

Do you look to the future or focus on today? The impact of life experience on intertemporal decisions ☆

Wendy Liu¹, Jennifer Aaker^{*}

Graduate School of Business, Stanford University, Stanford, CA 94305, USA

Received 2 June 2005
Available online 18 April 2006

Abstract

In this research, we investigate the impact of significant life experiences on intertemporal decisions among young adults. A series of experiments focus specifically on the impact of experiencing the death of a close other by cancer. We show that such an experience, which bears information about time, is associated with making decisions that favor the long-term future over short-term interests (Studies 1 and 2). Underlying this effect appears to be increased salience and concreteness regarding one's future life course, shifting focus away from the present toward the long run (Studies 3 and 4). Finally, we explore the shift caused by a cancer death of a public figure and examine its stability over time (Study 5). Implications for research on intertemporal decision making and the impact of life events on perceptions and preferences are discussed.

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Keywords: Intertemporal choice; Life events; Temporal construal

“My dad was an entrepreneur. He had started his own business—and then out of the blue one day, he came home and announced that he had cancer... I remember my dad saying that he wasn't so much afraid that he might die but that he hadn't done the things he wanted to do in his life. That really got me thinking at that young age: What do I want to do with my life? Without that, I'm not sure it would have been as much of a call to action.” (Jeff Skoll, cited in McIntyre, 2006).

People often have to decide among options whose costs and benefits are associated with different time frames. For example, individuals need to decide how

much of their income should be spent on the present or saved for the future, and whether they should devote more time to studying rather than playing. Similarly, organizational decision makers often have to balance the pressure for short-term results and long-term strategic planning (e.g., Ancona, Okhuyse, & Perlow, 2002; Graves & Waddock, 1990; Perlow, Okhuysen, & Repenning, 2002). Indeed, the topic of intertemporal decisions has received much attention from social scientists in recent years (for a review see Loewenstein, Read, & Baumeister, 2003), shedding insight on people's time discounting patterns and intertemporal preferences. For example, researchers have identified factors that contribute to short-term focus (e.g., visceral influences, Loewenstein, 1996; ego depletion, Vohs & Heatherton, 2000), and have examined the effectiveness of corrective strategies (e.g., self-rationing, Wertenbroch, 1998; implementation intentions, Gollwitzer, 1999). Further, considerable progress has been made in unpacking the intertemporal preference phenomena by examining underlying psychological mechanisms. To illustrate, recent research has shown that

☆ The authors thank Itamar Simonson and Laura Carstensen for comments on this research, and Jackson Library for their invaluable help in research. This research was funded by the GSB at Stanford University.

^{*} Corresponding author. Fax: +1 650 725 6152.
E-mail addresses: liu_wendy@gsb.stanford.edu (W. Liu), aaker_jennifer@gsb.stanford.edu (J. Aaker).

¹ Fax: +1 650 725 7462.

the way future events are represented in people's minds is an important determinant of intertemporal judgment and decision making (e.g., Liberman & Trope, 1998; Trope & Liberman, 2000).

However, important gaps remain in our understanding of intertemporal decisions. In particular, although it is widely acknowledged that individuals differ in their preferences in intertemporal decisions, insight into the determinants of such differences has been sparse. Extant research has focused on broad demographic variables such as age (e.g., Read & Read, 2004) and national culture (e.g., Chen, Ng, & Rao, 2005), leaving unanswered many foundational questions regarding the shaping and development of people's "taste" for time. Specifically, what are the factors that contribute to differences in people's intertemporal decisions? And how do one's intertemporal decisions change over the course of one's life?

We address these questions by examining one potential social antecedent of an individual's intertemporal decisions: the experience of a significant life event (e.g., graduation, college, and marriage). Indeed, in the last two decades researchers have pointed to such life events as forces that can cause fundamental changes in individuals, coloring the way individuals see events and providing a different lens with which to evaluate objects. For example, major life events such as the death of a spouse or being diagnosed with a serious illness contribute to psychological anxiety and distress (Pillow, Zautra, & Sandler, 1996), and have been linked to changes in consumption behavior (e.g., brand switching; Mathur, Moschis, & Lee, 2003). Life events such as family conflict or divorce also impact satisfaction with one's choices (although the specific causal mechanism for those effects has not yet been empirically examined; Andreasen, 1984). Further, life events can result in shifts in individuals' perceptions of their self as well as the world. Graduating from college is associated with a shift in the perception of one's potential self (Zirkel, 1992). Becoming a parent leads to the perception that the world is a more dangerous place (even though in fact it is not the world but the person that has changed in the event of parenthood; Eibach, Libby, & Gilovich, 2003).

In a similar vein, a significant life event may influence one's intertemporal decisions. In this research, we focus on one type of life event fundamentally linked to one's sense of time—the experience with the death of someone close. We propose that such an experience prompts people to notice and reflect upon their long-term futures, causing changes in their intertemporal decisions. Common intuition suggests that the notion "life is short" evoked at the thought of death causes people to become more short-term oriented, focused on the present. However, the results of a series of studies provide evidence to the contrary, demonstrating that in fact experiencing the death of a close other can be associated with greater long-term focus in decisions.

Theoretical background

A fundamental premise underlying intertemporal decision making is that, because an organism responds to its immediate environment and drive states, current concerns or present interests often dominate longer-term interests (Böhm-Bawerk, 1889; Jevons, 1888; Loewenstein, 1996). However, attention to future interests is adaptive: in certain situations and for certain people, such a "myopic" tendency is overridden (Baumeister & Vohs, 2003; Kacelnik, 2003). In the case of intertemporal decisions, several mechanisms and corresponding moderators have been proposed to account for how people regulate temporal focus, and thus choose between short-term and long-term options. One prominent perspective, anticipatory utility (Loewenstein, 2000), is particularly relevant to the current research and is supported by a number of related psychological frameworks.

The anticipatory utility perspective proposes that one way that future interests are incorporated into a current decision is through the feelings derived from anticipating the future consumption (Loewenstein, 1987). A person is likely to choose a long-term option if the positive feelings generated from anticipating the consumption of the long-term option are greater than those generated by the short-term option. By this account, variations in people's intertemporal decisions depend on their propensity to hold the future in active thought, imagining the future vividly (Baumeister & Vohs, 2003; Frederick, Loewenstein, & O'Donoghue, 2003).

Relatedly, work on construal level theory suggests that events in the distant future are often represented more abstractly (Liberman & Trope, 1998; Trope & Liberman, 2000), due in part to relative lack of knowledge about distant relative to proximal events (Liberman, Trope, & Stephan, *in press*). For example, a representation of a vacation in the short-term future (e.g., this weekend) may include concrete details such as the feeling of warm sand in the sun or a splash in the water. In contrast, a representation of a vacation in the future (e.g., next year) may be abstracted to general categorizations such as "much-needed relaxation" and "fun activities." The absence of concrete details may reduce the attractiveness of long-term options compared to short-term options. Similarly, research on self-control shows that by decreasing the vividness of a present stimulus (making it more abstract and hence conceptually more similar to a future prospect), people are better able to delay gratification (Metcalfe & Mischel, 1999). Therefore, as future prospects become more salient and concrete, they tend to become more motivating. In turn, people become more willing to devote their attention, time, and money to achieving future desirable end states—often at the sacrifice of present interests.

Thus, the research to date suggests that the salience and concreteness of one's representation of future events

is a key determinant of intertemporal decisions. In particular, the perception of one's own future life course may affect a person's decisions implicating present and future time frames, such as the decision to save money for the long run. Questions that naturally arise include: how is the individual's perception of the future formed? How does that perception develop and change? Does the perception of the future become more salient or concrete over time, and if so, what is the impetus for such a shift? Building on previous research on life experiences (e.g., Eibach et al., 2003), we propose that one process by which individuals' outlook of the future becomes more salient and concrete is through the experience of events in life that bear lessons about time. In particular, we focus on the effect of such experiences on young adults. We propose that because young adults have a long future ahead of them, experiences that increase the salience and concreteness of their expansive future life course may cause systematic shifts in intertemporal decisions towards a focus on the long run.

Social antecedents of intertemporal decisions

One type of event fundamentally related to the conception of the future is death. In fact, some argue that death singularly provides meaning to time in life (Gray, 1988). Therefore, although the experience of a death of a close other is multi-faceted and complex (Kubler-Ross, 1969), it tends to have a profound effect on most individuals, causing reflections about life and bringing changes to one's vision of the future in life. In this research, we focus on the role of a particularly poignant type of death event – where a close other dies of cancer.

Our focus on cancer was motivated by three reasons. First, cancer is a common disease (e.g., currently the #1 killer in the US for ages 85 and under; National Center for Health Statistics, 2005), making a cancer death event an important experience to study. Its commonness also facilitates data collection. In this research, we rely on the young adult population to study the effect of cancer death experience by contrasting those who not yet have had a cancer death experience in their lives with those who have had such an experience. In a pretest among college students, we found that 63% of participants have had cancer death experience while 37% have not, suggesting the ability to obtain a relatively balanced set of subjects in the two groups. (Of note, when older participants were examined, the percentage of participants who had experienced the death of a close other by cancer was 90%, thus hitting near ceiling levels.) Second, unlike deaths from chronic illnesses, or deaths from sudden events such as accidents or heart attacks, cancer deaths involve a distinct period of confronting death (e.g., the median survival time of advanced pancreatic cancer in one clinical study is about six months, National Cancer Institute 2005), making cancer death experiences partic-

ularly memorable and thus impactful. And third, but not least, cancer can happen to anyone, young or old, strong or weak without any apparent cause or special situations. This vulnerability further heightens the chance that reflections about one's own life course and own future may be evoked, thereby hopefully resulting in a distinguishable influence on one's intertemporal judgments and decisions.

In this research, we posit that a young adult who has gone through a cancer death experience, compared to someone who has not, is likely to have thought about his/her life course in more detailed ways, fostering a more salient and concrete vision of the future (e.g., including important long-term life goals and even implementation plans for achieving them; Cantor, Norem, Niedenthal, Langston, & Brower, 1987; Gollwitzer, 1999). Further, we hypothesize that a salient and concrete view of their entire future life course (rather than a faint and abstract one) should lead these individuals to become more long-term focused in their intertemporal decisions. In the following sections, we present a series of studies that (a) provide evidence that a cancer death experience is associated with becoming more long-term focused in intertemporal decision making (S1-2), (b) test the life course salience mechanism proposed to underlie the effect (S3-4), and (c) examine whether a public event involving cancer death is associated with life-course thoughts and a similar shift in temporal focus, and whether such effects are long-lasting or if they quickly fade (S5).

Study 1: Money management and magazines

Overview and design

Study 1 explores the premise that an experience of a cancer death of a close other can make the individual more long-term focused in his/her decisions and thus choose long-term rewards over short-term benefits. To provide evidence for this hypothesis, we compare the decisions of young adults who have experienced at least one cancer death in their lives with those who have not experienced any in two consumer contexts, selected based on a pretest where participants were asked to list what they believed to be key to their long-term happiness. Their top categories included family and friends (88% of all participants mentioned this element), financial well-being (62%), successful career (52%), health (16%) and seeing the world (10%). Thus, in Study 1, we focus on the financial and career domains as our areas of interest, as their pursuits often incur short term costs.

In the first decision scenario, participants are asked to make allocations in a personal financial decision making context, choosing between saving for the long run, saving for the short run, or spending now. The second

scenario involves a choice between buying a magazine for pleasure (providing transient short-term benefit) and a magazine for professional development (providing professional knowledge contributing to the longer-term goal of career development). Thus, if cancer death experience makes people more long-term oriented, such participants should be more likely to buy the professional magazine and should allocate more funding to the long-term account.² Thus, Study 1 is based on a single factor design, where cancer death experience is measured at the end of the questionnaire.

Method

Participants ($N=106$, mean age = 20 years old, 44% male) were recruited from a large Western university and paid \$20 to participate in several unrelated studies addressing topics such as decision-making, personal experiences, and general psychology. On the first page of the questionnaire, participants read, “Please imagine you have just received \$400 due to a federal tax cut. What would you do with this money? Please indicate the amount you would allocate for each of the following purposes (must sum to \$400).” They were given three options: (a) spend it: \$____, (b) put it in a short-term savings/investment account \$____, and (c) put it in a long-term savings/investment fund \$____.

On the next page, participants were asked to choose between two magazines. One magazine (Brand A) was described as, “not necessarily in your main domain of professional interest. However, just imagining yourself reading this magazine makes you feel good.” The other magazine (Brand B) was framed in the opposite way: “The topic of this magazine is in your main domain of professional interest. However, imagining yourself reading this magazine does not make you feel good.” Participants indicated their choice likelihood between the two options on a 7-point scale (1, Definitely Brand A; 7, Definitely Brand B).

Next, participants filled out additional questionnaires for a set of unrelated studies, one of which was entitled “Life Experience Questionnaire” where they answered yes or no to the question, “Do you know anyone who has died of cancer?” Participants reported the nature of their relationship with the deceased, at what age the person died, and when the event occurred. A total of 61 participants (58%) had a cancer death experience (hereafter, CDE group), whereas the remaining 45 (42%) did not have such an experience (no experience, or NE group). Among the cancer death experiences reported, 36% were a parent or grandparent, 26% were other family mem-

Table 1

Means and standard errors of allocation to long-term account and preference for professional magazine in Study 1

	Long-term account	Professional magazine
CDE	\$148 (17)	3.27 (.21)
NE	\$91 (20)	2.12 (.25)

Standard errors provided in parenthesis. Preference for professional magazine measured on a 7-point scale (1, definitely Brand A and 7, definitely Brand B, where Brand B is the professional magazine).

bers (uncles, aunts, and cousins), 8% were friends, and 30% were other close relationships (family friends, teachers). On average the death event occurred 6.42 years ago, and the mean age of death was 59.6 (considerably lower than the national average age of death in the US which is 77.6 years, National Center for Health Statistics, 2005). There was a significant gender difference between the CDE and NE groups (percentage of male: $M_{CDE} = .31$, $M_{NE} = .62$), $F(1, 104) = 10.99$, $p = .001$, that was controlled for statistically in the analysis. There was no age difference between the CDE and NE groups ($M_{CDE} = 20.36$, $M_{NE} = 20.22$), $F < 1$, $p = .60$. Finally, participants were debriefed and dismissed.

Results and discussion

A one-way ANCOVA with cancer death experience as the factor of interest was conducted on the fund allocation choices; age and gender of participants were included as covariates. The results yielded a significant effect for cancer death experience on the amount allocated to the long-term account ($F(1, 102) = 4.65$, $p = .03^3$). The gender covariate was not significant ($F < 1$), but the age covariate was significant, $F(1, 102) = 6.72$, $p = .01$, whereby allocation to the long-term account decreased with age. As expected, planned comparisons showed a main effect of cancer death experience: CDE participants allocated more of the \$400 tax refund money into long-term accounts than did NE participants ($M_{CDE} = \$148$, $M_{NE} = \$91$), $F(1, 102) = 4.65$, $p = .03$, see Table 1. Further, CDE and NE participants differed in the amount they allocated to the short-term account ($M_{CDE} = \$135$, $M_{NE} = \$187$), $F(1, 102) = 4.06$, $p = .05$. Follow up contrasts showed that CDE and NE groups did not differ in the average amount they would spend ($M_{CDE} = \$119$, $M_{NE} = \$122$), $F < 1$.

Next, the one-way ANCOVA was run on magazine choice likelihood. Gender and age were used as covariates, yielding only a significant effect for gender ($M_{male} = 3.09$, $M_{female} = 2.43$, $F(1, 102) = 4.28$, $p < .05$; higher ratings indicate preference for the professional magazine). As predicted, there was a significant main effect for CDE, $F(1, 102) = 12.23$, $p = .001$, whereby

² We have no predictions for the relative allocation between spending now and saving for the short run. We assume that whether someone spends the money now or puts it in a temporary account depends largely on what the individual has in mind to purchase, rather than any difference in their temporal perspective.

³ Two-tailed tests were performed on all analyses in this research unless otherwise noted.

people with cancer death experience indicated greater likelihood of choosing the professional magazine than those with no such experience ($M_{CDE}=3.27$, $M_{NE}=2.12$).

To gain greater insight into this basic effect, we examined the ancillary variables (e.g., recency of the death, closeness to the individual). However, there were no significant effects of these measures, suggesting that the intensity of reactions to a cancer death experience may be determined by a combination of these factors and that an effect along any particular dimension may not clearly emerge in the current data.

Thus, the pattern of results suggests that indeed cancer death experience may be associated with a long-term focus in decisions—CDE individuals allocated more funds to long-term savings and were more likely to choose readings that help one's professional career. However, several limitations with this study merit note. First, despite our pretesting, the preference for the options may have been driven by a spurious variable (rather than long-term versus short-term focus). For example, choosing a professional versus pleasurable magazine may reflect a focus on professionalism or hedonic orientation. Second, the current study showed that CDE individuals preferred different types of options than did NE individuals. Would CDE individuals also respond preferentially to options that are simply framed as serving long-term versus short-term goals? To address these questions and to provide generalizability, Study 2 was conducted.

Study 2: Climbing Mount Kilimanjaro

Overview and design

The objective of Study 2 is twofold: (1) to provide convergent evidence that the experience of a cancer death is associated with greater long-term focus in decision making and (2) to disentangle potential confounds (e.g., professional vs. hedonic option) from their temporal implications. To this end, we designed a study in which we held the options constant, but manipulated which option is associated with a long-term goal. We predict that an option framed as a long-term goal will be preferred by people with a cancer death experience compared to those without such experience. However, when this same option is framed as a short-term, fleeting goal, the difference would be reversed such that people with cancer death experience will be less likely to choose this option than those without cancer death experience. Thus, Study 2 relies on a 2 (goal frame: short-term versus long-term) \times 2 (cancer death experience: present versus absent) between-subject design.

Method

Participants ($N=133$, mean age = 20.31 years old, 44% male) were recruited from the same sample pool as

in Study 1. The choice context involved a decision between two conflicting goals, namely, to go on a trip to climb Mount Kilimanjaro in Africa or to skip the trip and work for a job promotion. For half of the participants, climbing Mount Kilimanjaro was described as their "lifetime wish"—i.e., long-term goal compared to the job promotion. For the other half, climbing Mount Kilimanjaro was framed as "just an idea"—i.e., a short-term goal compared to career advancement. Thus, the manipulation involved a simple shift in the phrasing of the Mount Kilimanjaro option. Participants read, "Please imagine you have a lifetime wish [came up with the idea] to climb Kilimanjaro in Africa. Recently, you have been offered a chance to go there in the near future with a team of mountain climbers as well as a couple of your good friends. The trip will take about four weeks. However, although you really want to go, the trip does not come at the best time. Specifically, you believe you are up for promotion in the company you are working for. However, if you go on the trip, this might jeopardize your chance of promotion." Participants were then asked to indicate how likely they were to choose climbing Mount Kilimanjaro on a 7-point scale (1, Definitely not go on the trip; 7, Definitely go on the trip).

After the choice task, participants were asked to complete an unrelated study termed the Life Experience Questionnaire as in Study 1. A total of 41 participants (31%) reported not having had an experience with someone close to them dying from cancer, whereas the remaining 92 participants (69%) reported indeed having gone through such an experience. As in Study 1, the cancer death experiences reported were those of close others (37% involved a parent or grandparent, 19% more distant family members, 15% friends, and 29% other close relationships). On average the death event occurred 7.09 years ago, and the mean age of death was 55.07. Between the two groups, there was a gender difference (percentage of male: $M_{CDE}=.38$, $M_{NE}=.59$), $F(1, 131)=4.83$, $p=.03$, but no age difference ($M_{CDE}=20.35$, $M_{NE}=20.22$), $F(1, 131)<1$. Participants were then debriefed and dismissed.

Results and discussion

We conducted a two-way ANCOVA on choice likelihood of going on the Kilimanjaro trip with cancer death experience and goal framing as the factors of interest, and gender and age as covariates (neither covariate was significant, F 's < 1). There was no main effect of cancer death experience ($M_{CDE}=3.42$, $M_{NE}=3.54$, $F < 1$) or goal framing ($M_{\text{short-term}}=3.28$, $M_{\text{long-term}}=3.69$), $F < 1$. Importantly however, there was a significant interaction, $F(1, 127)=10.60$, $p=.001$. Consistent with predictions, planned contrasts revealed that when climbing Mount Kilimanjaro was framed as a long-term goal, CDE participants were more likely to choose climbing Kilimanj-

aro than were NE participants ($M_{\text{CDE}}=4.15$, $M_{\text{NE}}=3.23$), $t(129)=-2.09$, $p=.05$. This effect was reversed when Mount Kilimanjaro was framed as a short-term goal, whereby those with cancer death experience were less likely to choose to climb Kilimanjaro ($M_{\text{CDE}}=2.69$, $M_{\text{NE}}=3.86$), $t(129)=2.45$; $p=.01$. These results, summarized in Fig. 1, provide more evidence supporting the hypothesis that cancer death experience is associated with a greater focus on the long-term over the short-term when making decisions.

To better understand the dynamics of the results, we conducted an additional set of planned contrasts: For the CDE participants, framing Kilimanjaro as a lifetime goal resulted in an increase in preference for climbing ($M_{\text{long-term}}=4.15$, $M_{\text{short-term}}=2.69$), $t(129)=-4.00$; $p<.001$. In contrast, for the NE participants, framing Kilimanjaro as a long-term compared to a short-term goal had no significant effects on their choices ($M_{\text{long-term}}=3.23$, $M_{\text{short-term}}=3.86$), $t(129)=1.16$; $p=.24$. These results further support the premise that people with a cancer death experience became more sensitive to the temporal implications of their actions, shifting toward a longer-term focus.

In sum, Study 2 findings suggest that experiencing the cancer death of a close other is associated with greater long-term focus in decision making – an effect that does not appear to be driven by the particular nature of the options but rather by the temporal framing of the options. When an action is believed to be associated with lifetime goals and to have positive long-term implications, those with cancer death experience are more likely to pursue it at the cost of short-term interest, relative to those without such an experience, thereby complementing the insights from Study 1.

What remains unclear, however, is the mechanism(s) underlying this effect. In our theorizing, we argue that cancer death experience induces a long-term focus in decisions by changing a person's vision of the future. Specifically, by making salient and concrete the view of one's life course as a whole, one's attention gets shifted away from the present toward life in the long run. We refer to this mechanism as the *life course salience* mechanism.

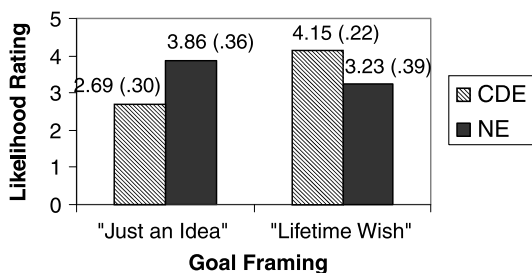


Fig. 1. Likelihood of climbing Mount Kilimanjaro by goal frame and cancer death experience in Study 2. Standard errors provided in parenthesis. Choice likelihood is measured on a 7-point scale, where 1, Definitely not go and 7, Definitely go on the trip.

On the other hand, an alternative explanation may be offered based on the principles of Terror Management Theory (Greenberg, Solomon, & Pyszczynski, 1997; Pyszczynski, Greenberg, & Solomon, 1997). Research on terror management suggests that increased mortality salience leads to heightened anxiety due to the realization of the inevitability of life's end, and a need to bolster self-esteem to feel better (Harmon-Jones, Simon, Pyszczynski, Solomon, & McGregor, 1997). To the degree that self-esteem needs are associated with a preference for options that favor long-term over short-term interests, the mechanism at hand may be closer to tenets of terror management. In Study 3, we wish to provide evidence for the presumed underlying mechanism of life course salience by directly manipulating it. In so doing, we also aim to determine whether terror management can provide an explanation for the effects. That is, if life course salience underlies the difference between the cancer death experience group and the no experience group, temporarily making everyone think about their life course should eliminate this difference because now the life course becomes salient and vivid for both groups. However, if terror management accounts for the difference between the CDE and NE groups, such that the CDE group is more long-term focused because they have greater anxiety over death, the life course salience manipulation should not be able to eliminate the effect, because such a manipulation does not heighten fear of death.

Study 3: Life course salience

Overview and design

Study 3 was designed to gain greater insight into the mechanism driving the effect of cancer death experience on intertemporal decisions by manipulating life course salience. We predict that in a control condition of low life course salience, people with cancer death experience (versus those without cancer death experience) will favor the long-term option—a difference that should disappear when life course is temporarily made salient for both CDE and NE individuals. Thus, we relied on a 2 (life course salience: high versus low) \times 2 (cancer death experience: present versus absent) between-subject design.

Method

To increase generalizeability, participants ($N=94$, mean age=21.65 years old, 28% male) were recruited from all over the country via the web by a professional sampling service. Screened by age to match the prior samples (between 18 and 25), participants were paid \$5 to complete a number of research questionnaires on decision-making, personal experiences, and general

psychology. The first questionnaire consisted of the life course salience manipulation through a writing task. The aim was to generate vivid thoughts about the life course as a whole by asking some participants to make projections for the life of their best friend in 50 years (high life course salience condition). To maintain a focus on one's present timeframe, the rest of the participants made projections for the current week of their best friend (low life course salience condition). Specifically, participants read the following instructions: "In this study, we are interested in people's long-term [short-term] projections for their friends. Please think about your best friend, and think about what his/her life might be like 50 years from now [this week]. Then in the space below, please write a brief description of how you envision the life of your friend in 50 years [this week] (e.g., what might he/she be like; what might he/she be doing, etc.)." This particular operationalization was used for two reasons. First, thinking about one's friend's life may guard against potential confounds such as psychological reactance (Brehm, 1966), which may be more likely to arise if one's self was the focus. Second, a task involving writing about a friend is a relatively subtle manipulation, thereby muting the chance of demand effects.

To further defend against demand, a 20-min unrelated filler task followed the life course salience manipulation. Then, as in Study 1, participants were asked to make a fund allocation decision with \$400 tax refunds, and then answered the question, "How easy is it for you to envision what life would be like for your best friend 50 years from now?" (1, Not at all Easy; 7, Very Easy), as a manipulation check. Finally, participants completed the Life Experience Questionnaire as in previous studies. A total of 40 participants (43%) reported not having had cancer death experience, whereas the remaining 54 participants (57%) reported having had a cancer death experience. The cancer death experiences reported were those of close others (46% involved a parent or grandparent, 20% more distant family members, 4% friends, 30% other close relationships). On average the death event occurred 5.87 years ago, and the mean age of death was 62.78. Thus, the profile of cancer death experiences reported by the national sample was similar to the college sample used in Studies 1 and 2. There was no significant gender difference (percentage of male: $M_{CDE} = .26$, $M_{NE} = .30$), $F < 1$, or age difference ($M_{CDE} = 21.76$, $M_{NE} = 21.50$), $F < 1$, between the CDE and NE groups.

Results and discussion

A two-way ANCOVA was run on the manipulation check measure of ease of imagining the life course, with life course salience manipulation and cancer death experience as independent variables, and age and gender as covariates. Results revealed only a main effect for the life course salience manipulation ($M_{high\ salience} = 3.94$,

$M_{low\ salience} = 2.67$), $F(1, 88) = 15.12$, $p < .001$. No other variables were significant (F 's < 1). We then conducted a two-way ANCOVA on the amount out of the \$400 tax refund allocated to the long-term savings and investment account, with life course salience and cancer death experience as the factors of interest, and gender and age as covariates (neither covariate was significant, $p = .90$ and $p = .59$ respectively). There was no main effect of cancer death experience ($M_{CDE} = \$108$, $M_{NE} = \$110$), $F < 1$, or life course salience ($M_{high\ salience} = \$125$, $M_{low\ salience} = \$94$), $F(1, 88) = 1.51$, $p = 0.22$. As predicted, however, an interaction effect emerged ($F(1, 88) = 4.33$, $p = .04$; see Fig. 2). Planned contrasts revealed that when life course was not made salient, we conceptually replicated the previous finding: People with cancer death experience allocated more funds into the long-term account than did those without such experience ($M_{CDE} = \$120$, $M_{NE} = \$68$), $t(90) = 1.67$, $p = .04$, one-tailed. The difference between the CDE and NE groups was eliminated when life course was made temporarily salient through envisioning the life of one's best friend 50 years later ($M_{CDE} = \$97$, $M_{NE} = \$152$), $t(90) = -1.54$, $p = .12$. Additional contrasts revealed a shift in allocation decisions by NE participants, whereby temporary life course salience increased NE participants' allocation to the long-term account ($M_{high\ salience} = \$152$, $M_{low\ salience} = \$68$), $t(90) = 2.30$; $p = .02$. In contrast, the manipulation had no effect on CDE participants' allocation decisions ($M_{high\ salience} = \$97$, $M_{low\ salience} = \$120$), $t < 1$, consistent with the premise that one's life course was already salient for this group.

Thus, the results in Study 3 support the hypothesis that increased life course salience may underlie the effect of cancer death experience on intertemporal decisions. When the life course is made salient to the participants who have not had a cancer death experience in life and thus have chronically low life course salience, these participants become temporarily more long-term focused, similar to the cancer death experience group. Furthermore, the effect of the manipulation does not lend itself to a terror management explanation. That is, if terror management underlies the effect, the current manipulation, which is both conceptually and content-wise

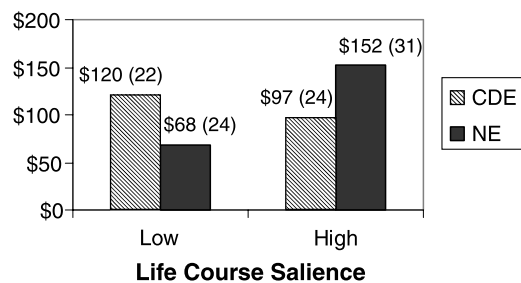


Fig. 2. Allocation to long-term account by life course salience and cancer death experience in Study 3. Standard errors provided in parenthesis.

distinct from mortality salience manipulations, should not eliminate the difference between CDE and NE groups.⁴

In the studies so far, we have examined the relationship between naturally experienced cancer death event and people's intertemporal decisions, and found that cancer death experience is associated with greater long-term focus. However, Studies 1–3 all relied on the focal independent variable, cancer death experience, as a measured construct. Consequently, the effects shown in these studies are correlational in nature, and thus prone to questions of causality and claims of conceptual foggi-ness. Therefore, we sought to create a temporary mental simulation of cancer death experience in the lab, recognizing of course that no mental simulation could capture the actual experience, but that it could hint at the causal relationship between our key variables of interest. Thus, we embarked on Study 4.

Study 4: Imagining cancer death of a friend

Overview and design

Study 4 was conducted with two goals in mind. First, we aimed to shed more light on the role played by cancer death experience in shifting a person's intertemporal decisions by attempting to create a mental simulation of cancer death experience, which admittedly was necessarily simplistic and muted, in the lab. In absence of a simu-

lated cancer death experience, we predict a conceptual replication of the prior findings. However, when a mental simulation of cancer death experience is present, we predict that those without real-life cancer death experience should, at least temporarily, behave similarly to those with real-life cancer death experience.

Second, and of equal importance, we aimed to gain insight into the thoughts engendered by a cancer death experience by examining whether responses were focused on visions and goals for life, or on the threat of death, which may hint at a terror management process as an alternative account of the effect. Consequently, Study 4 relies on a 2 (simulated cancer death experience: absent versus present) \times 2 (real-life cancer death experience: absent versus present) between subjects design, where the first factor is manipulated between subjects, and CDE is measured.

Method

Participants ($N = 88$, mean age = 20.91 years old, 47% male), recruited from a large western university, were paid \$20 to participate in several unrelated studies addressing topics such as decision-making, personal experiences, and general psychology. Half of the participants received a writing task asking them to imagine a cancer death event: "In this study, we are interested in people's reactions to the death of a close one. For the next few minutes, please imagine that your best friend has died of cancer. Consider how you would think and feel in such an event, and answer the following questions: In what ways do you think you would respond to such an event? How would this event make you think about how you would live your life?" This operationalization allows us to evoke an event conceptually related to the real-life experiences (albeit considerably more muted and simplified), and to tap the thoughts related to such an event. The other half of the participants did not receive this writing task.

All participants were handed a booklet of unrelated filler questionnaires (taking up approximately 20 min), and then completed the fund allocation task used in Studies 1 and 3. Finally, after two unrelated questionnaires, participants completed the Life Experience Questionnaire. Twenty-six participants (30%) reported not having had cancer death experience, whereas the remaining 62 participants (70%) reported having had a cancer death experience. Of the cancer death experiences reported, 39% involved a parent or grandparent, 26% more distant family members, 3% friends, 32% other close relationships. On average the death event occurred 6.39 years ago, and the mean age of death was 57.62. Between the CDE and NE groups, there was a marginally significant gender difference (percentage of male: $M_{CDE} = .40$, $M_{NE} = .62$), $F(1, 86) = 3.37$, $p = .07$, but no age difference ($M_{CDE} = 21.05$, $M_{NE} = 20.57$), $F < 1$.

⁴ To further test whether CDE and NE groups differed in their level of felt terror over death, an ancillary study was conducted where participants ($N = 27$, mean age = 21 years old, 44% male) responded to a series of 15 true/false statements from the Fear of Death Scale (Goldenberg, McCoy, Pyszczynski, Greenberg, & Solomon, 2000) that has been used to assess mortality salience (Ferraro, Shiv, & Bettman, 2005), followed by the Life Experience Questionnaire. A total of 37% were classified as having had cancer death experience. A composite measure of fear of death was computed by summing together all 15 items (a "true" answer was coded as 1 and a "false" as 0; no-fear items were reverse-scored). A one-way ANOVA run on the composite measure revealed no effect of cancer death experience ($M_{CDE} = 5.60$, $M_{NE} = 7.35$, $F(1,25) = 2.06$, $p = .16$, where higher scores indicate greater fear of death). For more detailed insight, we examined the responses to specific items in the scale. Notably, there was no difference across groups on the item, "I am not particularly afraid of getting cancer." Also of interest were scale items associated with the participant's discomfort with the concept of death ("The thought of death never bothers me"), and the participant's outlook on life ("I feel the future holds nothing for me to fear"). Chi-squared tests on these items revealed differences between groups, whereby cancer death experience was associated with greater confidence regarding the future ($M_{CDE} = .60$, $M_{NE} = .29$, $\chi^2(1) = 4.51$, $p < .05$) and increased comfort with the concept of death ($M_{CDE} = .40$, $M_{NE} = .18$, $\chi^2(1) = 3.44$, $p < .05$, where the M 's indicate the proportion of participants who indicated "true" on the corresponding items above). These results suggest that cancer death experience does not lead to greater fear of death; in fact, if anything, cancer death experience appears to be associated with a more confident outlook on the future and greater acceptance with the idea of death.

Results and discussion

We conducted a two-way ANCOVA on the fund allocation decision, with simulated and real-life cancer death experience as the factors of interest, and gender and age as covariates. Neither covariate was significant ($p = .68$ and $.83$ respectively). Furthermore, there was no main effect of simulated cancer death experience ($M_{\text{present}} = \$187$, $M_{\text{absent}} = \$132$), $F(1, 82) = 2.51$, $p = .12$, or real-life cancer death experience ($M_{\text{CDE}} = \$160$, $M_{\text{NE}} = \$158$), $F < 1$. Importantly however, there was a significant interaction effect ($F(1, 82) = 5.87$, $p = .02$; see Fig. 3). Consistent with predictions, planned contrasts revealed that in the control condition where participants did not engage in mental simulation of experiencing cancer death of their best friend, replication occurred: People with cancer death experience allocated more funds into the long-term account than those without such experience ($M_{\text{CDE}} = \$173$, $M_{\text{NE}} = \$90$), $t(84) = 1.69$, $p = .05$, one-tailed. However, this difference between the CDE and NE groups dissipated when participants engaged in mental simulation of experiencing cancer death of their best friend ($M_{\text{CDE}} = \$148$, $M_{\text{NE}} = \$226$), $t(84) = -1.77$, $p = .10$.

To gain insight into the thoughts generated in response to a cancer death of a close one, and to determine whether responses focused on thoughts about one's future life course versus terror over death, two coders blind to conditions and hypotheses coded the participants' free responses to imagining the cancer death of their best friend. Responses were coded into three categories: (a) thoughts about the future life course, including goals and plans (e.g., "It would make me eat healthier, exercise more frequently, and learn to appreciate my friends more," "It would make me want to keep solid relationships with the people in my life and not stress out too much about everyday things."), (b) thoughts related to anxiety over death (e.g., "I would be afraid of dying the same death. I would meditate more."), or (c) other thoughts (e.g., "It would change my outlook on the way our economic, social and educational systems are structured."). Coder agreement was 79%; disagreements were resolved through discussion.

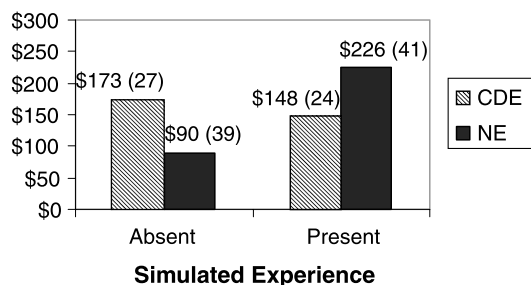


Fig. 3. Allocation to long-term account by simulated and real-life cancer death experience in Study 4. Standard errors provided in parenthesis.

Consistent with our theorizing, only a small percentage (9%) of participants expressed anxiety and fear over their own death, whereas a majority (72%) of participants had concrete thoughts about their visions for life. The results thereby supported the idea that thoughts evoked by the cancer death of a close one tend to center around the crystallization of one's life course rather than terror over death.

Corroborating the results from previous studies, Study 4 again provided evidence that cancer death experience may lead to a greater long-term focus in decisions. Furthermore, a mental simulation of experiencing a cancer death event appears to temporarily produce a directionally similar effect. However, we should note that this effect indeed may only be temporary. That is, when the salience of the manipulation fades, participants' long-term versus short-term focus should return to their chronic levels. This premise is important as it hints at the difference between temporarily induced effects (resulting from simple manipulations such as priming) and chronic ones (which presumably occur only from significant real life experiences). Priming manipulations should lead to surface thoughts affecting decisions at the time. However, such thoughts should not be deeply integrated into the person's knowledge about the self and about life. Therefore, such effects should be short lived. On the other hand, thoughts engendered by a concrete, real experience in a person's own life should prompt deeper elaboration that may fundamentally alter a person's world and self view, and hence have long-lasting effects. The main objective of Study 5 was to provide further evidence for the basic effect (showing a link between the experience of a cancer death event and long-term orientation), but also demonstrating the temporary nature of effects based on more simple, superficial events. A second goal of Study 5 was to examine the degree to which cancer death experiences evoked life course thoughts, so as to provide greater evidence for the proposed life course salience mechanism.

Study 5: Temporary effect of public cancer death event

Overview and design

To provide further support for the effect of a cancer death experience and ensuing life-course salience, and to explore whether the priming effects found in Study 4 were lasting, we ran a longitudinal field study. While conducting the current research, Peter Jennings, a well known television news anchor, died of lung cancer (August 7th, 2005). Due to the vivid and emotionally laden media coverage, we speculated that people may have relatively intense reactions to the event. Such reactions might share some similarities to the death of a personal friend or family member (e.g., causing a reflection

on one's own life), thereby providing us with a glimpse of the effect of cancer death experience in real time. However, because Peter Jennings was a celebrity rather than someone in an individual's personal life, his death should be more likely to generate relatively casual, rather than deeply elaborated thoughts about the event. (Moreover, the public may not share the experience of the patient confronting death as when cancer happens to a family member or friend, thereby further dampening the depth and impact of the experience.) Consequently, the effect of such a public cancer death event on a person's general long-term orientation should be temporary, dissipating as the event fades from public and personal consciousness.

Thus, we conducted a longitudinal study in which we examined people's intertemporal choice 2 days after Peter Jennings' death (time 1), and then measured choice again approximately 3 weeks after the event (time 2). At time 1, we expect the effect of Peter Jennings' death to be similar to the simulation of a friend's death condition in Study 4; the event should make life course salient for those who had not experienced cancer death in their personal life, and therefore will induce a (temporary) long-term focus. On the other hand, because life course is already salient for those who have already had cancer death experience in life, the event should not further increase their long-term focus. Therefore, at time 1, there should be no difference between the CDE group and NE group in long-term focus. As time passes, however, we expect the effect of Peter Jennings' death to fade. Therefore, temporal focus should return to chronic levels, whereby a difference should again emerge between the CDE and NE group such that the CDE group will be more long-term focused. Thus, Study 5 has a two-factor design in which the (personal) cancer death experience factor is measured, and time is a within-subject factor.

Method

Participants ($N = 52$,⁵ mean age = 22.40 years old, 45% male) were paid \$8 to participate in several unrelated studies addressing topics such as decision-making, personal experiences, and general psychology. As in Study 3, they were recruited from across the country. At time 1 (August 9th, 2 days after Peter Jennings' death), they were reminded of Peter Jennings' death by reading a brief news announcement of his death. They were subsequently asked, "How easily can you imagine the life Mr. Jennings had lead?" and "How easily can you imagine Mr. Jennings as someone you know personally?" to gauge the extent to which a celebrity can be seen as a

close other. The results showed that people were moderately able to imagine the life Jennings had led ($M = 2.77$) and to feel that Jennings was someone they knew personally ($M = 2.51$).

Participants then were given a study on consumer behavior where they completed a set of six unrelated filler questions on decision making. The fund allocation task was sandwiched in between the filler choice sets. After the decision making task, participants received a follow up question regarding Peter Jennings' death, where they were open-endedly asked, "How did the news story about Mr. Peter Jennings make you think about your own life?" This question was aimed at tapping the thoughts engendered by a cancer death event, thereby providing some empirical evidence for the life course salience mechanism.

Finally, participants completed the Life Experience Questionnaire. A total of 17 participants (33%) reported not having had a cancer death experience, whereas the remaining 35 participants (67%) reported having had a cancer death experience. Of the cancer death experiences reported, 51.4% involved a parent or grandparent, 17.1% more distant family members, 2.9% friends, and 28.6% other close relationships. On average the death event occurred 7.64 years ago, and the mean age of death was 61. Between the CDE and NE groups, there was no significant gender difference (percentage of male: $M_{CDE} = .40$, $M_{NE} = .59$), $F(1, 50) = 1.62$, $p = .21$, or age difference ($M_{CDE} = 22.69$, $M_{NE} = 21.76$), $F(1, 50) = 2.81$, $p = .10$.

Approximately 3 weeks later, participants were contacted again to participate in a follow up study. The fund allocation question used in time 1 and previous studies was embedded amongst several unrelated studies. Finally, participants were thanked and debriefed.

Results and discussion

A repeated-measure analysis was conducted on the amount allocated to the long-term account. Cancer death experience was a two-level between-subjects factor (CDE, NE), time was a two-level repeated factor (time 1 was when the event was salient, time 2 was when the event had faded), and age and gender were covariates. The results of the ANCOVA revealed no between-subjects main effects of age, gender, or cancer death experience, F 's < 1. Further, there was no within-subjects main effect of time, $F < 1$. However, as predicted, there was a significant interaction between time and cancer death experience ($F(1, 48) = 11.81$, $p = .001$; details in Table 2). Follow-up ANCOVA's for each time period showed that, as expected, CDE and NE groups allocated similar amounts to the long-term account at time 1 when Peter Jennings had just passed on ($M_{CDE} = \$84$, $M_{NE} = \$132$), $F(1, 48) = 1.41$, $p = .24$. However, when salience of the event faded, individuals' temporal focus returned to

⁵ A total of 61 individuals participated in time 1; nine of them did not return for time 2. These participants were excluded from the analysis reported below—however, the analysis remains qualitatively and statistically the same when they are included.

Table 2
Means and standard errors of allocation to long-term account over time in Study 5

	Time 1	Time 2
CDE	\$84 (22)	\$107 (18)
NE	\$132 (32)	\$41 (26)

Standard errors provided in parenthesis. Time 1 is 2 days after Peter Jennings' death and time 2 is 3 weeks after his death.

chronic levels. Consistent with previous studies, the CDE group allocated significantly more funds to the long-term account ($M_{CDE} = \$107$, $M_{NE} = \$41$), $F(1, 48) = 4.05$, $p = .05$.

For further insight into these results, we compared the longitudinal effect using paired t tests within each group. Consistent with the premise that life course salience is chronically high for the CDE group, there was no difference between allocations to the long-term savings account when the event was salient and after the event had faded (mean change = \$17), $t(34) = 1.26$, $p = .22$. However, for the NE group, the temporary impact of Jennings' death on long-term focus declined as the salience of the event faded (mean change = -\$81), $t(16) = -2.22$, $p = .04$.

Finally, we examined the responses to the open-ended question posed at time 1 ("How did the news story about Mr. Peter Jennings make you think about your own life?"). Two coders blind to the conditions and hypothesis coded thoughts into three categories: (a) life-course thoughts present (e.g., "It made me think about death. He made a difference in the world and I'd like to do that too! I don't want to die without being somebody special"; "His cause of death made me think about my choice to be a smoker. He lived a rich life, one that I would like to live myself. His passing has caused me to re-evaluate my life and to give more thought to my future and the choices I am presently making"), (b) life course thoughts absent (e.g., "I didn't relate it to my own life"; "Very little—it did not cause me to think about my own death"), and (c) other thoughts that were irrelevant with respect to the life course (e.g., "It was sad. I grew up seeing Peter Jennings on the television. It was our family togetherness moment"; "I was deeply saddened"). Coder agreement was 92%; differences were resolved through discussion. Fifty-six percent of the participants reported having life course thoughts; 33% reported not having life course thoughts, and 12% had other types of thoughts.

To examine whether thoughts about the life course were related to long-term orientation, we computed the correlation between life course thoughts (coded as 0 or 1) and long-term allocation. As expected, we found a significant positive correlation between having life course thoughts and long-term allocation ($r = .24$, $p = .04$), suggesting that indeed having thoughts about the life course in response to the cancer death event was associated with greater long-term focus. Further, the correlation

between reported absence of life course thoughts and long-term allocation was marginally significantly negative ($r = -.18$, $p = .10$). In contrast, the correlation between other types of thoughts and long-term allocation was not significant ($r = .12$, $p = .20$).⁶

Thus, Study 5 captured the (temporary) effect of a real-life cancer death event on temporal focus. Specifically, the news of a cancer death of a public figure caused a temporary increase in long-term orientation among young adults who have not had a cancer death experience in their personal lives, but had no effect on those who have experienced a personal cancer death event. Further, compared to a real-life personal experience, the effect of a story of a public figure's death appears to be short-lived—showing a pattern akin to a priming effect demonstrated in Studies 3 and 4. Study 5 also provided insights into the types of thoughts engendered by a cancer death event, demonstrating a relationship between life course thoughts and long-term focus.

General discussion

Evidence from five studies shows that experiencing the death of a close other of cancer may be associated with a shift in people's intertemporal decisions. Young individuals who have experienced at least one cancer death experience, compared to those who have not, make decisions that favor the long-term future over short-term interests. Furthermore, increased life course salience appears to underlie this effect. These results complement recent literature demonstrating how the nature of mental construction and representation of events can affect judgment and decision making (Carstensen, Isaacowitz, & Charles, 1999; Liberman & Trope, 1998), and add to our understanding of intertemporal decision making. Most notably, since one's representa-

⁶ Although no mediation analysis could be run (as the open-ended question was posed only at time 1), we ran one more analysis to gain more process insight. Specifically, we examined the relationship between the life course thoughts and long-term allocation for the two groups (CDE and NE). If life course was already salient for people who have experienced cancer death in their personal life, life course thoughts due to Jennings' death should have more impact on long-term allocations for those who have not yet had a cancer death experience in their lives. Indeed, examining the CDE and NE groups separately, we found that life course thoughts were significantly correlated with long-term allocation for the NE group ($r = .45$, $p = .03$), but not so for the CDE group ($r = .10$, $p = .28$). Of note, we also examined the content of the thoughts across groups, and found no differences between the two groups in any of the three categories: presence of life course thoughts ($M_{CDE} = .51$, $M_{NE} = .65$, $F < 1$); absence of life course thoughts ($M_{CDE} = .40$, $M_{NE} = .18$, $F(1, 48) = 2.63$, $p = .11$); other thoughts: $M_{CDE} = .09$, $M_{NE} = .18$, $F < 1$. Thus, it appears that both groups had similar thoughts in response to Peter Jennings' death; they only differed in the relationship between these thoughts and long-term allocation. Life course thoughts appeared to have a greater impact on the fund allocation amounts for the NE than the CDE group.

tions and visions of the future life course are at least partially shaped by one's social experiences, it is instructive to examine the social antecedents of people's visions for the future, and their consequences. In this light, these findings add to extant research that illuminates how variables such as culture (e.g., Chen et al., 2005; Trommsdorff, 1992) and age (e.g., Pennebaker & Stone, 2003; Read & Read, 2004) contribute to individual differences in temporal focus and intertemporal decisions (Ancona et al., 2002). Indeed, the current findings suggest that intertemporal decisions can shift, not only based on broad-brush demographics, but also based on the significant experiences had in one's life.

This research also raises important questions that merit exploration in future research. First, since this research only examined the effect of one type of time-related life experience, follow-on research is needed to examine other life events that mark time (e.g., school reunions, significant birthdays) to determine whether they too foster a future focus. An interesting distinction worth examining is that, although death is an event that marks the *endpoint* of time, events such as reunions can mark the *passage* of time. One might hypothesize that whereas marking the end of time is associated with a longer-term focus (i.e., focus on the entire future lifespan rather than just the present), marking the rapid passage of time may have the opposite effect of creating a present-oriented mindset.

Relatedly, this research focused directly on one specific type of death experience, namely, the death of someone close from cancer. Although we have argued that cancer deaths are unique compared to other types of deaths (due to a combination of factors such as commonness, memorability, and relevance), the relative importance of these factors as contributors to increasing life course salience and long-term focus remains unclear. Worthy of future exploration is the question: would the same effects occur when the death of a close other was forecasted (as may be in the case of cancer, thus creating a period of confronting death) versus unexpected (as in the case of car accidents)? One might argue, for example, that in cases where death of a close other is unexpected, the feeling that "life is short" may be evoked to a greater degree, thereby eliminating or even reversing the effects documented here.

Another direction of future research would seek to make methodological advances by moving beyond quasi-experimental designs, and more deeply exploring alternative explanations. For example, stronger evidence regarding the effect of cancer death experience might come from longitudinal field research that directly tracks individuals' experiences with cancer deaths. Further, we operationalized temporal orientation in terms of two endpoints on a uni-dimensional continuum (long vs. short) in the current studies. However, it may be that short and long term focus are, in fact, two orthogonal

dimensions. If true, there is the possibility that a fundamental life event, such as a cancer death experience, may allow an individual to be simultaneously long-term oriented (e.g., likely to consider their future) and short-term oriented (e.g., able to focus on and appreciate the present). Thus, future research is needed to address the question: when, and to what degree does long-term orientation stand in contrast to short-term orientation?

The current research showed that cancer death experience increases people's preference for options that are instrumental to long-term goals. However, a related interpretation of making long-term choices may be that—not only do they bring greater welfare to the future life course—they may also extend the future life course for example, by eating healthy, or bringing better quality of life into the future via good financial standing. Thus, an interesting question is whether individuals who have had a cancer death experience are also motivated to achieve a longer life for themselves, and therefore engage in behavior such as quitting smoking and exercising more frequently. Further, often the effective achievement of long-term goals may require more intermediary-level subgoals (Lieberman et al., *in press*), and specific plans of implementation (Gollwitzer, 1999). Thus, it would be worthwhile to examine how significant life experiences impact people's planning (Buehler, Griffin, & Ross, 1994) and goal setting behavior (Huffman, Ratneshwar, & Mick, 2000). For example, are there differences between cancer death experience groups and others in the types of goals adopted, and the timeframes associated with such goals?

This research also calls for a deeper understanding of the role that mortality plays in people's lives. Although much research has focused on the terrifying effect of death on people's behavior (e.g., TMT, Pyszczynski et al., 1997), scant attention has been paid to the potentially affirming and positive consequences of such events. The results of the current research raise the question: under what conditions does the experience of death have a threatening rather than an affirming impact on individuals? This research hints at least two moderators, namely, (1) whether the death event is merely primed, compared to when it is a significant life experience substantially elaborated upon and (2) the characteristics of the individual. In particular, rather than a basic activation of fear and anxiety, a life experience with death may become a life lesson about one's future.

Furthermore, the content and impact of the life lesson may differ depending on the age and life stage of the individual. Although we focused on young adults in the current research, the question remains whether a similar effect would be found in other age groups. For example, life course salience may work differently depending on whether the life course is one that seems long and expansive (as for young adults), or more limited (as for the elderly; Carstensen et al., 1999). One might speculate, for

example, that when more of one's life is behind them (versus ahead of them), an increase in life course salience due to cancer death experience may lead to greater short-term, rather than long-term, focus. As a result, the findings here should be mitigated or reversed. We found preliminary evidence for this prediction in an additional small-scale study where we focused on an older sample ($N=29$, age 50–85, mean = 60), using methods similar to Study 1. For this age group, the relevant distinction may not lie in whether one has had any experience with cancer deaths in life (indeed the data shows that 90% of people in this age group has had at least one cancer death experience), but whether they have experienced it as older adults. Thus, we measured cancer death experience within the past five years, on the grounds that (a) the event occurred when the person was older; (b) recent events should have greater impact; and (c) this measure provided us with relatively balanced cells (59% of these participants have had a cancer death experience in the past five years). The results showed that for cancer death experienced later in life, the effect was eliminated ($F < 1$, $p = .48$) and indeed directionally reversed: Those with such experience allocated *less* money into the long-term account ($M_{CDE} = \$106$, $M_{NE} = \$144$), and allocated more money for spending ($M_{CDE} = \$142$, $M_{NE} = \$86$), $F(1, 25) = 1.42$, $p = .24$. More generally, additional research is needed to identify boundary conditions of the temporal-based effects documented, and to integrate the perspectives of terror management theory with real life experiences.

Finally, the mechanism of life course salience and its implications for an individual's psychological development merit further exploration. For example, while this research provides evidence of increased life course salience among young adults with cancer death experience, one possibility is that such experience changes not only the salience of life course perception, but also the content of such perception, such as its length and boundedness (Carstensen & Lang, 1996). In ongoing research, we find evidence that indeed young adults with cancer death experience (compared to those without such experience) tend to forecast a longer lifespan for themselves (Liu & Aaker, 2007). Further, it is possible that the shift toward a long-term orientation is only a part of a bigger phenomenon of life course salience. In particular, it is possible that for young adults, having versus not having a salient view of the long life course ahead marks a developmental leap, such that those with life course salience arrive at a different stage of maturity. Indeed, research on developmental maturity identifies the key developmental tasks for individuals at different stages of their life cycle. The Vineland social maturity scale (Doll, 1953), for example, identifies the following developmental markers of maturity for young adults of age 20–25: (1) I use money providently; (2) I assume responsibilities beyond my own

needs; (3) I contribute to social welfare; (4) I provide for the future. Thus, becoming future oriented appears to indicate social maturity for young adults at this stage of their lives. Therefore, it is possible that a significant shift in social perception—namely, gaining life course salience through a life experience—can make the individual more mature. Such a premise is also consistent with prior work showing that certain life events (e.g., graduating from college and starting work) can lead people to alter life goals and the representations of themselves in the future (Zirkel, 1992). One question to address in future research is whether cancer death experience impacts the individual's temporal focus solely through life course salience, or are there multiple paths by which cancer death experience influences long-term focus? Further, although we argued that life course salience creates long-term focus by making the future more vivid, thus increasing its weight in intertemporal decisions, another possibility is that knowledge about the future abates young adults' anxiety and increases their confidence about the future, leading to greater willingness to invest in the future.

In closing, this research highlights the usefulness of looking at significant life experiences as antecedents to individual's judgments and decisions. More generally, life experiences may have broad implications on the individual's psychological functions by fundamentally redefining the individuals' outlook on life and the self. A broader array of theoretical areas can thereby relate to this work, including self concept and self regulation, examining, for example, the impact of life experiences on the strategies we adopt to achieve important goals in life and the satisfaction we derive from decisions and life more generally (Diener, 1984).

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