Terror Management and Self-Awareness: Evidence That Mortality SalienceProvokes Avoidance of the Self-Focused State

Jamie Arndt
Jeff Greenberg
Linda Simon
University of Arizona

Tom Pyszczynski
University of Colorado—Colorado Springs

Sheldon Solomon
Skidmore College

Two studies assessed the terror management hypothesis that when mortality is salient, people will avoid stimuli that increase self-awareness. In Study 1, we measured the length of time that participants wrote about either their death or an exam in cubicles that either did or did not contain a large mirror. In Study 2, participants completed either a death anxiety scale or a future concerns scale and then wrote a story fostering either an internal or external focus of attention. As predicted, in Study 1, the self-focusing stimulus reduced the amount of time that participants spent in the cubicles contemplating their mortality. In Study 2, mortality-salient participants wrote less when the task prompted an internal focus of attention than when it prompted an external focus. Across both studies, no differences emerged between participants in the control conditions. Implications of this research for understanding the relationship between terror management processes and self-awareness are briefly discussed.

Terror management theory (Greenberg, Pyszczynski, & Solomon, 1986; Solomon, Greenberg, & Pyszczynski, 1991) posits that it is the uniquely human capacity to be self-aware and to reflect on ourselves as objects of attention that reveals to us our vulnerability and mortality—to know that we exist is also to know that one day we will not exist. For a species endowed with an instinct for self-preservation, awareness of mortality creates the potential for existential terror because it serves as a reminder that we will ultimately be unable to satisfy this desire for continued existence. Self-awareness, then, by facilitating the realization of the inevitability of death, is a potential catalyst for the experience of existential terror (Pyszczynski, Greenberg, Solomon, & Hamilton, 1990). Because of this relationship between self-awareness and the awareness of death, when mortality is salient, people should be motivated to avoid circumstances that engender self-focused attention. The purpose of the present research was to test this hypothesis.

Terror Management Theory and Research

Terror management theory (for a more thorough presentation, see Greenberg et al., 1986; Solomon et al., 1991) draws heavily from the work of cultural anthropologist Ernst Becker (e.g., 1973) and places the capacity for self-awareness at the crux of an understanding of the human condition. As a result of the uniquely human abilities to reflect on ourselves as objects of attention, to think in terms of cause and effect, and to project ourselves in time and imagine things that have yet to occur, we inevitably become aware of not only the tenuous nature of existence but also the fact that it will inevitably end. This awareness of our mortality, when juxtaposed

Authors’ Note: This work was supported in part by grants from the National Science Foundation (Grant Nos. SBR-9212798, SBR-9312546, and SBR-9601474). Address correspondence to Jamie Arndt, Department of Psychology, University of Arizona, Tucson, AZ 85721; e-mail jarndt@u.arizona.edu.

with an instinct for self-preservation, creates the potential for paralyzing terror. This terror is managed by maintaining faith in a cultural anxiety buffer that has two components: (a) an individualized version of the cultural worldview that imbues the world with meaning, order, and permanence; provides standards for valued behavior; and promises either literal or symbolic immortality to those who meet or exceed these prescriptions for value and (b) self-esteem, that is, the belief that one is meeting the criterion of value espoused by one’s worldview. Thus, by investing in a cultural worldview, people largely circumvent the experience of existential terror as they navigate through their daily affairs.

Empirical research to assess the merits of terror management theory has been directed toward two general hypotheses (for a recent review of this research, see Greenberg, Solomon, & Pyszczynski, 1997). The anxiety-buffer hypothesis states that if self-esteem serves an anxiety-buffering function, then higher levels of self-esteem should decrease anxiety or anxiety-related defenses in response to threat and lower levels of self-esteem should increase such responses. Consistent with this proposition, a series of studies has shown that when self-esteem is experimentally increased or dispositionally high, participants exposed to threatening stimuli exhibit less self-reported anxiety, physiological arousal, and anxiety-related defensiveness (Greenberg et al., 1992, 1993). High self-esteem has also been shown to decrease defensive responses to death-related thoughts (Harmon-Jones et al., 1997).

The mortality-salience hypothesis states that reminders of mortality increase the need for faith in the worldview and thus increase favorable responses to anyone or anything that supports the worldview and unfavorable responses to anyone or anything that threatens it. Support for this hypothesis has been obtained in a number of studies demonstrating that, when reminded of their mortality, people become more favorable in their evaluations of those who support their worldview and more unfavorable in their evaluations of those who challenge it (worldview defense) (e.g., Florian & Mikulincer, 1997; Greenberg et al., 1990; Ochsmann & Reichelt, 1995; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989).

These effects appear to be unique to reminders of one’s own mortality. Physiological arousal and thoughts about other aversive events, such as an important exam, public speaking, intense pain, dental pain, and failure, both real and imagined, do not produce the same biased evaluations that are obtained in response to mortality salience (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; Greenberg, Simon, Harmon-Jones, et al., 1995; Harmon-Jones et al., 1997; McGregor et al., 1998; Rosenblatt et al., 1989). Although thinking about these other aversive events has at times led to increased negative affect, the mortality-salience treatment typically does not. Internal analyses have also consistently failed to indicate that self-reported affect mediates these effects. Moreover, self-awareness, although regarded as the necessary precondition to the experience of existential terror, is not in its own right sufficient to create the worldview defense effect. Specifically, Study 4 of Rosenblatt et al. (1989) found that whereas mortality salience led to harsher treatment for moral transgressors, heightened self-awareness did not produce a similar effect.

**Self-Awareness and Existential Terror**

Although self-awareness does not produce the worldview defense engendered by mortality salience, terror management theory suggests that self-awareness may contribute to concerns about mortality. Specifically, one of the consequences of reflecting on ourselves as objects of attention that can be conceptualized across time is an awareness that although we have existed in the past and exist in the present, we will inevitably cease to exist in the future. In this way, self-awareness has the propensity to unveil the paradox of the human condition—that is, despite our strivings to be significant contributors to a meaningful cultural drama, we are also mortal animals with distinct physical limitations (Becker, 1973). Increased self-focus may therefore augment the individual’s concern with controlling the potential for terror because the more aware one is of one’s existence, the more salient and inescapable is the problem of possible nonexistence. As a character from John Cassavettes’s (Cassavettes & McMendree, 1960) first film, *Shadows*, remarks,

> It is perfectly obvious—man, in contrast to other animals, is conscious of his own existence and therefore conscious of the possibility of nonexistence; ergo, he has anxiety.

To the extent that this is true, when people are thinking about their own death they should find self-awareness particularly aversive and seek to avoid circumstances that produce it. To examine the merits of this analysis we conducted two studies that crossed a mortality-salience manipulation with a manipulation of self-focused attention and then assessed participants’ willingness to remain in a situation that fostered either an internal or external focus of attention.

**STUDY 1**

Over the years, a number of methods have been used to measure avoidance of self-focus (see, e.g., Duval, Wicklund, & Fine, 1972; Gibbons & Wicklund, 1976; Hull & Young, 1983; Pyszczynski & Greenberg, 1985). In Study
1, we used a variant of the method pioneered by Duval et al. (1972). In this method, the participant is placed in a room either with or without a mirror and given some choice regarding when he or she chooses to leave that room. Given the substantial evidence that mirrors increase self-awareness (e.g., Carver & Scheier, 1978, 1981; Duval & Wicklund, 1972), the extent of a desire to avoid self-awareness may be inferred from the amount of time that participants remain in the presence of a mirror.

This methodology enables us to test the hypothesis that mortality salience arouses a desire to avoid self-awareness. Participants were induced to think about either their own mortality or an aversive control topic (i.e., taking an important exam) in a small room that either contained a large mirror or did not. They were told to leave the room when they were done with the questionnaire, and we assessed the length of time that participants spent there. We expected participants to spend less time in the room when mortality was made salient and self-awareness was increased by the presence of a mirror, relative to the other conditions in the experiment.

We also obtained self-reports of participant’s affective states after they left the cubicles. One potential process involved with the predicted effects is that the mortality-salience treatment may create negative affect, which may then be intensified under conditions of self-awareness. This may, in turn, prompt the escape response. Previous research on the intensification effects of self-awareness on negative affect is consistent with this possibility (see Gibbons, 1990, for a review). For example, Carver, Blaney, and Scheier (1979) found that heightened self-focus increased self-reported anxiety among snake-phobic participants when they approached the target of their fear. Subsequent studies also suggest that increased fear in self-focused participants may lead them to avoid a threatening stimulus (Scheier, Carver, & Gibbons, 1981). However, other research has failed to find self-awareness-induced increases in self-reported affect (Lanzetta, Biernat, & Kleck, 1982). Moreover, there is further reason to expect that affect may not be involved in the predicted effects. One of the central purposes of terror management theory is to explain how people learn to routinely engage in a host of behaviors and to go through daily living without experiencing the existential terror that could be engendered by knowledge of personal mortality. In this light, consciously experienced affect may not be a necessary component of mortality-salience-induced behavior. As mentioned earlier, previous terror management research has consistently failed to find that the open-ended mortality-salience treatment creates self-reported negative affect; in addition, such affect does not mediate the worldview defense effects that have been found (e.g., Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997; Greenberg, Simon, Harmon-Jones, et al., 1995; see Greenberg et al., 1997, for a review). Thus, it is also quite possible that in the present research, the mortality-salience manipulation, even in conjunction with heightened self-awareness, may fail to create negative affect.

**METHOD**

**Participants**

This study consisted of 26 male and 24 female introductory psychology students at the University of Arizona who participated in this study for partial course credit. Participants were randomly assigned to conditions in a 2 (Mortality Salient vs. Exam Salient) × 2 (Self-Aware vs. Not Self-Aware) between-participants design and run in sessions of 3 to 4 participants. One participant in the self-aware exam condition was dropped from the study for failing to follow instructions by not leaving the cubicle when finished with the manipulation questionnaire.

**Procedure**

After arriving at the laboratory, the study was described to participants as investigating the relationship among a variety of personality characteristics. Participants were told that the study entailed filling out some personality questionnaires. The experimenter, who was blind to the mortality-salience manipulation, also told participants that they would be completing the first questionnaire in individual cubicles to ensure their privacy and that they should return to the main room when they had finished. This questionnaire was placed in the cubicles prior to participants’ arrival and constituted the mortality-salience or control treatments. The mortality-salience treatment (Rosenblatt et al., 1989) consisted of having participants respond to two open-ended questions: “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 physically as you die and once you are physically dead.” The exam-salience control treatment consisted of parallel questions with respect to taking important exams, as in Greenberg, Simon, Harmon-Jones, et al. (1995). Taking an important exam was used rather than our typical television control to address the possibility that our predicted effects might result from thinking about negative events in general rather than contemplating mortality specifically.

Participants were also told that the experimenter was sharing the lab with other research assistants so there was equipment in the cubicles from those other studies but they should pay no attention to it. The objects in the cubicles in which participants completed either questionnaire constituted the manipulation of self-awareness. Two of the cubicles each had a ream of paper...
and a large 4 ft. × 3 ft. mirror resting on the desk on which participants worked when responding to the questionnaire. The other two cubicles did not contain mirrors but did have other equipment intended to corroborate the cover story that the lab was being used by multiple researchers. This equipment included folding lapboards and an old electric timer encased in a black box with the face of the timer turned to the wall so that all participants saw was a black box with an electrical cord. Both self-awareness cubicles and both control cubicles were identical in terms of their respective objects and their placement.

The experimenter recorded on an Armitron stopwatch the time at which each participant closed the door when entering the cubicle and the precise moment that each participant opened the door to exit the cubicle. The time that each participant spent in the cubicle completing the mortality-salience or exam questionnaire was the main dependent measure of this study. Participants then returned to the main room and were given a few more questionnaires, including the PANAS-X (Watson & Clark, 1992), to assess positive and negative affect. For this checklist questionnaire, participants were asked to indicate the "extent to which you feel this way right now" for each of the 60 adjectives provided. The experiment was concluded at this point and all participants were thoroughly debriefed and thanked for their time. No one reported any suspicion regarding the appearance of mirrors in the cubicles or the general purpose of the study.

RESULTS

The primary analyses were 2 (Mortality Salient vs. Exam Salient) × 2 (Self-Aware vs. Not Self-Aware) between-participants analyses of variance (ANOVAs).

Mortality Salience and Self-Awareness

The main dependent measure of the present study is similar to that employed by Duval et al. (1972) and Steenbarger and Aderman (1979), that is, the duration of time that participants spent in the cubicles, which was computed by subtracting the time at which participants closed the door after entering the cubicle from the time at which they opened the door to exit the cubicle. The ANOVA conducted on this measure revealed a significant main effect for self-awareness, $F(1, 46) = 4.56, p < .04$, with self-aware participants remaining in the cubicles for less time than non-self-aware participants, $M = 306.2$ seconds and 367.5 seconds, respectively. This effect was qualified, however, by the predicted two-way interaction between mortality salience and self-awareness, $F(1, 46) = 4.47, p = .04$. Cell means are displayed in Table 1.

<table>
<thead>
<tr>
<th>Mortality Salient</th>
<th>Exam Salient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-aware (in seconds)</td>
<td>282.7$^a$</td>
</tr>
<tr>
<td>$SD$</td>
<td>52.3</td>
</tr>
<tr>
<td>$N$</td>
<td>15</td>
</tr>
<tr>
<td>Not self-aware (in seconds)</td>
<td>399.9$^b$</td>
</tr>
<tr>
<td>$SD$</td>
<td>13.27</td>
</tr>
<tr>
<td>$N$</td>
<td>15</td>
</tr>
</tbody>
</table>

NOTE: Cell means that do not share a superscript differ at $p < .05$.

Cell Means for the Two-Way Interaction of Mortality Salience × Self-Awareness on the Amount of Words Used in Study 1

<table>
<thead>
<tr>
<th>Mortality Salient</th>
<th>Exam Salient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-aware</td>
<td>81.8$^a$</td>
</tr>
<tr>
<td>$SD$</td>
<td>(26.1)</td>
</tr>
<tr>
<td>$N$</td>
<td>15</td>
</tr>
<tr>
<td>Not self-aware</td>
<td>109.2$^b$</td>
</tr>
<tr>
<td>$SD$</td>
<td>(36.1)</td>
</tr>
<tr>
<td>$N$</td>
<td>15</td>
</tr>
</tbody>
</table>

NOTE: Cell means that do not share a superscript differ at $p < .06$.

To investigate our primary hypothesis, we conducted planned comparisons using the residual error term from the two-way ANOVA (value of 9,507.4). As predicted, a pairwise comparison within the mortality-salient conditions revealed that increased self-awareness led participants to reduce the amount of time that they chose to remain in the cubicle contemplating their mortality, $t(46) = 3.06, p < .01$. In non-self-aware control conditions, participants actually spent more time in the cubicles thinking about their mortality than about exams, although not significantly so, $t(46) = 1.73, p = .09$. By reducing the amount of time spent in the cubicle thinking about death, self-awareness reversed this trend, albeit not to the point at which self-aware participants spent significantly less time thinking about mortality than exams, $t(46) = 1.26, p > .21$.

Pairwise comparison within the exam-salient condition revealed that increased self-awareness did not have any effect on the time that participants spent in the cubicles, $t < 1$. Thus, increased self-awareness significantly reduced the time that participants spent in the cubicles only within the mortality-salient condition.

Secondary Analyses

Length of responses. Another related way to examine participants' reactions to these treatments is to consider the length of their responses. If participants are seeking to exit the cubicle faster when they are writing about

<table>
<thead>
<tr>
<th>Mortality Salient</th>
<th>Exam Salient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-aware</td>
<td>81.8$^a$</td>
</tr>
<tr>
<td>$SD$</td>
<td>(26.1)</td>
</tr>
<tr>
<td>$N$</td>
<td>15</td>
</tr>
<tr>
<td>Not self-aware</td>
<td>109.2$^b$</td>
</tr>
<tr>
<td>$SD$</td>
<td>(36.1)</td>
</tr>
<tr>
<td>$N$</td>
<td>15</td>
</tr>
</tbody>
</table>

NOTE: Cell means that do not share a superscript differ at $p < .06$.

To investigate our primary hypothesis, we conducted planned comparisons using the residual error term from the two-way ANOVA (value of 9,507.4). As predicted, a pairwise comparison within the mortality-salient conditions revealed that increased self-awareness led participants to reduce the amount of time that they chose to remain in the cubicle contemplating their mortality, $t(46) = 3.06, p < .01$. In non-self-aware control conditions, participants actually spent more time in the cubicles thinking about their mortality than about exams, although not significantly so, $t(46) = 1.73, p = .09$. By reducing the amount of time spent in the cubicle thinking about death, self-awareness reversed this trend, albeit not to the point at which self-aware participants spent significantly less time thinking about mortality than exams, $t(46) = 1.26, p > .21$.

Pairwise comparison within the exam-salient condition revealed that increased self-awareness did not have any effect on the time that participants spent in the cubicles, $t < 1$. Thus, increased self-awareness significantly reduced the time that participants spent in the cubicles only within the mortality-salient condition.

Secondary Analyses

Length of responses. Another related way to examine participants' reactions to these treatments is to consider the length of their responses. If participants are seeking to exit the cubicle faster when they are writing about
their mortality under conditions of increased self-awareness, then they should write less in response to these manipulation questions relative to mortality-salient participants without such a focus of attention. To assess this possibility empirically, we counted the number of words that participants wrote in responding to the mortality-salience and exam questionnaires and subjected this count to a Mortality Salience × Self-Awareness ANOVA. This analysis yielded an interaction paralleling that found for time, \( F(46) = 4.07, p = .05 \). Pairwise comparisons were again conducted using the residual error term from the two-way ANOVA (value of 1,354.8). Self-awareness reduced not only the time spent in the cubicles but also the amount of words that mortality-salient participants used to answer the two questions, \( t(46) = 1.93, p = .06 \). Means are displayed in Table 1. In contrast, within the exam conditions participants wrote more under self-awareness, although not significantly so, \( t < 1 \). However, the mortality-salient self-aware condition did not differ from either exam conditions (both \( t < 1 \)), but again, this could be because self-awareness had the opposite effect when combined with mortality salience than it did when combined with exam salience. Indeed, although only marginally significant, under non-self-aware conditions, mortality-salient participants wrote more than exam participants, \( t(46) = 1.87, p < .07 \).

**Positivity and negativity of responses.** Although our personal experience as instructors suggests that taking an important exam is indeed an aversive prospect for most undergraduate students, it is conceivable that for some students this topic prompted thoughts of potential achievement and success. If this were the case, participants in the exam self-aware condition may have stayed in the cubicles because they were writing about positive thoughts. To examine this possibility we had two independent raters, blind to self-awareness condition, code the responses to the mortality and exam questionnaires for negativity and positivity of thoughts expressed on two 3-point scales (where 1 = *not at all negative* [positive] and 3 = *very negative* [positive]). The raters had 90% agreement. Using the mean ratings across the two raters, ANOVA on the positivity rating revealed no effects or interactions \( (ps > .10) \) involving self-awareness and only a main effect for mortality salience versus exams on negativity, \( F(46) = 20.97, p < .001 \). Thoughts of taking an important exam were more negative (\( M = 2.57 \)) than thoughts of mortality (\( M = 1.73 \)), suggesting that the exam condition produced negative rather than positive affect. To assess whether negativity mediated the effects of mortality salience and self-awareness on both exit time and length of responses, analyses of covariance (ANCOVAs) were conducted on these measures using negativity as a covariate. Analyses revealed that the critical two-way interaction was still significant in both cases (both \( Ps > 4.38, ps < .05 \)), suggesting that negativity did not mediate these effects.

**Affect measures.** The PANAS-X, administered after participants left the cubicles, is composed of 13 subscales that include Positive and Negative Affect, Fear, Hostility, Shyness, Guilt, Sadness, Joviality, Self-Assuredness, Atteniveness, Serenity, Surprise, and Fatigue. ANOVAs on these measures revealed only a significant main effect for mortality salience on the Self-Assured subscale, \( F(1, 45) = 7.19, p < .02 \), with mortality-salient participants reporting more self-assurance than controls, \( Ms = 3.07 \) and 2.44, respectively.

Although this marginal increase in self-assuredness was not anticipated, it may reflect an effort to bolster self-esteem following the mortality-salience treatment or may be spurious given the number of effects assessed. To assess the possibility that negative affect mediated the escape response, we again conducted 2 × 2 ANCOVAs using scores on the Negative Mood subscale as the covariate. Analyses revealed the interactions between mortality salience and self-awareness on both exit time, \( F(1, 45) = 4.10, p < .05 \), and length of responses, \( F(1, 45) = 4.06, p = .05 \), remained significant.

**DISCUSSION**

Study 1 supported the hypothesis that when mortality is salient, people will be motivated to escape stimuli that enhance self-awareness. Mortality-salient participants spent less time in the cubicles if a mirror was present; no such effect emerged for those participants thinking about taking an important exam. From the perspective of terror management theory, people are motivated to avoid awareness of the inevitability of death. To the extent that self-awareness contributes to mortality concerns, when attention is directed inward, people should try to minimize continued confrontation with this awareness.

Although we posit that the aversiveness of self-awareness when contemplating one’s mortality prompted the quick exit, another possible account of this effect could be based on the notion that self-focus increases the accessibility of self-relevant information (e.g., Hull & Levy, 1979). Specifically, under such conditions it may have been easier to write about one’s death, therefore, participants may have simply needed less time. However, this seems unlikely for two reasons. First, if self-focus increased the accessibility of self-relevant information and this was responsible for the reduced time that mortality-salient participants spent in the presence of a mirror, then one would also expect this to be the case in the exam-salient condition. In other words, self-focus should increase the accessibility of information that is relevant to both one’s mortality and taking exams and cause participants in both self-aware conditions to finish faster.
than their non-self-aware counterparts. However, the presence of a self-focusing stimulus only reduced the time that participants spent in the cubicles in the mortality-salient condition.

Second, if the accessibility of self-relevant information was driving the quick exit of the mortality-salient self-aware participants, then one would not have expected differences in the amount that they wrote as a function of self-awareness. Having increased access to how they feel about their death, self-aware participants would have been expected to write the same amount as non-self-aware participants, but they would have taken less time to do it. However, analyses of the number of words written in response to the questions revealed evidence that was inconsistent with this possibility. It would seem, therefore, that the more rapid departure of mortality-salient participants from the room with the mirror did not occur because of increased accessibility of self-relevant information.

To the extent that people are afraid of dying, another plausible account of these findings was that participants sought to avoid negative affect created by the mortality-salience treatment and intensified under self-awareness. Contrary to this possibility, as with previous terror management research, there was no indication that the mortality-salience manipulation engendered negative affect or that self-reported affect played a role in these effects. However, one concern with this null finding is that affect was measured after participants had removed themselves from either the self-aware or non-self-aware situation; this response may have served to reduce previously increased negative affect. Thus, another study in which affect is assessed in the same situation in which participants are made self-aware is needed to address this issue.

Although the finding that self-awareness reduced time spent in the cubicles only when participants contemplated mortality is consistent with our predictions, the results of Study 1 leave three additional issues unresolved. The first issue concerns the comparison between the mortality-salient and exam-salient self-aware conditions. As we noted earlier, this comparison may not have reached significance because in the non-self-aware conditions, participants had more to say about the prospect of their deaths than about exams. Considering the non-self-aware conditions as a baseline, because the baseline is higher for death contemplation than exam contemplation, an avoidance of self-awareness is evidenced by a decrease in time spent in the cubicles relative to the mortality-salient non-self-aware condition but not necessarily to less time than in the exam conditions. Nonetheless, the case would have been clearer if there had been no difference between the non-self-aware conditions. Second, although content analyses indicated that the exam control contemplation was not viewed more positively than death (indeed it was viewed more negatively) and that there were no main or interaction effects on these ratings, the possibility exists that at least for some participants such contemplation aroused positive feelings associated with a potentially successful experience. Such activation of mastery-oriented thoughts may have given participants more to write about under self-awareness in the exam control condition. Similarly, self-awareness combined with the exam topic may have led to problemsolving thoughts that would keep participants in the cubicles longer. Thus, research that uses a different control condition would, if it were to successfully replicate the pattern from Study 1, provide converging support for the specificity of these effects to mortality salience. Finally, as is the case with single experiments, the results of Study 1 are limited in their generalizability by using only one operationalization of the constructs under investigation. Therefore, we designed a second study using different operationalizations of mortality salience and self-awareness to conceptually replicate the finding that participants will avoid self-focused attention when it follows a mortality-salience treatment.

**STUDY 2**

In Study 2, we first administered the mortality-salience treatment followed by the manipulation and measurement of self-focused attention—rather than simultaneously presenting participants with these manipulations as in Study 1. In addition, in contrast to the open-ended questions used in Study 1, participants completed either the Death Anxiety Scale (Conte, Weiner, & Plutchik, 1982) or, to provide an assessment of the specificity of these effects to mortality concerns, a general worries about the future scale. Previous research has demonstrated that this mortality-salience treatment produces worldview defense effects that are similar to those typically found with the open-ended questions (Greenberg, Simon, Harmon-Jones, et al., 1995).

Although the presence or absence of a mirror has a long-established history as a manipulation of self-awareness (e.g., Carver & Scheier, 1981; Duval et al., 1972), we decided to use a different manipulation of self-focused attention based on the story-construction task developed by Fenigstein and Levine (1984). With this technique, participants are presented with a list of words, some of which are either self-referent or other referent, and are asked to construct a story using the words provided, thereby serving to manipulate self-focused attention. As detailed by Fenigstein and Levine (1984), this method presents certain advantages over other experimental manipulations of self-awareness by minimizing possible self-presentation and self-perception concerns as well as offering practical convenience. By examining the length of the stories that participants generate, one can infer a
motivation to remain in the situation that is promoting the respective focus of attention. If the juxtaposition of mortality salience and self-awareness is, as Study 1 suggests, an aversive state that participants are especially motivated to avoid, then mortality-salient participants should write shorter stories when such writing prompts an internal focus than when it entails an external focus. In contrast, the length of stories written by participants primed with general worries about the future should not differ as a function of attentional focus.

A secondary purpose of Study 2 was derived from the findings of recent research that investigated the level of death-thought accessibility following mortality salience. One possibility with the present research is that if self-awareness is intensifying mortality concerns activated by the mortality treatment, then death thoughts will be highly accessible following the juxtaposition of these manipulations. However, recent work suggests that the opposite hypothesis is more likely to be true. Greenberg et al. (1994) found that death-thought accessibility was low immediately following completion of the mortality-salience treatment but that it increased after participants were distracted from death-related themes by reading an innocuous passage or by completing a word search puzzle. Greenberg et al. (1994) hypothesized that participants may have initially been actively suppressing death-related thoughts. Support for this hypothesis was then obtained by Arndt, Greenberg, Solomon, et al. (1997), who found that increased cognitive load, a procedure previously shown to impair suppression efforts (e.g., Wegner, Erber, & Zanakos, 1993), led to immediate increases in death-thought accessibility following mortality salience. Taken together, these studies suggest that after contemplating mortality, when such concerns are most salient, participants initially suppress death-related thought, which results in low death accessibility. However, after participants are distracted and active suppression is lifted, death-related thoughts show a delayed increase in accessibility. Based on this reasoning, in the present context, if self-focus intensifies the impact of mortality salience and impairs participants’ ability to relax the cognitive suppression of death-related thought, then mortality-salient, internal-focus participants would actually show low death accessibility. In contrast, if an external focus of attention distracts participants and therefore facilitates the relaxation of the suppression of death thoughts, then, as with previous research, death-thought accessibility should be relatively high after participants think about death and are externally focused. Indeed, the typical study showing the delayed increase in accessibility of death thoughts has used reading passages and word search puzzles likely to evoke such an external focus of attention. To investigate this possibility, after participants completed the PANAS-X to again assess whether these manipulations had any effect on conscious affective experience, we included a word fragment completion task to measure the accessibility of death-related thoughts.

**METHOD**

**Participants**

The study consisted of 21 male and 24 female introductory psychology students at the University of Maryland who participated for partial course credit. Participants were run in groups of 5 to 8 and were randomly assigned to conditions in a 2 (Mortality Salient vs. Future Worries Salient) × 2 (Internal Focus of Attention vs. External Focus of Attention) between-subjects design.

**Procedure**

After entering the lab, participants were greeted by an experimenter who told them that the study was designed to assess the relationship between various personality traits and attitudes. Participants were spread out across the large classroom to give them a sense of privacy. After reading and signing a consent form, the experimenter, who was blind to conditions, gave participants a packet of questionnaires and instructed them to simply work through the packet in the order it was presented. Once all participants had completed the packet of questionnaires, they were fully debriefed and thanked for their time.

**Stimulus Materials**

The packet began with a filler personality measure followed by either the mortality-salience treatment or the general concerns control treatment used in Greenberg, Simon, Harmon-Jones, et al. (1995). The mortality-salience treatment consisted of having participants respond to the Death Anxiety Questionnaire (Conte et al., 1982), which was renamed the Mortality Concern Questionnaire and contained 15 questions to which participants responded using a 3-point scale (where 0 = not at all, 1 = somewhat, and 2 = very much). Typical items on this scale involved statements such as, “Do you worry about dying?” “Do you worry that dying may be very painful?” “Does the thought worry you that with death you may be gone forever?” and “Are you worried about knowing what to expect after death?” Using the same 3-point scale, the general concerns control treatment entailed responding to 15 questions that were designed to make salient future events about which college students might worry. Typical questions on this scale involved statements such as, “Do you worry that a college education is a waste of time and money?” “Do you worry that your career field will be so crowded that it will be hard for you to find a job?” “Are you afraid that you may lose all of
your friends once college ends?” and “Do you dread getting out of college and having no one but yourself to rely on?”

Participants then completed either the internal or external focus of attention treatment. Based on Fenigstein and Levine (1984), this treatment involved having participants write a short story about either themselves (internal focus) or someone else (external focus). Participants were presented with a list of 20 words; of these words, 5 were varied to focus them internally or externally. In both conditions, participants were instructed to use as many of the words as they could to write a short story, to just write naturally as if they were telling someone a story, and to write as much or as little as they wanted to without worrying about spelling or grammar. The internal focus of attention terms were I, me, myself, my, and mirror. These terms were replaced with the external focus of attention words (i.e., his, him, he, and himself) to create the two conditions.

Following this writing task, participants responded to the PANAS-X (Watson & Clark, 1992) to assess positive and negative affect. This was then followed by the death accessibility measure (Greenberg et al., 1994). This measure consisted of having participants fill in letters to complete word fragments with either death-related words or neutral words. For example, a word fragment such as coff** could be completed with the death-related word coffin or with the neutral word coffee. Six fragments out of the 25 presented could be completed as death-related terms or neutral terms, whereas the remaining 19 could only be completed as neutral terms. The potential death-related words were buried, dead, grave, killed, skull, and coffin.

RESULTS

Manipulation checks. As a check on our manipulation of self-focused attention, two independent raters, blind to conditions, counted the number of self-referent phrases and sentences that each participant used in her or his story (they had 93% agreement). The two raters and a third rater then came to agreement when discrepancies existed. We computed a ratio of self-referent phrases to sentences for each participant such that higher scores indicated a greater concentration of phrases reflecting an internal focus of attention. ANOVA on this ratio revealed that internal-focus participants had higher scores (M = 1.81) than external-focus participants (M = .12), F(2, 44) = 112.22, p < .001, suggesting that the manipulation effectively promoted a differential focus of attention. No other effects approached significance.

Primary Analyses

To assess participants’ inclinations to remain in a situation that fostered either an internal or external focus of attention, we counted the number of words that participants wrote in their stories and used this total as our first dependent measure. A 2 (Condition) × 2 (Focus of Attention) ANOVA on words written revealed a main effect for focus of attention, F(1, 41) = 4.63, p < .04, such that external focus of attention participants (M = 153.03) wrote more than internal focus of attention participants (M = 124.14). This effect was, however, qualified by the predicted two-way interaction of Condition × Focus of Attention, F(1, 41) = 5.01, p < .04. Cell means are presented in Table 2.

To test the hypothesis that participants would write less following mortality salience when such writing entailed an internal focus of attention rather than an external focus of attention, we conducted pairwise comparisons between each of the conditions. Using the residual error term from the two-way ANOVA (value of 7,637.2), these analyses provided support for this hypothesis. Mortality-salient internal-focus participants wrote significantly less than mortality-salient external-focus participants, t(41) = 3.08, p < .01; control internal-focus participants, t(41) = 2.48, p < .05; and control external-focus participants, t(41) = 2.42, p < .05. There were no other significant differences between conditions. Thus, participants wrote less after being reminded of their mortality when the writing task entailed an internal focus of attention. However, after being reminded of more general worries, no such difference emerged. This pattern of means clearly supports the primary hypothesis.

Secondary Analyses

Accessibility of death thoughts. If an external focus of attention allows participants to distract themselves from death-related ideation and thus relax active attempts at suppression, whereas self-focus does not, then based on previous research, there should be an increase in accessibility of death thoughts in the mortality-salient external-focus condition. To examine this notion, we counted the number of death-related words completed by each par-

### Table 2: Cell Means for the Two-Way Interaction of Condition × Focus of Attention on the Number of Words Written in Study 2

<table>
<thead>
<tr>
<th>Focus of attention</th>
<th>Mortality Salient</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>100.36&lt;sup&gt;a&lt;/sup&gt;</td>
<td>147.91&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>SD</td>
<td>(45.64)</td>
<td>(44.67)</td>
</tr>
<tr>
<td>N</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>External</td>
<td>159.39&lt;sup&gt;b&lt;/sup&gt;</td>
<td>146.75&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>SD</td>
<td>(39.58)</td>
<td>(50.11)</td>
</tr>
<tr>
<td>N</td>
<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

NOTE: Cell means that do not share a superscript differ at p < .05.
participant and subjected this score to a Mortality Salience × Focus of Attention ANOVA. Analyses revealed a main effect for focus of attention, $F(1, 41) = 8.98, p < .01$, such that external focus of attention participants ($M = 2.17$) showed greater death-related accessibility than internal focus of attention participants ($M = 1.14$). In addition, there was a main effect for condition, $F(1, 41) = 7.48, p < .01$, such that mortality-salient participants ($M = 2.13$) had higher death accessibility than control participants ($M = 1.19$). These effects were, however, qualified by the predicted two-way interaction of Condition × Focus of Attention, $F(1, 41) = 6.12, p < .02$. Cell means are presented in Table 3.

Pairwise comparisons (using the residual error term from the two-way ANOVA, value of 1.36) revealed that mortality-salient externally focused participants showed greater accessibility of death-related terms than mortality-salient internally focus participants, $t(41) = 3.87, p < .01$; control internally focused participants, $t(41) = 4.06, p < .01$; and control externally focused participants, $t(41) = 3.69, p < .05$. There were no other significant differences between conditions. Thus, this pattern runs contrary to the possibility that an internal focus of attention after mortality salience would cause participants to be more consciously aware of death thoughts. Rather, these findings are consistent with prior research that shows that an externally focusing task following mortality salience serves as an effective distraction from conscious death ideation. In addition, this study adds to the information presented in prior work by showing that a self-focusing task does not serve as an effective distraction from conscious death ideation, as would be expected if self-focus contributes to concerns with mortality.

**Positivity and negativity of stories.** To assess whether the mortality salience and focus of attention treatments led to different affective content in the stories that participants wrote, two independent raters, blind to conditions (with 100% agreement), coded the stories for positivity and negativity of thoughts expressed on two 3-point scales (where 1 = not at all positive [negative] and 3 = very positive [negative]). ANOVA on these ratings revealed only a main effect on negativity for focus of attention, $F(2, 44) = 14.96, p < .001$, with internal-focus participants ($M = 2.90$) expressing more negative content than external-focus participants ($M = 1.35$). There were no significant effects involving mortality salience ($F < 1$). To examine whether negativity mediated the effects of mortality salience and self-focus on story length, we conducted an ANCOVA using negativity as a covariate and found that the critical interaction was still significant, $F(1, 44) = 4.81, p < .04$.

**Affect measures.** ANOVAs on the 13 subscales of the PANAS-X revealed no significant main effects and one unexpected interaction on the Surprise subscale, $F(1, 38) = 4.53, p < .05$, which, due to the number of potential effects, may be spurious. A $2 \times 2$ ANCOVA conducted to assess the possible mediational role of negative affect revealed that the Mortality Salience × Self-Focus interaction on length of stories was still significant, $F(1, 44) = 5.08, p = .03$. Even though, unlike in Study 1, affect was measured in the same situation as the administration of the mortality-salience and self-focus manipulations, no consistent effects emerged.

**DISCUSSION**

Using different operationalizations of the independent variables, the results of Study 2 provide a clear replication of Study 1 and thus offer additional support for the hypothesis that participants will avoid focusing attention on the self after or when mortality is salient. Following mortality salience, participants wrote less when the writing entailed an internal focus of attention than when it entailed an external focus; however, no such effect emerged after participants thought about future worries. In addition, whereas the comparison between the mortality-salient self-aware condition and the exam-salient self-aware condition was not significant in Study 1, in the present study, mortality-salient self-focused participants wrote less than participants in each of the other three conditions.

This study also provides interesting information concerning the effects of combining mortality salience with an internal focus of attention on the accessibility of death-related thought. The idea that self-focus would lead to increased accessibility of death-related thought was not supported by the observed pattern of results. Rather, participants in the mortality-salient external-focus condition revealed higher accessibility of death thoughts than participants in the other three conditions. Similar to the distraction tasks used in Greenberg et al.
(1994) and Arndt, Greenberg, Solomon, et al. (1997), an external focus of attention may have facilitated a relaxation of the active suppression previously found to follow mortality salience, which, in turn, may have led to increased death-thought accessibility. When participants were internally focused following mortality salience, death accessibility was at a similar level to that of control conditions. This suggests that when they were self-focused, mortality-salient participants continued their suppression efforts through the writing task; this is consistent with previous research suggesting that when mortality concerns are highest people suppress such thoughts, which, in turn, results in low death-thought accessibility.

GENERAL DISCUSSION

The present research examined the possibility that a contemplation of personal mortality would lead people to avoid self-awareness. From the perspective of terror management theory, people are highly motivated to protect themselves from the realization that death is inevitable. Because the capacity to reflect on the self as an object of attention is posited to be an essential prerequisite to the awareness that the self will ultimately perish, the juxtaposition of these two states was hypothesized to create a situation that participants would be motivated to avoid. Results of two studies provided strong support for this prediction. In Study 1, participants physically removed themselves from a situation that had them contemplate personal mortality under conditions of increased self-awareness. In Study 2, using different operationalizations of mortality salience and self-awareness, mortality-salient participants wrote especially little when required to write a story using self-referent words. Taken together, the results suggest an intimate association between mortality salience and self-focused attention.

Of interest, it does not appear that these effects occur because of an increase in the availability of self-referent information. In addition, it does not appear that they are motivated by an increase in consciously experienced affect. Previous research (e.g., Scheier, 1976; Scheier & Carver, 1977; Scheier, Carver, & Gibbons, 1981) has shown that self-awareness intensifies negative affect. Therefore, it is tempting to postulate that the quick exit may have occurred because mortality salience created negative affect, which was then intensified under self-awareness. However, such an explanation is not supported by this and other evidence. Previous terror management research has repeatedly demonstrated that the mortality-salience inductions used in these and other studies do not produce self-report negative affect. Consistent with these findings, in the present studies, mortality salience did not create negative affect as measured by the PANAS-X (as compared with the exam condition in Study 1 and the general worries condition in Study 2), and there was not an increase in conjunction with enhanced self-awareness. In addition, ratings of the responses in Study 1 found that the prospect of taking an important exam was viewed more negatively than was thinking about death. Ratings of the stories in Study 2 did find more negativity among internal-focus participants but failed to find any effects involving mortality salience. Moreover, ANCOVAs using these measures as covariates did not compromise the effects of mortality salience and self-focus. For these reasons, an explanation for the quick exit of mortality-salient participants from conditions of self-awareness based on consciously experienced negative affect seems very unlikely.

This does not, however, necessarily speak to the possible involvement of a more implicit affective process; further research is needed to investigate the possibility of nonconscious affective reactions to mortality salience. It may be that the potential for affect provoked by the juxtaposition of mortality salience and self-awareness set the avoidance response in motion without need for the conscious experience of that affect. Certainly many defensive responses occur without people having to consciously experience the affect with which they are associated (cf. Sidman, 1966). For example, people may avoid driving through high crime areas at night without experiencing the fear that such a journey might arouse. Terror management theory posits that people learn to cope with the awareness of the fragility and mortality of their existence as children, and, in this light, the escape or other defensive responses may be learned as a means of avoiding the experience of negative affect. Indeed, one way to think about terror management theory is as an attempt to explain how people conduct their daily affairs without experiencing the fears that awareness of mortality might be expected to engender.

How then does mortality salience combine with self-awareness to reduce the time that participants spent in the cubicles? One possibility emerges from a consideration of the self-regulatory processes posited by Carver and Scheier (1981) in their expansion of Duval and Wicklund’s (1972) theory of objective self-awareness. According to this control theory approach, increasing self-focus may lead to a comparison between the self and a salient behavioral standard. If a discrepancy is detected between the self and that standard, and the estimated probability of successfully reducing that discrepancy is low, then one will be motivated to abandon the situation that produces self-focused attention.

Combining this approach with a terror management perspective, mortality salience can be viewed as the recognition of the ultimate discrepancy that exists between the self as a finite creature and the instinctual standard
of wanting to live. In the present context, using a mirror in Study 1 and self-referent story writing in Study 2 to increase self-focus may have facilitated this comparison and in so doing intensified the need to respond defensively to reminders of mortality. Because the knowledge of personal mortality is in many ways the ultimate irreducible discrepancy and an awareness of such gives rise to the potential for abject terror, one course of action left to the participant to avoid the conscious experience of this terror would be a timely exit from conditions that produce or enhance self-awareness.

In daily functioning, however, simply departing from those situations that provoke a reminder of one’s mortality is not always an available, or at least adaptive, possibility. According to terror management theory, protection from concerns about mortality is generally afforded through the culturally derived and maintained standards of value in which we invest ourselves. Integrating this notion with a self-regulatory perspective, Pyszczynski et al. (1990) posit that to the extent that self-awareness creates the potential for terror, and to the extent that this terror is assuaged by meeting cultural standards of value, it follows that one would compare oneself with such standards when one becomes self-aware. (p. 182)

This analysis suggests that an interesting direction for future research would be to cross the present manipulations of mortality salience and self-awareness with an opportunity for participants to live up to the standards prescribed by their cultural worldview. Because the fulfillment of these standards buffers the anxiety associated with an awareness of death, giving participants positive feedback about the extent to which they meet these values, for example, may diffuse the psychological impact of the situation. In this case, the same quick exit from self-awareness may not be observed among mortality-salient participants.

Similarly, if the juxtaposition of self-awareness and mortality salience presents a situation that demands increased efforts at protection, then following such a combination, participants may respond with particularly exaggerated worldview defense toward those who threaten and validate cultural values or beliefs. Moreover, to the extent that there is a strong convergence between the conditions promoting increased worldview defense and those promoting increased death accessibility (Arndt, Greenberg, Pyszczynski, & Solomon, 1997; Arndt, Greenberg, Solomon, et al., 1997; Greenberg et al., 1994; Harmon-Jones et al., 1997; Simon et al., 1997), and death accessibility was found to be low following mortality salience and induced self-focused attention in Study 2, it may also be that such defense will not occur until there is a substantial delay before participants have the opportunity to engage in worldview defense. More research is clearly needed to investigate these possibilities.

CONCLUSION

The present studies supplement a growing body of research concerning the behavioral consequences of mortality salience. Most terror management research to date has investigated the effects of mortality salience on the subjective evaluations of those who threaten or support one’s cultural worldview. Recently, however, studies have shown that inducing mortality salience also makes people resistant to using culturally loaded objects for inappropriate purposes (Greenberg, Simon, Porteous, Pyszczynski, & Solomon, 1995), leads people to physically distance themselves from a worldview deviate (Ochsmann & Reichelt, 1995), and increases aggression toward people who violate one’s worldview (McGregor et al., 1998). In demonstrating that mortality salience will prompt a speedy withdrawal from self-focus-enhancing situations, the present studies document another overt behavioral response to mortality salience, thereby providing an important extension to the breadth of evidence supporting the role of terror management in social behavior and inviting further investigation of the processes resulting from the existential dilemma of wanting to continue to exist and knowing that we will die.

NOTES

1. Initial analysis of the primary dependent measure revealed heterogeneity of variance, $F_{max}(4, 19) = 5.97$, $p < .05$. Because the cell rrs were only slightly unequal (15 for the mortality-salience conditions and 12 for the exam-salience conditions), to assess the impact of this violation of the assumption of ANOVA, we conducted a log-linear transformation that eliminates the heterogeneity of variance (Kirk, 1995). This approach led to the same significant effects as analyses on the untransformed data, including the critical interaction and pairwise comparisons on time spent in the cubicles.

2. Initial analyses in this study and in Study 2 included sex as an independent variable, but no significant effects or interactions were found. There was a Sex X Self-Awareness interaction on time that approached significance in Study 1, $F(1, 42) = 3.01$, $p = .09$, but it did not replicate in Study 2 (all $p's < .1$) and is thus not mentioned further.

3. All planned pairwise comparisons adopt a two-tailed test of significance.

REFERENCES


Received April 14, 1997
Revision accepted November 29, 1997