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Why Giving Up the Keys Can Be Terrifying: Examining Driving Retirement Through a Terror Management Theory Paradigm

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Why Giving Up the Keys Can Be Terrifying: Examining Driving Retirement Through a

Terror Management Theory Paradigm

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ABSTRACT

Driving retirement, or giving up the keys, is a current topic of interest in the gerontological literature. Most adults will outlive their ability to drive safely, yet do not plan for driving retirement, although planning for driving retirement appears to result in better outcomes. The current study examined the possibility that older adults avoid driving retirement because it is a mortality prime (reminder of death), as well as the possible role of implicit self-esteem in buffering against mortality concerns specifically in an older adult population. Participants in the current study (*n*=90) were randomly assigned into one of three experimental conditions, and completed measures assessing demographic information and self-report of cognition. They then completed a word puzzle that delivered a mortality prime, driving retirement prime, or control (pain) prime, depending on their experimental condition. Subsequently, participants completed personality and mood assessments as filler measures. They then completed measures of generative concern and implicit self-esteem. It was predicted that participants in the mortality prime conditions and the driving retirement prime conditions would respond equivalently on the generative concern measure and those in the driving retirement prime condition would report significantly higher generative concern than those in the control condition. Further, it was posited that those with higher implicit self-esteem would report less generative concern than those with lower implicit self-esteem. Results did not support that driving retirement is a mortality prime; no significant differences were detected between experimental groups. Results also suggested that implicit self-esteem and generative concern are significantly negatively correlated. Implicit self-esteem was a significant predictor of generative concern; however, this relationship became

nonsignificant when other covariates were entered into the regression. These results

suggest that implicit self-esteem in older adults may buffer against response to mortality

salience (measured by generative concern). This may have implications for future terror

management theory research with older adult populations, as well as further research in

driving retirement. Further study may use a larger sample to ascertain the possibility of

driving retirement as a mortality prime.

Keywords: Older adult, driving retirement, driving cessation, implicit self-esteem, terror

management theory, mortality prime

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Projections indicate that one in every five drivers will be over the age of 65 by the

year 2025 (Center for Disease Control and Prevention, 2015, TRIP National

Transportation Group, 2012). Many older adults find themselves arriving at a milestone

that they may not want to reach: retirement from driving. More than 600,000 older adult

Americans give up their keys each year due to changes in physical, visual, and cognitive

functioning (Foley, Heimovitz, Guralnik & Brock, 2002). Further, this number of former

drivers is likely to grow, as the American population of older adults (defined in this paper

and generally in the literature as those aged 60 and older) is expected to nearly double by

2050 (Ortman, Velkoff, & Hogan 2014). Discussions of driving retirement are often

avoided by older adults.   This avoidance is problematic; timely discussion and planning

for older adult driving retirement is necessary for their well-being and safety.

Avoidance of Planning For Driving Retirement

Older adult drivers report in qualitative studies that they are reluctant to plan for

or discuss driving retirement. They commonly express concerns of losing independence

and decreased self-worth (King, Meuser, Berg-Weger, Chibnall, Harmon, & Yakimo,

2011; Laliberte Rudman, Friedland, Chipman, & Sciortino, 2006; Siren & Hakamies-

Blomqvist, 2005; Yassuda, Wilson, & von Mering, 1996); many seek ways to maintain

their driver status instead of giving up driving altogether (Bryanton & Weeks, 2014;

Laliberte Rudman et al., 2006; Tuokko, McGee, Gabriel, & Rhodes, 2007; Yassuda et al.,

1997). In a recent study of community-dwelling older adult current drivers, seventy-five

percent of the sample reported difficulty imagining themselves as non-drivers and over

half of the sample had not planned for future transportation needs to any extent (Harmon,

Babulal, Vivoda, Zikmund-Fisher, & Carr, 2018). Further, older adults also indicate a

reticence in bringing up driving retirement issues with same-age friends who demonstrate

poor or even dangerous driving behavior; rather, they express their discomfort by electing

not to ride with these drivers, feeling it is not their place to explicitly bring up the topic

(Adler & Rottunda, 2006).

Because many older adults are reluctant to plan for driving retirement, educational

programs that assist in driving retirement may be avoided, even if they are available.

Nearly three quarters of a community-dwelling older adult sample noted that they had

never considered driving retirement (Bryanton & Weeks, 2014).   When asked their

opinions about the helpfulness of a driver retirement education program, twenty percent

of these older adults did not think that this program would be helpful. Additionally, forty

percent indicated that they would not attend such a program (Bryanton & Weeks, 2014).

The response rate to this survey was only twenty percent, so the findings may not be

representative to older adult drivers in general. However, the results do suggest resistance

to thinking about and planning for driving retirement on the part of many older adults.

This reluctance to consider driving retirement has been supported in other studies as well

(King et al., 2011).

Most older adults will outlive their ability to drive safely due to changes in

physical and cognitive functioning, including deterioration in visual abilities (Foley,

Heimovitz, Guralnik, & Brock, 2002). Driving retirement has been correlated with

negative outcomes, such as depression and accelerated cognitive decline (Choi, Lohman,

& Mezuk, 2013; Fonda, Wallace, & Herzog, 2001; Windsor, Anstey, Butterworth,

Luszcz, & Andrews, 2007). Because of this, it is important that older adults continue driving as long as they can safely do so; it is a quality of life issue. Contrary to popular belief, driver crash involvement rates per capita actually decrease with age (Lyman, Ferguson, Braver, & Williams, 2002). However, older adults are at greater risk of serious injury due to decreased physical resilience (Leipzig, 2016; Newgard, 2008) as well as death if involved in an automobile crash (Foley, Heimovitz, Guralnik, & Brock, 2002; Lyman, Ferguson, Braver, & Williams, 2002). Based on projections of population growth, fatal accidents may increase by 155% among older drivers by the year 2030 (Lyman, Ferguson, Braver, & Williams, 2002). Thus, it is important for older adults to keep driving as long as they safely can, and also important for them to stop driving if their safety is compromised, in order to decrease the risk of fatality related to automobile crash.

Although driving retirement has been linked to undesirable consequences, qualitative research has suggested that planning for driving retirement outcomes can lead to better outcomes for older adults (Musselwhite & Shergold, 2012). Nearly all of the older adults in a British sample who maintained their quality of life after retiring from driving had spent significant time considering how this event would affect them and seeking information about alternate transportation options. Conversely, those older adults who reported a poor quality of life after giving up their keys did not report any planning prior to the event (Musselwhite & Shergold, 2012). Further, in these situations resulting in a poorer quality of life, the decision to stop driving was always made by someone other than the older adult driver. The decision by another person was likely made necessary due to the older adult driver's avoidance of the issue. An explanation for

why older adults avoid planning for driving retirement may be found in terror

management theory- an empirically tested paradigm that assesses how people respond to

thoughts of their own death.

Terror Management Theory and Driving Retirement

Death is the threat of not being, of nothingness. The awareness of death

juxtaposed with the desire to continue existence represents a tension inherent in the

human condition. Terror management theory (TMT) provides a framework for how

people typically manage concerns about death. According to the theory, distal defenses

are activated to reduce the accessibility of death-related thoughts in order to stop them

from becoming conscious (Arndt et al., 2004; Pyszczynski et al., 2010; Solomon et al.,

2004). Distal defenses involve engagement in worldviews that provide literal or

symbolic immortality. A person can find literal immortality by adhering to certain

constructs, such as religious beliefs in an afterlife, which allow them to perceive that their

existence will never cease to be. The route to symbolic immortality involves becoming

part of a culture, such as a nation or other social group, that is larger than oneself and will

survive longer than any one person. Put another way, it is a way for a person to feel

significant or that their life is meaningful. Striving for symbolic immortality allows for

the person to view himself or herself as a "being of enduring value" (Maxfield et al.,

2014, p. 2). A person may achieve symbolic immortality through cultural affiliation by

living in accordance with cultural values; this adherence is reassuring because the culture

as a whole will carry on after the person dies. Thus, even after death, some part of the

person---the culture they are affiliated with--- continues. According to terror

management theory, people respond to reminders of their own mortality by adhering to

their own cultural values and feel protected to the degree that they feel they live up to these values; this is the distal defense system.

Distal defenses within terror management theory have been investigated empirically using experimental paradigms across many different populations and cultures. These paradigms typically involve a mortality prime embedded within a larger set of measures advertised as capturing facets of personality; after a delay, the participants are administered a dependent measure (Burke, Martens, & Faucher, 2010). This mortality prime can be direct (i.e. participants are asked to write about the thoughts their own death brings about within them) or subtle (i.e. asking participants to search for neutral words to complete a word search puzzle that contains death-related words in the letter matrix; Maxfield, Kluck, Greenberg, Pyszczynski, Cox, Solomon, & Weise, 2007). Experimental groups typically include the experimental condition (i.e. those exposed to the mortality prime) and a control condition, which usually involves a non-death related negative prime involving an unpleasant, usually painful experience (i.e. participants are asked to write about a visit to the dentist). A variety of attitudes and behaviors have been captured as dependent variables, each of which relates in some way to the achievement of symbolic immortality through adherence to broader cultural values. The most common dependent variable measures the participant's attitude towards the author of an essay that espouses disagreement with the participant's worldview, an operationalization of worldview defense. A recent meta-analytic review noted that the overall effect size for direct mortality salience effects across 277 studies was 0.34, supporting the idea that people respond to reminders of their own mortality by adhering to their own cultural values (Burke, Martens, & Faucher, 2010).

The Connection between Death and Driving Retirement

Thoughts of driving retirement may act as a mortality prime for older adults. That is, threats to one's ability to drive appear to bring up thoughts of one's death. Qualitative data across multiple studies suggests that older adults associate the decision to stop driving with their personal decline and death. In particular, an older adult explicitly noted that giving up driving "would be like dying" (Yassuda, Wilson, & von Mering, 1997, p. 534). In another study, an older adult said that preparing for retirement from driving is "like preparing for death" (Bryanton & Weeks, 2014, p. 761). Finally, driving retirement was linked to "becoming old" and considered "a sign that you're going downhill" (Laliberte Rudman et al., 2006, p. 68). One Australian participant noted "[w]ithout my driving license…well, it is the end of my life and I can't say anything else, because I can't do anything" (Whitehead, Howie, & Lovell, 2006, p. 177).

Terror Management Theory and Older Adults

Older adults tend to respond differently to mortality salience than younger adults do. The literature examining the tenets of terror management theory specifically within an older adult population (in individuals aged 60 and older) is currently quite small. Indeed, in a review of research with mortality salience paradigms, involving 277 studies, the average age of participants was 22.2 (Burke, Martens & Faucher, 2010). However, although the literature is small, it is consistent in demonstrating how older adults react to terror management paradigms.

Older adults tend to respond less to direct mortality primes, such that worldview defense does not differ between those exposed to a direct mortality prime and those exposed to a control dental pain prime (Maxfield, Kluck, Greenberg, Pyszczynski, Cox,

Solomon, & Weise, 2007). Direct mortality primes involve the mention of death directly,

such as asking participants to write about the feelings that their own death brings about

for them, or what they believe will happen when they physically die (Burke, Martens, &

Faucher, 2010; Greenberg, Pyszczysnki, Solomon, Rosenblatt, Veeder, & Kirkland,

1990). Indirect mortality primes do not involve the mention of death in an obvious way,

instead more subtly reminding participants of their immortality. It is possible that due to

an increase in blatant reminders of death as one ages (such as deaths of friends and

family, attending funerals), older adults become more acclimated to these obvious

reminders and they do not affect the older adult to a large degree. However, more subtle

mortality salience primes do produce a measurable effect (Maxfield et al., 2007;

Maxfield, Greenberg, Pysczyznski, Weise, Kosloff, Soenke, Abeyta, & Blatter, 2014).

Thus, in terror management theory research with older adults, a subtle mortality salience

prime appears more effective than a blatant one. This has important implications for how

driving retirement functions within a terror management theory framework. Because

driving retirement is not explicitly associated with death, it is not a direct mortality prime.

Driving retirement likely functions as a subtle mortality prime, since it may evoke

thoughts of death through an indirect association.

        Generativity, and the perception that driving retirement is a threat to generativity,

may be part of this connection. Another way older adults differ from younger adults in

responses to mortality salience is in the type of symbolic immortality that they seek.

Older adults react to subtle mortality primes through a pro-social, generativity-oriented

pathway (Maxfield et al., 2014). That is, they respond with a focus on generative

concern, contribution to others, and the welfare of future generations, as opposed to a

focus on their role, status, and self-enhancement (Maxfield et al., 2014). Older adults

have likely accomplished several of their self-focused life goals, and are invested in

finding ways to make a lasting impact on the world before they die, whether or not they

are personally recognized for it.

Driving retirement may threaten the older adult's ability to defend against

mortality salience with generative concern in two main ways. First, driving retirement

can impact an older adult's ability to maintain a connection with their community.

Qualitative studies note that older adults associate driving with the ability to be part of

society (Donorfio, D'Ambrosio, Coughlin, & Mohyde, 2009), particularly in rural areas

(Johnson, 1995; Johnson, 2002). Other studies note that when community-dwelling older

adults give up their keys, their out-of-home activity levels decrease, even when

accounting for other variables that could impact activity levels, such as age and health

status. Specifically, older adults who have retired from driving spend significantly less

time shopping, going to movies, restaurants, and sporting events, taking trips, performing

paid or unpaid work, playing cards, games, or bingo, attending religious services, and

participating in nonreligious organizations (Marattoli, Mendes de Leon, Glass, Williams,

Cooney, & Berkman, 2000). Participants who retired from driving experienced an

average decline of activity levels three times higher than the average decline in a cohort

of current drivers (Marattoli et al., 2000). Curl and colleagues replicated these findings

(2014). Productive engagement, operationalized as employment or volunteer work, was

negatively impacted by driving retirement, such that the likelihood of these activities

drops between 68 to 79 percent (Curl et al., 2014). Overall, the literature indicates that

driving retirement can place significant limits on one's ability to engage in activities

outside the home, which can affect one's ability to contribute to one's community and

culture.

Second, driving retirement can also affect the social relationships of the older

adult. These interpersonal relationships may be an avenue for the older adult to respond

to generative concerns about future generations, such as relationships with children and

grandchildren. Qualitative research indicates that driving retirement can disrupt roles that

older adults consider to be important. Older adults indicate that they are unable to see

family members as much as they would like since retiring from driving (Musselwhite &

Shergold, 2012). A case study of an older adult couple indicates that when one ceases

driving, one's perceived ability to fill valued roles of grandfather and husband can

decrease (Vrkljan & Miller Polgar, 2007). Other studies note the loss of valued roles that

stems from driving retirement (Liddle, Carlson, & McKenna, 2004). In a study of older

women drivers and former drivers, the car was viewed as a means to fulfill roles of

caretaker and altruist (Siren & Hakamies-Blomqvist, 2005). A comparison of current and

retired drivers found that retired drivers were significantly more likely to spend time in

solitary leisure, and significantly less likely to spend time in social leisure (Liddle,

Gustafsson, Bartlett, & McKenna, 2012).

A driver's license is an important cultural symbol. Eisenhandler (1990) points out

that a driver's license is a "baseline indicator of mainstream cultural membership" (p. 2).

When older adults retire from driving, their ability to contribute to the well-being of

future generations (generative concern) is thwarted due to decreased ability to interact

with their community and decreased ability to create or maintain meaningful,

interpersonal relationships. With these routes to symbolic immortality impeded or

limited, older adults may associate driving retirement with death. To ascertain if driving retirement is a subtle mortality prime, three experimental conditions are necessary: a driving retirement prime condition, a subtle mortality prime condition to establish equivalency, and a pain control condition to establish difference. The dependent variable should assess generative concern in some manner, in order to capture the effects of mortality salience and driving retirement within an older adult population.

Driving Retirement and Self-Esteem

Empirical studies assessing terror management theory have assessed the effects of mortality salience on investment in cultural worldviews as well as variables that may moderate this relationship; self-esteem is one of the most commonly measured potential moderators (Burke, Martens, & Faucher, 2010). Within terror management theory, "self-esteem is the belief that one is a valued contributor to the meaningful reality conveyed by the individual's cultural worldview" (Maxfield et al., 2014). The theory also holds that high self-esteem serves a buffering function against anxiety; if one feels that one is living a life according to one's cultural values, one feels protected and secure (Greenberg, Solomon, Pyszczynski, Rosenblatt, Burling, Lyon, Simon & Pinel, 1992). However, the way the construct of self-esteem is measured has demonstrated differing results on mortality salience effects.

Many studies use the construct of explicit self-esteem. Explicit self-esteem is a person's self-reported perception of their global self-worth (Burke, Martens, & Faucher, 2010). However, studies that ascertain how explicit self-esteem affects mortality salience response have demonstrated inconsistent findings. Some indicate that explicit self-esteem does, indeed serve an anxiety-buffering function (Harmon-Jones, Simon,

Pyszczynksi, Solomon, & McGregor, 1997). Others indicate no effect, and many show

that high explicit self-esteem in fact increases the response to mortality salience response

(Burke, Martens, & Faucher, 2010; Schmeichel, Galliot, Filardo, McGregor, Gitter, &

Baumeister, 2009). On the other hand, another construct, implicit self-esteem, has been

shown to consistently serve an anxiety-buffer function (Burke, Martens, & Faucher,

2010). Implicit self-esteem is a person's automatic evaluation of oneself that affects

one's spontaneous behaviors (Burke, Martens, & Faucher, 2010; Bosson, Swann, &

Pennebaker, 2000). One of the most common measures of implicit self-esteem is the

Name Letter Test, which involves rating the attractiveness of each letter of the English

alphabet (Schmeichel et al., 2000; Krizan & Suls, 2008; Nuttin, 1985). Those that

demonstrate higher implicit self-esteem (i.e. those who rate the letters of their name as

more attractive than letters that are not in their name) generally respond to mortality

salience in a diminished way. Studies tend to indicate that as constructs, explicit self-

esteem and implicit self-esteem are slightly positively correlated with each other, or

otherwise not at all related (Bosson, Swann, & Pennebaker, 2000; Greenwald &

Farnham, 2000).

Individual differences in implicit self-esteem may impact how an older adult

responds to the idea of driving retirement. In order to assess how self-esteem is related to

responses to mortality salience, implicit self-esteem should be measured and considered

as a moderating variable. It is possible that those older adults who experience higher

implicit self-esteem are more likely to respond to driving retirement as well as a subtle

reminder of death in a diminished way, compared to older adults who experience lower

self-esteem. No study has assessed the relationship of self-esteem, implicit or otherwise, to mortality salience response specifically among older adults.

The Present Study

To date, no study has used terror management theory paradigms to assess the possibility that driving retirement is a subtle mortality prime. The first aim of the current study was to assess the potential role of driving retirement as a subtle mortality prime by measuring the effects of a subtle mortality prime and a driving retirement prime on generative concern. Three experimental conditions were required: a subtle mortality prime (see Appendix A), a subtle driving retirement prime (see Appendix B), and a subtle control (dental pain) prime (see Appendix C). These experiences were primed using a word puzzle paradigm, previously used by Maxfield and colleagues (2014). Participants in the mortality prime condition searched for neutral target words within a matrix containing death-related words or phrases (e.g. death, mortal person), intended to subtly prime for reminders of death. Participants in the driving retirement prime condition searched for the same neutral target words within a matrix containing driving retirement-related words or phrases (e.g. give up the keys, former driver), intended to subtly prime for the experience of driving retirement. Participants in the control condition searched for the same neutral target words as the previous conditions within a matrix containing dental pain-related words or phrases (e.g. dental patient, extract tooth), intended to subtly prime for an unpleasant experience that is not life-threatening.

If driving retirement acts a subtle mortality prime, both primes would demonstrate equivalent effects on the dependent variable, generative concern. Further, a driving retirement prime would demonstrate significantly different effects than a control prime

on the dependent variable. Terror management theory research usually controls for

current mood and personality characteristics; often mood and personality measures were

included for this purpose, and also were used to create a delay between the administration

of the mortality prime and administration of the dependent measures. The literature

indicates that older adults respond to mortality salience with generative concern; the

present study used generative concern as the dependent variable to capture this. It was

expected in the current study that participants who were exposed to a subtle driving

retirement prime would demonstrate equivalent levels of generative concerns compared

to those participants who are exposed to a subtle mortality prime. Additionally, it was

expected that participants who were exposed to a subtle driving retirement prime would

demonstrate significantly higher generativity concerns compared to those exposed to a

subtle control (unpleasant experience) prime.

The second aim of the study was to assess implicit self-esteem as it relates to

responses to driving retirement within an older adult population. Implicit self-esteem has

been found to act as a buffer against mortality salience concerns, but this has not been

studied in an older adult population. It was expected that implicit self-esteem will

moderate the posited relationship between exposure to a subtle mortality salience prime

and increased generativity concerns, such that participants exposed to a subtle mortality

prime who have low implicit self-esteem would respond with significantly higher

generativity concerns compared to those with high self-esteem. As the driving retirement

prime was expected to evoke similar responses to a subtle mortality prime, it was also

expected that participants exposed to a driving retirement prime who have low implicit

self-esteem would also respond with significantly higher generativity concerns compared to those with high self-esteem.

Method

Participants

Participants were recruited through university and community contacts, through local senior community centers as well as senior living facilities. The researchers attempted to obtain an older adult sample of people age sixty and over that vary widely across genders and racial and ethnic identities. The goal for total sample size was approximately 90 individuals. As an incentive for participation, participants had the option to be entered into a drawing for one of five $50 gift cards. The identities of each participant were kept strictly confidential. Participant identities were not be directly linked to their responses, as each participant was assigned a unique number for the purposes of data storage. Participant names and addresses were stored separately from their responses, but they were collected in order to ensure compensation if they were winners of the raffle.

Measures

Demographics Questionnaire. Participants completed a brief measure regarding their gender, racial/ethnic identity, age, education level, marital status, and driver status. Gender was coded as a categorical variable (1=men, 2=female, 3=other). Racial/ethnic identity, due to lack of diversity within the sample, was coded categorically (1=white, 2=non-white). Education level was coded in the following way: 1=No schooling; 2=Nursery school to 8th grade; 3=Some high school (no diploma); 4=High school graduate; 5=Some college credit; 6=Associate's Degree; 7=Bachelor's Degree;

8=Master's Degree; 9=Professional Degree; 10=Doctorate Degree;

11=Trade/Technical/Vocational Training. Marital status was coded in the following way:

1=single, never married; 2=Married or domestic partnership; 3=Widowed; 4=Divorced;

5=Separated. Driver status was coded categorically (1=Driven in past month, 2=not

driven in past month).

Word Find Puzzle Condition. Participants were randomly assigned into three

different experimental conditions: subtle mortality prime, driving retirement prime, or

control prime (pain). Participants were asked to search for ten neutral target words

within a word search that contained different prime words, depending on the assigned

experimental condition. The target words the same across conditions (see Appendices A,

B, and C). Participants assigned to the mortality prime condition, were asked to search

for the ten neutral target words within a letter matrix that contains five mortality-related

words or phrases (i.e. death, see Appendix A). Participants assigned to the driving

retirement condition were asked to search for the ten neutral target words within a letter

matrix that contains five driving retirement-related words or phrases (i.e. give up keys,

see Appendix B). Participants assigned to the control condition will be asked to search

for the ten neutral target words within a letter matrix that contains five pain-related words

or phrases (i.e. dismay; see Appendix C). The use of these subtle primes is based from

the procedure of Maxfield and colleagues (2014). Participants were allowed 3 minutes to

complete the word puzzle.

Positive and Negative Affect Schedule. The Positive and Negative Affect

Schedule (PANAS) is a brief (20-item) measure of mood that has demonstrated adequate

reliability and validity (Tuccitto, Giacobbi, & Leite, 2010; Watson, Clark & Tellegen,

1988) and is often used in terror management theory research to establish a delay

between administration of the prime and measurement of the dependent variable and to

control for factors related to mood (Maxfield et al., 2014). The self-report measure

required participants to rate different adjectives on a scale from 1 to 5 according to how

they have felt in the past week, including the present moment, with 1 indicating "very

slightly or not at all" and 5 indicating "extremely." The measure yields a positive affect

score and a negative affect score, with ranges from 10 to 50. Higher scores indicate

higher levels of affect, and the scale yields a positive affect scale and negative affect

scale (Crawford & Henry, 2004).

     Ten Item Personality Inventory. The Ten Item Personality Inventory (TIPI) is a

brief self-report measure that assesses the "Big Five" personality dimensions (Gosling,

Rentfrow, & Swann, 2003). The measure has demonstrated adequate validity and

reliability (Gosling, Rentfrow, & Swann, 2003) and has been used in prior research to

establish a delay between prime and dependent variable measurement and to control for

personality factors related to generativity concerns (Maxfield et al., 2014). Participants

rated the degree to which they agree that the listed phrases describe them on a Likert

scale from 1 to 7, with scores of 1 indicating strong disagreement and scores of 7

indicating strong agreement. Higher scores indicate the presence of greater levels of the

personality trait.

     Name-Letter Test. The Name-Letter Test is a measure of implicit self-esteem

(Albers, Rotteveel, & Dijksterhuis, 2009; Krizan & Suls, 2008; Nuttin, 1985).

Participants were presented with the letters of the alphabet in a random order and will

rate the degree to which they find "beautiful" each letter on a Likert Scale from 1 to 7,

with 1 indicating "Not at all beautiful" and 7 indicating "Extremely beautiful" (Krizan &

Suls, 2008; Ryan, 2012). The participant's liking of their own initials compared to other

letters is the target variable. Scores were calculated by regressing the average score of a

participant's liking for their own initials and the average score of a participant's liking for

letters that are not their initials on to the average name letter evaluation (Albers,

Rotteveel, & Dijksterhuis, 2009). Subsequently, the not-name letter evaluation and the

evaluation of their own initials were multiplied by their unstandardized regression

coefficients before they were subtracted from the name-letter evaluation. In this way,

general letter liking of each participant was controlled for (Albers, Rotteveel, &

Dijksterhuis, 2009). Evaluations of first and last initials are generally correlated at

approximately .30 (Krizan & Suls, 2008). Implicit self-esteem, as measured by the

Name-Letter Test, has demonstrated no relationship or moderately positive correlations

with measures of explicit self-esteem, depending on the study (Bosson, Swann, &

Pennebaker, 2000; Krizan & Suls, 2008).

Loyola Generativity Scale. The generative concern of participants after

exposure to an experimental prime was assessed by the Loyola Generativity Scale

(McAdams & de St. Aubin, 1992). This instrument measures the self-report of an

individual's goals for providing for younger generations, and has been significantly

associated with actual generative behaviors (McAdams, de St. Aubin, & Logan, 1993).

The scale has previously been used in terror management theory research with older

adults (Maxfield et al., 2014) and has demonstrated acceptable validity and reliability

(McAdams & de St. Aubin, 1992). Participants rated twenty statements from 0 to 3 with

their report of how often each statement applies to them. Sample items include "I have

important skills that I try to teach to others" and "I feel as though my contributions will

exist after I die." Total scores range from 0 to 60, with higher scores indicating greater

generative concern.

AD8 Cognitive Assessment. Participants completed the AD8, a brief, eight-item

screening measure designed to assess for the presence of cognitive impairment (Galvin et

al., 2005). The measure can be completed collaterally by an informant or by the

individual him or herself. The rater indicates whether a change in memory and/or

thinking skills has been noted in the following areas: judgment/problem-solving, interest

in activities, repetition of material, trouble learning new skills, orientation, finances,

memory for appointments, and daily thinking problems. In the case of this study, the

AD8 was completed by the participant about their observations of themselves. Scores on

the AD8 can range from 0 to 8. Scores of 0 to 1 suggest normal cognition. Scores of 2 or

above suggest the presence of cognitive impairment (Galvin et al, 2005).

Procedure

The study was completed using pen and paper tests within a single study session

in group or individual settings free from distraction. Prior to their participation,

participants completed an informed consent document that advertised the study as

research in age and personality in order to avoid demand characteristics (Maxfield et al.,

2014). Participants were randomly assigned to one of three experimental conditions

(mortality prime, driving retirement prime, or control prime) by the researchers. All

participants completed a demographics questionnaire, followed by the AD8 self-report

measure. Depending on experimental condition, they were then asked to complete a

word search puzzle with mortality-related words, driving retirement-related words, or

pain-related words within it. All participants were searching for the same neutral target

words. Subsequently, participants completed the Positive and Negative Affect Schedule

(PANAS) and the Ten Item Personality Inventory (TIPI)) in order to have a 5-7 minute

buffer between the delivery of the prime and the measurement of generativity concerns.

The Positive and Negative Affect Schedule and the Ten Item Personality Inventory are

commonly used filler measures in terror management theory research to provide for a

delay between administration of the prime and measurement of the dependent variable,

and they also can be used to control for mood and personality variables (Burke, Martens,

& Faucher, 2010; Maxfield et al., 2014). After completing the TIPI, all participants

completed the Loyola Generativity Scale (LGS) to assess for generative concern. The

final measure of the study was the Name-Letter Test (NLT), a measure of implicit self-

esteem. Finally, each participant was asked what they believe the experiment is about,

and they were debriefed about the purpose of the study. Once they had been debriefed,

they were again asked for permission to include their data in the study's analyses.

Participation was between 30 and 45 minutes' duration.

Results

The study's analyses were conducted using the Statistical Packages for the Social

Sciences (SPSS). Microsoft Excel was also used to assist in calculating Name-Letter

Test (NLT) scores. A priori power analyses using G*power software indicated that the

detection of an effect of moderate size would require a sample size of 84 total

participants for a one-way ANOVA (power = .80, α = .05) (Faul, Erdfelder, Lang, &

Buchner, 2007). To assess the second hypothesis (potential moderating role of implicit

self-esteem), a priori power analyses indicate a sample size of 39 participants (multiple

regression, power = .80, α = .05). Analysis began with data screening, including

assessment of missing data, identification of non-normal distributions, and identification

of outlying data points.

Data Screening

Eligibility for Study

Study was administered in groups as well as 1:1 with participants. Some

participants did not complete all of the measures. A total of 92 participants completed

informed consent and debriefing statements. If participants did not complete the Loyola

Generativity Scale (LGS) at all, they were eliminated from study analyses, as the LGS

was the primary outcome variable (*n*=1). If participants did not complete the word

puzzle, they were eliminated from analyses (n=1), as they were not exposed to the

experimental prime and could not be sorted into one of the experimental groups. Several

participants did not report their age (*n*=7). Prior to enrollment in the study, all

participants confirmed their ages to be 60 or older as part of informed consent, thus these

participants are considered to be eligible for data analyses.

The LGS contains six reverse-scored items that can serve as "attention checks."

Participants' rating of these items was visually screened in relation to their other ratings

on the LGS, to ensure they were responding consistently and not carelessly. No

participants demonstrated a careless responding style (i.e. responding identically on

normally scored and reverse-scored items). Data analysis proceeded with 90 cases.

Randomization Check

One-way ANOVAs were used to assess if the random assignment procedure was

successful and ensure that personality and mood variables did not differ significantly between

experimental conditions. None of these variables differed significantly between groups. Neither

PANAS positive scale scores ($F(2, 87)=1.12$, $p=.330$) nor PANAS negative scale scores

($F(2,87)=.092$, $p=.912$) differed significantly between experimental conditions. Similarly, none

of the five personality variables assessed by the TIPI differed significantly between groups. TIPI

Extraversion scores did not significantly differ between groups ($F(2,87)=1.33$, $p=.269$). Nor did

TIPI Agreeableness scores($F(2,87)=.697$, $p=.501$), TIPI Conscientiousness scores ($F(2,87)=2.62$,

$p=.079$), or TIPI Emotional Stability scores ($F(2,87)=.646$, $p=.527$). Finally, TIPI Openness to

Experience scores did not significantly differ between experimental groups ($F(2,87)=.240$,

$p=.787$).

Mean Comparisons Based on Data Source

This study sampled from multiple distinct sources, including the St. Louis Ethical

Society ($n=39$), Mideast Area Agency on Aging ($n=12$), St. Louis Activity Center ($n=4$),

and the Laclede Groves Senior Living Community ($n=11$), Other Referral ($n=21$), St.

Joseph's Senior Apartments ($n=4$). ANOVA group mean comparisons were conducted to

determine whether data from these sources should be separated before conducting

primary data analyses. Although these sample sizes were quite different, ANOVA is

generally robust for unequal sample sizes, and Levene's Test for Equality of Error

Variances was not significant ($F(5,84)=.255$, $p=.936$) for LGS group comparisons or for

NLT group comparisons ($F(5,76)=.800$, $p=.553$). ANOVA comparisons showed that the

groups did not differ significantly in terms of LGS ($F(5,84)=.404$, $p>.05$) or NLT scores

($F(5,76)=.595$, $p>.05$).

Similarly, the groups did not differ significantly in terms of Positive and Negative

Affect Schedule (PANAS) scores, including PANAS Positive Scale scores

($F(5,84)=1.216$, $p>.05$) or PANAS Negative Scale scores ($F(5,84)=1.511$, $p>.05$). The

data from these sources also did not differ on the Ten Item Personality Measure (TIPI)

scales, including Extraversion ($F(5,84)$=1.160, p>.05), Agreeableness ($F(5,84)$=0.625, p>.05), Conscientiousness ($F(5,84)$=0.258, p>.05), Emotional Stability ($F(5,84)$=1.963, p>.05), or Openness to Experience ($F(5,84)$=0.750, p>.05). Because the groups did not differ significantly on the primary variables of interest, data from the separate sources were combined and analyzed concurrently.

Preliminary Analyses

Addressing Missing Data

Multiple participants did not report their age (*n*=7). Prior to enrollment in the study, all participants confirmed their ages to be 60 or older as part of informed consent, thus these participants are considered to be eligible for data analyses. As age was not a variable of interest, missing data values were simply replaced by the sample's mean age.

Missing data on the Loyola Generativity Scale (LGS), Name-Letter Test (NLT), Positive and Negative Affect Schedule (PANAS), and Ten-Item Personality Measure (TIPI) needed to be addressed. An item-level Missing Value Analysis was used to perform Little's MCAR test and determine whether missing LGS data could be considered to be missing completely at random (MCAR). The test failed to reject the null hypothesis ($\chi2$=178.626, df=164, p=.206). We can safely assume that the missing data for the LGS is missing completely at random. An item-level Missing Value Analysis was used to perform Little's MCAR test and determine whether missing NLT data could be considered to be missing completely at random (MCAR). The test failed to reject the null hypothesis ($\chi2$=303.306, df=274, p=.108). We can safely assume that the missing data for the NLT is MCAR. An item-level Missing Value Analysis was used to perform

Little's MCAR test and determine whether missing TIPI data could be considered to be

missing completely at random (MCAR). The test failed to reject the null hypothesis

(χ2=14.205, df=18, p=.716). Thus, we can safely assume that the missing data for the

TIPI is MCAR.

An item-level Missing Value Analysis was used to perform Little's MCAR test

and determine whether missing PANAS data could be considered to be missing

completely at random (MCAR). The test did reject the null hypothesis (χ2=142.929,

df=112, p=.026). Thus, there appear to be patterns in missing PANAS data. Multiple

items on the PANAS demonstrated 5% or greater missing values. An independent

samples T-test (equal variances assumed) with the same groups (those who completed

full PANAS vs. those who had any missing data on PANAS) with NLS as the dependent

variable indicated that there was a significant different in NLT scores between those who

completed the PANAS and those who missed any PANAS items (t=-3.68, p<.000). As

PANAS missing data can be significantly predicted by other variables, this supports that

PANAS data are missing at random. When data are missing at random or completely at

random, expectation-maximization approaches are less likely to bias data analyses

compared to listwise deletion approaches (Rubin, Witkiewitz, St. Andrew, & Reilly,

2007). Expectation-maximization is a type of a maximum-likelihood estimate of the

covariance structure provided available data (Rubin, Witkiewitz, St. Andrew, & Reilly,

2007). In this case, listwise deletion approaches to the missing data could also reduce the

power of the study (Garson, 2015). Thus, missing data points on all variables except for

Name-Letter Test scores were estimated using the Expectation-Maximization Algorithm

via SPSS software. Because of the procedure used to standardize the NLT scores

(Albers, Rotteveel, & Dijksterhuis, 2009), the expectation-maximization approach could

not be used. As sample size requirements were met for this measure based on the a priori

power analyses, data from participants who did not complete the NLT were excluded

listwise from statistical analyses that required a NLT score.

Outliers

Z-scores and boxplots were generated for each measure's total score (or separate

scales when necessary) to assist in the detection of univariate outliers. When the absolute

value of the generated z-score was greater than 3 (Zhang, 2011), the case was identified

as an outlier. When data points were beyond the fences of the boxplot, the case was

identified as an outlier. Through the z-score detection method, three outliers were

identified on the basis of NLT scores, two outliers were detected on the basis of PANAS

negative scores, one outlier was identified on the basis of their TIPI Emotional Stability

score, and one outlier was identified on the basis of TIPI Openness to Experience score.

Boxplots identified a further seven unique outlying cases on these same variables. In

total, fourteen cases were identified as univariate outliers. Multivariate outliers were

detected using Mahalanobis' distance values. Three cases violated the criterion

Mahalanobis' distance ($|21.67|$, $p < .01$ *df*=-9), which were all found to be univariate

outliers previously. In total, fourteen cases were identified as outliers. These were

included in final data analyses because the harm of including them was outweighed by

the benefit of having a sample with enough cases to detect a difference between the

groups; the removal of the outliers from the data set would likely result in inadequate

power to do so. The final sample for preliminary analyses contained 90 participants.

Distribution Characteristics

Several measures were taken to examine univariate normality of the distribution of all study measures (LGS, NLT, PANAS Positive Scale, PANAS Negative, and TIPI Big Five Trait scores), including observation of skewness and kurtosis statistics, Shapiro-Wilk statistics, and visual examination of histograms. Total scores on the LGS were slightly negatively skewed and moderately platykurtic. Total scores on the NLT were negatively skewed and leptokurtic. PANAS Positive Scale scores were fairly symmetrical and their distribution was approximately mesokurtic. PANAS Negative Scale scores showed a positive skew and were leptokurtic. TIPI Extraversion Subscale scores were fairly symmetrical and platykurtic. TIPI Agreeableness Subscale scores were negatively skewed and slightly leptokurtic. TIPI Conscientiousness scores were negatively skewed and slightly platykurtic. TIPI Emotional Stability scores were negatively skewed and leptokurtic. Finally, TIPI Openness to Experience scores were negatively skewed and leptokurtic. Skewness and kurtosis values less than |1| suggests that variables meet requirements for regression analyses (Meyers, Gamst, and Guarino, 2006). All skewness and kurtosis values were less than |1|, with the exception of Name-Letter Test Scores and PANAS Negative Scale scores. Log transformations were attempted on these two variables to assess if this improved the distribution. If log transformed, the distributions appeared visually closer to normal, yet the Shapiro-Wilk statistics remained significant. Normality was not improved for PANAS Negative Scale scores or NLT Scores through Natural Log transformations. Because normality was not improved, and transformations can unnecessarily complicate the interpretation of results (Osbourne & Waters, 2006), no transformations were performed before conducting the primary analyses. The assumption of normality was partially met.

Bivariate scatterplots were created to assess for linearity of relationships between variables. Each of the variables demonstrated linear relationships of varying levels, although some of the relationships (LGS and TIPI Agreeableness, LGS and TIPI Conscientiousness, NLT and TIPI Emotional Stability) were only slightly linear. It seems that the assumption of linearity is partially met. It is possible that linear analyses (t-tests, regression) will slightly underestimate the strength of the relationships between those variables who demonstrated slight to no linear relationships.

To test the assumption of homoscedasticity, plots of the standardized residuals by the standardized predicted values were examined. Variable relationships generally demonstrated homoscedasticity; any instances of heteroscedasticity were very slight (LGS and PANAS Negative Scale scores, LGS and TIPI Emotional Stability Scale scores, LGS and TIPI Openness to Experience scores). The assumption of homoscedasticity is generally met by these variables. If violations of homoscedasticity were present in some of the comparisons, they appear to be quite minor.

Sample Characteristics Participants ranged in age from 61 to 97 years old, with an average age of 74 years (SD = 8.03) and were generally European-American (*n*=82, 89%) and women (*n*=58, 64%). Most participants identified themselves as married (*n*=46, 51%), although a sizable minority described themselves as widowed (*n*=26, 29%). The sample was fairly well-educated, with approximately half of participants achieving a master's degree or higher. Most of them were current drivers (i.e. had driven in the past month, *n*=82, 90%) and did not report significant cognitive difficulty on the AD8 (79% negative on the AD8 screening, *n*=70). Other relevant demographic characteristics are reported in Table 1.

Average scores and reliability (Cronbach's alpha values) for each of the measures are also reported in Table 2. Compared to normative data available for the Loyola Generativity Scale (LGS), participants in this study scored within a standard deviation of the provided normative data (McAdams & de St. Aubin, 1992). Most measures demonstrated adequate to excellent reliability, with the exception of the TIPI. It should be noted that the TIPI is in total a ten-item scale with two items per personality trait. These generally poor Cronbach's alpha coefficients are typical of the TIPI, which was designed as a very brief personality measure (Gosling, Rentfrow, & Swann, 2003).

Table 1

Demographic Characteristics of the Sample

Demographic Characteristic	Sample	
Gender	*N*	%
Male	31	34%
Female	58	64%
Other	1	1%
Ethnicity	*N*	%
European-American/White	82	89%
Black/African American	4	4%
Other	1	1%
Asian/Asian American/ Pacific Islander	3	3%
Hispanic/Latino	1	1%
Marital Status	*N*	%
Single/Never Married	5	6%
Married/Partnership	46	51%
Widowed	26	29%
Divorced	11	12%

Separated			1	1%
Highest Level of Education			*N*	%
Nursery School to 8th Grade			1	1%
Some High School			2	2%
High School Graduate			9	10%
Trade/Technical/Vocational Training			3	3%
Some College			2	2%
Associate Degree			3	3%
Bachelors			24	26%
Masters			28	31%
Professional/Doctorate			18	19%
Driving Status			*N*	%
Drove in Past Month			82	90%
Did Not Drive in Past Month			8	9%
Cognitive Status			*N*	%
Positive AD8 (2+)			19	21%
Negative AD8			70	79%

Table 2

Characteristics of the Sample: Average Scores and Reliability of Study Measures

Variable	*M*	*SD*	Minimum	Maximum	Cronbach's α
Loyola Generativity Scale	39.92	9.49	18	58	.85
Name-Letter Test	1.81	1.72	-5.37	5.15	.95
PANAS Positive Scale	36.61	6.71	19.00	50.24	.89
PANAS Negative Scale	15.77	5.60	10.00	37.00	.86
TIPI Extraversion	4.4	1.58	1	7	.70
TIPI Agreeableness	5.73	1.18	2	7	.60
TIPI Conscientiousness	5.89	1.09	3	7	.46
TIPI Emotional Stability	5.68	1.08	2	7	.60
TIPI Openness to	5.35	1.15	1.5	7	.26

Experience

     Covariates Analyses were conducted to ascertain if LGS or NLT scores differed

based on demographic variables. The following variables were assessed as potential

covariates: age, gender, marital status, driver status, ethnicity, educational background,

cognitive status, PANAS Positive Scale scores, PANAS Negative Scale scores, TIPI

Extraversion scores, TIPI Agreeableness scores, TIPI Conscientiousness scores, TIPI

Emotional Stability scores, and TIPI Openness to Experience scores. One-way ANOVAs

were conducted for categorical variables and Pearson correlations were conducted for

continuous variables. Correlations for continuous variables are reported in Table 2.

     LGS scores did not differ significantly by gender ($F(2, 87)=.063$, $p=.94$), age ($r= -.078$, $p=.464$), marital status ($F(4, 84)=1.27$, $p=.29$), driver status ($F(1,88)=1.07$, $p=.304$),

ethnic/racial identity ($F(1, 88)=.133$, $p=.716$), educational background ($F(9,80)=1.89$,

$p=.065$), or self-reported cognitive status ($F(1,87)=.106$, $p=.746$). None of the

demographic variables were considered to be covariates for analyses involving LGS

scores. LGS scores were not correlated with PANAS Negative Scale scores ($r=-.038$,

$p=.724$), TIPI Agreeableness scores ($r=.183$, $p=.084$), or TIPI Emotional Stability scores

($r=.202$, $p=.056$). However, LGS scores were significantly correlated with PANAS

Positive Scale scores ($r=.52$, $p<.000$), TIPI Extraversion scores ($r=.305$, $p=.003$), TIPI

Conscientiousness scores ($r=.305$, $p=.004$) and TIPI Openness to Experience scores

($r=.247$, $p=.019$). Please see Table 2. Although PANAS Positive Scale scores, TIPI

Extraversion scores, TIPI Conscientiousness scores, and TIPI Openness to Experience

scores were significantly correlated with LGS scores, they also were randomly distributed

across experimental conditions. Thus, it was not necessary to control for these variables
in analyses involving LGS scores.

NLT scores did not differ significantly by gender ($F(2,79)$=.98, p=.38), age (r= -.081, p=.471), marital status ($F(4, 76)$=1.03, p=.40), driver status ($F(1,80)$=.033, p=.856), ethnic/racial identity ($F(4, 77)$=1.44, p=.230), educational background ($F(8,73)$=1.37, p=.224), or self-reported cognitive status ($F(1,79)$=.124, p=.725). None of the demographic variables were considered to be covariates for analyses involving NLT scores. NLT scores were not correlated with PANAS Negative Scale scores (r=-.199, p=.072), TIPI Agreeableness scores (r=.084, p=.455), TIPI Emotional Stability scores (r=.202, p=.056), TIPI Extraversion scores (r=.086, p=.440), TIPI Conscientiousness scores (r=-.122, p=.277) or TIPI Openness to Experience scores (r=-.174, p=.117). However, NLT scores were significantly correlated with PANAS Positive Scale scores (r=-.229, p=.038). Please see Table 3. Thus, PANAS Positive Scale scores were considered to be covariates in statistical analyses involving the NLT.

Table 3 *Correlations Among Generativity, Implicit Self-Esteem, and Personality Variables*

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. LGS	-	-.254*	.519**	-.038	.305**	.183	.305**	.202	.247*
2. NLT	-.254*	-	-.229*	-.199	.086	.084	-.122	.153	-.174
3. PANAS Positive	.519**	-.229*	-	-.048	.333**	.289**	.279**	.131	.325**
4. PANAS Negative	-.038	-.199	-.048	-	-.192	-.341**	-.095	-.447**	-.233*
5. TIPI Extraversion	.305**	.086	.333*	-.192	-	.150	.028	.100	.089
6. TIPI Agreeableness	.183	.084	.289**	-.341**	.150	-	.153	.393**	.239*
7. TIPI Conscientiousness	.305**	-.122	.279**	-.095	.028	.153	-	.198	.198
8. TIPI Emotional Stability	.202	.153	.131	-.447**	.100	.393**	.198	-	.243*
9.TIPI Openness to Experience	.247*	-.174	.325**	-.233*	.089	.239*	.198	.243*	-

* Correlation is significant at the .05 level (two-tailed)
**Correlation is significant at the .01 level (two-tailed)

Main Analyses

Hypothesis 1a: Participants who are exposed to a subtle driving retirement prime will demonstrate equivalent levels of generative concern compared to those participants who are exposed to a subtle mortality prime. It was predicted that those participants in the mortality prime and driving retirement prime groups would respond similarly on the Loyola Generativity Scale (LGS). Although PANAS positive scale score, TIPI Extraversion, TIPI Conscientiousness, TIPI Openness to Experience were significantly correlated with LGS scores, these were found to be randomly distributed across groups, and so were not entered as covariates into the ANOVA.

This hypothesis was supported. A one-way ANOVA with post-hoc Tukey tests indicated that participants in the mortality prime condition (*M*=39.98, *SD*=9.64) and the driving retirement prime condition (*M*=41.48, *SD*=7.40) reported similar levels of generative concern on the LGS. Generative concern did not differ significantly between experimental conditions, based on a one-way ANOVA, $F_{(2,87)}=.841$, $p=.435$.

Hypothesis 1b Participants who are exposed to a subtle driving retirement prime will demonstrate significantly higher generativity concerns compared to those exposed to a subtle control (dental pain) prime. It was predicted that those participants in the driving retirement prime condition and the control condition (dental pain) would respond significantly differently on the Loyola Generativity Scale (LGS). Based on the same one-way ANOVA as above, this hypothesis was not supported. Participants in the driving retirement prime condition (*M*=41.48, *SD*=7.40) and the dental pain prime control condition (*M*=38.30, *SD*= 11.12) reported similar levels of concern on the LGS.

Hypothesis 2: Implicit self-esteem will moderate the posited relationship between exposure to a subtle mortality salience prime and increased generativity concerns. There was no main effect of experimental condition on LGS scores. However, Pearson correlations do suggest that LGS and NLT scores are significantly related ($r=-.254$, $p=.021$). A stepwise regression was used to ascertain any relationship between implicit self-esteem (NLT score) and generative concern (LGS scores) across experimental conditions (whole sample). NLT scores were originally a significant predictor of LGS scores ($\beta=-.254$, $t=-2.35$, $p=.021$, adjusted $r^2=.053$), but did not remain so when the covariates (PANAS Positive Scale score, TIPI Extraversion, TIPI Conscientiousness, and TIPI Openness to Experience) were added to block 2 of the regression ($\beta=-.162$, $t=-1.66$, $p=.101$). See Table 4 for standardized coefficients.

Table 4

Regression Analysis Summary for Variables Predicting Generativity (LGS) Scores

Variable	B	SE B	B	t	P
Name-Letter Test Score	-.892	.537	-.162	-1.66	.101
PANAS Positive Scale Score	.517	.163	.368	3.17	.002
TIPI Extraversion	1.057	.590	.181	1.79	.077
TIPI Conscientiousness	1.276	.849	.149	1.50	.137
TIPI Openness to Experience	.224	.843	.027	.266	.791

Note: Adjusted $R^2=.296$, $n=81$, $p<.001$

The average LGS scores by experimental condition are reported in Figure 1, with a median split in Name-Letter Test Score (NLS split of 1 indicates NLS scores below the median). LGS means did not differ by experimental condition (see hypothesis 1), nor did they differ by low or high NLT score (see hypothesis 2), although the general trend appears to be that higher NLT scores generally correspond to lower LGS scores.

Figure 1 *Average LGS Scores by Experimental Condition with NLS Median Split*

Error Bars: 95% CI
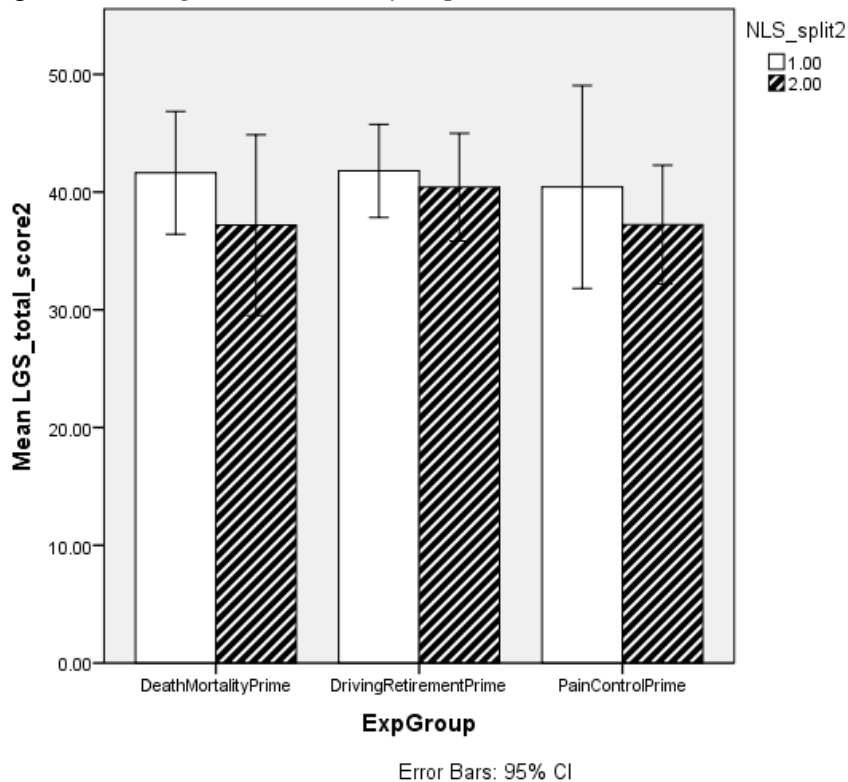
Note: The striped columns represent average scores of participants with higher implicit self-esteem (above median), while the white columns represent average scores of participants with lower implicit self-esteem (below median).

Discussion

Driving retirement (giving up the car keys), also known as driving cessation in the

gerontological literature, is an increasingly popular topic of research; several studies with

aging populations from multiple countries (including Denmark, Korea, Australia,

Canada, Britain, Japan, and the United States) have investigated different facets of

driving retirement over the past decade due to the aging international Baby Boomer

generation (Arai, Mizuno, & Arai, 2010; Bryanton & Weeks, 2014; Hwang & Son Hong,

2017; Pachana, Mitchell, McKenna, & Gustafsson, 2013; Siren & Haustein, 2014;

Tuokko, McGee, Gabriel & Rhodes, 2007). Previous research has suggested that many

older adults avoid talking about driving retirement with each other (Adler & Rottunda,

2006), with their adult children (Connell, Harmon, Janevic, & Kostyniuk, 2013), and with their doctors (Betz, Jones, Petroff, & Schwartz, 2013), and that many older adults do not plan for driving retirement (Bryanton & Weeks, 2014; King, Meuser, Berg-Weger, Chibnall, Harmon, & Yakimo, 2011; Laliberte Rudman et al., 2006; Tuokko, McGee, Gabriel, & Rhodes, 2007; Yassuda et al., 1997).   However, most older adults will outlive their ability to drive safely due to cognitive or physical concerns (Foley, Heimovitz, Guralnik, & Brock, 2002) and planning for driving retirement seems to be linked with maintenance of quality of life after the transition (Musselwhite & Shergold, 2012).

This study sought a potential answer to the question of why many older adults avoid driving retirement, assessing the possibility that driving retirement is a mortality prime. That is, that ceasing to drive reminds older adults of their future death. The present research attempted to uniquely contribute to the gerontological literature by seeking support for a novel way to conceptualize driving retirement using an existential perspective. Giving up the keys could be considered a mortality prime due to threats to generativity and legacy. The rationale of this study proposed that driving retirement is a reminder of mortality because it may stifle generativity by threatening community and social connections. Qualitative studies have suggested that some older adults associate driving retirement with death and decline (Bryanton & Weeks, 2014; Laliberte Rudman et al., 2006; Whitehead, Howie, & Lovell, 2006; Yassuda, Wilson, & von Mering, 1997). However, to date, no published empirical study has considered the possibility that giving up the keys may be a reminder of mortality. Additionally, Terror Management Theory literature has suggested that implicit self-esteem can act as a buffer against response to mortality primes (Burke, Martens, & Faucher, 2010). This study also assessed the idea

that a personality construct, implicit self-esteem, could help to buffer older adults against

mortality concerns, and therefore possibly against driving retirement concerns This study

utilized a between-subjects design (three experimental conditions included subtle

mortality prime, subtle driving retirement prime, and subtle control prime) using a Terror

Management Theory paradigm previously used with older adults (Maxfield et al., 2014))

in order to assess the following hypotheses. First (1a), participants who are exposed to a

subtle driving retirement prime will demonstrate equivalent levels of generative concerns

compared to those participants who are exposed to a subtle mortality prime. Second (1b),

participants who are exposed to a subtle driving retirement prime will demonstrate

significantly higher generativity concerns compared to those exposed to a subtle control

(unpleasant experience) prime. Third, implicit self-esteem will moderate the posited

relationship between exposure to a subtle mortality salience prime and increased

generativity concerns.

Driving Retirement as a Mortality Prime

    The first hypothesis regarding equivalency of reported generative concern between

the mortality prime and driving retirement prime groups was supported. Participants

across these two experimental groups responded with similar levels of generative concern

and did not differ significantly from each other. However, the second part of the

hypothesis was not supported. Although on average participants who were exposed to a

subtle driving retirement prime reported higher generativity concerns than those exposed

to a subtle control prime, this difference did not reach statistical significance.

    There are multiple possibilities to explain why this hypothesis was only partially

supported. First, it is possible that the effect size of older adult generative response to a

subtle mortality is smaller than originally thought. Previous studies have utilized smaller

sample sizes, but compared responses of older and younger adults (Maxfield et al., 2014).

Thus, this study may have been underpowered to detect the effect of the primes. This

seems plausible, given that the trends in the data were in the expected direction (i.e. on

average, higher generative concern reported from mortality prime groups and driving

retirement prime groups compared to control group), but did not reach statistical

significance. Relatedly, it is also possible that driving retirement may be a reminder of

mortality for some people, but not others, thus leading to a smaller effect size of a driving

retirement prime on generative concern. As noted previously, prior qualitative studies

have suggested that older adults may view driving retirement as a mortality prime, but the

sample sizes were small, as is usually the case with qualitative research (Bryanton &

Weeks, 2014; Laliberte Rudman et al., 2006; Whitehead, Howie, & Lovell, 2006;

Yassuda, Wilson, & von Mering, 1997). Some demographic characteristics of the sample

may have decreased the likelihood that participants would respond to driving retirement

as a reminder of mortality, including gender and location of residence (urban vs. rural).

Previous research indicates that men are more likely than women to experience

reluctance to give up the keys (Adler & Rottunda, 2006; Siren & Haustein, 2014),

therefore suggesting that men are more likely to view driving retirement as a mortality

prime. As this sample was approximately two-thirds women, it is possible that they did

not demonstrate responsiveness to the driving retirement prime. Analyses indicated no

gender differences in response to the primes in this study; however, the sample was likely

underpowered to adequately detect any gender differences (thirty-one males distributed

across three experimental conditions). Further, both qualitative and quantitative studies

indicate that older adults living in rural areas demonstrate significant difficulty with driving retirement, such that older rural women drivers were 110% more likely to continue driving than older urban women drivers (Byles & Gallienne, 2012). Living in an urban area has been found to be one of the strongest predictors of driving retirement (Hwang & Son Hong, 2018). Previous qualitative research has indicated that some older rural drivers have a difficult time with driving retirement due to lack of alternative transportation options, separation from their communities, and significant distance between their homes and necessary services, such as grocery stores (Johnson, 1995, 2002). This study utilized a community sample of urban-dwelling older adults; it is possible that the geographic location of their residences could have lessened their response to driving retirement as a mortality prime.

Another possibility regarding the lack of significant difference in reported generative concern between the driving retirement prime condition and the control condition is the potential ineffectiveness of the subtle primes. This study's method of subtle prime delivery has been used previously and successfully with older adults (Maxfield et al., 2014). However, at times the current study's measures were administered in relatively large groups (between 10 and 40 people). Data was only used in analyses if the participant had attempted the word puzzle (evidenced by circling at least one word), yet it was difficult to control how long participants spent on the word puzzle (the prime delivery) in larger group contexts. It is possible that the subtle primes were not detected if participants completed the word puzzle in a cursory manner, leading to lack of difference between the experimental groups.

Prior terror management theory research used generative concern as a dependent variable to examine the response to mortality reminders, and conceptualized this construct as susceptible to experimental manipulation (Maxfield et al., 2014). However, generative concern has also been considered as a characterological variable that remains relatively stable over one's life (Einolf, 2014). It is possible that participants were not receptive to the mortality and/or driving retirement primes in this study (as demonstrated by significant differences on the generative concern measure) because in general they retain high levels of generative concern as a characterological trait, demonstrating a potential ceiling effect. However, normative scores for generative concern, as measured by the Loyola Generativity Scale (McAdams and de St. Aubin, 1992) were comparable in mean and range to the current sample's mean and range, suggesting that this was not likely the case.

It is also possible that psychosocial characteristics of the participants may have predisposed them to not view driving retirement as a mortality prime. This study utilized a community sample of socially engaged older adults. Study data collection methods often utilized referrals and word of mouth, thus participants were socially connected through friendship networks and/or involvement in local organizations. Previous research has found that people are less resistant to driving retirement if they received transportation assistance from friends or neighbors and/or organizations (Choi, Betts Adams, & Kahana, 2012), and this study's participants were connected to friends, neighbors, and/or were members of community organizations. The results from this study suggest that for socially connected older people, driving retirement does not generally appear to be a mortality prime. It is possible that social connection may be a

protective factor in the driving retirement process and help maintain quality of life after

the transition; this is supported by other studies (Choi, Betts Adams, & Kahana, 2012;

Johnson, 2008).

Implicit Self-Esteem as a Buffer Against Mortality Concerns

The final study prediction posited that implicit self-esteem would moderate the

relationship of mortality to generative concern, such that those indicating higher implicit

self-esteem would be less susceptible to the mortality prime and report lower generativity

scores. As there were no main effects stemming from the experimental manipulations, a

relationship did not exist to be moderated. However, implicit self-esteem was related to

generative concern, such that those who reported high levels of implicit self-esteem

tended to score lower on the generativity questionnaire. Implicit self-esteem did

significantly predict generative concern across all experimental conditions, yet when

other variables were controlled for (reported positive affect and personality

characteristics of extraversion, conscientiousness, and openness to experience), this

relationship was no longer significant.

To the authors' knowledge, this is the first study to assess the relationship of

implicit self-esteem and generative concern specifically in an older adult population.

Previous research (using undergraduate college student participants) found that implicit

self-esteem, as measured by the Name-Letter Test, decreased response to mortality

salience (Schmeichel, Gaillot, Filardo, McGregor, Gitter, & Baumeister, 2009). Previous

research has also found that older adults respond to reminders of death with generative

concern, as opposed to younger adults, who focus on culturally laudable personal

achievement (Maxfield et al., 2014). Putting these together, one would expect that older

adults with higher implicit self-esteem should report less generative concern in the

context of mortality salience. Because of the lack of main experimental effects in this

study, generativity in this case should not be interpreted as a response to mortality

salience manipulated by the study itself. However, given that many older adults are

frequently exposed to reminders of mortality by virtue of their age (Maxfield et al., 2007;

Maxfield et al., 2014), it is possible to conceptualize implicit self-esteem and generative

concern as occurring in the general context of mortality salience that may come with

older adulthood. In this study, correlations suggest that as implicit self-esteem increases,

generative concern decreases. This is consistent with terror management theory, which

holds that self-esteem is "the belief that one is a valued contributor to the meaningful

reality conveyed by the individual's cultural worldview." (Maxfield et al., 2014, page 2).

Thus, if one holds this belief, they may report less generative concern on self-report

measures as they are buffered against anxiety related to death (Burke, Martens, &

Faucher, 2010).

It has been found that *explicit* self-esteem increases from adolescence to middle

adulthood, reaches a peak at age 50, then subsequently decreases (Orth, Robins, &

Widaman, 2011). However, other research has noted at best a weak relationship between

explicit and implicit self-esteem; self-esteem as measured by name-letter evaluation did

not correlate with measures of explicit self-esteem (Bosson, Swann, & Pennebaker,

2000). No studies have appeared to examine the effects of implicit self-esteem with age.

The current study found no relationship of age to implicit self-esteem within the subset of

the population deemed to be older adults (60-years-old or older). This finding is

consistent with terror management theory conceptualization of implicit self-esteem.

Implicit self-esteem as a construct is considered to reflect a person's automatic, overlearned associations about his or herself (Shimizu & Pelham, 2004). Put another way, it has been described as "accumulated social evaluations" and is considered to be a relatively stable construct (Zeigler-Hill, 2006). However, it has been shown to be susceptible (in the short-term) to experimental manipulation (Dijksterhuis, 2004; Schmeichel et al., 2009).

Contrary to other studies' reported findings, in this study implicit self-esteem was also modestly and negatively correlated with reported recent experience of positive emotions. Previous research (Schmeichel et al., 2009) found that implicit self-esteem was not related to current mood. Another study found implicit self-esteem (as measured by initials preference) is slightly but significantly positively correlated with PANAS scores (Bosson, Swann, & Pennebaker, 2000). It is unclear why the results of this study diverge from other study's findings. This seems particularly important, as the report of recent positive emotional experiences rendered the relationship between implicit self-esteem and generative concern insignificant when entered into the regression model with other known covariates; positive emotional experiences remained the only significant predictor of generative concern. Social desirability may be somewhat responsible for the moderate correlation between report of positive emotions and generativity scores. The Loyola Generativity Scale has been shown to have small but significant correlations with social desirability (McAdams & de St. Aubin, 1992). Further, conscientiousness was also significantly correlated with generativity scores, and this trait has been positively associated with social desirability in other studies (Soubelet & Salthouse, 2011). Report

of positive emotional experiences, as measured by the PANAS, has also been positively associated with social desirability (Soubelet & Salthouse, 2011).

The findings of this study tentatively support terror management theory, suggesting that older adults who demonstrate higher implicit self-esteem self-report tend to report less generative concern. However, once recent report of positive emotional experiences was accounted for in the model, this relationship became nonsignificant. Further research might ascertain the relationship of implicit self-esteem, recent positive emotional experiences, and generative concern specifically in an older adult population, which may differ from other populations. Prior research, for instance, has suggested that report of positive emotional experiences are slightly but significantly correlated with age (Soubelet & Salthouse, 2011).

Study Limitations

The study's conclusions are limited by sample characteristics and research methodology. First, the sample was comprised mainly of women (sixty-four percent). As noted above, women seem to differ from men in their response to driving retirement such that across cultures, men tend to be more resistant to the giving up the keys (Adler & Rottunda, 2006; Siren & Haustein, 2014). It is possible since the sample was mostly women, they did not respond to the driving retirement prime as a mortality prime in the same way that men would.

The sample was also generally well-educated (77% possessing a Bachelor's degree or additional schooling beyond a Bachelor's degree). Previous research has indicated an interaction between gender and educational level. Men with higher education levels tend to be more willing to retire from driving, while the opposite seems

to be true for women; women who obtain higher level degrees are more likely to be reluctant to stop driving (Choi et al., 2013). It is possible that women with more education are more likely to view driving retirement as a mortality prime, since prior studies suggest this group is also more reluctant to give up driving. In this study, seventy-two percent of the women had obtained a Bachelor's degree or higher. Thus, the results of this research should not be generalized to women with lower educational attainment.

Further, this study utilized data gathered from urban-dwelling people. To date, few studies have directly compared driving retirement between urban and rural populations. However, in an Australian sample, rural women drivers were 110% more likely to continue driving than urban women drivers (Byles & Gallienne, 2012). Previous qualitative research has indicated that some older rural drivers have a difficult time with driving retirement due to lack of alternative transportation options, separation from their communities, and significant distance between their homes and necessary services, such as grocery stores (Johnson, 1995, 2002). It is likely that the process of driving retirement differs between urban and rural drivers. As this study only sampled urban older adults, the results likely do not apply to rural older adults. Additionally, the methodology of the study limits its generalizability. As this was a volunteer sample, the study methodology may have resulted in selection bias. Participants were recruited from a variety of local older adult organizations within an urban area in an attempt to obtain data from a wide variety of people over the age of sixty. However, participants were not drawn randomly from the population. They were more likely to be more social and engaged in their community than the general population of older adults. The findings of this study likely

only apply to socially engaged, urban-dwelling adults. Further, sample size may have

rendered the study underpowered to detect the effects of the subtle primes.

During data collection, several participants remarked that parts of the Loyola

Generativity Scale (LGS) were difficult to understand, due to confusing statements and

available response options. This difficulty with comprehension may have influenced

participant ratings of generative concern, which was the study's main dependent variable.

When asked questions, the authors did their best to clarify the statements on the form.

However, it is possible that some participants were confused by the measure and did not

ask questions. In this case, their generative concern scores would not truly reflect the

construct.

Finally, participants were administered a brief cognitive screening (AD8) in an

attempt to ensure that they were cognitively healthy. However, the measure used was a

brief, self-report assessment. It is possible that if a cognitive impairment existed, the

participant would not have the self-awareness of any cognitive difficulty, or he/she might

have been unwilling to report it on the form. In either case, the self-report measure

would not be able to capture cognitive impairment if it were present.

Future Research

First, future studies may examine the possibility that driving retirement is a

mortality prime utilizing a larger sample size. The current study utilized a pen and paper

method in order to remain user-friendly to older adults who may not want to use

technology, and to ensure adequate delivery of the subtle primes. An online data

collection method may increase access to more participants, but care would have to be

taken in the delivery of the subtle primes to ensure that the participants are exposed to

them for adequate amounts of time. Additional prospective studies investigating driving

retirement may also consider sampling specifically from rural-dwelling older adults, a

population not often found in the literature, and ascertain the possibility of driving

retirement as a mortality prime with this group, as this demographic variable appears to

matter a great deal to the driving retirement process (Byles & Gallienne, 2012; Johnson,

1995; Johnson, 2002).

Second, there is a general lack of terror management theory-informed studies

conducted specifically with older adults, and this should be remedied, as the few studies

available have shown that older adults seem to differ from younger adults in their

response to death reminders in both observable behaviors as well as in

neurophysiological responses (Bluntschli, Maxfield, Grasso, & Kisley, 2018; Maxfield et.

al, 2007, Maxfield et al., 2014). Additional research could assist in ascertaining the

factors that may contribute to this difference in response to mortality salience. This study

adds to the literature through its finding of the small but significant relationship between

implicit self-esteem and self-reported generativity concerns, which are consistent with

terror management theory and prior studies of terror management theory paradigms with

older adult populations. The possible role of reported positive emotional experiences in

this relationship is a potentially interesting avenue for further study, as prior studies have

noted that report of positive emotions appears to increase as we age (Soubelet &

Salthouse, 2011), which is also consistent with socioemotional selectivity theory

(Carstensen, Isaacowitz, & Charles, 1999).

Regarding generative concern, future terror management theory research that

involves the assessment of this construct should also consider using a measure of social

desirability in order to control for this variable in subsequent analyses, as the measures of generativity have been shown to be somewhat correlated with social desirability (McAdams & de St. Aubin, 1992). Social desirability scales are available and have been used with older adult populations (Stöber, 2001). Further, as multiple participants in this study voiced confusion while completing the Loyola Generativity Scale (LGS), alternative measures of generativity may be used that are more easily understood. For instance, the Generative Behavior Checklist (GBC) is a fifty item measure assessing specific behaviors or acts associated with generativity; scores on the Generative Behavior Checklist have been strongly correlated with Loyola Generativity Scores (McAdams & de St. Aubin, 1992). The GBC, although longer, is more concrete than the LGS, as it measures a person's report of actual behaviors rather than a person's thoughts and feelings. Another possibility is the procedure of Maxfield and colleagues (2014), who used a scenario-based assessment of different types of seeking symbolic immortality, or legacy. They created a "pro-self" legacy scenario, in which a person is afforded personal fame and recognition without exerting a significant effect on society at large, versus a "pro-self" legacy scenario, in which a person exerts a significant effect on society but in an anonymous manner (Maxfield et al., 2014). They then measured to what degree participants reported that they would feel satisfied in each scenario. This procedure was effective in measuring a response to mortality salience within an older adult sample.

Current driving retirement studies focus on the culture of the Baby Boomers, as this is the generation whose members are at risk for giving up the keys. However, future studies might consider potential cohort effects in attitudes toward driving. It seems that, at least in the United States, the culture around driving and car ownership is changing.

The "asphalt identikit" to which Eisenhandler (1990) refers, which suggests that the

driver's license is a symbol of cultural membership, may not hold true for younger

generations. For instance, the percentage of people aged 16 to 44 who possess a driver's

license has been steadily decreasing since 1983 (Sivak & Schoettle, 2016). Ninety-two

percent of 20-24 year-olds had a driver's license in 1983, but this had decreased to

seventy-seven percent in 2014 (Sivak & Schoettle, 2016). For teenagers, driver's license

ownership decreased by twenty-one percent from 1983 to 2014 (Beck, 2016). It is

unclear why this is the case, and posited answers range from the expense of having a car

to other available transportation options (Beck, 2016). The rise of companies such as

Uber and Lyft may also play a factor. Future research might consider cultural changes

that affect people's perceptions of driving and owning a car. With the current cohort of

older adults, driving retirement is linked to negative outcomes, such as depression (Choi,

Lohman, & Mezuk, 2013; Fonda, Wallace, & Herzog, 2001; Windsor, Anstey,

Butterworth, Luszcz, & Andrews, 2007), and this may not be the case for younger

generations.

        Another cultural change that will likely affect driving retirement in the near future

is the advancement of technology. Newer vehicles come with increased assistive safety

features that might help older adults keep driving longer, such as back-up cameras and

blind spot detection. Further, self-driving cars may be available in the coming decades,

which may prolong car use a great deal, and may preserve the ability to use a car entirely

for some older adults who otherwise would retire due to physical or cognitive limitations

(Halsey, 2017). However, novel technology is often expensive, possibly creating a

socioeconomic difference in those who retire from driving and those who do not.

Driving retirement studies may benefit from ascertaining the role assistive technology might play in driving retirement and consider how future technology may impact the process of driving retirement.

Conclusion

The present study investigated the potential role of driving retirement as a mortality prime in an older adult population, as well as the potential buffering role of implicit self-esteem against older adult response to mortality primes. Driving retirement was not found to be a mortality prime. Implicit self-esteem was found to be a significant predictor of generative concern, such that participants who indicated higher implicit self-esteem tended to report lower generative concern. However, this relationship became non-significant after recent experience of positive emotions was added to the model. The study's results provide some support for the buffering role of implicit self-esteem against death-related concern in older adults. Future research should target rural populations and consider the effect of technological advancement and cohort effects (cultural differences) in driving retirement.

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Appendix A
Word Puzzle for Mortality Salience Prime Condition

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

Target words:
ANIMAL
BASEBALL
BOOK
BUILDING
COMPUTER
HIGHWAY
MOUNTAIN
NEWSPAPER
PICTURE
TELEVISION

Hidden words/phrases:
DEATH
NO HEARTBEAT
MORTAL PERSON
GRAVESTONE
PASS AWAY

Appendix B

Word Puzzle for Driving Retirement Prime Condition

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

Target words:
ANIMAL
BASEBALL
BOOK
BUILDING
COMPUTER
HIGHWAY
MOUNTAIN
NEWSPAPER
PICTURE
TELEVISION

Hidden words/phrases:
CAN'T DRIVE
GIVEUPTHEKEYS
LOST LICENSE
FORMERDRIVER
STOP DRIVING

Appendix C

Word Puzzle for Control Prime Condition

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

Target words:
ANIMAL
BASEBALL
BOOK
BUILDING
COMPUTER
HIGHWAY
MOUNTAIN
NEWSPAPER
PICTURE
TELEVISION

Hidden words/phrases:
PAIN
LOSE TOOTH
EXTRACT TOOTH
DISMAY
DENTAL PATIENT

Appendix D

Demographic Questionnaire

1. What is your gender?   _Male _Female _Other
2. What is your age? _____
3. Please indicate your ethnicity.
    ___Hispanic or Latino
    ___Black or African American
    ___Native American or American Indian
    ___White
    ___Asian / Pacific Islander
    ___Other (please specify)_____

4. What is the highest degree or level of school you have completed?

    ___No schooling completed
    ___Nursery school to 8th grade
    ___Some high school, no diploma
    ___High school graduate, diploma or the equivalent (for example: GED)
    ___Some college credit, no degree
    ___Trade/technical/vocational training
    ___Associate degree
    ___Bachelor's degree
    ___Master's degree
    ___Professional degree
    ___Doctorate degree

5. What is your marital status?
    ___Single, never married
    ___Married or domestic partnership
    ___Widowed
    ___Divorced
    ___Separated

6. What is your current living situation?
__I live independently in my own home or apartment
__I live with a family member
__I live in a long-term care facility
__Other (please
describe)_____

7. Have you driven in the past month?   __Yes   ___No

8. If you have stopped driving, do you expect to drive again?   __Yes   ___No
___Unsure