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An Economic Model of Mortality Salience in Personal Financial Decision Making: Applications to Annuities, Life Insurance, Charitable Gifts, Estate Planning, Conspicuous Consumption, and Healthcare

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The study of personal mortality salience and the denial of death have a long history in psychology leading to the modern field of Terror Management Theory. However, a simple consumer utility function predicts many of the outcomes identified in experimental research in this field. Further, this economic approach explains a range of otherwise unexpected financial decision-making behaviors in areas as diverse as annuities, life insurance, charitable gifts and bequests, intra-family gifts and bequests, conspicuous consumption, and healthcare. With its relevance to such a wide range of personal financial decisions, understanding the impact of mortality salience can be particularly useful to advisors in related fields.

Keywords: mortality salience; terror management theory; annuities; life insurance; charitable gifts; healthcare

“I intend to live forever. So far, so good.”

– Comedian Steven Wright

INTRODUCTION

A long history of work in psychology – beginning with Otto Rank (1941/2011), popularized by Ernest Becker (1973), and experimentally tested for decades by modern researchers (Burke, Martens, & Faucher, 2010) – called Terror Management Theory (TMT) suggests that humans treat personal mortality awareness far differently than other types of objective information. This paper proposes that a simple consumer utility function predicts many behaviors identified in TMT experimental research and provides insight into a wide range of otherwise perplexing behaviors with relevance to financial decision making. Understanding the sometimes unexpected implications of the model for financial

decisions involving contemplation of personal mortality can generate practically useful strategies for advisors seeking to understand and assist clients in advancing personal and family well-being.

MORTALITY SALIENCE IN PSYCHOLOGY

Originally rooted in complex notions of post-Freudian psychoanalysis, TMT suggests that the awareness of impending death creates anxiety or “terror,” and the central task of various psychological constructs is to manage this fear (Becker, 1973; Rank, 1941/2011). A modern extension of these concepts holds that personal mortality salience generates two types of defenses: first, avoidance, and second, pursuit of symbolic immortality (Pyszczynski, Greenberg, & Solomon, 1999).

Initial Avoidance

In general, people express an aversion to focusing on their own death. In a standard work on the psychology of death, Kastenbaum (2000, p. 98) explains that there is “general agreement that most of us prefer to minimize even our cognitive encounters with death.” Avoiding personal mortality related thoughts can be accomplished in a number of ways such as distraction (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994), active suppression (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997), or biasing estimates of vulnerability (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000).

Induced Avoidance

Beyond this general tendency towards avoidance, experimentally-induced mortality reminders actually increase subsequent tendencies to suppress death-related interactions (Arndt et al., 1997; Greenberg et al., 2000). For example, experimentally-induced mortality reminders lead to increased denial of personal characteristics said to result in early death (Greenberg et al., 2000).

Symbolic Immortality

Avoidance, however, is not a complete solution to managing the fear of death because the inevitable reality of mortality persists. As a second defense, people may engage in the pursuit of symbolic immortality. Pyszczynski, Greenberg, and Solomon (1999) explained, “the hope of symbolic immortality is provided by enabling individuals to feel a part of something larger, more powerful, and more eternal than themselves, such as the family, church, nation, corporation, or other enduring social entities” (p. 836). Although the person will die, some impact will live on through one’s surviving in-group, making the support and maintenance of the in-group particularly important.

Accordingly, mortality salience increases the desire to be remembered by and to support one’s surviving in-group members, and to oppose surviving out-group members. The increased desire for remembrance can be seen in that mortality reminders increase the desire for fame (Greenberg, Kosloff, Solomon, Cohen, & Landau, 2010), the perception of

one's past significance (Landau, Greenberg, & Sullivan, 2009), and even the interest in naming a star after one's self (Greenberg et al., 2010). Increased willingness to support one's in-groups, and resist out-groups, can be seen in the effect of mortality reminders on increasing negative ratings by Americans of anti-US essays (Burke et al., 2010), increasing German preference for the German mark instead of the euro (Jonas, Fritsche, & Greenberg, 2005), increasing the predicted success of the national soccer team (Dechesne, Greenberg, Arndt, & Schimel, 2000), increasing negative ratings of foreign candy (Friese & Hoffmann, 2008), and increasing support for more nationalistic political figures (Burke et al., 2010).

Although these core TMT principles do not cover the wide range of complexities, causes, and implications found in the field, they represent important points of agreement well supported by experimental results. The next section demonstrates how similar principles, as well as others, arise from an economic approach using a simple consumer utility function.

AN ECONOMIC MODEL OF CONSUMPTION WITH DEATH DENIAL

Definition of the Economic Model

Following Brunnermeier and Parker (2005), consumers maximize expected well-being, defined both by current circumstances and by expectations regarding future circumstance at each period. The inclusion of expectations of the future as an independent source of current well-being leads to a divergence between optimal expectations and rational expectations. Brunnermeier and Parker (2005) explained, "optimal beliefs trade off the incentive to be optimistic in order to increase expected future utility against the costs of poor outcomes that result from decisions made based on optimistic beliefs" (p. 1096).

In the simplest model incorporating anticipatory utility, the consumer in a two period game seeks to maximize felicity, W , where c_1 is current consumption, δ is the discount function for anticipatory utility from subjectively estimated future consumption, \hat{c}_2 , and β is the discount function for actual future consumption, c_2 . As a simple illustration, the purchase of a new pair of designer shoes can contribute to felicity because the consumer can immediately wear them, $u(c_1)$, can immediately enjoy the anticipation of wearing them at an important future event, $\delta u(\hat{c}_2)$, and later can enjoy actually wearing them at the future event, $\beta u(c_2)$.

$$W = u(c_1) + \delta u(\hat{c}_2) + \beta u(c_2)$$

Next, following Gary Becker (1974), utility is affected not only by personal consumption, c , but also by the circumstances of others, R . This utility from the circumstances of those in one's social environment, R , may represent either positive interdependence, as with a loved one, or negative interdependence, as with an enemy. Because future personal consumption is contingent on the consumer's survival to the future period, s [0,1], anticipatory utility from future personal consumption is contingent on the consumer's subjective beliefs regarding survival to the future period, \hat{s} [0,1]. In

contrast, the consumer may gain anticipatory utility from the future circumstances of others, R_2 , even in a condition where the consumer will not survive to the future period. Although the consumer who does not survive will be unable to personally observe and appreciate the circumstances of others during the future period, the consumer can still gain anticipatory utility from his or her impact upon those future circumstances. In this approach, the only element of uncertainty subject to optimism is the consumer's subjective estimation of the probability of survival, \hat{s} , which may differ from an objective survival estimate, s , by incorporating death denial, d [0,1]. Thus, in this expanded form, the consumer seeks to maximize.

$$W = u(c_1, R_1) + \delta u(\hat{c}_2, R_2) + s\beta u(c_2, R_2), \text{ where } \hat{c}_2 = \hat{s}c_2 \text{ and } \hat{s} = s + d(1-s)$$

To return to the simple illustration, in the expanded model the consumer can also receive felicity by giving a new pair of designer shoes to a friend from the friend's immediate use of the shoes, $u(R_1)$, from the immediate contemplation of the friend's use of the shoes at an important future event, $\delta u(R_2)$, and later from actually observing the friend wearing the shoes at the future event, $s\beta u(R_2)$. Additionally, the expanded model incorporates the objective, s , and subjective, \hat{s} , likelihood that the consumer will survive to the future event. As before, the consumer may purchase a pair of shoes for his or her own use and immediately enjoy the anticipation of wearing them at an important future event. But now, that enjoyment, $\delta u(\hat{c}_2)$, depends upon the consumer's subjective estimate of the likelihood of surviving to the future event, $\hat{c}_2 = \hat{s}c_2$. In contrast, enjoyment from the immediate anticipation of the friend's use of the shoes at the future event, $\delta u(R_2)$, is not dependent upon the consumer's survival.

Anticipatory utility is assumed to be non-decreasing in inputs and subject to diminishing marginal utility separately for anticipatory utility from expected future consumption, $u'(\hat{c}_2) > 0$ & $u''(\hat{c}_2) < 0$, anticipatory utility from expected future circumstances of others, $u'(R_2) > 0$ & $u''(R_2) < 0$, and combined as total anticipatory utility, resulting in negative cross-partials, $\partial u'(\hat{c}_2) / \partial R_2 < 0$ & $\partial u'(R_2) / \partial \hat{c}_2 < 0$.

Finally, developing and maintaining a bias, such as death denial, is not costless but requires effort. Thus, an exogenous personal mortality reminder could reduce the death denial bias, consequently requiring additional investments to rebuild the bias to the pre-reminder level. The consumer is constrained by a budget, B , that can be used to purchase a vector of market or self-produced goods and services, X . These expenditures can influence current personal consumption, X_{c1} , current circumstances of others, X_{R1} , future circumstances of others, X_{R2} , future personal consumption if the consumer survives, X_{c2} , objective survival probability, X_s , or help to bias or ignore estimates of the consumer's survival probability, X_d . As in Lancaster (1966), goods are inputs in which the output is a collection of characteristics, and utility comes from these characteristics. Thus, a single good or service may have multiple impacts in each of these categories of characteristics. Although such characteristics may be bundled within a specific good, prices p_{c1} , p_{c2} , p_s , p_d , p_{R1} , and p_{R2} , reflect the latent unbundled price structure, assumed to be non-decreasing, for each separate characteristic type via current efforts and expenditures.

$$B = p_{c1}X_{c1} + p_{c2}X_{c2} + p_sX_s + p_dX_d + p_{R1}X_{R1} + p_{R2}X_{R2}$$

Current personal consumption, c_1 , includes the vector of characteristics of goods and services both from current period purchases, X_{c1} , and from all sources outside of current purchases (e.g., pre-existing capital assets or public goods). The same concept applies to all other budget elements. For example, the current, R_1 , or anticipated future, R_2 , circumstances of all others includes those generated by the consumer's expenditures, X_{R1} or X_{R2} , and those existing outside of such expenditures. The objectively estimated probability of survival, s , consists of current expenditures affecting longevity, X_s , and mortality-related circumstances outside of such expenditures. The consumer's level of death denial, d , is influenced by current efforts affecting death denial, X_d , and death denial circumstances outside of such efforts. As with any maximizing consumption decision, at equilibrium, the marginal utility from spending on any inputs will be equal for all inputs with a positive investment.

Discussion of the Economic Model

Kopczuk and Slemrod (2005) presented the only previous economic model explicitly incorporating death denial, explaining "we argue that anxiety associated with thinking about death may in some circumstances lead people to repress, or deny, news about their mortality" (p. 2). The current approach differs from Kopczuk and Slemrod's (2005) model in several ways, including incorporating the consumer's social environment, R_1 and R_2 , and removing the requirement for an *a priori* assumption that death contemplation must cause anxiety (although allowing that such a reaction would be likely).

Death denial need not mean that a consumer is unable to estimate accurate survival probabilities, only that he or she does not always apply such estimates in specific consumption decisions when optimism is the felicity-maximizing subjective expectation for that decision. The idea that people routinely apply rosier predictions about their own future than is objectively warranted (i.e., "optimism bias") is not new (Sharot, 2011), nor is an economic model that explicitly allows for information repression and self-deception in support of these self-serving beliefs (Bénabou & Tirole, 2002). Similarly, the idea that people can invest effort to *increase* their appreciation of a future event is not new to economics (Becker & Mulligan, 1997; Böhm-Bawerk, 1891). Allowing death denial suggests that by similar means a person may put forth effort to *decrease* appreciation of a specific future event (i.e., his or her death).

The effort spent in biasing applied mortality estimates cannot be used for other production or leisure activities, and thus is subject to a personal time and effort budget constraint. As in previous approaches (Becker & Mulligan, 1997; Bénabou & Tirole, 2002), such efforts may include laboring to enhance the vividness of optimistic imaginations, purposeful information repression, and the active avoidance of undesirable reminders.

In addition to such personal efforts, spending money on certain goods or services can aid in death denial. For example, quack medicine or placebo treatments often provide a

plausible story, a convincing “expert,” and a community of followers, all of which may facilitate biasing mortality estimates or avoiding death contemplation.

Derivation of TMT and Other Predictions from the Economic Model

As derived by Brunnermeier and Parker (2005), incorporating anticipatory utility leads to optimism bias in predicting future circumstances. Where optimism regarding future survival is optimally present ($d > 0$), exogenously reducing this optimism, such as by a morality salience reminder, lowers anticipated future period personal consumption by reducing the survival estimate, \hat{s} , applied to future consumption. This reduces utility from current period anticipation of future circumstances.¹ Consequently, if re-establishing optimism is costly ($p_d > 0$), the consumer will avoid engaging with mortality salient topics that lower death denial unless there is an offsetting gain in objective longevity, s , consumption, c_1 or c_2 , or social environment, R_1 or R_2 . This corresponds with “initial avoidance” in TMT.

A shock that exogenously lowers death denial, d , lowers the subjective probability of survival to the future period, \hat{s} , and thereby lowers subjectively estimated future consumption \hat{c}_2 . Because the anticipatory utility from this subjectively estimated future consumption, \hat{c}_2 , is subject to diminishing marginal utility, $u'(\hat{c}_2) > 0$, the immediate marginal utility of \hat{c}_2 , and thus inputs d and s , will rise. However, this may not occur for the input of future consumption, c_2 , as the drop in death denial itself, d , reduces the effectiveness of this input in generating subjectively estimated future consumption, \hat{c}_2 , and hence in generating anticipatory utility. Additionally, the diminishing marginal utility of overall combined anticipatory utility, $\delta u(\hat{c}_2, R_2)$, also raises the immediate marginal utility of input R_2 (this from the negative cross-partial, $\partial u'(R_2)/\partial \hat{c} < 0$). Thus, the exogenous shock should increase investments in $p_d X_d$, $p_s X_s$, and/or $p_{R_2} X_{R_2}$ relative to investments in $p_{c_1} X_{c_1}$, $p_{c_2} X_{c_2}$, and $p_{R_1} X_{R_1}$. The increased investment in $p_d X_d$ corresponds with “induced avoidance” in TMT. The increased investment in $p_{R_2} X_{R_2}$ corresponds with pursuit of “symbolic immortality” (increased support for in-group members and resistance to out-group members) in TMT.

Beyond replicating these core predictions from TMT, this approach suggests additional implications with regard to objective longevity, s . Because objective survival probability, s , and death denial, d , are similar inputs to the subjective probability of survival, \hat{s} , reducing the objective probability of survival, s , such as through aging or health shocks, should have effects similar to experimental manipulations that reduce death denial, d . As described above, such exogenous reductions in d (or s) would generate increased investment in $p_s X_s$, $p_d X_d$, and/or $p_{R_2} X_{R_2}$. The choice of which depends upon the relative cost and effectiveness of each.

¹ This still holds when survival contingent transfers of goods originally intended for c_2 , i.e., bequests, are allowed. Such transfers result in lost utility whenever the desire for own future consumption, c_2 , differs from the desire for future impact on another, R_2 . For example, another may inherit clothes purchased for the consumer’s use, but this transfer will likely generate less anticipated utility than a comparable purchase originally intended for the other’s future use.

The increased marginal utility of R_2 relative to c_1 , c_2 , or R_1 would increase the relative desire for future social impact as objective longevity falls. But, the relationship with s and d is more complex. Death denial, d , and objective survival probability, s , are substitutes that crowd each other out, $\hat{s} = s+d*(1-s)$. At the extreme, a person with 100% death denial would receive no anticipatory utility benefit from improving objective longevity (e.g., via health-related investments or reducing risky behaviors). Conversely, improvements to objective longevity generate the greatest anticipatory utility impact when death denial does not exist. This trade-off is particularly important when pursuit of each is mutually exclusive. For example, getting tested for a life-threatening disease or accepting the mortality dangers of one's risky behaviors would likely generate higher mortality salience, thus lowering d , but could also increase objective longevity, s , due to early detection or behavioral changes. A person who believes he or she can have little additional impact on his or her health (i.e., perceives a high or unattainable marginal cost structure for $p_s X_s$) would be relatively more likely to invest in death denial, $p_d X_d$.

APPLICATIONS AND EXAMPLES

Annuities

Planning for retirement with a fixed sum of money presents a challenge in large part because of statistical uncertainty about the duration of life. For example, about 20% of 65-year olds in the U.S. will live fewer than ten years, but another 20% will live 25 or more years (Lockwood, 2012). Economists have long held that the optimal solution involves the purchase of annuities (Benartzi, Previtro, & Thaler, 2011; Yaari, 1965). Yet, consumers rarely take advantage of this potentially optimal financial choice, with only about 3.6% of recent retirees having purchased any life annuities (Lockwood, 2012). This behavioral conundrum has been dubbed the "annuity puzzle" and explaining it "has proven so difficult as to prompt a search for explanations outside the rational model" (Lockwood, 2012, p. 226).

If annuity contemplation generates increased personal mortality salience, and thus potentially decreased death denial, the implications of the proposed model become relevant. Given that an annuity involves an explicit bet on one's own longevity, such an effect is logical. Salisbury and Nenkov (2016) demonstrated this experimentally. Participants rated either the likelihood that at age 65 they would put accumulated savings into an IRA or the likelihood that at age 65 they would put accumulated savings into an annuity. When asked to list the thoughts going through their mind during the decision, 1% of those in the IRA condition spontaneously mentioned death-related thoughts, as compared with 40% of those in the annuity condition.

By the *initial avoidance* implication, this mortality salience feature of annuities would create consumer resistance. To test this causal link, Salisbury and Nenkov (2016) varied the description of annuities to increase mortality salience by replacing "each year you live" with "each year you live until you die", and "if the annuity holder lives up to different ages" with "depending on the age when the annuity holder dies" (p. 7). This change increased mortality salience. A higher share of respondents reported death-related

thoughts during the annuity decision process, including the death terms. Further, this increase in death-related thoughts generated a lower interest in purchasing annuities. Mediation analysis confirmed that the reduction in interest generated by the annuity description change was fully mediated by the change in death-related thoughts (Salisbury & Nenkov, 2016).

The *induced avoidance* implication suggests that other death reminders should make annuities – themselves a reminder of mortality – even less attractive. Salisbury and Nenkov (2016) also found this to be true. In a separate experiment, participants were randomly assigned to write an essay about either dental pain or their own death before indicating their interest in purchasing an annuity at age 65. Among those who first wrote about their own death, only 23% expressed interest in purchasing an annuity at age 65, while 41% of the comparison group did so.

The *symbolic immortality* implication suggests an additional reason for resistance to a standard annuity. This implication holds that a death reminder, such as annuity contemplation, should increase the relative desire for future social impact, R_2 . But, a standard annuity protects lifetime consumption, c_1 and c_2 , at the cost of a bequest transfer – a form of future social impact - R_2 . Increasing bequest motivation will decrease interest in standard annuities (Friedman & Warshawsky, 1990; Lockwood, 2012). This might also explain why about three-fourths of all annuities owned by recent retirees actually contain bequest benefits, or survivor benefits (Lockwood, 2012).

A contrary argument is that the presence of death denial should lead to excessive annuity purchases, given optimistic estimations of longevity. However, because such optimism is limited by objective impact on future outcomes, $s\beta u(c_2, R_2)$, within the limited context of this significant investment choice lowering death denial becomes maximizing, thus preventing excessive purchases. After such a choice not to invest, however, the consumer is left worse off, having lowered death denial below what is optimal outside of the limited context of this significant investment choice. Thus, the maximizing approach is to avoid or postpone contemplation of the annuity purchase altogether.

Life Insurance

The purchase of life insurance represents another behavioral “puzzle.” Relative to their risk exposure, older adults tend to be over-insured, while younger families tend to be under-insured (Chambers, Schlagenhauf, & Young, 2011). Based on standard consumption smoothing models, the peak value for life insurance arises at age 30, yet the propensity to own life insurance actually peaks in the late 60s (Chambers et al., 2011). In a study of life insurance holdings by those in their 50s and early 60s, nearly half of married people “were protected by life insurance even though they faced no underlying vulnerabilities” (Bernheim, Fornie, Gokhale, & Kotlikoff, 2003, p. 360). In contrast, another study found that among secondary earners in their 20s and 30s, only one-in-five “held sufficient life insurance to avert significant or severe financial consequences” (Bernheim, Carman, Gokhale, & Kotlikoff, 2003, p. 532). The authors summarized succinctly, “life insurance is

essentially uncorrelated with financial vulnerability at every stage in the life cycle” (Bernheim et al., 2003, p. 531).

Purchasing term life insurance is, in essence, pure death planning, suggesting that contemplation of such purchases would generate mortality salience. Fransen, Fennis, Pruyn, and Das (2008) confirmed this experimentally, finding that simply exposing participants to a life insurance company logo increased their mortality salience. Similarly, Rockloff, Browne, Li, and O’Shea (2014) used a question about owning a life insurance policy to trigger mortality salience.

By the *initial avoidance* implication, the mortality salience feature of life insurance would lead consumers to resist, and hence delay, the initial *purchase* of life insurance. Yet, if a consumer had a long-standing policy, contemplating *cancellation* might also heighten mortality salience, creating resistance and delay even when the original need had disappeared. Separately, advancing age reduces objective longevity, s , increasing the marginal utility of investing in future social impact, $p_{R2}X_{R2}$, such as through a life insurance bequest, relative to other investments, $p_{c1}X_{c1}$, $p_{c2}X_{c2}$, or $p_{R1}X_{R1}$.

Combining the *initial avoidance* and *symbolic immortality* implications may explain why life insurance is “sold and not bought” (Bernheim et al., 2003, p. 354). Consumers will tend to avoid decision making that induces mortality salience, such as contemplating life insurance purchases. However, if a salesperson were able to induce mortality salience – by forcing contemplation of life insurance or otherwise – then the consumer’s attraction to the bequest benefit, R_2 , of the product would increase. This results in a product that could be “sold” even if, without a salesperson, it would not be “bought.” However, to the extent that such salespeople are associated with death contemplation, the *initial avoidance* implication suggests that consumers will tend to avoid them. This may explain the tendency for life insurance agents to adopt substitute titles such as financial advisor (Rosh, 2015). Further, it may help to explain the relative attraction of whole life products that allow for initial discussion of non-death-related savings goals, albeit with an ancillary death-related component, as compared with the pure death planning of term life insurance.

Charitable Gifts

Charitable gifts are one method of making investments in the circumstances of others, such as improving others’ welfare or improving others’ opinions of the donor. The *symbolic immortality* implication suggests that inducing mortality salience will increase the marginal utility of investments in future social impact, $p_{R2}X_{R2}$, relative to current, $p_{c1}X_{c1}$, or future, $p_{c2}X_{c2}$, consumption experiences. Correspondingly, experimental research has found that death reminders increased giving and favorability toward charities that support one’s social affiliations (Jonas, Schimel, Greenberg, & Pyszczynski, 2002) or one’s salient social norms (Jonas, Sullivan, & Greenberg, 2013). Further, death reminders increased satisfaction resulting from sharing money with others (Zaleskiewicz, Gasiorowska, & Kesebir, 2015).

The same implication suggests that inducing mortality salience will increase the marginal utility of investments in future social impact, $p_{R2}X_{R2}$, relative to immediate social impact, $p_{R1}X_{R1}$. Wade-Benzoni, Tost, Hernandez, and Larrick (2012) provided an experimental test of this concept. Participants were entered into a drawing for \$1,000 and were given the opportunity to pre-commit some of their potential winnings to a charity benefiting people in impoverished communities. Half of the participants read that the charity was “focused on meeting the immediate needs of people in those communities.” The other half read that the charity was “focused on creating lasting improvements that would benefit people in those communities in the future.” Thus, the two descriptions roughly corresponded to the R_1 and R_2 concepts of the proposed model. Half of those in each group were exposed to a death reminder prior to making the charitable giving decision. For those not exposed to a death reminder, the description focused on immediate social impact generated a higher average gift amount (\$257.77) than the description focused on lasting improvements (\$100.00), $p_{R1}X_{R1} > p_{R2}X_{R2}$. However, under mortality salience, the description focused on immediate social impact generated a lower average gift amount (\$80.97) than the description focused on lasting improvements (\$223.98), $p_{R1}X_{R1} < p_{R2}X_{R2}$. Therefore, this result corresponds with the model’s implication that inducing mortality salience will increase the desire for future social impact, R_2 , relative to immediate social impact, R_1 .

Separately, the popularity of charitable gift annuities, estimated to hold \$15-\$20 billion (Behan & Clontz, 2005) despite their low return and high risk relative to commercial annuities, may be explained, in part, by an increased desire for future social impact, R_2 , generated by the mortality salience inherent in annuity contemplation. A charitable gift annuity allows a donor to purchase fixed lifetime payments, lower than those available for commercial annuities, from the charity that, depending upon the state of issuance, may have no reserves to support the payments (American Council on Gift Annuities, 2016). Nevertheless, because any unused portion benefits the charitable organization at the death of the annuitant, a charitable gift annuity provides the future social impact, R_2 , missing from a traditional commercial annuity.²

Estate Planning

The *initial avoidance* implication is consistent with the underutilization of estate planning documents. In the U.S., roughly half of adults age 55 and over have no estate planning documents (James, 2015). If this implication is influential then using descriptions limiting death references should increase interest, just as with annuity descriptions (Salisbury & Nenkov, 2016). James (2016) found experimentally that avoiding extraneous death-related terms when describing a charitable bequest gift significantly increased interest in making such gifts.

² The *symbolic immortality* implication may also explain why it is rare for a donor to either purchase a commercial annuity with cash and donate the price difference to a charity, or to request that the charity immediately spend the actuarial estimated residual rather than waiting for the donor’s death. As compared with the typical charitable gift annuity, both would exchange future charitable benefit, R_2 , for immediate charitable benefit, R_1 .

Poterba (2001) and Kopczuk and Slemrod (2003) demonstrated that those with taxable estates substantially underutilize the significant tax advantages of making immediate gifts to family members in place of bequest transfers. Kopczuk and Slemrod (2005) attributed this to “the refusal to face up to one’s mortality” (p. 19), which fits with the *initial* and *induced avoidance* implications of the current model. In addition, estate planning increases mortality salience, which, by the *symbolic immortality* implication, increases the value of investments in future social impact, $p_{R2}X_{R2}$, such as a bequest gift to family members, relative to investments in immediate social impact, $p_{R1}X_{R1}$, such as a current gift to family members. This implication corresponds not only with the underutilization of tax advantaged immediate gifts in estate planning, but also with the common form of these transfers. In practice, taxpayers often access these tax advantages by making current gifts to an irrevocable life insurance trust or a dynasty trust that will not benefit the recipient until well after the donor’s death (Willms, 2000). Thus, in accordance with the *symbolic immortality* implication, the taxpayer uses the tax benefit of immediate gifting, R_1 , but does so in a way that generates only a future benefit to heirs, R_2 .

These future circumstances of others, R_2 , may also include others’ opinions of the consumer even when the consumer is deceased at the future time. Such opinions commonly relate to compliance with or violation of socially accepted norms. Thus, social norm reminders may have a heightened importance in a mortality salient decision context such as estate planning. Correspondingly, in the United Kingdom, Sanders, Halpern, and Service (2013) found that inclusion of a charitable bequest increased more than three-fold when the drafting professional included a social norm statement by mentioning, “many of our customers like to leave money to charity in their will” (p. 22). In the United States, James (2016) reported a similar effect for a social norm statement in the charitable bequest context.

Conspicuous Consumption

Some goods may have benefits both from personal consumption experience and from their effect on others. Wong (1997, p. 197) defined conspicuous consumption as a circumstance “in which product satisfaction is derived from audience reaction rather than utility in use.” A luxury good or socially-conscious good (e.g., those with fair trade labels or associated charitable transfers) may be desired in part because it affects others opinions of the consumer, or because it encourages others to adopt socially beneficial practices. The portion of this social impact that continues into the future is a form of R_2 .

The *symbolic immortality* implication suggests that mortality salience will shift preferences toward those products with elements of desirable future social impact, R_2 , relative to those products with only personal consumption characteristics, c_1 and c_2 . Accordingly, Kasser and Sheldon (2000) found that mortality salience increased plans to purchase luxury products in the future. Others have found that mortality salience increased the desire for luxury products – Lexus car, Jaguar car, Rolex watch, famously expensive sweets, or other luxury brands – but not for products without such features – economy car, potato chips, or non-luxury brands (Heine, Harihara, & Niiya, 2002; Mandel & Heine, 1999; van Bommel, O’Dwyer, Zuidgeest, & Poletiek, 2015).

The same effect can be seen for socially-conscious purchases. Mortality salience, when combined with reminders of pro-environmental social norms, increased the desire for an environmentally-friendly vehicle, Toyota Prius, and an environmentally-friendly reusable cup while decreasing the desire for a less environmentally-friendly vehicle, Ford Expedition, and a less environmentally-friendly disposable cup (Fritsche, Jonas, Kayser, & Koranyi, 2010). Maheswaran and Agrawal (2004) suggested that in consumer purchase decisions, “when mortality is salient, people are more willing to act in concert with the opinions of others” (p. 214). Thus with both luxury and environmentally-friendly products, the opinions of others – an example of a characteristic of others that can persist in the future even without the consumer’s survival (i.e., R_2) – becomes more important as the result of inducing mortality salience.

End-Of-Life Healthcare Spending

Given that the majority of health care costs arise in the final year of life, advance medical directives could have a dramatic impact on survivor financial circumstances, as well as the fulfillment of patient desires (Horn & Meulen, 2014). Despite this potential impact, and free availability from medical care providers, only about 8% to 17% of adults over age 65 have advance directives (Musa, Seymour, Narayanasamy, Wada, & Conroy, 2015). The underutilization of advance directives is consistent with the mortality-salience *avoidance* implications of the current approach.

If the avoidance implications are relevant, then de-emphasizing death-focused language should be useful. Experimental research has found such framing to be influential not only in death-related financial decisions, such as annuities (Salisbury & Nenkov, 2016) and charitable bequests (James, 2016), but also in medical decisions. For example, people are more willing to accept a treatment presented as having a 90% chance of survival than one presented as having a 10% chance of death (McNeil, Pauker, Sox, & Tversky, 1982). Accordingly, Payne, Prentice-Dunn, and Allen (2009) found that a more death-focused, threatening intervention was less successful in generating completed advance directives than a positive intervention encouraging healthy aging. Discomfort with personal mortality can also lead healthcare workers to avoid broaching end-of-life planning discussions, with potentially serious negative consequences for the patient (Morrison, Morrison, & Glickman, 1994; Volandes, 2015). Peck (2009) found that oncology social workers with greater death anxiety were less likely to communicate with patients about advance directives.

Contrary to those who support advance directives, Jaworska (1999) presents an objection based upon the inability of the current self to predict the future self’s preferences. Such an objection actually corresponds with the current model, which suggests that preferences will change as objective longevity, s , falls. Specifically, exogenous reductions in objective survival, s , should generate increased investment in longevity, $p_s X_s$, death denial, $p_d X_d$, and/or future social impact, $p_{R_2} X_{R_2}$. The increased willingness to invest in longevity-related healthcare, $p_s X_s$, corresponds with results from Matsuyama, Reddy, and Smith (2006) who found that those actually facing the end of life were much more likely to choose extreme treatment options with small benefits than were well persons making similar decisions. Tsevat et al.’s (1998) finding also reflects a relatively high desire for increased

longevity at the end of life; among patients aged 80 years or more who were currently in the hospital, over two-thirds were unwilling to trade even 10% of life expectancy in exchange for excellent health. Even when treatments lose their objective medical efficacy, they may still have value in generating false hope, or death denial. This desire for investing in false hope, $p_d X_d$, may help to explain Emanuel and colleagues' (2003) finding that Medicaid patients nearing the end of life were just as likely to use chemotherapy whether or not their type of cancer was considered responsive or unresponsive to chemotherapy.

Separately, the current approach suggests an increased desire for investments in future impact on others, $p_{R2} X_{R2}$, resulting from diminished longevity. This is consistent with evidence that a terminal diagnosis can lead to a rapid shift in personal attitudes and values to become more other-centered, including increases in empathy, forgiveness, helping, compassion, and social bonding (Vail et al., 2012; Yalom, 2015). Of course, aging also reduces life expectancy. Correspondingly, Schoklitsch and Baumann (2012) observed that generativity or "the concern in establishing and guiding the next generation" is a particularly important focus at older ages (p. 262).

Health Promotion Using Mortality Risk

In a simple rational approach, a health promotion campaign emphasizing mortality risk should generate immediate behavioral adjustments that enhance consumer welfare and longevity. However, acting on this information requires the consumer to accept his or her own personal mortality risk. Such acceptance runs counter to maintaining death denial, d . Thus, in response to the mortality salience generated by the death-focused campaign, the consumer could pursue longevity, s , at the cost of diminished death denial, d , or vice-versa.

The choice to pursue death denial is seen in examples such as people responding to information about health risks by engaging in consumption, such as drinking, designed to dull the awareness of the health risk (Leventhal, 1970), or refusing to learn of their HIV status, specifically citing the desire to avoid the resulting psychological distress (Lyter, Valdiserri, Kingsley, Amoroso, & Rinaldo, 1987).

The choice of which path to pursue, investing in either $p_s X_s$ or $p_d X_d$, will depend upon the perceived cost structure for acquiring each. Accordingly, Arndt, Routledge, and Goldenberg (2006) found that among women who strongly believed they could influence their health, death reminders increased intentions to engage in breast self-examination for cancer detection. But, among those who had low expectations of their ability to influence their health, death reminders reduced these same intentions. More generally, Witte and Allen (2000), in a meta-analysis of public health campaigns, found that stronger (commonly more mortality salient) fear appeals were simultaneously more likely to produce health-promoting behavior and were also more likely to produce defensiveness. The determining factor influencing the choice of response was the consumer's perceived efficacy in improving the health outcome with behavior change (Witte & Allen, 2000). In the current model this perceived efficacy is represented as the perceived cost structure for $p_s X_s$.

Thus, health promotion campaigns highlighting mortality risk may consider including information on the efficacy and ease of the proposed behavior change – unless the behavior is self-evidently easy (Kareklas & Muehling, 2014) – or alternatively, adding non-death related motivations (e.g., “smoking is disgusting” instead of “smoking kills”). Of course, avoidance does not require denying mortality risks that don’t apply to one’s self. This fits with experimental results finding that people are more likely to challenge the accuracy of negative medical information if it applies to their behavior (Kunda, 1987), or suggests that they are at risk (Jemmott, Ditto, & Croyle, 1986), than if it does not.

Other Personal Financial Behaviors

The proposed economic model has the potential to inform personal financial behaviors in other areas. For example, Ameriks and associates (2015) identified a “long-term care insurance puzzle” where people hold far less insurance for nursing home treatment than is economically justified. However, to the extent that contemplating future nursing home residency triggers mortality salience, the current approach would predict this kind of avoidance behavior. Similarly, the relatively low level of participation in pre-paid funeral plans (Hickey & Quinn, 2012) is unsurprising. In retirement spending, the current approach would suggest a particular attraction to spending no more than current income (from assets or otherwise), as this is the highest level of spending that does not require contemplation of the timing of one’s own death.

IMPLICATIONS FOR FINANCIAL ADVISORS AND FINANCIAL THERAPY

Financial therapy is a field that has grown from the intersection of diverse disciplines exploring personal finance, psychological functioning, and personal and family well-being. It promotes the idea that a cross-disciplinary approach can yield meaningful insights and useful practices. The proposed economic model of phenomena previously described in exclusively psychological terms demonstrates how such a cross-disciplinary approach can generate a remarkably wide range of potentially useful implications. Specifically, if many apparently disparate decisions involve a common framework when mortality is salient, then similar interventions may be effective across different applications. For example, attempts to promote estate planning may be informed by experiments with annuities, life insurance, advance directives, anti-smoking campaigns, long-term care insurance, death-related medical decisions, or even conspicuous consumption (and vice-versa). Such a radically cross-topical approach to addressing individual, ostensibly narrow, issues demonstrates the potential value of the multidisciplinary ethos of financial therapy. Beyond understanding the underlying connectedness of a wide range of decisions that either generate or respond to mortality salience, the proposed model generates specific suggestions for the practice of financial advising and financial therapy.

Manage Death Avoidance with Framing

The *avoidance* implications suggest that many people will prefer to avoid personal mortality reminders, especially when mortality is salient. This can cause clients to inappropriately avoid or postpone important death-related planning. In some cases, the advisor may be complicit in such avoidance either because the topic is personally aversive to the advisor or because the advisor wishes to avoid clients' negative reactions.

A simple step to managing this avoidance response is to reduce death-focused language when describing desirable planning options. Reframing such options with alternate language (e.g., "as long as you live" instead of "until you die") has consistently increased the attractiveness of options whether in annuities (Salisbury & Nenkov, 2016), estate planning (James, 2016), or healthcare decisions (McNeil, Pauker, Sox, & Tversky, 1982).

Where a death-focused planning discussion is necessary, creating the opportunity for such a conversation may be easier if the overall topic of discussion is not exclusively death-focused. Thus, the possibility of such a discussion may meet with greater acceptance if the advisor does not "lead with death." Broader financial topics (e.g., avoiding taxes, providing for a child's college education, planning an ideal retirement) may function as less aversive introductions to death-related topics (e.g., estate tax planning, life insurance to protect college funding, annuities). Such an approach can sidestep the initial avoidance response that might otherwise prevent the conversation from occurring at all.

Anticipate the Heightened Importance of Social Impact

When engaging in death-related planning topics, advisors may anticipate an increased interest in impact on important others, particularly long-lasting or future impact. Thus, advisors could frame desirable planning options to emphasize these features. Complex estate planning, such as dynasty trusts, spendthrift trusts, or family foundations, can be presented as a way to achieve a long-term future impact for the family or other important beneficiaries. Annuities may be presented as protecting a bequest of other assets from unexpected longevity, rather than simply protecting one's lifetime income at the expense of the heirs.

Additionally, social opinions, including social norms, become particularly significant in the mortality salient context as shown in experiments with consumer purchases (Fritsche et al., 2010), charitable giving (Jonas et al., 2013), and estate planning (James, 2016; Sanders et al., 2013). Thus, describing what is normal, typical, or approved among similar others can be influential. Likewise, defaults may be powerful in this context as they provide both a cue of social norms (important in the *symbolic immortality* implication) and a simple mechanism to make an immediate choice that avoids further contemplation of the death-related topic (important in the *avoidance* implications). As an example of the power of defaults in a death-related context, Johnson and Goldstein (2003) found that effective national consent rates to organ donations varied from 4%-27% when the default choice was "no," but were over 99% when the default choice was "yes."

Appreciate the Value of Third Party Agency

The avoidance response may cause clients to postpone or resist important financial planning components that require contemplation of personal mortality. However, this avoidance reaction applies to contemplation of one's own mortality, not to contemplation of another's mortality (when such thoughts do not create personal mortality salience). In this way, a third-party advisor may be a more objective and effective decision-maker for the client simply because the advisor is not the client. Thus, when an intermediary can act as agent for mortality salient decisions, the client may experience preferred outcomes without the negative utility impact from personal mortality salience. Even where such agency is not possible, an intermediary or advisor may rephrase or reframe a decision in order to reduce mortality salience, and hence reduce any negative consequences from an avoidance response.

Future Research

Given the wide range of potential applications of the approach, the proposed implications remain untested in many contexts. Future testing of concepts consistent with this economic approach may be both practically helpful and informative as to the validity of the concept in a wider range of circumstances. Although it does not encompass the wide range of explanations, mechanisms, and motivations encompassed by TMT, the proposed simple economic approach may prove to have substantial explanatory power for a diverse range of decisions.

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