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# Terror Management Theory and Autobiographical Memory: Does Mortality Salience Influence Narrative Content and Structure

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Terror Management Theory and Autobiographical Memory: Does Mortality Salience influence  
Narrative Content and Structure

by

Kathleen J. O'Neill

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science  
in Experimental Psychology with a concentration in Behavioral Neuroscience

Department of Psychology

Seton Hall University

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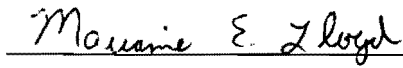
Approval Page

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## Abstract

Terror management theory posits that individuals respond positively to people and ideas that bolster their cultural worldviews and negatively to those that threaten their cultural anxiety buffers (Rosenblatt, Greenberg, Solomon, Pyszczynski & Lyon, 1989). Repeated studies have shown that people exposed to awareness of immanent death write different kinds and varying lengths of story narratives than people not exposed to death prompts prior to writing. The purpose of the present study was to address whether priming individuals with thoughts of their own mortality would influence the content (references to self, others and emotionality words) and structure (narrative length) of autobiographical memory narratives.

Results indicate that priming individuals with thoughts of their own mortality did not have an overall effect on the measures indicated, although mortality salience did interact with others variables to produce an effect. It was observed that when primed with death those in the non-imagined self condition wrote narratives that contained more references to others. Results also indicated that females wrote narratives that were longer in length and contained more emotionality in comparison to males. These results support previous findings in the area of narrative length and emotion (Friedman & Pines, 1991; see Buckner & Fivush, 1998, 2000, for reviews). With no clear evidence of the independent effects of mortality salience on autobiographical memory future research is needed to clarify the relationship on this topic.

## Introduction

Terror management theory (TMT), the idea that people subscribe to cultural worldviews and beliefs in order to suppress anxious thoughts of their own mortality (Rosenblatt, Greenberg, Solomon, Pyszczynski & Lyon, 1989) was originally inspired by the ideas of Ernest Becker (1962, 1973, 1975). According to Becker the realization that death is a part of human life and that death can occur at anytime ultimately gives rise to a potentially constricting terror. Furthermore, he wrote that the uniquely human awareness of death shapes and motivates human behaviors on a day-to-day basis (Becker, 1973); in fact, he argued that one historical manifestation of human coping with death is the creation and maintenance of culture.

The creation of culture and the idea of immortality have emerged as ways to defend against this death anxiety. Thus, the creation of culture promises security to those that live up to the cultural standards of value (Rosenblatt et al., 1989), and allows human beings to share beliefs with other in-group members. This shared goal, ultimately lends to individuals a sense of value in a world of meaning. The socio-cognitive account of constructed meaning and value provides human beings with the possibility of immortality, be it literal or symbolic--literal in the context, for instance, when religion can provide a prospect for the afterlife, or symbolically, in that after an individual member ceases to exist, distinct representations of culture still remain (Becker, 1973).

Naturally, problems arise when people are faced with those that threaten our worldview. If alternate explanations of reality are accepted, confidence drawn from percepts of reality are undermined. As this confidence in one's set of beliefs is shaken, overwhelming terror arises and anxiety leads us to take on defensive and protective roles. Thus, as Solomon, Greenberg, and Pyszczynski (1991) point out, when individuals encounter people who espouse ideas that

threaten their worldview, they tend to devalue them (and judge their ideas as ineffective, incomplete, erroneous) and consequently try to convince them to drop their beliefs and take the opposite viewpoint (Solomon, Greenberg, & Pyszczynski, 1991).

*Two General Hypotheses: Terror Management Theory (TMT)*

Typically speaking, research using terror management theory as a theoretical framework has focused primarily on two hypotheses. One set of research explores how self-esteem serves as an anxiety buffer. Several studies have supported this hypothesis by showing that when self-esteem is increased, participants exposed to threatening stimuli exhibit less reported anxiety, physiological arousal, and anxiety-related defensiveness (Greenberg et al., 1993). The other set is based on the hypothesis that when individuals are reminded of their own mortality, their need for faith and meaning in their own worldview is increased. Results of this work have indeed shown that mortality salience leads to positive outcomes when interacting with people whose views validate one's own worldview and negative outcomes to those who challenge it (Greenberg et al., 1990; Rosenblatt et al., 1989).

Given this social-cognitive function in the service of terror management, TMT predicts that people respond positively to those who bolster their cultural constructs (which "buffer" their anxiety) and negatively to those that threaten their cultural anxiety buffers (Rosenblatt et al., 1989). This process of responding to those that threaten our worldview is driven by an unconscious awareness and is not particularly obvious to people employing the proposed defenses. By providing an explanation of the ongoing strife that we see in the world, terror management theory provides an account for why people invest so much effort into their belief systems and why people feel the need to be valued. In turn, this understanding ultimately offers insight into a broad array of human behaviors (Burke, Martens & Faucher, 2010).

Though tested in various ways the most common approach to testing terror management theory has been using the mortality salience hypothesis. In fact, a recent meta-analysis of 238 empirical TMT journal articles reported that 83% of studies directly tested the mortality salience hypothesis (Burke et al., 2010). A typical mortality salience study involves having participants complete a packet that contains questionnaires assessing personality, as well as a mortality salience prime in which participants either write about their own death (experimental group) or write about a non-death-related, often negative, control topic (control group). Overall, the majority of studies (62.1%) utilized a control topic that was threatening or negative, whereas 33.6% used a neutral or positive topic and 4.3% had no control topic. If threatening control topics produce smaller effects than less-threatening topics, such as taking an upcoming exam, this would suggest that thinking about death is an extreme version of a threatening condition.

Nonetheless, threats with personal meaning (as opposed to threats not viewed as important to self) produce effects more similar to mortality salience than other control topics (Burke et al., 2010). Studies testing the mortality salience hypothesis also include having participants encounter a distracter task before completing the dependent measure, which allows time for death anxiety to fade from consciousness (Pyszczynski et al., 1999). Removal of this delay has been shown to decrease the effect of mortality salience (MS) on the dependent measure (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000).

The idea behind priming participants with mortality salience has led to numerous studies examining whether mortality salience increases adherence to one's own cultural worldview and self-esteem (Burke et al., 2010). Such studies have indicated that mortality salience provokes avoidance of self-awareness. More specifically, those who experience heightened mortality salience avoid self-focusing stimuli as compared to those who are not reminded of their own

mortality (Arndt, Greenberg, Simon, Pyszczynski & Solomon, 1998). In one study measuring narrative length in relation to mortality salience, those who were in a cubicle with a mirror in front of them (self-aware condition) and were primed with mortality salience spent significantly less time in the cubicles and had a lower word count than those who were either in the non-self-aware condition (with no mirror present) but were MS-primed, or those who were in a control condition where they were primed with taking a difficult exam (Arndt et al., 1998).

The Arndt et al. (1998) study also measured the amount of positive and negative thought words in individuals' narratives. They found that the thoughts of those who were presented with the cue of taking an important exam were more negative than thoughts of those primed with mortality salience (MS). Their findings were consistent with other previous research showing that self-awareness intensifies negative affect (Scheier & Carver, 1977; Scheier, Carver & Gibbons, 1981). Based on these findings, Arndt et al. (1998) concluded that the exam condition produced negative rather than positive affect (Arndt et al., 1998). A second study manipulated MS using different operationalizations of death awareness; participants completed a self-report scale assessing their own death anxiety, or a "general worries about the future" scale. Then they were asked to write a brief fictitious story about themselves (internal focus) or about someone else (external focus).

Results of this work indicated that individuals who were asked to use an external focus of attention wrote longer stories than internally focused individuals. Moreover, MS-primed individuals in the internal focus attention condition wrote significantly less than those in the MS-primed external focus condition. In relation to emotionality words they found that regardless of mortality salience, internally focused individuals expressed more negative content than externally focused individuals (Arndt et al., 1998).

The fact that there were no significant findings for the mortality salience conditions can be explained by terror management theory, in that messages that amplify the possibility of death promote behaviors that enhance self-esteem (i.e., they produce more talk about self). The underlying mechanism regarding self-esteem is that when individuals feel that their self-esteem is elevated, they derive meaning and feel valued by their society. Subsequently, individuals feel connected to an enduring entity, which affords them a sense of symbolic immortality and thus alleviates existential anxiety (Gailliot, Stillman, Schmeichel, Maner, & Plant, 2008). That is, by investing in a cultural worldview, individuals are able to avoid the experience of existential terror in their everyday lives.

The majority of research on mortality salience includes a dependent variable that measures an attitude, either towards a person's own views of self, or the author of a piece of writing (a story or an essay) along a very specific theme (usually a fictional situation). A few studies, as described above, investigate the impact of mortality salience on narratives produced in response to a writing prompt or questionnaire. While these studies have measured time and length associated with writing an essay, no studies have looked at the content or structure of the narrative beyond a cursory counting of affective words. Moreover, little work has examined the impact of mortality salience on more personal types of narratives, such as the kind that are reported as descriptions of personal experiences in the past (autobiographical narratives). What follows below is a brief history regarding how self and memory interface and how such a relation would be a valuable place to study mortality salience.

### *Autobiographical Memory*

Autobiographical memories are episodes recollected from an individual's life. In the last 35 years, the study of autobiographical memory has undergone a marked change adopting a cognitive approach to the interpretation of autobiographical memory within the theoretical framework of mainstream memory research. Prior to this approach autobiographical memory was almost exclusively psychoanalytic or clinical in orientation and diagnostic or therapeutic in aim (Williams, Conway, & Cohen, 2008).

In constructing autobiographical memories, individuals must utilize information from other types of memory systems; for example, autobiographical memory is comprised of episodic and semantic details of past experiences recalled by an individual and is composed by recollecting episodes from an individual's life. These episodes represent a combination of specific events, objects, and people present in a given experience in addition to semantic knowledge (general facts about the self and world) that supports these details (Williams et al., 2008).

### *The Self and Autobiographical Memories*

There is consensus that autobiographical memory and the self are very closely related—so close, in fact, that some theorists postulate that autobiographical memory *is* part of the self-system (Conway & Tacchi, 1996). Generally speaking, there are three categories of functions for autobiographical memory that serve the individual – self related functions, directive functions, and social functions. One critical type of self-related function is self-knowledge. Most theorists and researchers agree that autobiographical knowledge supports and promotes self-continuity and is maintained by the interconnected relationship between the identity and memory about the self (Bluck & Levine, 1998). Subsequently, autobiographical knowledge is especially important

when the self is presented with adverse conditions requiring self change (Robinson, 1986; Bluck & Levine, 1998) as is experienced by those that are exposed to the mortality salience condition.

It has also become clear in the research literature that one facet of great importance to autobiographical memory is the relation between gender and self. Indeed, one pattern consistently reported in research is that females describe their personal experiences in greater detail than do males (Fivush, Haden, & Reese, 1996). Part of this more detailed style of memory talk by females stems from their inclusion of more emotional content in their autobiographical memories than their male counterparts (Davis, 1991). Previous research investigating adult's narrative memories of their childhood has found that women also make more frequent mention of other people and relationships in their narratives while men are more likely to talk about instances of independence (e.g., Ross & Holmberg, 1990). Most importantly, women appear to make more self-references and references to others than do their male counterparts (Thorne, 1995).

In relation to data collection, on a whole, studies use two different techniques in order to obtain narratives from individuals: either through a verbal interview or a written method of narrative collection. Overall, there is no specific reason as to why there are different methodologies in obtaining narrative information and ultimately both types of recall methods are considered to be valid and provide similar types of narrative content (Cvasa, 2007).

Given such patterns elucidated in this body of memory research, it is evident that a variable of great importance to any examination of the relations between mortality salience and autobiographical recall, is a consideration of how gender impacts the inclusion of specific content (including emotion and personal references), as well as the length and structure of recalled memories.



### *Summary and Research Question*

In summary, the majority of research that manipulates mortality salience utilizes questionnaires that elicit specific attitudes regarding the self and other people, or, instead, centers participant attention on more generic attitudes that do not directly assess individuals. The present study sought to explore whether exposure to mortality salient conditions would influence the content and structure of individuals' written narratives. As reviewed above, previous research on mortality salience has examined participants' written expressions and descriptions of scenarios, but little to none of this work has begun to utilize more personally relevant behaviors, such as reporting autobiographical memory narratives, as a vehicle for mortality priming and measures. To this end, the present experiment sought to determine how autobiographical memory narratives are influenced by priming participants with mortality salience or a control condition.

To be specific, using a method similar to the Arndt et al. (1998) studies, the present study explored how memories reported after a mortality priming session differed from those memories reported after a non-mortality salience prime. The effects of this manipulation were explored across two different conditions: in an imagined self condition and a non-imagined self condition. Manipulating the salience of personal-threat (via mortality salience conditions) and the degree to which individuals are made mindful of self during memory recall (thus, the imagining of self vs. no specific prompt to imagined self in recalled situations) allows for a close examination into the ways that induced anxiety can shape the kinds of memories that are shared with others about personal experiences in the past.

In recognition of the profound role that the self plays in autobiographical memory as well as the role of self in self-awareness and self-esteem, two main research goals were investigated:

- 1) Determine the extent to which reminding individuals of their mortality influenced or hindered

the overall length of memories reported by individuals; 2) As well as the amount of emotionality, and references to self and others contained within their narratives.

Consistent with previous research (Arndt et al., 1998) it was expected that participants in the mortality salience imagined self condition would write narratives that were shorter in length in comparison to all other conditions. Additionally, previous research has found that individuals are highly motivated to protect themselves from the realization that death is inevitable (Arndt et al., 1998); because of this tendency to avoid anxiety, people may not focus on themselves when recalling events from personal memory (as that it may *increase* their own anxiety), it was expected that those in the mortality salient condition would write narratives with fewer references to self and more references to others than those not mortality primed, regardless of being in the imagined self or non imagined self condition.

The effects of the impact of self-awareness were considered based on previous research that suggests that self-awareness intensifies negative affect (Scheier & Carver, 1977; Scheier, Carver & Gibbons, 1981). Participants asked to focus upon details of the self in their narrative writing were expected to produce more negatively emotional memory stories than those in a non-imagined self condition (regardless of whether participants were primed with mortality salience or not). These results would also be consistent with the results of the Arndt et al. (1998) study.

The effects of gender were considered for both references to self and others as well as positive and negative emotionality words. Gender was considered based on previous research that suggests differences between males and females during narrative recall. Females have been found to make more self and other references and include more emotion than males (Fivush, Haden, & Reese, 1996; David, 1991). Additionally, the effect of gender, consistent with prior

research (Burke et al., 2010), was not considered to significantly moderate effects of mortality salience or self-awareness.

## Method

### *Participants*

Participants were 236 undergraduate students recruited through the psychology research pool using the online SONA system. All participants received research credit for their participation in the study. Five participants were excluded from the analysis for failing to follow instructions. An additional 11 were excluded for not being able to write about the memory prompt that was presented. The final sample therefore consisted of 220 participants. Participant ages ranged from 18 to 22 years of age, with a mean of 18.92 ( $SD = 1.00$ ). Of this sample, 157 were female (71%) and 63 (29%) were male. The participants reported being in years 1-5 of their college careers ( $M = 1.74$ ,  $SD = 0.96$ ).

### *Materials*

For all conditions, participants wrote their narratives on a Dell desktop computer using Microsoft Word software. Depending on the condition, participants were given a packet that contained all of the instructions and materials necessary for the study. Each page of the booklet was designed in order to direct the participant along the process (e. g., “open up Microsoft Word and type a memory about ...; “choose an id number for yourself”). The researcher had his or her own version of the packets, by condition, available during the course of the experiment. The packets that were given to the participants contained a generic questionnaire regarding specific demographics (see Appendix A), as well as the Rosenberg Self-Esteem Scale (Rosenberg, 1989), which was given to the participants before the mortality salience prime.

*Rosenberg Self-Esteem Scale.* The Rosenberg Self-Esteem Scale (see Appendix B) was included in the packets of materials in order to assess the overall level of self-esteem held by participants as a baseline measure of self. This scale contains 10 questions assessing self-esteem

each with four possible answers from, “strongly agree” to “strongly disagree”. The scale ranges from 0-30 with scores between 15-25 representing the normal range, and scores below 15 suggesting low self-esteem. The Rosenberg scale has high reliability: test-retest correlations are typically in the range of .82 to .88, and Cronbach's alpha for various samples are in the range of .77 to .88 (original sample N=5,024, Blascovich & Tomaka, 1993; Rosenberg, 1986).

*Mortality Salience Prime.* Embedded in the packets was the mortality salience prime which consisted of having participants, who were randomly assigned to one of two levels of mortality salience, respond to two open ended questions in a five minute time period. Participants were told that these questions were a part of a recently developed innovative personality assessment in which recent research suggests that feelings and attitudes about significant aspects of life tell us a considerable amount about the individuals’ personality. Participants that were randomly assigned to the mortality salience condition were asked to: “Please briefly describe the emotions that the thought of your own death arouses in you” and, “Jot down, as specifically as you can, what you think will happen to you when you physically die and once you are physically dead” (see Appendix C). The non-mortality salient (control) condition consisted of parallel questions with respect to taking important exams: “Please briefly describe the emotions that the thought of an upcoming exam arouses in you” and, “Jot down, as specifically as you can, what you think will happen to you when you are taking the exam and once you have turned in the exam” (Greenberg, Simon, Harmon-Jones, et al., 1995; see Appendix D). Participants recorded their responses to this priming session by writing their thoughts on space that was provided to them under each open-ended question.

*Word Completion Task.* Participants completed a distracter task in which they were asked to complete words by filling in missing letters, for example L \_\_ VE and EX \_\_ \_\_ T (see Appendix E). Participants were presented with a list of 15 word fragments all at once, and were asked to fill in the missing letters to form the first word that came to their minds. Five of the 15 fragments could be completed as words related to death, and most of the fragments could be completed to form a few different neutral words each, depending upon the letters selected<sup>1</sup>.

*Spielberger State Anxiety Inventory (STAI-S).* This measure was administered to assess the level of anxiety induced in participants by the mortality salience manipulation. The STAI-S consists of 20 items (see Appendix F) that ask how the participant felt at the present moment, and reflected situational factors that might have influenced anxiety factors, such as, “I feel tense” or I feel calm”. Scores range between 20-80 on the STAI-S, with higher score indicating a greater level of anxiety (Spielberger, 1970).

For analysis of the data, SPSS version 18.0 was used to conduct several Analyses of Variance and t-tests.

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<sup>1</sup> Although not measured in this design, majority of mortality salience research that uses the word completion task includes an additional analysis on the accessibility of death-related thoughts.

## Procedure

The experimental design was as follows:

Table 1. Experimental Design

Mortality Salience	Exam Salience
Informed Consent Sheet	
Demographic Sheet	
Rosenberg Self-Esteem Scale	
Mortality Salience Prime	Exam Salience Prime
Word Completion Task	
Imagined Self Condition Memory Prompt or Non-Imagined Self Condition Memory Prompt	
Spielberger State Anxiety Inventory (STAI-S)	

The study employed a two (mortality salienc – present or absent) by two (imagined self or non-imagined self condition) by two (female or male) between subjects design, randomly assigning participants into one of four conditions: a *Mortality Salienc/Imagined Self Condition* (42 female, 13 male), a *Mortality Salienc/Non-Imagined Self Condition* (37 female, 18 male), a *Exam Salienc/Imagined Self Condition* (41 female, 14 male), and a *Exam Salienc/Non-Imagined Self Condition* (37 female, 18 male).

Upon arrival, each participant was given a consent form that revealed the full purpose of the study. After agreeing to continue, the participants in each group were given questionnaire packets and were asked to carefully follow all the instructions necessary to complete the study. Contained in the packets were a demographic questionnaire and the Rosenberg Self-Esteem Scale, as well as the Mortality Salienc Condition prime (and a place for participants to write a response), and the Word Completion task (distracter). Following all of the questionnaires and the distracter task, a written narrative prompt was presented to participants to elicit one

autobiographical memory.

With respect to the narrative prompt, individuals were read one of two memory instructions, which varied only in terms of how much detail about the self they were asked to think about before they began to write their response. Participants in imagined self conditions were asked to close their eyes while the experimenter read the prompt out loud to them. The imagined self-prompt asked participants to: “Think about your first day of orientation at Seton Hall University. Think about the time of day, where you were, what the weather was like, what was going through your mind, and any feelings associated with the memory” (see Appendix G). Those in non-imagined self conditions were not asked to close their eyes and were simply asked to: “Please tell me about your first day of orientation at Seton Hall University” (see Appendix H). Participants were allowed five minutes to type out a response to the narrative prompt. These narratives were then saved to a flash drive, using a secret code number provided by the participants.

After completion of the written narrative the Spielberger State Anxiety Inventory was given to participants in order to assess how the participant was feeling at that present moment. In total, the data collection took place in a single meeting and lasted for approximately 20 minutes.

*Coding.* Written narratives were coded for length, emotionality words and references, both to self and other people, using a scheme adapted from Buckner and Fivush (1998), which is included as Appendix I.

One aspect of narrative structure, the length of the narrative, was calculated by using the word count tool on Microsoft Word and then by subtracting out any off-task words in the narrative. Off-task words were defined as words that did not contribute to the overall memory in general, words such as, “I’m done,” or “that’s all I have to say,” as well as words that repeated



the memory prompt, such as, “My first day of orientation at Seton Hall University” or “On my first day of orientation”.

Narrative analysis was conducted following the Buckner and Fivush (1998) scheme; each narrative was assessed individually, word by word, and coded individually along three major categories, each containing several sub-categories.

Emotionality was measured according to the number of emotion words contained in written memories; both positive and negative words about emotion states (happy, angry, scared, etc.) and emotional behaviors (screaming, crying, etc.) were counted. Only negative emotion words and total emotional word count (negative + positive terms) were tabulated, converted to proportions (in order to reflect the percentage of participants’ narratives that were emotive in nature), and included in the analyses described below.

The second major category, *references*, was measured by counting any mention of a particular person or persons in the narrative memories elicited. Sub-categories of references included those that were personal in nature (self references), and those that were in reference to other people. The “other references” category also included references that could be classified as “we-ness”, such as, “us” and “we.”.

To ensure reliability of coding, word counts, emotionality, and references were coded first by a primary coder while a secondary reliability coder checked the accuracy of the coding on randomly selected 30% of the narratives. Inter-rater agreement (reliability) of the coding ranged between 90% and 100% across coding categories. Any disagreement in relation to coding was resolved through discussion.

After the total word counts for each narrative were completed they were then converted into proportions in order to provide a percentage of each category occurring within narratives.

For example, the frequency of *self references* in each memory was divided by the total number of words contained in that particular narrative to yield a proportional measure of self-referencing within the memory reported. This methodology provides a more stable conceptualization of content when the length of narratives reported by individuals vary (see Buckner & Fivush, 1998 for a discussion).

## Results

**Table 2, 3, 4.** Mean Proportions (and Standard Deviations) for Narrative Length, Emotionality, and References by Gender, Mortality salience, and Self conditions

**Table 2.** Mean Number (and Standard Deviations) of Words per Narrative, by Condition

Mortality Salience Condition		Self Condition		Total
		Imagined Self	Non-Imagined Self	
<u>Males</u>				
	Mortality Salience	124.15 (42.73)	136.83 (59.22)	131.52 (52.52)
	Exam Salience	<u>158.14 (76.62)</u>	<u>151.56 (67.29)</u>	<u>154.44 (70.40)</u>
<u>Total for Males</u>		141.78 (63.86)	144.20 (62.92)	143.16 (62.82)
<u>Females</u>				
	Mortality Salience	174.26 (66.01)	156.16 (50.16)	165.78 (59.45)
	Exam Salience	<u>167.59 (70.16)</u>	<u>167.59 (70.16)</u>	<u>164.63 (59.62)</u>
<u>Total for Females</u>		168.18 (58.19)	161.88 (60.84)	165.21 (59.34)
<u>Total</u>				
	Mortality Salience	162.41 (64.62)	149.83 (53.53)	156.12 (59.40)
	Exam Salience	<u>160.98 (56.49)</u>	<u>162.35 (69.03)</u>	<u>161.66 (62.79)</u>
<u>Total across all</u>		161.70 (60.42)	156.09 (61.80)	158.89 (61.04)

**Table 3.** Mean Proportion (and Standard Deviations) Positive and *Negative\** Emotion Words, by Condition

Mortality Salience Condition	Self Condition				Total		
	Imagined Self		Non-Imagined Self				
<u>Males</u>							
Mortality Salience	2.6 (1.8)	2.2 (1.2)*	2.4 (2.7)	1.3 (1.6)*	2.5 (2.3)	1.6 (1.5)*	
Exam Salience	2.2 (1.5)	2.3 (2.1)*	2.4 (1.9)	1.2 (1.1)*	2.2 (1.7)	1.7 (1.7)*	
<u>Total for Males</u>	2.0 (1.6)	2.2 (1.7)*	2.4 (2.3)	1.3 (1.4)*	2.2 (2.0)	1.7 (1.6)*	
<u>Females</u>							
Mortality Salience	2.0 (1.6)	2.8 (1.9)*	2.3 (2.2)	2.5 (2.2)*	2.1 (1.9)	2.7 (2.0)*	
Exam Salience	2.2 (1.5)	2.2 (1.5)*	2.5 (2.1)	2.6 (2.1)*	2.4 (1.8)	2.4 (1.8)*	
<u>Total for Females</u>	2.1 (1.5)	2.5 (1.7)*	2.4 (2.1)	2.6 (2.1)*	2.2 (1.8)	2.5 (1.9)*	
<u>Total</u>							
Mortality Salience	2.1 (1.6)	2.6 (1.8)*	2.4 (2.4)	2.1 (2.1)*	2.2 (2.0)	2.4 (1.9)*	
Exam Salience	2.0 (1.4)	2.2 (1.7)*	2.4 (2.0)	2.2 (2.0)*	2.2 (1.7)	2.2 (1.8)*	
<u>Total across all</u>	2.0 (1.5)	2.4 (1.7)*	2.4 (1.6)	2.1 (2.0)*	2.2 (1.9)	2.3 (1.9)*	

**Table 4.** Mean Proportion (and Standard Deviation) of References (Self and *Other\**), by Condition

Mortality Salience Condition	Self Condition				Total		
	Imagined Self		Non-Imagined Self				
<u>Males</u>							
Mortality Salience	9.9 (2.3)	3.8 (1.5)*	9.9 (2.7)	7.2 (3.6)*	9.9 (2.5)	5.7 (3.3)*	
Exam Salience	9.1 (2.4)	5.4 (3.6)*	8.9 (2.9)	6.9 (3.3)*	9.0 (2.6)	6.2 (3.5)*	
<u>Total for Males</u>	9.5 (2.4)	4.6 (2.8)*	9.4 (2.8)	7.1 (3.4)*	9.5 (2.6)	6.0 (3.4)*	
<u>Females</u>							
Mortality Salience	9.7 (3.2)	5.8 (2.6)*	8.6 (3.0)	8.0 (3.1)*	9.2 (3.1)	6.8 (3.1)*	
Exam Salience	9.8 (2.9)	6.7 (2.9)*	9.6 (2.9)	7.4 (3.9)*	9.7 (2.9)	7.0 (3.4)*	
<u>Total for Females</u>	9.8 (3.0)	6.2 (2.8)*	9.1 (2.9)	7.7 (3.5)*	9.5 (3.0)	6.9 (3.2)*	
<u>Total</u>							
Mortality Salience	9.8 (3.0)	5.3 (2.6)*	9.0 (2.9)	7.7 (3.2)*	9.4 (3.0)	6.5 (3.2)*	
Exam Salience	9.6 (2.8)	6.4 (3.1)*	9.4 (2.9)	7.2 (3.7)*	9.5 (2.8)	6.8 (3.4)*	
<u>Total across all</u>	9.7 (2.8)	5.8 (2.9)*	9.2 (2.9)	7.5 (3.5)*	9.5 (2.9)	6.7 (3.3)*	

In order to address if narratives varied across the different conditions a 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) Analysis of Variance (ANOVA) was performed on narrative length (total word count) and proportions of narrative content that was emotional or referential to self or other people. For these analyses, mortality salience (primed or non-primed), self condition (imagined self or non-imagined self) and gender were treated as the independent variables (IVs).

### *Analysis of Length*

Results of the 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) analysis of narrative length revealed a main effect of gender,  $F(1,219) = 6.012$ ,  $p=0.015$ ,  $\eta_p^2 = 0.03$ , whereby females wrote, on average, significantly more words than males (see Table 5).

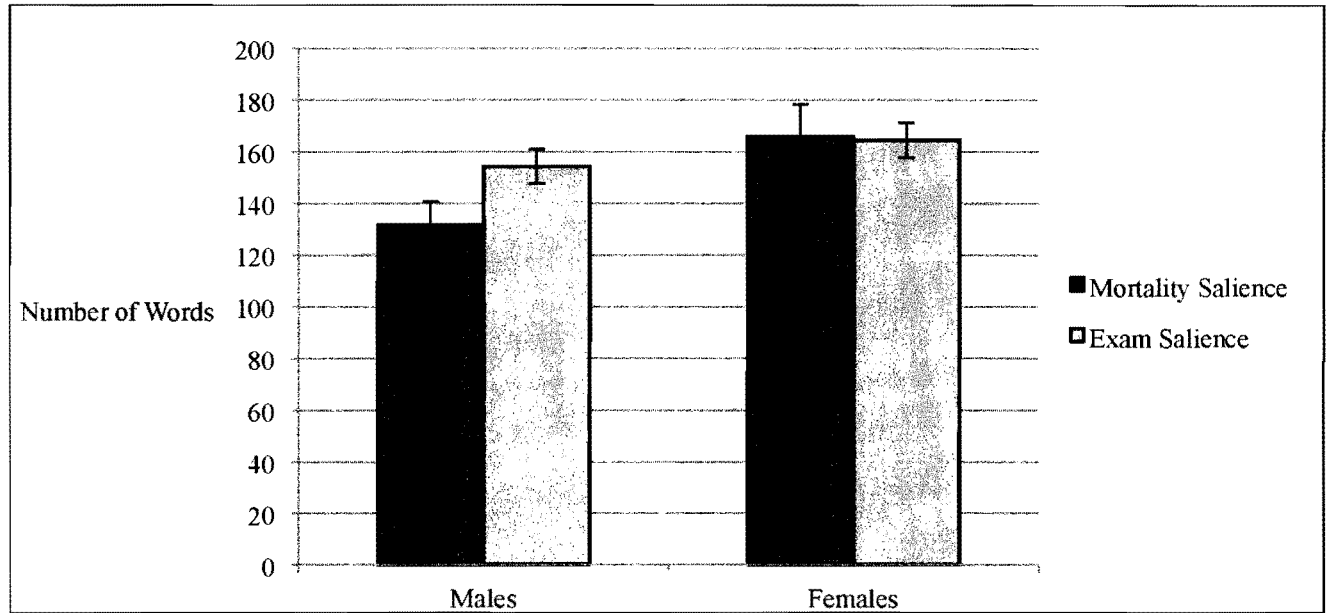
**Table 5.** Narrative Length by Gender

	<b>Narrative Length</b>
<b>Males</b>	143.2 (62.8)
<b>Females</b>	165.2 (59.3)

This effect of gender, however, was qualified by an interaction. There was a significant effect of mortality salience by gender,  $F(1,109) = 1.945$ ,  $p=0.006$ ,  $\eta_p^2 = 0.07$ , (see Figure 1).

When primed with death, females wrote narratives that were longer, on average, in comparison to males (see Table 2), across each of the self conditions. This effect was not significant in the exam salience condition,  $F(1,109) = 0.596$ ,  $p=0.442$ ,  $\eta_p^2 = 0.01$ . Narrative length did not vary across conditions for males,  $t(61) = -1.461$ ,  $p=0.149$ ,  $d=0.37$ .

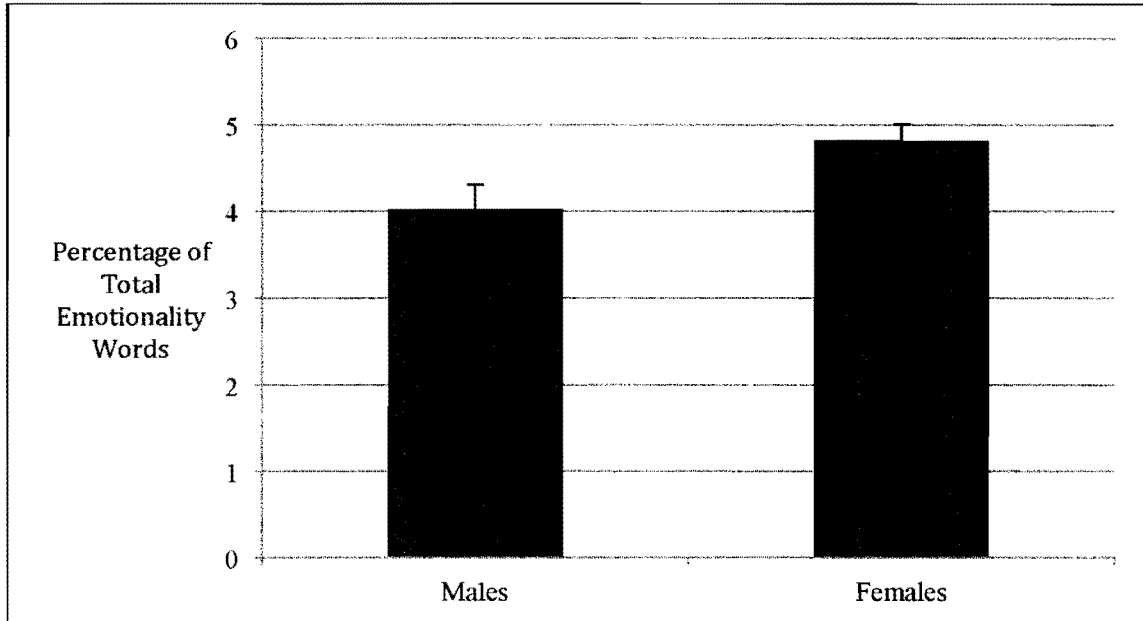
No other significant effects or interactions were found for narrative length.



**Figure 1.** Effect of Mortality Salience and Gender on Narrative Length

*Emotion Words: Total*

A 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) ANOVA conducted on the total emotion terms was computed by summing the proportions of both positive and negative emotionality words into a single unit, namely “total emotion words.” It was predicted female narratives should contain more emotionality terms, overall, in comparison to males. This was found to be significant,  $F(1,219) = 4.799, p=0.030, \eta_p^2=0.02$  (see Figure 2) with females writing narratives that contained, on average, more overall emotionality in comparison to their male counterparts. No other main effects or interactions were found to be significant for the proportion of overall emotionality contained within narratives.

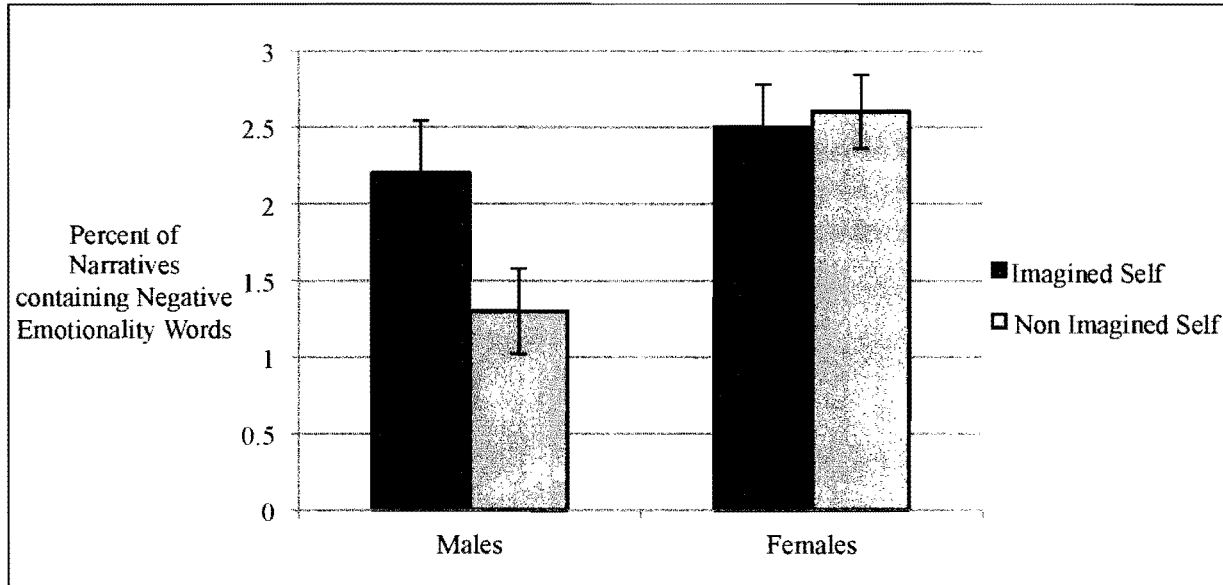


**Figure 2.** Effect of Gender on Total Emotionality Words

*Emotion: Negative Emotionality*

A 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) ANOVA conducted on the proportion of negative emotional words contained within narratives revealed a main effect of gender,  $F(1,219)=8.090$ ,  $p=0.005$ ,  $\eta_p^2=0.04$ , as well as a marginal main effect of imagined self,  $F(1,219)=2.893$ ,  $p=0.09$ ,  $\eta_p^2=0.01$ . However, these main effects were qualified by a marginally significant interaction of imagined self by gender,  $F(1,219)=3.62$ ,  $p=0.058$ ,  $\eta_p^2=0.02$ . Follow-up analyses revealed a significant gender difference in the proportion of negative words reported in the non-imagined self condition,  $t(108)=3.345$ ,  $p=0.001$ ,  $d=0.64$ . In the imagined self condition, the differences were not statistically significant,  $t(108)=0.683$ ,  $p=0.496$ ,  $d=0.13$ . See Table 3 and Figure 3 for presentation of the percentages. No other effects were found to be significant.





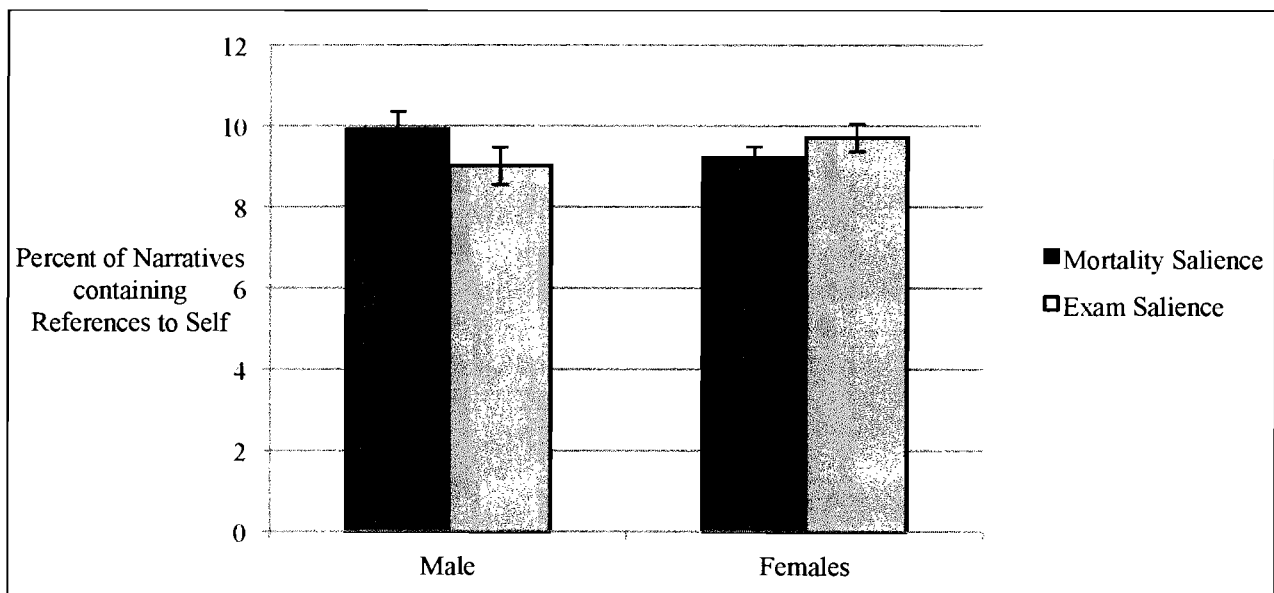
**Figure 3.** Effect of Self Condition and Gender on Negative Emotionality Words

*Emotion: Positive Emotionality*

A 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) ANOVA conducted on the proportion of positive emotion words contained within narratives revealed no statistically significant interactions of mortality salience by imagined self,  $F(1, 219) = 0.651, p=0.421, \eta_p^2 = 0.003$ , mortality salience by gender,  $F(1, 219) = 2.052, p=0.153, \eta_p^2 = 0.010$ , imagined self by gender,  $F(1, 219) = 0.003, p=0.955, \eta_p^2 = 0.000$ , and mortality salience by imagined self by gender,  $F(1, 219) = 0.966, p=0.327, \eta_p^2 = 0.005$ . Additionally the ANOVA revealed no statistically significant findings of mortality salience,  $F(1, 219) = 0.474, p=0.492, \eta_p^2 = 0.002$ , self condition,  $F(1, 219) = 1.225, p=0.270, \eta_p^2 = 0.006$ , and gender,  $F(1, 219) = 0.004, p=0.947, \eta_p^2 = 0.000$ .

### *Analysis on References to Self*

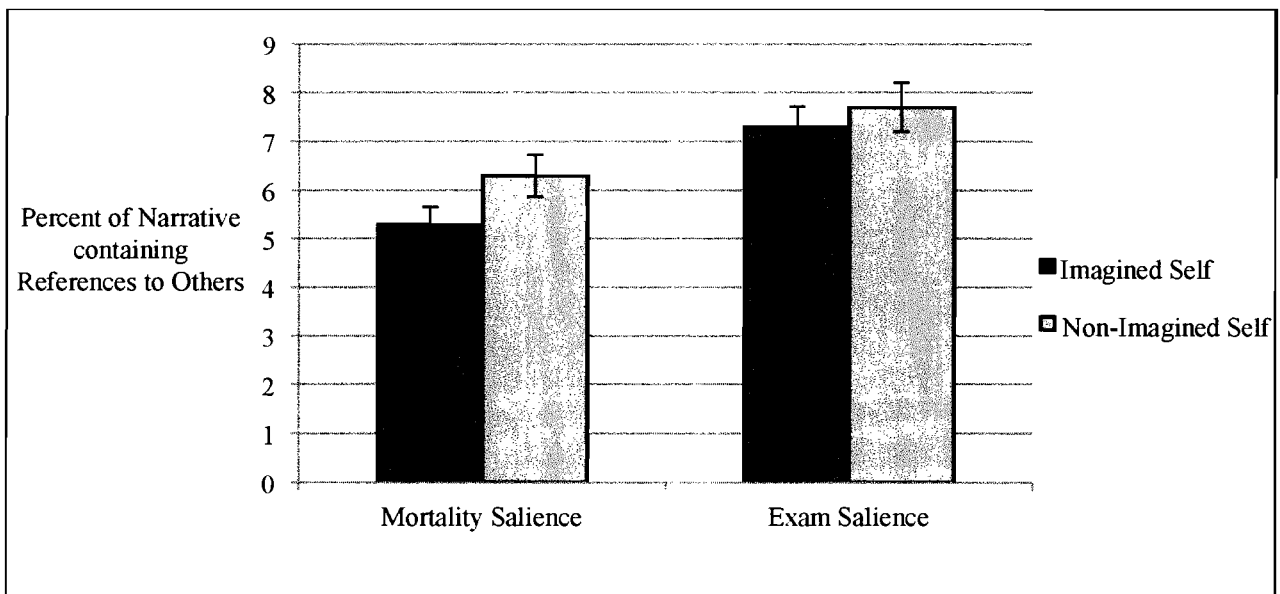
A 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) ANOVA conducted on the proportion of narrative content that was referential revealed a marginally significant mortality salience by gender crossover interaction of references to self,  $F(1,219) = 2.875$ ,  $p = 0.091$ ,  $\eta_p^2 = 0.01$ , such that mortality salience leads to an increase in references to self for males but a decrease for females and the exam salience condition leads to an increase in self references for females but leads to a decrease for males, see Figure 4. However, follow up analyses revealed no significant gender effects in either mortality salience condition,  $t(108) = -1.173$ ,  $p = 0.243$ ,  $d = 0.13$ , or exam salience condition,  $t(108) = 1.217$ ,  $p = 0.226$ ,  $d = 0.23$ , see Table 4. No other effects were significant or approaching significance for self references made by participants in their narratives.



**Figure 4.** Effect of Mortality Salience and Gender on References to Self

### Analysis on Reference to Others

A 2 (Mortality Salience) x 2 (Self Condition) x 2 (Gender) ANOVA was conducted on the proportion of words that were referring to other people. With regards to the effect of self, there was a main effect,  $F(1, 219) = 17.610$ ,  $p=0.000$ ,  $\eta_p^2 = 0.07$ , but this was qualified by a marginally significant interaction with mortality salience,  $F(1, 219) = 3.123$ ,  $p=0.08$ ,  $\eta_p^2 = 0.02$ . Follow up analyses revealed a marginally significant difference in the imagined self condition for mortality salience,  $t(108)=-1.926$ ,  $p=0.057$ ,  $d=0.36$ , with those primed with mortality salience expressing less references to others, on average, in comparison to those in the exam salience condition. There was no difference in references to others in relation to those that were in the non-imagined self condition,  $t(108) = 0.683$ ,  $p=0.496$ ,  $d=0.13$ . See Table 4 and Figure 5 for presentation of means.



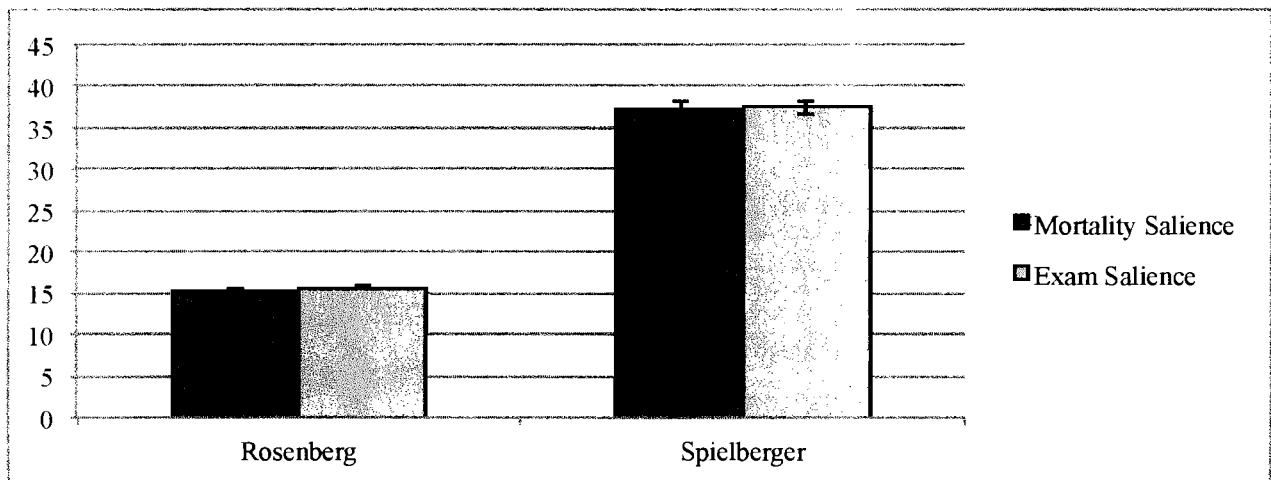
**Figure 5.** Effect of Self Condition and Mortality Salience on References to Others

*Analysis of Mortality Salience on Self-Esteem Measures*

Lastly, it is important to be able to distinguish if exposure to the mortality salience prime was putting participants in a bad mood; if that is the case than it would be possible that the negative affect produced by the open-ended death questions was driving the results found, rather than the unconscious thought processes. To test this, scores from the Rosenberg Self-Esteem Scale and the Spielberger State Anxiety Inventory were summed together by condition, mortality salience or exam salience. Analyses of scores from both of the scales indicated that neither the mean scores of the Rosenberg Scale,  $t(110) = -0.836, p=0.472$  or the Spielberger Inventory,  $t(110) = 0.119, p=0.316$  differed by condition (See Table 6 and Figure 6 for presentation of the means).

**Table 6.** Mean Score of the Rosenberg Self-Esteem Scale and the Spielberger State Anxiety Inventory by Condition

	<u>Mortality Salience</u>	<u>Exam Salience</u>
<b>Rosenberg Scale</b>	15.35 (2.47)	15.61 (2.21)
<b>Spielberger Inventory</b>	37.35 (8.18)	37.45 (8.86)



**Figure 6.** Effect of Mortality Salience on Self Esteem Measures

## Discussion

### *Regarding Narrative Length*

From the perspective of terror management theory, people are motivated to avoid awareness of the inevitability of death, regardless of gender. However, in contrast to other studies involving the manipulation of mortality, only males in the mortality salience condition wrote narratives that were shorter in length than their female peers. It is possible that this gender effect was reflective of a female tendency to write more than males, in general. But it is also possible that this finding could be due to a more “reactive” response of males to the death prime. Additional analyses investigating the accessibility of death related thoughts expressed in the word completion task might help measure the “reactiveness” of the mortality salience prime.

Socialization practices surrounding cultural stereotypes reinforce males to be less self-disclosing and emotional as female counterparts. Males faced with a death-related prime, one that evokes negative feelings and anxiety, may have written less than any participant in any of the other gender and prime conditions as a consequence of feeling uncomfortable in the death-prime situation. Additionally, autobiographical memory research has consistently shown that narratives belonging to females are longer than those of males (Bauer, Stennes & Haight, 2003; deVries, Blando & Walker, 1995; Friedman & Pines, 1991).

The analyses of the Rosenberg Self-Esteem Scale and Spielberger State Anxiety Inventory did not reveal significant differences between the prime conditions in terms of negative mood or anxiety per se, but gender was not explored as a mediator of this relation. This is something to explore in future studies (that is, how gender and mortality salience together

might shape expressions of anxiety in narratives, even when describing seemingly positive experiences like attending an orientation at a University).

### *Regarding Emotionality*

Similar to findings regarding overall length, females' narratives were more emotional overall than were males' narratives. They were also more negative in nature (with respect to their use of emotion terms) than were males. It is important to take note that this is not simply because females' written memories were longer in length, since these significant findings relate to *proportions* of words reported in the autobiographical narratives, not frequencies of word occurrences. With relation to the self conditions, the results found in the present study partially mapped onto previous research which has showed that stimulating self-awareness intensifies negative affect (Duval & Wicklund, 1972). The present study found that rather than reporting more negative emotion in the heightened self-awareness condition, females reported proportionally more negative emotion words in the non-imagined self condition. Results found for the males supported the finding of Duval & Wicklund (1972).

The difference in results may be due to a wealth of previous research findings suggesting that females may feel generally more comfortable expressing negative emotions than their male counterparts (for a review see Fivush & Buckner, 2000). Perhaps females were especially sensitive to the anxious emotions stirred up by both the death-salient prime, and self-aware instructions; as such, they may have avoided negativity, as TMT would predict. As a result, they were likely to focus on positive emotion in their memories of University Orientation. Again, however, given the finding that gender does not significantly moderate effects of mortality

salience or self-awareness (Burke et al., 2010) this possibility was not investigated. Future investigators would do well to conduct such an analysis.

### *References to Self*

Despite the position by TMT that humans have a propensity to avoid discussion of the self in mortality salient situations, the results of the present study did not support this. This prediction was based on the expectation that when reminded of one's own mortality a person will try to suppress death-anxious thoughts and focus attention on the maintenance and creation of cultural scripts, stereotypes, and roles. This focus of attention on culture in situations where death anxiety is increased functions to distract attention away from the self per se; thus in the context of narrative descriptions of personal experiences, autobiographical descriptions after facing personal demise would be expected to contain fewer references to self in contrast to situations when individuals are primed with thought of an upcoming exam (where one would make more references to self).

### *References to Others*

Given the reasoning that when reminded of ones' own mortality a person will shift their attention to the creation of cultural scripts, stereotypes, and roles, it would be expected that individuals in the mortality salience condition would make more references to others than those in the exam salience condition. However, empirical results indicated the opposite pattern, in that those primed with death expressed fewer references to others. Thus, when primed with death anxiety, and made aware of self, people are less likely to think about others.

In a more theoretical vein, the present study contributes to a growing body of research concerning self-consequences of mortality salience. A majority of the research conducted on

terror management theory has investigated the effects of mortality salience on the subjective evaluations to those who threaten or support one's cultural worldview (Arndt et al., 1998). Such studies measured either an attitude towards a person, or sports team, or towards an author of essay, while other studies measured behavior and affect, all in response to a worldview threat (Burke et al., 2010).

Results on the above mentioned dependent variables consistently show that when reminded of their own mortality, people are more readily able to accept those that support their worldview and are more critical in their evaluations of those who challenge it (worldview defense) (Rosenblatt et al., 1989). Rather, if asked not to write about a memory that is self-focused and in turn asked to write an essay in relation to a political or moral issue felt strongly by the individual the narrative content and structure might differ from presently reported results. These differences might include proportionally more positive emotionality words when talking about an individual who supports their cultural worldview and proportionally more negative words when confronted with an individual who does not share the same opinion.

Although, all of the previously mentioned studies deal with a mortality salience manipulation that is relatively homogeneous, that is, the manipulations were designed to have participants think about their own mortality but not to explicitly reflect on their respective lives (Burke et al., 2010). More specifically, these manipulations may be different from other real-life reminders of death such as, near-death experiences or being diagnosed with a terminal illness, which individuals often react to with liberation and growth rather than defensiveness (Martin, Campbell, & Henry, 2004). Given the amount of death reminders that are present in everyday life research should continue to investigate whether more immediate and reflective real-world



death reminders lead to more growth-oriented behaviors as a means to buffer anxiety related worldview defenses (Pyszczynski, Greenberg, Solomon, & Maxfield, 2006).

### Limitations and Future Research

While the present study revealed several findings on the interplay of mortality salience and self conditions, the experimental design did have several shortcomings. First, while a main feature of this study was the manipulation of the self it would have been beneficial to prime self-awareness during the presentation of the mortality salience prime. In the present study, the manipulation of self was primed after the presentation of death-related questions and involved individuals to close their eyes while the narrative prompt was read out loud.

Moreover, in the present study, one could argue that the mortality-salience condition and the exam condition both induce self-awareness which is evident by the fact that there were no statistically significant mean differences between the amount of references to self in both the mortality salience and exam salience condition. One possible reasoning behind this is that the prompt presented might have been too self-focused for a true control. One method of potentially controlling for this influence might be to present a narrative prompt that is focused towards being other-aware (vs. being self-aware) as in, “How would your best friend feel about your decision to come to Seton Hall University?” Moving awareness away from the self in the narrative prompt might lead to differences in the amounts of references to self, others, and emotionality words.

Also, while the present manipulation of self may be beneficial when studying autobiographical memory it may have been presented too late in the current design to be able to elicit effects from the manipulation of mortality salience. That is, effects might have been more pronounced if self-awareness was primed during the presentation of open-ended death questions.

With that said, one possible future direction for this study could be to replicate this experiment with a different manipulation of provoking awareness of self. Arndt et al. (1998) manipulated self-awareness by utilizing a mirror that remained in the cubicle during the mortality salience manipulation as well as for the duration of the study in which participants were instructed to write a short story using either an internal or external focus of attention. Given the substantial evidence in the literature (Carver & Scheier, 1978, 1981; Duval & Wicklund, 1972) that suggests that mirrors increase self-awareness, it may be beneficial to employ this method in the future.

Second, the fact that the present experiment did not find an effect of narrative length in that those in the mortality salience imagined self condition, as a whole, did not write narratives that were shorter in length in comparison to other conditions might be explained by the presence of the experimenter. Arndt et al. (1998) informed participants that they could leave the cubicles after they completed their narrative. In contrast, in the present study, the experimenter remained in the room with the participant for the duration of the session. Participants might have felt pressured to write for the full five minutes allotted to them. Future studies might look into whether presence of the experimenter would influence the effects of mortality salience. Additionally, the present study utilized only one approach to studying autobiographical memory, eliciting written narratives as opposed to oral narratives. While both types of memory recalls are considered to be valid, it would be interesting to compare and contrast autobiographical memories based on their specific mode of recall.

As already suggested above, another step in filling the void in the literature might include a different kind of evaluation of the specific contribution of general anxiety responses or negative mood induction to the effects of mortality salience or other kinds of personal threats on performance. In particular, the influence of gender beliefs or roles on susceptibility to anxiety

effects would be an interesting factor to consider, perhaps as a mediator of emotional reactions in mortality salient situations.

Lastly, mortality salience exerts its death-related defenses with the addition of a distractor task that allows for death related thoughts to exit consciousness while still remaining highly accessible. While the most commonly utilized distractor task is the positive and negative affect scale (PANAS) the present study used the word completion task. The word completion task might not have been the most beneficial distracter task to use in that some fragments have the potential to be filled in with words relating to death. While beneficial if measuring the accessibility of death related thoughts after the manipulation of mortality salience, in the present study this task might not have allowed for thoughts relating to death to be fully suppressed resulting in death thoughts that might have still been active in the mind of the participants while completing the autobiographical memory prompt. This could have been corrected by presenting the Spielberger State Anxiety Inventory directly after the mortality salience prime and moving the word completion task to the end of the study, which, additionally, would have afforded the inclusion of another analysis in relation to the accessibility of death-related thoughts by condition.

In conclusion, while this study did not follow well-documented mortality salience patterns in relation to narrative length, the present findings should prompt further research into the relationship between mortality salience, self-awareness, and autobiographical memory.

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## Appendix A: Demographics Questionnaire

Directions: Please fill in or answer each question below. Your data will remain confidential and will only be identified by your individual participant code.

### Information about yourself:

Age: \_\_\_\_\_

Gender (circle one)

M                      or                      F

Year at Seton Hall (circle one):

1<sup>st</sup>                      2<sup>nd</sup>                      3<sup>rd</sup>                      4<sup>th</sup>                      Other \_\_\_\_\_

Do you have corrected vision?

Y                      or                      N

If so, did you remember to bring your glasses/contacts?

Y                      or                      N

Are you currently sick with an illness or taking any medication that affects your vision, level of attention, or other cognitive abilities?

Y                      or                      N

Do you have dyslexia or any other conditions that may affect your ability to read from a short distance?

Y                      or                      N

Please characterize your typing skills below:

1. Circle one:    I am ...

Faster than most people

Slower than most

Average

2. How does your typing compare to your friends:

Faster

Slower

Same

3. Are you comfortable using a computer to type?

Yes

/

No

4. If no, why?

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## Appendix B: Rosenberg Self-Esteem Scale

Directions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle Strongly Agree. If you agree with the statement, circle Agree. If you disagree, circle Disagree. If you strongly disagree, circle Strongly Disagree.

1. On the whole, I am satisfied with myself.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

2. At times, I think I am no good at all.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

3. I feel that I have a number of good qualities.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

4. I am able to do things as well as most other people.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

5. I feel I do not have much to be proud of.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

6. I certainly feel useless at times.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

7. I feel that I'm a person of worth, at least on an equal plane with others.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

8. I wish I could have more respect for myself.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

9. All in all, I am inclined to feel that I am a failure.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

10. I take a positive attitude toward myself.

Strongly Agree                      Agree                      Disagree                      Strongly Disagree

## Appendix C: Mortality Salience Prime

### The Projective Life Attitudes Assessment

Directions: This assessment is a recently developed, innovative personality assessment. Recent research suggests that feelings and attitudes about significant aspects of life tell us a considerable amount about the individual's personality. Your responses to this survey will be content-analyzed in order to assess certain dimensions of your personality. Your honest responses to the following questions will be appreciated.

Please respond to them with your first, natural response. We are looking for peoples' gut-level reactions to these questions. You will have 5 minutes to complete this assessment.

1. PLEASE BRIEFLY DESCRIBE THE EMOTIONS THAT THE THOUGHT OF YOUR OWN DEATH AROUSES IN YOU.

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2. JOT DOWN, AS SPECIFICALLY AS YOU CAN, WHAT YOU THINK WILL HAPPEN TO YOU AS YOU PHYSICALLY DIE AND ONCE YOU ARE PHYSICALLY DEAD.

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## Appendix D: Exam Salience Prime

### The Projective Life Attitudes Assessment

Directions: This assessment is a recently developed, innovative personality assessment. Recent research suggests that feelings and attitudes about significant aspects of life tell us a considerable amount about the individual's personality. Your responses to this survey will be content-analyzed in order to assess certain dimensions of your personality. Your honest responses to the following questions will be appreciated.

Please respond to them with your first, natural response. We are looking for peoples' gut-level reactions to these questions. You will have 5 minutes to complete this assessment.

1. PLEASE BRIEFLY DESCRIBE THE EMOTIONS THAT THE THOUGHT OF AN UPCOMING EXAM AROUSES IN YOU

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2. JOT DOWN, AS SPECIFICALLY AS YOU CAN, WHAT YOU WILL THINK WILL HAPPEN TO YOU WHEN YOU ARE TAKING THE EXAM AND ONCE YOU HAVE TURNED IN THE EXAM.

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### Appendix E: Word Completion Task

Directions: Please fill in the blanks with the first word that comes to mind, you will have three minutes to complete this task.

L\_\_VE

EX\_\_ \_\_T

MU\_\_ \_\_ER

H\_\_TR\_\_D

ST\_\_R\_\_Y

A\_\_E

DR\_\_ \_\_N

B\_\_E

P\_\_ST\_\_R

C\_\_MP\_\_ \_\_T

A\_\_T\_\_R

W\_\_ \_\_M

SPEA\_\_

COO\_\_

H\_\_NT

## Appendix F: Imagined Self Condition Memory Prompt

Please follow these instructions:

1. Now I want you to write about a very specific memory.

Please close your eyes ...

Think about YOUR first day of orientation at Seton Hall University. Think about the time of day, where you were, what the weather was like, what was going through your mind and any feelings associated with the memory.

Please begin writing your memory in the Microsoft Word Document!



## Appendix G: Non-Imagined Self Memory Prompt

Please follow these instructions:

1. Now I want you to write about a very specific memory.

Tell me about YOUR first day of orientation at Seton Hall University.

Please begin writing your memory in the Microsoft Word Document!

## Appendix H: Spielberger State Anxiety Inventory

Directions: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate one to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

1. I feel calm

Not at all                      Somewhat                      Moderately So                      Very Much So

2. I feel secure

Not at all                      Somewhat                      Moderately So                      Very Much So

3. I am tense

Not at all                      Somewhat                      Moderately So                      Very Much So

4. I am regretful

Not at all                      Somewhat                      Moderately So                      Very Much So

5. I feel at ease

Not at all                      Somewhat                      Moderately So                      Very Much So

6. I feel upset

Not at all                      Somewhat                      Moderately So                      Very Much So

7. I am presently worrying over possible misfortunes

Not at all                      Somewhat                      Moderately So                      Very Much So

8. I feel rested

Not at all                      Somewhat                      Moderately So                      Very Much So

9. I feel anxious

Not at all                      Somewhat                      Moderately So                      Very Much So

10. I feel comfortable

Not at all                      Somewhat                      Moderately So                      Very Much So

11. I feel self-confident	Not at all	Somewhat	Moderately So	Very Much So
12. I feel nervous	Not at all	Somewhat	Moderately So	Very Much So
13. I am jittery	Not at all	Somewhat	Moderately So	Very Much So
14. I feel "high strung"	Not at all	Somewhat	Moderately So	Very Much So
15. I am relaxed	Not at all	Somewhat	Moderately So	Very Much So
16. I feel content	Not at all	Somewhat	Moderately So	Very Much So
17. I am worried	Not at all	Somewhat	Moderately So	Very Much So
18. I feel overexcited and rattled	Not at all	Somewhat	Moderately So	Very Much So
19. I feel joyful	Not at all	Somewhat	Moderately So	Very Much So
20. I feel pleasant	Not at all	Somewhat	Moderately So	Very Much So

Appendix I: Narrative Coding  
(adapted from Buckner & Fivush, 1998)

**A. Narrative Structure**

I. *Narrative Length*

- a. *Number of off-task words*: Off-task words such as, “My first day of orientation at Seton Hall University”, “I’m done”, and “I don’t remember much after that” were not included in the memory length.
- b. *Number of Words*: Memory length was determined by using the “word count” Microsoft Word tool. Memory length was calculated as the number of words minus the number of off-task words.

**B. Narrative Content**

- I. *Emotion Words*: Emotional feeling state words (happy, sad, afraid) were counted along with emotional behaviors (crying, laughing). Statements about positive and negative effects (“I liked it”) were also included. Words that served to intensify the emotion word (“I *really* liked it”) were also included in the overall count.
  - a. *General Emotional Words* – Emotional terms that were not necessarily ascribed to any particular person(s), “it was a good day”, “the weather was beautiful”, etc.
  - b. *Emotional Words Pertaining to Self* – Words that made references to the writer’s own emotional state.
  - c. *Emotional Words Pertaining to Others* – Words describing the emotional states of others perceived by the writer of the narrative

- d. *We/Group Emotional Words* – Words describing simultaneously the emotional states of others as well as the writer of the narrative
- e. *Total Emotional Words* – The summation of all the aforementioned categories of emotional words taken together as a whole

**II. *References:*** Indications about a particular person or persons in the narrative account

- a. *References to self* – The frequency of terms referring to the self (“I”, “me”, or use of own first name) was counted
- b. *References to others* – The frequency of references referring to proper names and other-person pronouns, as well as specific different relationships (mother, father, sister, brother, friend); it included the vague mention of others (“someone in my group”) as well as “we-ness” terms which included pronouns and other terms aligning/affiliating the self with others (us, we, our(s)) were counted.