before taking part in the study that they were going to be asked about their feelings towards their personal mortality. Furthermore, they were informed of their right to withdraw anytime during the survey and of their anonymity. Helplines were also provided for those affected by the questions on mortality awareness.

2.5 Procedure

The three questionnaires were compiled into a Qualtrics survey. A link to the Qualtrics survey was given on social media posts which called for participants from the ages of 40-65 years old to take part in a study on individual differences and attitudes towards mortality. Participants could access the survey from any device with internet connection. The first page of the survey included an information sheet which informed potential participants of their right to withdraw at any time, that the data was to be stored in a password protected computer and that their participation would be anonymous. Helplines to AgeUk and Samaritans were also provided if participants were affected by the questions on mortality. On the next page participants were asked to give their consent by clicking on the “yes” or “no” button. Participants were asked to indicate whether they were male or female and their age. Following this they were taken to the questionnaires on mindfulness, openness to experience and mortality awareness. At the end they were asked to submit their entry by clicking on the
“finish” button. This page also included the helplines and a contact number to the supervisor of the study.

2.6 Method of Analysis

Multiple regression was used to measure the predictive quality of trait mindfulness, openness to experience on the five facets of mortality awareness.
3. Results

3.1 Pearson correlation coefficients

To determine whether there are any associations between the individual facets of mortality awareness and the independent variables mindfulness and openness a Pearson correlation coefficients was run. See Table 1.

Pearson correlation coefficient showed that there was a significant positive correlation between mindfulness and MLegacy (r=0.31, p<.001) and a positive significant correlation between openness and MLegacy (r=0.62, p<.000).

Whereas Mindfulness and MAcceptance (r=-.19; p< .05) showed a negative correlation and no significant correlation between Openness and MAcceptance (r=0.004; p=.49) was found.

The results show that there was a significant positive correlation between Mindfulness and MFearfulness (r=.36; p< .000) and a significant positive correlation between Openness and MFearfulness (r=0.815; p<.000).

A non-significant negative correlation between Mindfulness and MDisengagement (r=-.08; p=.224) and a significant positive correlation between Openness and MDisengagement (r=0.31; p<.001) was demonstrated.

The results show that there was a significant positive correlation between Mindfulness and MDisempowerment (r=.54; p<.000) and a significant positive correlation between Openness and MDisempowerment (r=0.30; p<.05).
Table 1. Pearson correlation coefficients

<table>
<thead>
<tr>
<th></th>
<th>M-Legacy</th>
<th>M-Acceptance</th>
<th>M-Fearfulness</th>
<th>M-Disengagement</th>
<th>M-Disempowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindfulness</td>
<td>.314**</td>
<td>-.194*</td>
<td>.358**</td>
<td>-.079</td>
<td>.295*</td>
</tr>
<tr>
<td>Openness</td>
<td>.620**</td>
<td>.004**</td>
<td>.815**</td>
<td>.307**</td>
<td>.547**</td>
</tr>
</tbody>
</table>

**significant at p<.001  *significant at p<.05

3.2 Multiple Regressions

As shown in Table 2 multiple regressions were run to determine the predictive value of mindfulness and openness to experience for each of the facets of mortality awareness. The underlying assumptions of the model in relation to residual statistics (Std.Residual Min = -2.152, Std. Residual Max = 3.501), multicollinearity (Mindfulness: Tolerance = .85, VIF: 1.06; Openness: Tolerance = .85, VIF = 1.18), independent errors (Durbin-Watson value =2.074) and non-zero variance (Mindfulness: variance = 156.86, Openness: variance = 433.43, MLegacy: variance = 90.52, MAcceptance: variance = 10.14, MFearfulness: variance = 143.35, MDisengagement: variance = 25.69, MDisempowerment: Variance=43.16) were checked and confirmed to be met.

Mindfulness and Openness predicted 39% of the variance in MLegacy F(2,91)=29.18, p<.000, R₂ = .39, R₂Adjusted =.38. However, the final regression model identified that this contribution was due to Openness as this was shown to significantly predict MLegacy (t (91) = 6.607, p<.000); whereas Mindfulness was not a significant predictor of MLegacy (t(91) =.924, p= 0.36). This suggests that high scores on openness to experience predict MLegacy orientation towards mortality awareness.
For MAcceptance 5% of the variance was due to Mindfulness and Openness $F(2,91)=2.16$, $p=.12$, $R^2 = .05$, $R^2_{Adjusted} = .02$. However, the final regression model identified that this contribution was due to Mindfulness as this was shown to significantly predict MAcceptance ($t (91) = -2.076, p<.04$); whereas Openness was not a significant predictor of MAcceptance ($t (91) = .852, p= .40$). Therefore, low scores on mindfulness contribute to an accepting awareness of mortality.

Mindfulness and openness predicted 67% of the variance on MFearfulness $F(2,91)= 90.589$, $p<.000$, $R^2 = .67$, $R^2_{Adjusted} = .66$. However, the final regression model identified that this contribution was due to Openness as this was shown to significantly predict MFearfulness ($t (91) = -12.09, p<.000$); whereas Mindfulness was not a significant predictor of MFearfulness ($t (91) = .674, p= .50$). This indicates that those with a fearful orientation to mortality awareness are higher in openness to experience.

For MDisengagement 14% of the variance was due to Mindfulness and Openness $F(2,91)= 7.497$, $p<.001$, $R^2 = .14$, $R^2_{Adjusted} = .12$. The final regression model identified that this contribution was due to Openness as this was shown to significantly predict MDisengagement ($t (91) = 3.786, p<.000$); whereas Mindfulness was a significant negative predictor of MDisengagement ($t (91) = -2.239, p<.03$). This suggests that high scores in openness to experience predict an avoidant response to mortality awareness whereas high scores on mindfulness predict a less avoidant approach.

For MDisempowerment 31% of the variance was due to Mindfulness and Openness $F(2,91)= 20.102$, $p<.000$, $R^2 = .31$, $R^2_{Adjusted} = .29$. The final regression model identified that this contribution was due to Openness as this was shown to significantly predict MDisempowerment ($t (91) = 5.364, p<.000$); whereas Mindfulness was not a significant predictor of MDisempowerment ($t (91) =-0.996, p=.322$). This indicates that high scores in
openness to experience predict feelings of disempowerment when faced with mortality awareness.

**Table 2.** Regression coefficients of Mortality Awareness Facets and Mindfulness and Openness

<table>
<thead>
<tr>
<th>Predicted</th>
<th>Predictors</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLegacy</td>
<td>Mindfulness</td>
<td>.08</td>
<td>.92</td>
<td>.358</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>.59</td>
<td>6.61</td>
<td>.000</td>
</tr>
<tr>
<td>MAcceptance</td>
<td>Mindfulness</td>
<td>-.23</td>
<td>-2.08</td>
<td>.041</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>.85</td>
<td>.85</td>
<td>.396</td>
</tr>
<tr>
<td>MFearfulness</td>
<td>Mindfulness</td>
<td>.04</td>
<td>.67</td>
<td>.502</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>.80</td>
<td>12.09</td>
<td>.000</td>
</tr>
<tr>
<td>MDisengagement</td>
<td>Mindfulness</td>
<td>-.24</td>
<td>-2.24</td>
<td>.028</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>.40</td>
<td>3.79</td>
<td>.000</td>
</tr>
<tr>
<td>MDisempowerment</td>
<td>Mindfulness</td>
<td>.10</td>
<td>1.00</td>
<td>.322</td>
</tr>
<tr>
<td></td>
<td>Openness</td>
<td>.51</td>
<td>5.36</td>
<td>.000</td>
</tr>
</tbody>
</table>

The results from the study indicate that trait mindfulness negatively predicts mortality acceptance and negatively predicts disengagement. There was no correlation between trait mindfulness and mortality disempowerment and mortality fearfulness.

Openness to experience was found to positively predict mortality legacy, mortality disempowerment, mortality fearfulness and mortality disengagement. There was no correlation between openness to experience and mortality acceptance.
4.0 Discussion

4.1 Overview

The current research aimed to measure the predictive quality of trait mindfulness and openness to experience on different facets of mortality awareness. A middle age sampled was used as this a time in life-span development when people become aware that time is limited (Cate & John, 2007) and the consequences their death would have on dependents (Suhail & Akram, 2002). Previous research into mortality awareness has focused on negative aspects such as death anxiety and avoidance (Neimeyer, Wittowski & Moser, 2004). A new measure developed by Levasseur, McDermott & Lafreniere (2015) expands the concept of mortality awareness including facets of acceptance and legacy creation. Wong & Tomer (2011) hold that accepting mortality as a reality and focusing on activities which create meaning is important to psychological wellbeing. Trait mindfulness and openness to experience have demonstrated a buffering effect towards avoidant, defensive and anxious responses towards mortality awareness (Niemiec et al, 2010; Prentice, Kasser & Sheldon, 2017). Research by Niemiec et al. (2010) found that people who were high in trait mindfulness engaged in a mortality awareness task for longer, did not suppress death thoughts afterwards and did not display the defensive responses as predicted by TMT. Therefore, it was hypothesised that trait mindfulness would predict mortality acceptance and negatively predict mortality fearfulness, disempowerment and disengagement. Openness to experience has been linked to generative behaviour in a middle age population (Cox et al. 2010). Generativity and legacy formation are closely linked (Hunter & Rowes, 2005). Therefore, it was hypothesised that openness to experience would predict mortality legacy. However, legacy formation is a mechanism by which people seek symbolic immortality which, according to TMT, is a way to avoid the finality of death. Due to research showing that those high in openness to experience are buffered against the defensive responses it is unknown whether this is being
those open to experience approach mortality with open curiosity (Prentice, Kasser & Sheldon, 2017) or whether it is because they are more likely to engage with activities which provide them with a way to transcend mortality. Therefore, the current study did not hypothesis the predictive value of openness to experience on mortality fearfulness, disengagement and disempowerment.

4.2 Findings

The hypothesis that trait mindfulness would positively predict mortality acceptance was not supported. The results showed that participants with low levels of trait mindfulness were more accepting of mortality than those high in trait mindfulness. Trait mindfulness did not correlate with mortality fearfulness or disempowerment. However, the hypothesis that trait mindfulness would negatively predict mortality disengagement was supported. Mortality legacy was predicted by openness to experience, supporting the hypothesis. It was also found that openness to experience predicted mortality fearfulness, disengagement and disempowerment. Mortality acceptance and openness to experience did not show any correlation.

The finding that mortality acceptance was negatively predicted by trait mindfulness was surprising. Mindfulness is associated with a non-judgemental acceptance of reality as it is (Kabat-Zinn, 2003). Masel, Schur & Watze (2012) note that in Buddhist tradition living mindfully and openly to present experiences allows for a matter of fact orientation to the impermanence of life. Therefore, it was expected that those who are more likely to pay attention to the present moment would not see mortality as something to deny. However, the current studies finding may be due to the measurement tools used. Grossman (2011) criticizes Western attempts to measure trait mindfulness as not measuring the full construct. According to Grossman (2011) the Mindfulness Attention Awareness Scale (Brown & Ryan, 2003) does
not measure patience, tolerance and acceptance towards the present moment which are defining aspects of mindfulness but rather measures how effective people think they are at paying attention to everyday situations. Therefore, people who merely pay attention are not necessarily doing it without judgement and acceptance. This suggests that the mindfulness associated with greater meaning in life and fulfilment which has been implicated in reducing fear of mortality was not measured in this study (Tomer & Wong, 2011).

The current study did find that high trait mindfulness was negatively predictive of mortality disengagement. This indicates that high trait mindfulness leads to a greater willingness to engage in thoughts about mortality. This is congruent with the finding by Niemiec et al. (2010) that being high in trait mindfulness leads people to engage with tasks about their mortality for longer and are less likely to suppress mortality-related thoughts. However, because the scale used in both the current study and Niemiec et al. (2010) has been criticized as not measuring true mindfulness it can be suggested that a willingness to engage with thoughts about mortality may be due to general attentiveness to stimuli and not specifically mortality awareness. Therefore, people who feel they are good at paying attention may also be less likely to report that they are not willing to think about mortality.

The hypothesis that openness to experience would be a significant predictor of M-Legacy was supported. The results also indicated that openness to experience was a significant positive predictor of mortality disengagement, disempowerment and fearfulness with openness to experience accounting for 67% of the variance on mortality fearfulness. This suggests that avoidance, anxiety and feelings of hopelessness at the awareness of mortality are predicted by openness to experience. Boyd, Morris & Goldenberg (2017) had concluded that participants high in openness to experience responded less defensively to mortality awareness as being open to experience meant that they approached mortality with curiosity and not fear. However, the current research indicates that those who are high in openness to
experience are fearful and avoidant of mortality awareness. As indicated by Kashdan & Steger (2007) it is taking part in actual activities which encourage curiosity which give a sense of greater meaning in life. The finding that mortality legacy was predicted by openness to experience supports the finding by Cox et al (2010) that openness to experience is correlated to generative behaviour. A legacy orientation was indicated by a desire to engage in charitable work, write a book about one’s life, express one’s individuality and carry out work which would be considered great (Levasseur, Mcdermott & Lafreniere, 2015).

Therefore, it may be that openness to experience encourages creative and generative behaviour which may reduce or provide a coping strategy for awareness of mortality. As indicated by Routledge, Ardnt & Sheldon (2004) creative tasks which encourage open-mindedness reduce mortality fearfulness. Therefore, legacy formation tasks may be what reduces fearfulness in those open to experience. As indicated by Prentice, Kasser & Sheldon (2017) being reminded of mortality encourages those high in openness to experience to seek tasks which reflect intrinsic values rather than defensive responses. However, it is beyond the results attained from the current study to conclude whether fearfulness is reduced by legacy or whether legacy is a response of high fearfulness. However, TMT research would indicate that the need to create a symbolic immortality is in response to mortality fearfulness and a need to avoid thoughts about the finitude of life.

The current research indicates that openness to experience does not facilitate a curiosity to mortality but rather encourages behaviours which allow a person to create a symbolic immortality. The finding that openness to experience can lead to mortality fearfulness, disengagement and disempowerment as well as mortality legacy may be useful for helping people in middle age who may lack meaning in life. Those who are high in openness to experience and do not currently take part in activities which are generative and legacy forming may benefit from engaging in such activities.
4.3 Limitations

The current research measured mortality awareness within a sample of middle aged adults, however, no assumptions can be made whether these findings are specific to those in middle age and how they compare to other age groups. As previously mentioned the measurement used to determine levels of trait mindfulness has been criticized for not being a true measure of non-judgemental mindfulness awareness. Therefore, a main aim of the research was not met. Openness to experience was shown to predict legacy as well as mortality fearfulness, disengagement and disempowerment however it is unknown whether those who are higher on the legacy facet are less fearful, disengaged or disempowered or whether it is because of those facets that they also have a legacy orientation. Furthermore, the study used self-report measures which have a predetermined set of responses. However, mortality awareness and the reactions it may elicit are broad and may not capture people’s true feelings.

4.4 Future Research

This study has indicated that there is a relationship between openness to experience and legacy creation. Future research may reconcile whether those high in openness to experience have a legacy orientation are still highly fearful, disengaged and disempowered by mortality awareness or whether having a legacy orientation reduces these responses. Researchers could find out whether participants actually take part in activities that create a legacy as the current measurement only indicates a wish to take part in such activities.

4.5 Conclusion

The current study provides further understanding into the individual differences which influence mortality awareness. Although, the study could not make assumptions about the role of trait mindfulness in relation to mortality acceptance, openness to experience was found to play a significant role in predicting many facets of mortality awareness. The current
research indicates that those who are open to experience have a wide range of reactions to mortality awareness with legacy formation and fearfulness being the most prominent. Legacy formation may be an important factor in helping people overcome anxiety and avoidance towards mortality awareness especially for people in the middle years.
References


**Word Count**

<table>
<thead>
<tr>
<th>Section</th>
<th>Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>219</td>
</tr>
<tr>
<td>Introduction</td>
<td>2462</td>
</tr>
<tr>
<td>Method</td>
<td>901</td>
</tr>
<tr>
<td>Results</td>
<td>665</td>
</tr>
<tr>
<td>Discussion</td>
<td>1595</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5623</strong></td>
</tr>
</tbody>
</table>

Date: 19/04/2018