Fear of Death in Older Adults: Predictions From Terror Management Theory

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Terror management theory asserts that death fear (fear of annihilation) is buffered by self-esteem and beliefs in literal and symbolic immortality achieved through participation in the cultural system. The aims of this study were to determine how variables suggested by the theory were related to fear of death measures. Participants were 123 Black and 265 White elders aged 60 to 100 years; they were assessed on the Multidimensional Fear of Death Scale (MFODS), self-esteem, religiosity, locus of control, socioeconomic status, social support, and health. Regression analysis findings ($p < .05$) offered partial support to the theory, with greater Fear of the Unknown (fear of annihilation) related to weaker religiosity, less social support, and greater externality; the effect of self-esteem was mediated by externality. Other predictors were related to an overall fear score based on the remaining 7 MFODS subscales. Findings are interpreted in terms of changing sources of self-esteem in old age.

The purpose of the present study was twofold: (a) to extend the application of the theory to older adults and to fear of death measured at the level of conscious awareness, and (b) to test predictions from the theory which would explain the lower fear of death among older adults.

Terror Management Theory (TMT)

The basic assumption of TMT (Becker, 1973; Greenberg et al., 1997; Solomon et al., 1991a, 1991b) is that all humans are instinctively driven toward survival and continued existence, while at the same time have knowledge of their inevitable mortality. As a result, there is a potential for them to consciously experience a terror of death. The core of death fear is fear of annihilation, which refers to the extinction of mind, spirit, and soul, as well as the destruction of the body—that is, total nonexistence. According to these theorists, the experience of such death terror would be paralyzing without some means of suppressing it from awareness. The basic task of the theory is to identify the factors helping to maintain this suppression.

Terror management theorists (Greenberg, Pyszczynski, Solomon, & Breus, 1994; Greenberg et al., 1997; Solomon et al., 1991a, 1991b) assert that, over time, individuals in various societies developed cultural worldviews that characterized the universe or society as having rationality, predictability, and permanence. Socialization into any of these cultural worldviews provides protection against fear of annihilation, because it allows people to create standards of value for a meaningful life as well as ways of transcending death. If individuals become socialized and meet the standards valued by the culture, they attain a greater self-esteem and a promise of immortality.

Self-esteem is regarded as the primary psychological mechanism whereby culture acts as a buffer to facilitate the individual’s suppression of death fear (Greenberg et al., 1994; Greenberg et al., 1997; Solomon et al., 1991a, 1991b). Developing early in life as children interact with
and meet the standards of their parents, the process is carried forward into adulthood when individuals maintain or enhance their self-esteem by learning the teachings of the culture, participating in cultural rituals, attaining goals valued by the culture, fulfilling cultural roles, experiencing social validation in personal relationships, and using defensive responses when self-esteem is threatened.

The culture includes beliefs, values, and norms that allow the individual to create the illusion of being protected from death or eventually transcending it (Greenberg et al., 1994; Greenberg et al., 1997; Solomon et al., 1991a, 1991b). By believing in the cultural systems, individuals can achieve both literal and symbolic immortality (Lifton, 1983) and thus reduce the fear of death. Literal immortality refers to the belief that a noncorporeal aspect of the individual will live on indefinitely in some way. It is attained through religious beliefs concerned with a soul and afterlife. Symbolic immortality refers to the belief that individuals are represented by something or someone other than themselves that will continue to exist after they are dead. Individuals may continue to live symbolically by viewing children as extensions of themselves that continue through time, by feeling that they are valued parts of a culture that endures over time and beyond individual death, by making a permanent mark in the world through things that they produce or achieve, and so on.

TMT suggests two distinct modes of responding to death concerns (Pyszczynski, Greenberg, & Solomon, 1999). First, individuals may use such defense mechanisms as distraction, distancing themselves, and denying their vulnerability to help remove death threats from immediate focal awareness. Stimuli initially in awareness lead to suppression of concerns with death, but such concerns apparently continue outside of awareness, somehow signaling and motivating the defenses of self-esteem and faith in the worldview (Greenberg et al., 1997). It seems that this signal effect further suggests that self-esteem and faith in the worldview might be related to fear of death at the level of conscious awareness as well as outside of awareness.

However, processes at different levels of awareness appear to run parallel to one another, dealing with death fears of different duration and intensity. Terror management theorists seem to admit that there is some kind of connection between these parallel processes (Greenberg et al., 1994). Thus, death concerns at the level of immediate awareness both activate conscious defense mechanisms and signal the need for mechanisms to deal with fear of annihilation outside the level of awareness. In such a two-step theory, fear of annihilation experienced at the level of awareness in response to death stimuli may be incompletely suppressed by transitory defense mechanisms or maintained in consciousness for a longer duration before being reduced to a manageable level by mechanisms that were signaled and elicited to deal with fear outside the level of awareness.

**Extension of TMT to Fear at the Level of Conscious Awareness**

Assuming that death is made salient and fears are aroused at the level of conscious awareness by the administration of a fear of death instrument, then the study of fear of death at the level of awareness would be justified as an extension of the ideas of TMT. Variables related to the suppression of fear by adhering to the standards and values of the culture and through the promise of literal and symbolic immortality (self-esteem, religious belief, locus of control, social support, and status within society) may be hypothesized to also mitigate fears that come to awareness from time to time. Within this context, one might examine existing research on fear of death in older adults to see if there is any empirical evidence that TMT variables are related to fear of death assessed at the level of awareness.

Unfortunately, only a few studies relate to major TMT variables. (Most studies of fear of death in old age have focused on the relationship of fear to age and various demographic and health variables.) With regard to self-esteem, no studies of older adults were found, but there was evidence that among college students, those with higher self-esteem had less fear of death (Davis, Martin, Wilee, & Voorhees, 1978); this may also be true for older adults. Existing evidence regarding locus of control is mixed, with some studies linking externality to greater death anxiety and internality to less death anxiety and other studies reporting no relationship (Hayslip & Stewart-Bussey, 1986–1987; Hunt, Lester, & Ashton, 1988; Schulz, 1978). The effects of religious concern on fear of death are complex, depending on whether religious behaviors or intrinsic religiosity (faith in God and an afterlife) are measured. Studies of fear of death in older adults (Clement, 1998; Fortner et al., 2000) support the relationship between intrinsic religiosity and reduced fear of death. No empirical studies were found linking socioeconomic status (SES) and fear of death. The only study dealing with social support involved AIDS patients; those with more family support had less fear of death (Catania, Turner, Choi, & Coates, 1992).

Beyond the five major TMT variables discussed above, it can be argued that women and ethnic minority group members have less accessibility to the rewards and acceptance of the culture, implying less belief in the values of the culture, and ultimately a greater fear of death. Existing studies offer only slight support to this contention. In general, although many fear of death studies found no gender differences, whenever differences were found, women reported greater fear than men (Neimeyer & Van Brunt, 1995). With regard to gender differences in old age, the meta-analysis of Fortner and colleagues (2000) failed to find a significant gender effect. Studies of ethnic differences between Whites and Blacks have had mixed findings (Cicirelli, 2000; Neimeyer & Van Brunt, 1995). Overall, no clear findings exist regarding fear of death in relation to either gender or ethnicity.

It can be argued that two other variables, poor health and loss of spouse, imply a sense of increasing vulnerability to death, with the increased salience of death associated with greater fear. Existing studies offer some evidence for a greater fear of death among those in poor health. Mullins and Lopez (1982), in a study of nursing home patients, found that fear of death was greater among older, sicker group than among those who were younger and healthier. Although some mixed findings regarding health exist, the Fortner and colleagues (2000) meta-analysis found that greater physical and mental health problems were found to predict higher levels of death anxiety.
Study Hypotheses

Even though not all of them are supported by the limited existing literature, major hypotheses based on TMT are as follows:

1. Individuals with more positive self-esteem will have less fear of death.
2. Individuals with an internal locus of control are expected to experience less fear of death, and, conversely, individuals with an external locus of control orientation are predicted to have greater fear of death.
3. Individuals with a strong support group of others with similar cultural beliefs will have less fear of death.
4. Individuals of higher SES levels within the society will have less fear of death.
5. Individuals with stronger religious beliefs will have less fear of death.

In addition, several predictions are made regarding health and demographic variables. Increasing age and poor health would each seem to imply increasing nearness to death, with a heightened sense of vulnerability, and, consequently, greater fear of death. Similarly, loss of spouse through widowhood or divorce may leave the survivor with an increased sense of vulnerability and greater fear of death. Finally, women and minority group members are expected to have greater fear of death.

The present study examined the relationship of the hypothesized TMT variables to fear of death. By so doing, the study not only increases the understanding of factors influencing fear of death at the level of conscious awareness in old age, but also advances existing knowledge of fear of death by investigating its relationship to personality and background variables that either have not been investigated in older adults or have not been studied in a sample containing large numbers of elders beyond age 75 years.

Methods

Sample

I obtained the sample of 388 study participants from two sites: a medium-sized Midwestern city (Greater Lafayette, IN, with approximately 100,000 residents) and a large urban area (Indianapolis, IN, with a population of approximately 1,250,000). Study participants were at least 60 years of age, were living in private homes or apartments in the community, and were alert, oriented, and of sufficient cognitive ability to respond to the interview-questionnaire (as judged by the interviewer or the senior center director).

I sampled elders through seniors’ organizations, first securing a representation of such organizations in each site and then interviewing elders within organizations. I collected data at 20 different centers, 16 in Indianapolis and 4 in Lafayette, selected to represent different geographic areas of the two cities and thus a wide range of socioeconomic status levels. The Indianapolis site included 12 senior programs in community centers and 4 multidenominational church-operated centers; 11 of the 16 centers served both Black and White seniors. The Lafayette site included one community-operated senior center serving the entire city, one interdenominational church-operated center, and two programs serving retirement housing complexes. I visited each center during a regularly scheduled group meeting, explained the study, and asked for participants. All who consented were scheduled to be interviewed at the center at a convenient time. Participation rates at the 20 centers ranged from 40% to 85%, with an overall participation rate of 66%.

Of 460 people who consented to participate in the study, 447 were interviewed (13 began the interview process, but declined to continue). The sample used for the analyses reported here consisted of 388 older people for whom all data were complete, ranging in age from 60 to 100 (M = 72.65, SD = 7.73). There were 285 women (73%) and 103 men (27%), 265 Whites (68%) and 123 Blacks (32%), and 293 from Indianapolis and 95 from Lafayette. All Blacks in the sample were from Indianapolis. (Preliminary analyses by Cicirelli, 1997, indicated only minor differences between the Lafayette White and Indianapolis White samples, so samples from the two sites were combined for further analysis.) With regard to marital status, about 35% of participants were married with a living spouse, with the remainder either widowed, divorced, separated, or never married. The mean educational level (M = 4.42, SD = 1.45) was between that of a high school graduate and a high school graduate with some additional training. The mean occupational level (M = 3.72, SD = 1.55) was between that of a skilled manual occupation and a clerical, technical, or salesclerk occupation. The mean health rating of participants (M = 4.35, SD = 0.90) was between “good” and “very good.” The means and standard deviations of study participants on background and psychosocial variables are summarized in Table 1.

When I compared the sample of 388 elders who completed all measures with the total sample of 447 study participants on key demographic variables, there was no difference in gender composition, ethnic composition, or self-rated health. However, those persons completing all measures were slightly younger (72.6 compared to 73.2 years), of higher educational level (4.4 compared to 4.2), and of higher occupational level (3.7 compared to 3.6) than the total group. Overall, there was little difference between the two samples.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Item Mean*</th>
<th>Item SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>72.65</td>
<td>7.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Level</td>
<td>4.42</td>
<td>1.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Level</td>
<td>3.72</td>
<td>1.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SES</td>
<td>43.71</td>
<td>15.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>4.35</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religiosity</td>
<td>14.14</td>
<td>2.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>55.92</td>
<td>17.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>32.35</td>
<td>4.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Support</td>
<td>1.14</td>
<td>0.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fear of Death</td>
<td>102.35</td>
<td>23.33</td>
<td>2.77</td>
<td>0.63</td>
</tr>
<tr>
<td>Fear of the Unknown</td>
<td>10.30</td>
<td>4.54</td>
<td>2.06</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Note: SES = socioeconomic status.

*Each item mean equals the corresponding scale mean divided by the number of items in the scale.
Measures

Fear of death.—To assess fear of death in the present study, I used the Multidimensional Fear of Death Scale (MFODS; Hoelter, 1979; Neimeyer & Moore, 1994). The instrument consists of 42 5-point items yielding eight subscales. The subscales include Fear of the Dying Process (including painful or violent deaths), Fear of the Dead (including avoidance of human or animal bodies), Fear of Being Destroyed (including cremation or dissection of the body for autopsy or organ transplants), Fear for Significant Others (including apprehension about the impact of the respondent’s death on others), Fear of the Unknown (including fear of nonexistence and lack of knowledge about afterlife), Fear of Conscious Death (including concerns about falsely being declared dead), Fear for the Body After Death (including concern about decay and isolation of the body), and Fear of Premature Death (concerns about being unable to accomplish desired goals or experiences). Appropriate items are summed to yield subscores, with items coded so that a high score indicates greater fear of death. Neimeyer and Moore (1994) reported internal consistency reliabilities (Cronbach’s α) for the subscales ranging from .65 to .82 and test–retest reliabilities over a 3-week period ranging from .61 to .81. In addition, they reported factor analytic evidence for the subscales as well as evidence for construct validity. Cronbach’s α for the participants in the present study ranged from .65 to .81 for the subscales, values considered adequate for studies involving group comparisons.

In an effort to reduce the eight dependent variables of the study (the MFODS subscores) to a smaller number, I carried out a principal components analysis with varimax rotation (see Table 2). One strong factor labeled Fear of the Known (on which seven of the eight subscores had loadings above .3), and one weak factor (on which Fear of the Unknown had the only loading above .3), were identified. Accordingly, I used two MFODS scores as dependent variables in the analysis: Fear of the Unknown and Fear of the Known (the sum of the remaining seven MFODS subscores).

Fear of the Unknown most closely approximates fear of annihilation, the core fear of TMT. The remaining subscales are concerned with fears of various known aspects of death, dying, and the fate of the body, but do not deal with the fear of annihilation of the self. Fear of the Unknown differs in that it reflects fear and uncertainty that transcendence of the noncorporeal self will take place following death. Thus, one might expect the set of predictor variables derived above from TMT to be more strongly related to Fear of the Unknown than to the Fear of the Known factor comprising the other MFODS subscales.

Religiosity.—To assess subjective (or intrinsic) aspects of religiosity, three items drawn from the work of Markides (1983) and Krause (1993) were used: importance of religion (a 5-point item), God (a 6-point item), and private prayer in the respondent’s life (a 5-point item). The score is the sum of the item scores and can range from 3 to 16 for subjective religiosity, with a high score indicating greater religiosity. Cronbach’s α for the participants in this study was .79.

Self-esteem.—The measure of self-esteem used was the Rosenberg (1965) Self-Esteem Scale. The scale consists of 10 items, each with a 4-point response scale; the total score is the sum of the item scores, with a high score indicating greater self-esteem. Estimates of internal consistency reliability for the instrument range from .77 to .88, with test–retest reliability ranging from .82 to .85. Cronbach’s α for the participants of this study was .78. Considerable evidence for the convergent and discriminant validity of the scale exists (Robinson, Shaver, & Wrightsman, 1991).

Locus of control.—Levenson’s (1981) Multidimensional Locus of Control measure was used to assess respondents’ locus of control beliefs. The measure consists of 24 items, each with a 7-point response scale indicating degree of agreement. Scores for Internality, Powerful Others, and Chance, obtained by summing the appropriate eight items in each case, indicate belief in internal control of events, control by powerful others, and control by chance. Scores on each subscale could range from 8 to 56, with a high score indicating belief that the locus of control was of the given type. Levenson reported Cronbach’s α for the three subscales ranging from .64 to .73, as well as evidence for the scales’ validity. In addition to the above subscores, the Powerful Others and Chance scores can be summed to yield a total Externality score. Cronbach’s α of the three subscores for the participants of this study ranged from .69 to .75; Cronbach’s α for Externality was .86. Because Internality had negligible relationships with the Fear of Death subscores in preliminary analysis whereas Externality had stronger correlations, only the Externality score was used in this study.

Perceived social support.—One indicator of social support is the number and closeness of people perceived by an individual to be in his or her support network. To assess this, the circles technique from Antonucci and Akiyama’s (1987) Social Networks in Adult Life Survey was used. The investigator asks respondents to identify persons who are “close and important” to them at each of three levels of closeness depicted by concentric circles, with the inner circle including those persons who are very close, the middle circle including those who are close, and the outer circle including those who are not so close. Scores consist of the number of

Table 2. Factor Loadings of Eight MFODS Subscores

<table>
<thead>
<tr>
<th>MFODS Subscore</th>
<th>Factor I</th>
<th>Factor II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of Dying Process</td>
<td>.79</td>
<td>.15</td>
</tr>
<tr>
<td>Fear of the Dead</td>
<td>.69</td>
<td>-.14</td>
</tr>
<tr>
<td>Fear of Being Destroyed</td>
<td>.47</td>
<td>-.29</td>
</tr>
<tr>
<td>Fear for Significant Others</td>
<td>.62</td>
<td>-.08</td>
</tr>
<tr>
<td>Fear of Conscious Death</td>
<td>.68</td>
<td>.16</td>
</tr>
<tr>
<td>Fear for the Body After Death</td>
<td>.73</td>
<td>.15</td>
</tr>
<tr>
<td>Fear of Premature Death</td>
<td>.65</td>
<td>.21</td>
</tr>
<tr>
<td>Fear of the Unknown</td>
<td>.21</td>
<td>.79</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>3.23</td>
<td>1.04</td>
</tr>
<tr>
<td>% of variance explained</td>
<td>40.34</td>
<td>13.04</td>
</tr>
</tbody>
</table>

Note: MFODS = Multidimensional Fear of Death Scale.
persons named at each level (inner, middle, and outer). Evidence for validity includes the expected correlations with indicators of psychological health, and a correlation between respondents' and their significant others' reports of social support. For the present study, I used the sum of scores for the inner and middle levels as an indicator of the size of the respondent's close support network. Because the distribution of scores on this measure was skewed, I applied a log transformation before data analysis.

**Health.**—A single-item self-rating of health was used, with ratings on a 6-point scale ranging from 1 (very poor) to 6 (excellent). Although participants also completed the Instrumental Activities of Daily Living (IADL) measure (Lawton, 1972), the mean IADL score was very low, indicating little or no functional impairment for most study participants. For this reason, I did not use the IADL score in data analysis.

**Demographic background.**—I assessed several demographic variables: ethnicity (0 = White; 1 = Black), gender (0 = male; 1 = female), chronological age in years, marital status (0 = married; 1 = widowed, divorced, or unmarried), educational level, and occupational level (using occupation before retirement). Educational level and occupational level were coded using the 7-point Hollingshead (1957) scales, with 7 representing the highest levels. I computed Hollingshead's SES index as the sum of 4 with 7 representing the highest levels. I computed Hollingshead’s SES index as the sum of 4 × the educational level + 7 × the occupational level.

**Procedure**

Interviewers administered interview-questionnaires to study participants in a separate activity room at the senior center which they attended. Most elders completed the interview-questionnaire independently in a small group setting (from 3 to 10 persons), with two interviewers present to answer any questions or to clarify misunderstandings. Depending on the number of elders who wished to participate at a given site, interviewers arranged to administer the interview-questionnaire at several convenient times. On average, the interview-questionnaire took about an hour and a half to complete. Individual interviews were conducted for 18 participants who had visual impairments or who suffered from arthritis which made writing difficult.

**Results**

**Differences in Fear of Death Scores**

The means and standard deviations of the two fear of death factors are presented in Table 1. The means for Fear of the Known and Fear of the Unknown are not directly comparable because they contain differing numbers of items; therefore, each mean score was divided by its respective number of items to get a corresponding item mean for comparison purposes. When the item means are compared, it can be seen that participants’ Fear of the Known is stronger ($M = 2.77$) than Fear of the Unknown ($M = 2.06$).

**Correlations of Fear of Death Scores With Background and Psychosocial Variables**

As a first step in examining the relationship of the background variables (ethnicity, gender, age, health, and marital status) and the psychosocial variables (religiosity, externality, self-esteem, social support, and SES) with two fear of death scores, I computed intercorrelations of the study variables. These are presented in Table 3.

Looking at the relationship with Fear of the Unknown first, all 5 TMT variables were significantly correlated ($p < .05$), although the correlations with self-esteem and SES were very weak. The correlation of religiosity with Fear of the Unknown ($r = -.45$) was the strongest of all correlations obtained. Those elders with greater religiosity, more positive self-esteem, more social support, higher SES, and a less external locus of control had less Fear of the Unknown. None of the 5 background variables (ethnicity, gender, age, health, and marital status) were significantly related.

In the case of Fear of the Known, 4 of the 5 TMT variables were significantly correlated, although the correlations with religiosity, self-esteem, and SES were very weak. Those elders with a less external locus of control, greater religiosity, more positive self-esteem, and higher SES had less Fear of the Known. Of the background variables, only gender and health were significantly related. Men and those in better health had less Fear of the Known.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<tbody>
<tr>
<td>1. Fear of the Known</td>
<td>—</td>
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<td></td>
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<tr>
<td>2. Fear of the Unknown</td>
<td>35**</td>
<td>—</td>
<td></td>
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<td>3. Ethnicity</td>
<td>−05</td>
<td>01</td>
<td>—</td>
<td></td>
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<tr>
<td>4. Gender</td>
<td>17**</td>
<td>−08</td>
<td>−09</td>
<td>—</td>
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<tr>
<td>5. Age</td>
<td>−03</td>
<td>−01</td>
<td>−25**</td>
<td>11*</td>
<td>—</td>
<td></td>
<td></td>
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<tr>
<td>6. Health</td>
<td>−12*</td>
<td>−03</td>
<td>−13*</td>
<td>04</td>
<td>06</td>
<td>—</td>
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<td>7. Marital Status</td>
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<td>06</td>
<td>−01</td>
<td>34**</td>
<td>17**</td>
<td>−03</td>
<td>—</td>
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<tr>
<td>8. Religiosity</td>
<td>−10*</td>
<td>−45**</td>
<td>19**</td>
<td>20**</td>
<td>03</td>
<td>−02</td>
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<td>9. Externality</td>
<td>30**</td>
<td>31**</td>
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<td>−01</td>
<td>12*</td>
<td>−06</td>
<td>08</td>
<td>−07</td>
<td>—</td>
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<td>10. Self-Esteem</td>
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<td>−11*</td>
<td>11*</td>
<td>04</td>
<td>−10</td>
<td>21**</td>
<td>03</td>
<td>03</td>
<td>−21**</td>
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<td>11. Social Support</td>
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<td>−24**</td>
<td>−01</td>
<td>14**</td>
<td>−07</td>
<td>03</td>
<td>−10</td>
<td>23**</td>
<td>−10*</td>
<td>06</td>
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<td>12. SES</td>
<td>−13*</td>
<td>−10*</td>
<td>−26**</td>
<td>−08</td>
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<td>−06</td>
<td>−29**</td>
<td>16**</td>
<td>11*</td>
<td>—</td>
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</table>

Note: MFODS = Multidimensional Fear of Death Scale; SES = socioeconomic status.

*p < .05; **p < .01.
Predictors Overall, the multiple regression coefficient was .56, with the adjusted $R^2$ of .29 indicating that the 3 TMT variables and 2 background variables accounted for 29% of the variance of Fear of the Unknown.

It was puzzling that self-esteem, a core variable in TMT, was not a significant predictor of Fear of the Unknown in view of the fact that it had a significant, although weak, univariate correlation with the fear variable. One possibility was that the effect of self-esteem might have been mediated by one of the other TMT variables. Therefore, I examined each of the three significant predictors in turn for this possibility. To qualify as a mediating variable for self-esteem, self-esteem needed to be significantly related to the mediating variable, which was in turn related to the dependent variable, while at the same time the relationship of self-esteem to the dependent variable was reduced or eliminated in the presence of the mediating variable. Neither religiosity nor social support met the first criterion, because the correlation of self-esteem with religiosity was only .03 and the correlation of self-esteem with social support was only .06. However, self-esteem was significantly related to externality ($r = -.21, p < .01$), and externality was in turn significantly related to Fear of the Unknown ($r = -.30$). (A simple path analysis including only externality and self-esteem as independent variables was carried out to further verify the indirect effect of self-esteem on Fear of the Unknown. The direct path coefficients were .30 for externality and -.07 for self-esteem. Thus, the direct relationship between self-esteem and Fear of the Unknown was reduced from its correlation of -.11 between these variables in the absence of externality to -.07 when externality was present. The indirect effect of self-esteem on Fear of the Unknown when mediated by externality was -.06. The size of the indirect effect was the product of the coefficients for the effect of self-esteem on externality and the effect of externality on Fear of the Unknown, or $-.21 \times .30$. This small but significant effect still has relevance from a theoretical perspective.) Therefore, one can conclude that self-esteem had an effect on Fear of the Unknown which was mediated by externality. That is, higher self-esteem was associated with a less external locus of control, which was in turn associated with a lower Fear of the Unknown.

Of the 5 TMT variables, only externality ($\beta = .29$) and religiosity ($\beta = -.12$) were significant ($p < .05$) predictors of Fear of the Known. Self-esteem, social support, and SES were not significantly related. A more external locus of control and lower religiosity were related to greater Fear of the Known. Of the five background variables, only gender ($\beta = .19$) and health ($\beta = -.11$) were significant predictors. In this case, women and those in poorer health had greater Fear of the Known. Overall, the multiple regression coefficient $R$ was .40, with the adjusted $R^2$ of .14 indicating that the 2 TMT variables and 2 background variables accounted for 14% of the variance of Fear of the Known.

Using a similar procedure to that used for Fear of the Unknown, externality was also found to act as a mediating variable for self-esteem in its effect on Fear of the Known. Higher self-esteem was associated with a less external locus of control, which was in turn associated in turn with less Fear of the Known.

**DISCUSSION**

Findings of this study provide partial support for the hypothesis that cultural worldview variables suggested by TMT are related to fear of death assessed at the level of immediate awareness. Predictions regarding the relationships of religiosity, externality, and social support to fear of annihilation were not supported. However, one important element of the hypothesis, that higher self-esteem would be associated with less fear of annihilation (as assessed by Fear of the Unknown on the MFODS), was only partially supported. Although a very weak correlation ($r = -.11$) between self-esteem and fear of annihilation was found, self-esteem was
not a significant predictor of Fear of the Unknown in the regression analysis. However, it did have an indirect effect mediated by externality.

One possible explanation for the weak effect of self-esteem is that, on the one hand, its effect in suppressing fear of annihilation takes place only outside of conscious awareness, and that different variables are important in dealing with fear at the level of immediate awareness.

On the other hand, self-esteem may not be an important variable in relation to fear of death in a population of older adults except in terms of its indirect effect. Further research is needed here. Several aspects of the roles of self-esteem and fear of death in the lives of elderly persons seem puzzling. In a recent chapter, McCoy, Pyszczynski, Solomon, and Greenberg (2000) pointed out that although one would expect aging adults to have increased fear of death accompanied by their greater vulnerability in view of increasing age, illness, and general frailty, fear of death studies have consistently shown them to have a reduced fear of death compared to younger adults. At the same time, one would expect defenses against fear of annihilation to weaken because many sources of self-esteem are no longer available to aging individuals. They are no longer able to meet the standards of the culture due to declines in certain physical and cognitive abilities, obsolescence of previous roles in life that are no longer valued in a time of technological advances, loss of control over events, and the erosion of contemporary social supports making it more difficult to achieve social validation. According to McCoy and colleagues (2000), “The elderly face a chronic state of mortality salience coupled with a possible lessened capacity to use the cultural worldview or resulting self-esteem to maximally protect the self” (p. 45).

Yet, existing research (Bengtson, Reedy, & Gordon, 1985; Dietz, 1996) indicates that self-esteem remains high for most older adults.

McCoy and cohorts (2000) go on to suggest that older adults use alternative routes for self-esteem maintenance other than through the consensual worldview favored by younger adults. These include socioemotional selectivity (Carstensen, 1992) to minimize contact with those threatening the self-concept, selective optimization with compensation (Baltes, 1997), downward adjustment of standards to minimize discrepancy between real and ideal self (Ryff, 1991), cognitive reframing of events with optimistic reinterpretation, and reduced reliance on social consensus. Additionally, elders are able to maintain self-esteem as well as gain a sense of death transcendence through generativity, in which they seek to help future generations. However, the question remains: If self-esteem is maintained throughout old age, why isn’t it directly related to fear of death at the level of immediate awareness?

Another puzzling aspect of the relation of self-esteem to fear of death is elders’ apparent willingness to acknowledge the inevitability of death and deal with it at the level of immediate awareness. In this regard, Galt and Hayslip (1998) found that, compared to younger adults, older adults evidenced higher levels of overt death fear but lower levels of covert fear. If so, they may deal with fear by more direct means and gradually come to an acceptance of death. Feifel (1990) also viewed fear of death at different levels: a conscious level, a level of fantasy or imagery, and a unconscious level. The way of thinking about TMT in relation to fear of death at the level of immediate awareness as discussed in this article fits in with Feifel’s thinking; it is an extension of the theory to the level of immediate awareness without denying its basic tenets regarding fear of death outside of awareness. Certainly more research into the relationship between these levels of awareness and the role of self-esteem in dealing with fear of death at each level in an older population is needed.

Although generativity can aid in maintaining self-esteem, it is also a means of achieving symbolic immortality through transmission of one’s achievements in the culture to future generations (Solomon et al., 1991a). TMT also holds that religious faith leads to the promise of literal immortality, the continuation of life in some form after bodily death. Expectations of both symbolic and literal immortality achieved through participation in the cultural worldview are hypothesized to reduce fear of death. This expectation was supported by the findings regarding religiosity. Not only did the older adults of this study manifest high intrinsic religiosity, but it was substantially related to lower fear of annihilation. Further research should attempt to more carefully distinguish sources of literal and symbolic immortality (Lifton, 1983) and to include adequate measures of each in order to determine the contribution of each type of belief on fear of annihilation.

Feifel (1990) is concerned with the multidimensionality of fear of death, as are most contemporary researchers, whereas TMT is concerned only with the basic fear of annihilation. Thus, in applying the theory when using multidimensional measures, one would expect the set of predictors to be more strongly related to the fear of annihilation (Fear of the Unknown on the MFODS) than to other fears. Study findings confirmed this expectation, providing further evidence in support of TMT.

Although the 5 background variables (ethnicity, gender, age, marital status, and health) were unrelated to Fear of the Unknown (annihilation), gender and health were related to the Fear of the Known (a composite of other subscales of the MFODS), supporting the universality of TMT across various levels of these background variables.

Predictors suggested by TMT accounted for a much greater portion of the variance in Fear of the Unknown (29%) than in Fear of the Known (14%), thereby supporting the proposition that identification with the culture serves to buffer the individual against fear arising from awareness of vulnerability to total annihilation.

The role of locus of control in reducing fear of death was supported by the findings regarding externality. That is, fear of death was greater among those elders who felt that environmental events came about by chance or were controlled by others who had power over them. Although this finding is not unexpected in view of previous literature (e.g., Hayslip & Stewart-Bussey, 1986–1987; Hunt et al., 1988; Schulz, 1978), the lack of a relationship between fear of death and externality in preliminary correlations is puzzling. However, high internal control might imply invulnerability to death (and low fear) for some, whereas for others death might be viewed as uncontrollable (with higher fear). Also, some studies have...
found that people become more external in locus of control as they grow older (Schulz, 1986; Siegler & Gatz, 1985).

If one is serious about extending TMT to fear of death at the level of immediate awareness (while maintaining the basic theory of processes taking place outside of awareness), further theoretical formulation is needed as to how the different levels of awareness may be coordinated and how self-esteem and religious faith may be related to fear of death at each level of awareness. These topics need to be investigated further from an empirical point of view, as well. Carefully planned studies manipulating mortality salience and measuring self-reported fear of death might tease out differences in death thoughts at different levels of awareness and accessibility (see Harmon-Jones et al., 1997).

More research is also needed to identify aspects of the culture that are related to self-esteem and faith in the worldview, as recommended by Greenberg and colleagues (1997). Finally, TMT needs elaboration in relation to the multivariate conceptions of fear of death. Presumably the fear of annihilation is basic and all other fears are derived from it. Is it possible that, under different conditions and with different age groups, the derivative fears also may have importance for the theory? The relative strength of Fear of the Known as compared to Fear of the Unknown indicates the importance of other aspects of fear of death for older people, as does the relationship of certain MFODS subscales to elders’ end-of-life decisions (Cicirelli, 1997). The need to deal both theoretically and empirically with the various dimensions of fear of death (even if derivative) is underscored by recent research (Tomer, Eliason, & Smith, 1997) that not only found that the relationship of predictor variables to death anxiety depended on the dimension considered, but that the dimensionality of death anxiety itself varied with age.

The limitations of this article are acknowledged. It is recognized that the older people participating in the study represent a specialized population of elders who take part in activities at community senior centers, and this may influence findings. These elders might be better integrated into the larger culture than elders who are loners with few ties to the community; whether they are as well integrated into the culture as elders who participate in other community organizations and have many social ties is open to question. Also, better measures of some of the variables hypothesized to be related to fear of death might reveal stronger relationships.

Another limitation is that self-response measures of fear of death may suffer from social desirability effects, with respondents reporting less fear than they actually feel. Certainly, if fear of annihilation is regarded as the core fear of death in TMT, then further testing of the theory requires a more fully developed measure of this aspect of death fear than the 5-item Fear of the Unknown subscale of the MFODS. It was assumed in this study that Fear of the Unknown was an adequate indicator of fear of annihilation, but this needs to be demonstrated using a better measure of the concept.

In general, if a valid extension of TMT is to be attempted integrating processes occurring both within and outside of awareness, then one can only view this study as exploratory, and far more refined thinking regarding the mechanisms involved and their testing needs to be done.

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