CrossMark

The association between vivid thoughts of death and authenticity

Elizabeth Seto[1] · Joshua A. Hicks[1] · Matthew Vess[2] · Lisa Geraci[1]

Abstract Many theoretical perspectives link death-related thoughts to authenticity; however, there is little empirical research directly examining this association. The current studies examined how recalling a vivid experience associated with mortality relates to outcomes indicative of authentic engagement. In Study 1, participants described an experience that made them think about their mortality, indicated how vivid their recollection was, and completed measures of authenticity and goal-pursuit. Results indicated that how vividly a mortality experience was recalled predicted greater authenticity and more important goal-pursuits. Study 2 replicated many of the findings and found a similar pattern when individuals vividly recalled a mortality experience of a close other. Study 3 again replicated these results after controlling for a host of death-related variables. Exploratory analyses further revealed that ruminating about death was often negatively associated with authenticity. Implications for the role of death-related thoughts in authentic and alienated becoming are discussed.

Keywords Authenticity · Death · Mortality · Rumination · Vividness

✉ Elizabeth Seto
  seto.elizabeth@gmail.com

[1] Texas A&M University, College Station, TX, USA

[2] Montana State University, Bozeman, MT, USA

Introduction

Throughout our lives, there are times when we certainly feel invincible. We climb trees, unconcerned about the increasing height. We play in the ocean, ignoring tumultuous waves. In essence, we live life seemingly unaware of the fragility of our existence. Yet, an acute awareness of our mortality has the potential to transform our goals and motivation. The experience of being in a traffic collision, almost drowning, or receiving a diagnosis of a terminal illness, for example, can profoundly affect our plans and aspirations. The positive psychological and behavioral implications of death-related thoughts have been studied closely across multiple perspectives (see Cozzolino 2006; Furn 1987; Greyson 1983; Noyes 1980; Vail et al. 2012). The current report builds on this research by examining how individual differences in the way people think about death relate to active engagement in life. Specifically, we investigated how vivid memories of an encounter with death are associated with the subjective sense of authenticity and the pursuit of important goals.

Philosophical and psychological perspectives on death and authentic becoming

Existential philosophers suggest that an active engagement with life begins paradoxically with an active reflection of death. For instance, many conceptualize the "authentic existence" as the practice of living life while battling the inherent complexities of mortality, the meaning of life, and free will (Binswanger 1963). They argue that to achieve an authentic existence, one must confront the fear of mortality, infuse life with personal meaning, and believe that free will affords the opportunity to live the life we choose. Moreover, some existential philosophers maintain that the

fear of death is simply a misinterpretation of the anxiety that one is not living life in accordance with personal values (see Martin et al. 2004, for a discussion). For example, Kierkegaard (1961, 1983) views what he labels "existential dread" as a call to active, self-directed living, and Heidegger (1982/1927) contends that the path to authentic living is the full acknowledgement of death.

The antithetical relationship between life and death can also be understood through the existential ideal of "authentic becoming." Authentic becoming is a process of self-development in which individuals actively try to fulfill their potential to become who they really are (Kasser and Sheldon 2004). DeCarvalho (2000) argues that a confrontation with death can be a vehicle to authentic becoming as people become more self-aware of their limited time in the world (see also Carstensen et al. 1999, for a similar perspective). In contrast, "alienated becoming" refers to an individual's movement away from the true self (Kasser and Sheldon 2004). In our studies, we will use the terms authentic and alienated becoming to capture how thinking about death is related to actively engaging with life.

Existing research has broadly considered two ways of thinking about death that might affect authentic becoming. The first type consists of non-conscious thoughts about death, which have largely been examined in Terror Management Theory (TMT) research. TMT posits that the need to manage implicit concerns about death exerts widespread effects on people's thoughts, feelings, and behavior (Greenberg et al. 1990; Greenberg et al. 1997). To support this perspective, TMT research typically relies on a paradigm (mortality salience induction) in which people first think about their own death and then complete a delay or distraction task (see Burke et al. 2010). This delay or distraction period allows thoughts of death to recede from focal attention, but remain highly accessible at a non-conscious level. Of particular relevance to the current inquiry, TMT research has revealed that the activation of non-conscious thoughts about death can affect outcomes negatively linked to authentic becoming. For example, while conscious thoughts of death promote the immediate derogation of goals that are extrinsic in nature (e.g., wealth, status), accessible death-thoughts that are no longer in focal attention *increase* one's preference for these goals (Kosloff and Greenberg 2009). Given that extrinsic goals are often viewed as antithetical to authentic living (e.g., Ryan and Deci 2000), these findings suggest that the subtle activation of non-conscious death thoughts may negatively influence authentic becoming (but see Vail et al. 2012, for potential benefits of thinking about death from a TMT perspective).

In contrast to TMT, the Dual-Existential Systems Model (Cozzolino 2006) focuses on the unique consequences of deeply and consciously reflecting on death. This model states that thoughts about death activate either an abstract existential system through subtle reminders of death or a concrete existential system triggered by explicit thoughts about death. In contrast to the procedures utilized in most TMT studies, death reflection manipulations activate the specific existential system by asking people to intensely reflect on a potential death scenario and to go through the thought processes that are typical of near-death experiences (e.g., a life review). Critically, reflecting on death in this way fosters growth-oriented reactions indicative of authentic pursuits. For instance, an intense death reflection led people with high extrinsic values to behave more intrinsically, evincing less greed and greater spirituality, compared to participants under a traditional TMT manipulation (Cozzolino et al. 2004).

As predicted by the Dual-Existential Systems Model, these effects are quite consistent with those reported by people who have undergone a near-death experience (NDE; Furn 1987; Martin and Kleiber 2005). For example, individuals who have had NDEs often report a greater sense of fulfillment and self-actualization compared to individuals who have not had NDEs (Greyson 1992; Noyes 1982/1983), and many report becoming more spiritual and finding new meaning and sense of purpose in life (Kinnier et al. 2001). More crucially, people who have had NDEs tend to shed cultural values in favor of personal values, have little concern for others' opinions of them, and participate in activities that they find personally engaging (Martin et al. 2014).

In sum, research from multiple perspectives illustrates the effects that death-thoughts have on variables relevant to authentic becoming. This work has largely indicated that intense and deep reflections on mortality give way to growth-oriented outcomes indicative of authenticity. However, while existing research points to the importance of considering how people reflect on death (e.g., intense reflection) for authentic living, there are important metacognitive aspects of death-relevant thought that have not been assessed. The present studies thus build on previous research to more broadly examine how aspects of death-relevant reflection relate to authentic becoming. We examine a potential key component of mortality-related memories: the subjective vividness of the memory.

Vividness of a mortality experience

A large body of memory research demonstrates that people often report vividly recalling past events (see Roediger et al. 2007 for review). Often these recollective experiences are judged to be highly distinctive (Rajaram and Geraci 2000; Rajaram 1998), containing a great deal of physical and contextual detail. Pillemer (2001) argues that vivid memories of events serve directive functions that can motivate action and provide a sense of purpose in our

endeavors. In fact, more specific and detailed personal-event memories have affective significance and are more likely to stimulate action (Pillemer 2001, 2003). Similarly, through semi-structured interviews, researchers infer that the vividness of a NDE is an important component to produce psychological change (Martin et al. 2014; Noyes 1980). They argue that when individuals have vivid encounters with death, they experience a sense of finality and come to accept death's imminence. According to these researchers, the vividness of the experience plays an important role in many of the positive psychological consequences that emerge from death-relevant experiences.

There is empirical evidence that the general ability to imagine oneself in the future, which is intimately tied to the ability to recall oneself in the past, predicts several positive psychological, social, and physical outcomes. Tulving (1985) referred to the ability to vividly recall the past and imagine the future—a kind of mental time travel– as "autonoetic consciousness" (for a review, see Atance and O'Neill 2001; Szpunar 2010). Indeed, like recalling oneself in the past, research shows that thinking about oneself in the future is associated with important social and health behaviors (D'Argembeau and Van der Linden 2006; Keough et al. 1999; Zimbardo et al. 1997). This work generally shows that people who report readily imagining future events are likely to engage in positive health behaviors (not smoking) and prosocial behaviors (being more cooperative). Similarly, imaging future events is associated with reduced delay discounting (Peters and Büchel 2010). And, perhaps most relevant to the current study, the ability to "pre-experience" future events is associated with self-consciousness, or the degree to which people focus on their inner experience (D'Argembeau et al. 2010).

To our knowledge, no research has directly examined how the subjective experience of vividly recalling a memory of an encounter with death relates to authentic engagement with life. Here, we take a first-person approach to examining subjective experiences of memory (see Gardiner 2001; Tulving 1985), in which we investigate the nature of the subjective experience that people have recalling mortality-relevant memories. Some memory studies take a third-person approach to assessing memory, whereby a memory is either objectively right or wrong as devised by the experimenter (the third-person). In contrast, first-person approaches to memory focus on the individual's subjective experiences of the memory (the vividness, emotionality, or confidence), with the idea that how a person experiences the past (e.g., whether they feel that they have a vivid memory) has important consequences for behaviors, sometimes more than whether the memory is actually accurate (as in the case of a highly confident eyewitness to a crime). We examined people's subjective

reports of the vividness of their memories, a phenomenological characteristic that is commonly assessed in research on autobiographical and flashbulb memory (see Holland and Kensinger 2010; Rubin and Kozin 1984; Talarico et al. 2004).

We hypothesized that the subjective experience of vividly recalling a specific experience that engenders thoughts of one's mortality should relate to a sense of authentic becoming. We hypothesize that previous experiences with mortality can become personal-event memories that instill greater authentic strivings and pursuits in the present and future. Research shows that participants with greater experience with death report less death anxiety and view their death-related memories as "originating events" that signal the beginning of "living or thinking in a new way" (Bluck et al. 2008, p. 544). Subjectively vivid memories related to mortality should thus be associated with greater authentic engagement because these memories provide a landmark for present and future endeavors. Thus, we predicted that vivid reports of mortality-related memories would be positively associated with authentic becoming.

Vividness versus death rumination

A secondary goal of this project was to explore how general death rumination is associated with the authentic and alienated becoming. We define death rumination as simply having pervasive and repetitive thoughts about death. Death rumination is unique in that it captures conscious thoughts about death, that is, active awareness that death is inevitable, and the frequency with which these thoughts are a part of our daily experiences. Because ruminative thought is associated with a number of outcomes antithetical to authentic becoming (e.g., depressive symptoms, Mor and Winquist 2002; pessimism, Lyubomirsky and Nolen-Hoeksema 1995; self-criticism, Lyubomirsky et al. 1999), we explored the possibility that tendencies to ruminate on death-related thoughts would be inversely associated with authentic becoming. However, more importantly, including a measure of death-rumination allowed us to determine whether the relationship between the vividness of mortality-relevant memories and authentic becoming is distinct from other ways of reflecting on mortality.

Overview of the current studies

In the present research, our primary goal was to examine how the subjective vividness of recalling a previous experience with mortality relates to the experience of authentic becoming. In Study 1, participants described a previous experience that made them think about their own

mortality and rated the vividness of this experience. Study 2 was a direct replication of the first study, but in addition to describing an experience that made them think about their own mortality, participants also described an experience that made them think about the mortality of someone close to them. In Study 3, participants completed the same measures from the two previous studies as well as a host of measures associated with important covariates (e.g., health status). Across all studies, we predicted that the subjective vividness of recalling the mortality experience would positively relate to authentic engagement with life.

Study 1

Study 1 examined how the subjective vividness of recalling a mortality-related experience relates to feelings of authenticity. Participants described a previous experience that made them think about their own mortality and then rated the subjective vividness of this memory. We included two scales as a measure of authentic becoming. Authentic feelings and behavior were measured using The Authenticity Scale (Wood et al. 2008), a scale that gauges the three components (authentic living, accepting external influence, and self-alienation) of an authentic personality. Goal pursuits were assessed by asking participants to list five long-term goals and rate each goal for importance. We predicted that the subjective vividness of recalling a mortality-related episode would be positively related to these facets of authentic becoming.

Method

Participants

One hundred and fifty-two individuals (83 female, 69 male) recruited from Amazon Mechanical Turk (www.mturk.com), an online source of data (Buhrmester et al. 2011), participated in the study and were compensated with a payment of $1.50. Participants were from the United States only, diverse in age ($M = 33.91$, $SD = 11.00$, range 19–68), and predominantly white (86.2 %) and non-Hispanic (89.5 %). Participants completed the study through an online survey after accepting the job posting on Amazon Mechanical Turk.

Materials and procedure

Participants were informed that they would be participating in a study exploring their personality and attitudes before completing the measures described below. Measures were grouped into two blocks, death-related items (i.e., vividness of the mortality experience, death rumination) or main outcome measures (i.e., authenticity, goal importance), and randomized for the order of presentation. We also included a number of exploratory measures tangentially related to our current hypotheses (e.g., fear of personal death, goal self-concordance, personal growth, free will, satisfaction with life, future time perspective) that are described and analyzed in our supplementary materials. Block order was randomized to explore whether presenting the death-related items first would influence the main outcome measures. Participants were debriefed following the completion of the study.

Vividness of a mortality experience

Participants were asked to describe a personal experience that made them think about their mortality. Specifically, they were instructed to, "Think about a previous experience in your life that made you think about your own mortality. Please describe the experience you are thinking about in a few words below." To assess the vividness of their mortality experience, participants indicated on a 7-point scale "how clear was this experience" (1 = *not clear at all*; 7 = *very clear*), "how easy was it to imagine this experience" (1 = *not easy at all*; 7 = *very easy*), and "how vivid was this experience" (1 = *not vivid at all*; 7 = *very vivid*). We adapted the first two items from King and Smith (2004) and included a face-valid measure of vividness as our last item. Responses were averaged across the items to produce a composite Vividness score with higher values reflecting greater vividness of the experience ($M = 6.15$, $SD = 1.05$, $\alpha = .84$).

Death rumination

To explore the influence of death rumination on authentic functioning, participants indicated their agreement with 10 face-valid statements using a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*) taken from Abdel-Khalek (1998), Dickstein (1972), Klug and Sinha (1987), and Thauberger (1975). These scales have independently demonstrated good reliability. Example items include, "I often think about the inevitability of death," "I think about death more than those around me," and "Thoughts about death are always on the back of my mind." Responses were averaged across the items to produce a composite Death Rumination score with higher values reflecting greater death rumination ($M = 3.33$, $SD = 1.30$, $\alpha = .93$).

Authenticity

Authenticity was assessed using the 12-item Authenticity Scale (Wood et al. 2008) and consists of three 4-item

subscales: authentic living (e.g., "I am true to myself in most situations."), accepting external influence (e.g., "I am strongly influenced by the opinions of others."), and self-alienation (e.g., "I feel as if I don't know myself very well."). Responses were made on a 7-point scale (1 = *does not describe me at all*; 7 = *describes me very well*) and composite scores for each subscale were computed with higher values reflecting greater authentic living ($M = 5.92$, $SD = .91$, $\alpha = .79$), accepting external influence ($M = 3.10$, $SD = 1.51$, $\alpha = .90$), and self-alienation ($M = 2.42$, $SD = 1.43$, $\alpha = .90$), respectively.

Goal importance

Participants were asked to list five "important goals that you intend to pursue over the next year or beyond." Following each goal listed, participants indicated, "how important is this goal," "how meaningful is this goal," and "how committed are you to this goal" on a 7-point scale (1 = *not at all*; 7 = *extremely*). Responses were averaged across the items to produce a composite Goal Importance score with higher values reflecting greater goal importance ($M = 5.94$, $SD = .65$, $\alpha = .86$).

Results and discussion

Block order had no significant effects on any of our main outcome variables (ps > .146). Thus, all analyses were collapsed across orders.[1]

Preliminary correlational analyses showed positive associations between mortality vividness and authentic living and goal importance. Mortality vividness was also negatively correlated with self-alienation.

In contrast to mortality vividness, death rumination was positively associated with accepting external influence and self-alienation. Bivariate correlations for all variables can be found in Table 1.

In sum, mortality vividness and death rumination had distinct relationships with a sense of authentic becoming. Whereas mortality vividness is related to the positive facets of authentic engagement, frequent death rumination is associated with perceptions of alienated becoming. The

lack of association between mortality vividness and death rumination in the correlational analyses suggest that these variables are independent constructs, highlighting the importance of examining both measures as separate predictors of authentic becoming.

Primary analyses

We conducted a series of hierarchical linear regression analyses to predict each dependent variable from vividness of the mortality experience and death rumination while controlling for age. In the first set of analyses, age was standardized and entered on the first step of the regression equation, and vividness of the mortality experience was standardized and entered on the second step of the regression equation. In the second set of analyses, death rumination was standardized and entered on the second step of the regression equation.

Overall, vividness of the mortality experience remained a significant predictor of all variables except for accepting external influence while controlling for age.[2] Death rumination significantly predicted accepting external influence and self-alienation after controlling for age.[3] Statistics for each regression analyses are found in Table 2.

Study 2

Study 1 showed that reported vividness of mortality-related memories predicted different facets of authenticity and goal-pursuit. The ability to vividly recall a memory that made participants think about their own mortality predicted greater perceptions of authenticity and important goal-pursuits whereas frequent death rumination predicted lower authenticity.

Study 2 was conducted with three goals in mind. Our first goal was to provide a direct replication of Study 1 to instill greater confidence in our findings (Pashler and Harris 2012). Next, we included three new measures. Previous research suggests that individuals high in neuroticism

---

[1] It was determined beforehand that surveys without fully completed responses would be excluded from analyses. On MTurk, participants can open the survey and choose to not complete it at any point at their discretion. In Study 1, 21 participants did not complete the survey in full. Of these 21 participants, 9 participants completed between 1 and 27 items. In Study 2, 34 participants did not complete the survey in full. Of these 34 participants, 13 participants completed between 1 and 15 items. In Study 3, 41 participants did not complete the survey in full. Of these 41 participants, 15 participants completed between 1 and 84 items. Across three studies, 96 participants failed to complete all the measures and were thus excluded from analyses.

[2] It is possible that the distribution of scores for vividness and our outcome variables are negatively skewed across our studies and thus can increase the possibility of significant results. To instill more confidence in our findings, we created a categorical variable for vividness and ran an independent samples t tests on each of our outcome measures. In general, across all studies, we find that people who report highly vivid experiences with mortality report greater authentic living, less self-alienation, more important goal-pursuits or strivings, and intrinsic aspirations.

[3] We considered the possibility that gender may be associated with death-related thoughts (see Study 3). Thus, we also ran regression analyses adding gender as a covariate. When we control for gender in the regressions analyses in Studies 1 and 2, vividness and death rumination continued to predict the same outcome variables.

Table 1 Bivariate correlations among variables in study 1

	1	2	3	4	5	6
Vividness	–					
Death rumination	.16	–				
Age	.19*	−.08	–			
Authentic living	.22**	−.15	.18*	–		
Accepting external influence	−.15	.22**	−.14	−.52**	–	
Self-alienation	−.28**	.27**	−.14	−.49**	.50**	–
Goal importance	.25**	−.12	.05	.37**	−.09	−.27**

* $p < .05$; ** $p < .01$

Table 2 Regression analyses in study 1

Predictor	Authentic living				Accepting external influence			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.032*				.020
Age	.178	.080	.178*		−.143	.081	−.143	
Step 2				.035*				.015
Age	.142	.081	.142		−.119	.082	−.119	
Vividness of mortality experience	.192	.081	.192*		−.126	.082	−.126	

Predictor	Self-alienation				Goal importance			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.020				.002
Age	−.140	.081	−.140		.046	.082	.046	
Step 2				.067**				.063**
Age	−.090	.080	−.090		−.002	.081	−.002	
Vividness of mortality experience	−.263	.080	−.263**		.255	.081	.255**	

Predictor	Authentic living				Accepting external influence			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.032*				.020
Age	.178	.080	.178*		−.143	.081	−.143	
Step 2				.020				.044**
Age	.168	.080	.168*		−.127	.079	−.127	
Death rumination	−.140	.080	−.140		.210	.079	.210**	

Predictor	Self-alienation				Goal importance			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.020				.002
Age	−.140	.081	−.140		.046	.082	.046	
Step 2				.065**				.014
Age	−.121	.079	−.121		.037	.081	.037	
Death rumination	.256	.079	.256**		−.120	.081	−.120	

* $p < .05$; ** $p < .01$

spend more time contemplating death and their own mortality (Abdel-Khalek 1998). One objective was to determine whether the association between the death measures and authentic engagement, respectively, might be driven by neuroticism; therefore, we included the neuroticism subscale from the NEO Five Factor Inventory-3 (McCrae and

Costa [2004]). Additionally, we modified our measure of goal importance by asking participants to list and rate the importance of three personal strivings. Another, more important, objective was to examine how the reports of vivid mortality experiences and death rumination were associated with intrinsic and extrinsic goal pursuits. We thus included The Aspiration Index (Kasser and Ryan [1996]) as another main outcome variable. Previous research shows that people who have had near-death experiences report placing less value on extrinsic pursuits (Greyson [1983]), and conscious thoughts of death lead to the derogation of extrinsic goals (Kosloff and Greenberg [2009]).

In addition to these changes, we included a new exploratory prompt that asked participants to think about a mortality experience related to someone close to them. We included this measure to test whether thinking about the mortality of others is also associated with authentic becoming. Studies have shown that the loss of close others can influence personal beliefs and goals (e.g., Emmons et al. [1998]; Lehman et al. [1993]; Stein et al. [2009]). Therefore, we examined whether vividly recalling a mortality experience of someone close to you may similarly relate to authentic becoming.

We hypothesize that vivid phenomenological experiences of recalling a personal mortality-related episode as well as a mortality-related experience of a close other would positively predict authenticity, important strivings, and intrinsic aspirations and negatively predict extrinsic aspirations, controlling for age and neuroticism. Moreover, based on the findings of Study 1, we predict the opposite pattern for death rumination such that death-focused rumination would negatively predict authenticity, important strivings, and intrinsic aspirations and positively predict extrinsic aspirations, controlling for age and neuroticism.

Method

Participants

One hundred and fifty-two individuals (85 female, 67 male) recruited from Amazon Mechanical Turk participated in the study and were compensated with a payment of $1.50. Participants were from the United States only, diverse in age ($M = 31.58$, $SD = 9.36$, range 19–66), and predominantly white (80.6 %) and non-Hispanic (92.7 %). Participants completed the study through an online survey after accepting the job posting on Amazon Mechanical Turk.

Materials and procedure

Study 2 used the same structure and materials as Study 1 except participants also described a mortality experience

that someone close to them had, completed the new measure of goal pursuit, and the additional measures described below. Again, measures were grouped into two blocks and randomized for the order of presentation, with the new writing prompt falling under death-related items and neuroticism and aspirations falling under our main outcome measures. Participants completed the same measures of death rumination ($M = 3.50$, $SD = 1.28$, $\alpha = .92$) and authenticity: authentic living ($M = 5.80$, $SD = .94$, $\alpha = .83$), accepting external influence ($M = 3.30$, $SD = 1.43$, $\alpha = .89$), and self-alienation ($M = 2.69$, $SD = 1.46$, $\alpha = .86$).

Vividness of personal mortality experience

Participants again were asked to describe a personal experience that made them think about their mortality. Participants indicated the vividness of their personal experience using the same measure of vividness described in Study 1 ($M = 6.04$, $SD = 1.17$, $\alpha = .92$).

Vividness of close other's mortality experience

Participants were also asked to describe an experience that made them think about the mortality of someone close to them. Specifically, they were instructed to, "think about a previous experience that made you think about the mortality of someone close to you. For example, think about the loss of someone close to you or someone who has a terminal illness or had a close brush with death." Participants indicated the vividness of the experience that happened to a close other using the same measure of vividness described in Study 1 ($M = 5.98$, $SD = 1.12$, $\alpha = .88$).

Important strivings

Participants listed and rated 3 personal strivings. Specifically, they were told:

> A personal striving is an objective that you are typically trying to accomplish or attain. Examples of personal strivings may be trying to be physically attractive, trying to seek new and exciting experiences, and trying to avoid being noticed by others. Strivings may be positive or negative; that is, they could be about something that is typically approached or sought after or something that is typically avoided or prevented. For this task, we would like you to think about some strivings that you are trying to accomplish or attain.

Following each striving listed, participants indicated, "how important is this striving," "how meaningful is this striving," and "how committed are you to this striving"

on a 7-point scale (1 = *not at all*; 7 = *extremely*). Responses were averaged across the items to produce a composite Important Strivings score with higher values reflecting more important strivings ($M = 6.11$, $SD = .69$, $\alpha = .85$).

Aspirations

Intrinsic and extrinsic goals were assessed using the 32-item Aspiration Index (Kasser and Ryan 1996). Participants indicated how important they found each aspiration using a 5-point scale (1 = *not important at all*; 5 = *very important*). The Aspiration Index consists of seven subscales: 4-item self-acceptance (e.g., "You will know and accept who you really are."), 5-item affiliation (e.g., "You will have people who care about you and are supportive."), 5-item community feeling (e.g., "You will work for the betterment of society."), 4-item physical fitness (e.g., "You will feel energetic and full of life."), 4-item financial success (e.g., "You will have a job with high social status."), 5-item attractive appearance (e.g. "Your image will be one others find appealing."), and 5-item social recognition (e.g., "You will be admired by many people."). The composite Intrinsic Aspiration score was computed using the mean of the self-acceptance, affiliation, community feeling, and physical fitness subscales. The composite Extrinsic Aspiration score was computed using the financial success, attractive appearance, and social recognition subscales. Higher values indicated greater intrinsic aspirations ($M = 4.01$, $SD = .63$, $\alpha = .91$) and extrinsic aspirations ($M = 2.54$, $SD = .82$, $\alpha = .91$), respectively.

Neuroticism

Neuroticism was assessed using NEO Five Factor Inventory-3 (McCrae and Costa 2004). Participants indicated their agreement with 12 statements using a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*). Example items include, "I often feel tense and jittery" and "Too often, when things go wrong, I get discouraged and feel like giving up." Responses were averaged across the items to produce a composite Neuroticism score with higher scores reflecting greater neuroticism ($M = 2.77$, $SD = .95$, $\alpha = .92$).

Results and discussion

Block order had no significant effects on any of our main outcome variables ($ps > .089$). Thus, all analyses were collapsed across orders.

There was no relationship between death rumination and the reports of vivid personal and close other mortality experiences. Replicating most findings from Study 1, preliminary correlational analyses found positive associations between the personal mortality vividness and authentic living and important strivings. Personal mortality vividness was also positively correlated with intrinsic aspirations.

The close other mortality vividness variable yielded similar results to the personal mortality vividness. Correlational analyses found positive associations between close other mortality vividness and authentic living, important strivings, and intrinsic aspirations. There were also negative relationships with accepting external influence and self-alienation.

The results from the death rumination analyses also replicated many of the findings from Study 1. Death rumination was negatively associated with authentic living and positively associated with accepting external influence, self-alienation. Additionally, death rumination was positively related to neuroticism and extrinsic aspirations. Bivariate correlations for all variables can be found in Table 3.

Primary analyses

We conducted the same series of hierarchical linear regression analyses from Study 1 to predict each dependent variable from vividness of the mortality experience and death rumination, but controlling for age and neuroticism. Age and neuroticism were standardized and entered on the first step of the regression equation and vividness of one's personal mortality experience, vividness of a close other's mortality experience, and death rumination were standardized and entered on the second step of the regression equation, respectively.

Overall, vividness of the mortality experience significantly predicted authentic living, important strivings, and intrinsic aspirations while controlling for age and neuroticism. Vividness of a close other's mortality experience significantly predicted all the outcome variables except for extrinsic aspirations, controlling for age and neuroticism. (See supplementary materials.) Death rumination continued to predict accepting external influence, self-alienation, and extrinsic aspirations after controlling for age and neuroticism. Statistics for each regression analyses are found in Tables 4 and 5.

Study 3

Taken together, Studies 1 and 2 provide strong support for how individual differences in the way people think about death influence their sense of authentic engagement with life. Vividness of a personal and a close other's mortality-related memory predicted outcomes related to authentic

Table 3 Bivariate correlations among variables in study 2

	1	2	3	4	5	6	7	8	9	10
Vivid- P	–									
Vivid- O	.66**	–								
DR	.02	.02	–							
Age	.11	.12	−.06	–						
N	−.09	−.04	.42**	−.14	–					
AL	.31**	.36**	−.24**	.15	−.43**	–				
AEI	−.09	−.19*	.44**	−.21**	.37**	−.49**	–			
SA	−.15	−.28**	.43**	−.30**	.43**	−.47**	.59**	–		
IS	.51**	.52**	−.11	.25**	−.22**	.44**	−.23**	−.36**	–	
IA	.44**	.43**	−.04	.11	−.01	.32**	−.09	−.18*	.62**	–
EA	.06	−.01	.25**	−.28**	.19*	−.19*	.42**	.39**	−.02	.18*

Vivid-P Vivid personal, *Vivid-O* Vivid other, *DR* death rumination, *N* neuroticism, *AL* authentic living, *AEI* accepting external influence, *SA* self-alienation, *IS* important strivings, *IA* intrinsic aspirations, *EA* extrinsic aspirations

* $p < .05$; ** $p < .01$

Table 4 Regression analyses in study 2

Predictor	Authentic living				Accepting external influence				Self-alienation			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.196**				.163**				.245**
Age	.091	.074	.091		−.161	.076	−.161*		−.245	.072	−.245**	
Neuroticism	−.421	.074	−.421**		.349	.076	.349**		.398	.072	.398**	
Step 2				.071**				.001				.007
Age	.065	.071	.065		−.157	.076	−.157*		−.237	.072	−.237**	
Neuroticism	−.400	.071	−.400**		.345	.076	.345**		.391	.072	.391**	
Vividness of mortality experience	.268	.071	.268**		−.039	.076	−.039		−.085	.072	−.085	

Predictor	Important strivings				Intrinsic aspirations				Extrinsic aspirations			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.096**				.012				.104**
Age	.220	.079	.220**		.112	.082	.112		−.261	.078	−.261**	
Neuroticism	−.190	.079	−.190*		.003	.082	.003		.156	.078	.156*	
Step 2				.219**				.186**				.010
Age	.173	.069	.173*		.069	.075	.069		−.271	.079	−.271**	
Neuroticism	−.152	.069	−.152*		.038	.075	.038		.164	.078	.164*	
Vividness of mortality experience	.472	.069	.472**		.436	.074	.436**		.102	.078	.102	

* $p < .05$; ** $p < .01$

becoming, while death rumination predicted outcomes indicative of alienated becoming.

The main objective in Study 3 was to enhance the conceptual and methodological rigor of our findings and to establish the importance of vividness of mortality-evoking memories and death rumination as independent constructs in predicting authentic and alienated becoming. One important distinction in identifying key predictors of authentic engagement is whether the mortality-evoking experience itself or the vividness of the mortality-evoking

Table 5 Regression analyses in study 2

Predictor	Authentic living				Accepting external influence				Self-alienation			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.196**				.163**				.245**
Age	.091	.074	.091		−.161	.076	−.161*		−.245	.072	−.245**	
Neuroticism	−.421	.074	−.421**		.349	.076	.349**		.398	.072	.398**	
Step 2				.005				.096**				.074**
Age	.091	.074	.091		−.160	.071	−.160*		−.244	.068	−.244**	
Neuroticism	−.390	.082	−.390**		.206	.079	.206*		.272	.075	.272**	
Death rumination	−.074	.081	−.074		.341	.078	.314**		.300	.075	.300**	

Predictor	Important strivings				Intrinsic aspirations				Extrinsic aspirations			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.096**				.012				.104**
Age	.220	.079	.220**		.112	.082	.112		−.261	.078	−.261**	
Neuroticism	−.190	.079	−.190*		.003	.082	.003		.156	.078	.156*	
Step 2				.000				.001				.034*
Age	.220	.079	.220**		.112	.082	.112		−.261	.077	−.261**	
Neuroticism	−.181	.087	−.181*		.018	.091	.018		.071	.085	.071	
Death rumination	−.022	.086	−.022		−.037	.090	−.037		.203	.084	.203*	

* $p < .05$; ** $p < .01$

memory is creating a greater sense of authentic becoming. To isolate which aspect of the mortality related experience is associated with authenticity, we included several new measures specifically examining the content of participants' mortality-related experiences. First, we asked participants to indicate to what extent they believed their mortality experience was a near-death experience. Previous research suggests that NDEs serve as a "wake-up call" to behave more authentically (Martin et al. 2004, 2005), thus it is possible that the NDE itself may function to promote authenticity, important goal-pursuits, and aspirations. Additionally, we included other measures to assess the content of mortality-related experiences, including age of the memory, personal involvement in the memory, emotional experience at the time of the event, and seriousness of the experience. It is possible, for example, that more recent experiences, first-hand experiences, more negative emotions at the time of the experience, and the seriousness of the event might be key factors that are associated with authenticity. Finally, to provide converging evidence for our vividness measure, we also examined whether the perceptual detail of the mortality experience is also pivotal in promoting authenticity in mortality-related memories.

In regard to death rumination, it is possible that general cognitive rumination may be highly related death rumination. In other words, the general tendency to dwell on one's experiences, distinct from the frequency of death-related thoughts, may lead to greater alienated becoming. Thus, we included a measure of rumination to ascertain the importance of death rumination in predicting less active engagement with life. Finally, we also measured one's state of health, as poor health may invoke more thoughts about death (Missler et al. 2011). Similarly, previous research has shown that women live longer than men (Wingard 1984; Luy and Gast 2014), suggesting that gender may be influencing more death-related thoughts. Thus, we included health status and gender in each of our analyses described below.

Given our previous findings, we predict that vividness of the mortality experience and perceptual detail of the mortality experience will positively predict authenticity, important goals, and intrinsic aspirations and negatively predict extrinsic aspirations, controlling for important content of the mortality experiences. Furthermore, death rumination will negatively predict authenticity, important goals, and intrinsic aspirations and positively predict extrinsic aspirations, controlling for the important covariates described above.

Method

Participants

One hundred and fifty-three individuals (69 female, 1 female to male transgender, 81 male, 1 unsure, 1 unreported) recruited from Amazon Mechanical Turk participated in the study and were compensated with a payment of $1.00.

Participants were from the United States only, diverse in age ($M = 32.84$, $SD = 9.61$, range 20–68), and predominantly white (80.4 %) and non-Hispanic (91.5 %). Participants completed the study through an online survey after accepting the job posting on Amazon Mechanical Turk.

Materials and procedure

Study 3 used the same structure and materials as Study 1 except participants completed measures about their health, general cognitive rumination, additional measures about their mortality experience, and a second measure of vividness (e.g., perceptual detail of their personal experience with mortality). Again, measures were grouped into two blocks and randomized for the order of presentation, with the new measures falling under death-related items. Participants completed the same measures of vividness of the experience[4] ($M = 6.33$, $SD = .84$ $\alpha = .86$), death rumination ($M = 3.55$, $SD = 1.33$ $\alpha = .93$), authenticity: authentic living ($M = 5.70$, $SD = .99$, $\alpha = .85$), accepting external influence ($M = 3.30$, $SD = 1.27$, $\alpha = .89$), and self-alienation ($M = 2.70$, $SD = 1.51$ $\alpha = .92$), important strivings ($M = 6.34$, $SD = .59$, $\alpha = .85$), intrinsic aspirations ($M = 4.15$, $SD = .53$ $\alpha = .89$), extrinsic aspirations ($M = 2.60$, $SD = .85$ $\alpha = .92$), and neuroticism ($M = 2.66$, $SD = .96$ $\alpha = .94$) as Study 2.

Health status

Health status was assessed with 2 items adapted from the World Values Survey (WVS; World Values Association, 2012). Participants were asked to "describe their state of health" on one 11-point scale ($1 = poor$; $6 = good$; $11 = excellent$) and on another 11-point scale ($1 = not$ $healthy$ at all; $6 = moderately$ $healthy$; $11 = very$ $much$ $healthy$). Responses were averaged across the items to produce a composite Health Status score with higher values reflecting greater health ($M = 7.43$, $SD = 2.12$, $\alpha = .97$).

Rumination

To assess general cognitive rumination, participants completed the 12-item rumination subscale (e.g., "I often find myself re-evaluating something I've done.") of the Rumination-Reflection Questionnaire (Trapnell and Campbell 1999). Responses were made on a 5-point scale ($1 = strongly$ $disagree$; $7 = strongly$ $agree$) and were

---

[4] To provide greater validity to the construct of vividness, we included two measures of vividness from Talarico and Rubin (2003) and Gaesser and Schacter (2014) in Study 3, respectively. In short, both measures of vividness replicated the results of the vividness measure used across our studies. See our supplementary materials for a description of the results.

averaged across the items to produce a composite Rumination score. Higher values reflected greater rumination ($M = 3.29$, $SD = .92$, $\alpha = .95$).

Time of mortality experience

To assess time of the mortality experience, participants indicated, "how long ago the experience occurred." Responses were rounded to the nearest month and coded as follows: $.25 = 3$ months, $.5 = 6$ months, $.75 = 9$ months, $1 = 1$ year. On average, participants reported experiences that occurred about 4 years ago ($M = 4.15$, $SD = 6.20$).

Near-death experience

Participants indicated, "to what extent they considered the event to be a near-death experience" on a 7-point scale ($1 = Not$ a $near$-$death$ $experience$ at all; $7 = completely$ a $near$-$death$ $experience$; $M = 3.24$, $SD = 2.14$).

We assessed the following 4 variables using items from the Memory Characteristics Questionnaire (MCQ; Johnson et al. 1988).

Involvement in mortality experience

To assess their involvement in the mortality experience, participants indicated on a 7-point scale ($1 = spectator$; $7 = a$ $participant$) what their role "in the event was." On average, participants reported being more of a participant at the time of the experience ($M = 5.15$, $SD = 2.28$).

Emotionality of mortality experience

To assess the emotional detail of the mortality experience, participants indicated on a 7-point scale ($1 = negative$; $7 = positive$) what their "feelings were at the time." On average, participants reported feeling more negatively at the time of the experience ($M = 2.12$, $SD = 1.56$).

Seriousness of mortality experience

To assess the seriousness of the mortality experience, participants indicated on a 7-point scale ($1 = not$ at all; $7 = definitely$) whether "At the time, the event seemed like it would have serious implications." On average, participants reported more seriousness of the experience ($M = 5.76$, $SD = 1.69$).

Perceptual detail of mortality experience

As our second measure of vividness, we included 4 items from the MCQ. Participants were asked to indicate their

"memory for this event" on three separate 7-point scales (1 = *dim*; 7 = *sharp/clear*, 1 = *black and white*; 7 = *entirely color*, 1 = *sketchy*; 7 = *very detailed*) and whether the memory of the event "involves visual detail" on 7-point scale (1 = *little or none*; 7 = *a lot*). Responses were averaged across the items to produce a composite Perceptual Detail score with higher values reflecting greater perceptual detail ($M = 5.96$, $SD = 1.04$, $\alpha = .89$).

Results and discussion

Block order had no significant effects on any of our main outcome variables (ps > .073). Thus, all analyses were collapsed across orders.

Regarding our main predictors, there was no relationship between death rumination and mortality vividness and perceptual detail variables, respectively. It is important to note that the correlation between mortality vividness and perceptual detail, the two vividness measures, were strong and positive. Replicating findings from Studies 1 and 2, correlational analyses found positive associations between vividness reports of mortality experiences and authentic living, important strivings, and intrinsic aspirations and a negative relationship with self-alienation. Similar to the results from the subjective vividness ratings, ratings of perceptual detail were also positively correlated with authentic living, important strivings, and intrinsic aspirations.

In contrast to both vividness variables (vividness ratings and perceptual detail ratings), death rumination was positively associated with accepting external influence and self-alienation. These results also replicated findings from Study 2. Bivariate correlations for all variables can be found in Table 6.

Primary analyses

We conducted the same series of hierarchical linear regression analyses from Studies 1 and 2 to predict each dependent variable from vividness of the mortality experience and death rumination, but controlling for potential confounding variables. For the vividness of the mortality experience analyses and perceptual detail of the experience, gender, age, health status, neuroticism, time of the experience, involvement in the experience, emotions at the time of the experience, seriousness of the experience, and near-death experience were standardized and entered in the first step of the equation. Vividness and perceptual detail were standardized and entered in the second step of the regression equation, respectively. For the death rumination analyses, gender, age, health status, neuroticism, and rumination were standardized and entered in the first step

of the regression equation. Death rumination was standardized and entered in the second step of the regression equation.

Replicating Study 2, vividness reports of the mortality-relevant memories significantly predicted authentic living, important strivings, and intrinsic aspirations while controlling for relevant variables. Moreover, perceptual detail of the experience, was a significant predictor of the same outcome variables after controlling for relevant variables. However, death rumination was not a significant predictor of any outcomes variables after controlling for potential confounding variables.[5] Statistics for each regression analyses are found in Tables 7, 8, 9, 10, 11 and 12.

General discussion

The present research examined how the vividness of mortality-related memories and death-focused rumination relate to authentic engagement with life. Three studies found that participant reports of vividly recalling mortality-evoking experiences were related to outcomes indicative of authentic becoming such that individuals who reported high vividness also reported greater feelings of authenticity, more important goal-pursuits, and intrinsic aspirations. Overall, our studies suggest that the *vividness* of a mortality-related memory may be an important subjective experience for movement towards authenticity.

Of course, our research doesn't clarify the mechanisms underlying this relationship. From a narrative identity perspective, the vividness of a mortality-evoking experience may help solidify the event as a key scene in one's life story. In McAdams's (1993b) life story interview, for example, a personal experience with mortality may serve as a turning point. A turning point is an event that marks an important change in one's life story and is often a strong source of meaning (McLean and Pratt 2006; McLean and Breen 2009; Kray et al. 2010). Research shows that self-defining memories of mortality events carry extra meaning for adolescents (Thorne et al. 2004), as they lead to careful contemplation about life and death or the reevaluation of one's values (Thorne and McLean 2002, 2003). It is possible that vividly remembering mortality-related experiences becomes a turning point in one's life story that instill feelings of authentic becoming and movement towards one's true self.

---

[5] We ran the same regression analyses used in Study 2 for death rumination. Surprisingly, death rumination did not significantly predict any of our outcome variables after controlling for these covariates, suggesting that the relationship between death rumination and the variables of interest was weaker in Study 3 compared to the previous studies.

Table 6 Bivariate correlations among variables in study 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
V	–																
PD	.71**	–															
DR	-.01	.15	–														
A	.05	.07	-.00	–													
HS	.19*	.09	-.21**	-.02	–												
N	-.17*	-.11	.46**	-.10	-.43**	–											
R	-.01	.01	.45**	-.13	-.37**	.71**	–										
T	.07	.06	-.16	.29**	.19*	-.25**	-.20*	–									
I	.04	.16*	-.05	-.05	.14	-.06	-.19*	.18*	–								
E	-.19*	-.10	.18*	-.03	.15	.01	-.03	-.03	-.02	–							
S	.17*	.14	-.10	-.00	-.02	-.14	-.03	.07	.13	-.13	–						
NDE	.06	.14	.12	-.13	.14	-.07	-.24**	.20*	.34**	.16*	.18*	–					
AL	.36**	.37**	-.15	.12	.14	-.36**	-.22**	.12	-.01	-.17*	.16*	.07	–				
AEI	-.12	-.12	.24**	-.19*	.07	.41**	.47**	-.17*	.05	.21**	.09	.03	-.35**	–			
SA	-.23**	-.14	.26**	-.23**	-.19*	.57**	.45**	-.21**	.05	.14	-.15	.01	-.49**	.50**	–		
IS	.35**	.31**	-.13	.03	.30**	-.25**	-.16	.07	.06	-.17*	.01	.02	.38**	-.20*	-.27**	–	
IA	.40**	.35**	.02	-.04	.22**	-.11	.18*	-.08	-.13	-.08	.15	-.01	.49**	.03	-.14	.46**	–
EA	-.01	.06	.13	-.19*	.26**	.06	.03	-.10	.05	.13	-.08	.29**	-.014	.17*	.22**	.11	.21**

V vividness, *PD* perceptual detail, *DR* death rumination, *A* age, *HS* health status, *N* neuroticism, *R* rumination, *T* time of mortality experience, *I* involvement in mortality experience, *E* emotion of mortality experience, *S* seriousness of mortality experience, *NDE* near-death experience, *AL* authentic living, *AEI* accepting external influence, *SA* self-alienation, *IS* important strivings, *IA* intrinsic aspirations, *EA* extrinsic aspirations

* $p < .05$; ** $p < .01$

Table 7 Regression analyses in study 3

Predictor	Authentic living				Accepting external influence				Self-alienation			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.216**				.287**				.413**
Gender	.347	.157	.174*		−.161	.147	−.082		−.287	.135	−.145*	
Age	.072	.082	.071		−.110	.077	−.112		−.120	.070	−.121	
Health status	−.017	.086	−.017		.126	.080	.130		.061	.073	.062	
Neuroticism	−.386	.088	−.388**		.476	.082	.488*		.599	.076	.607**	
Time of mortality experience	.018	.085	.019		−.063	.079	−.065		−.072	.073	−.073	
Involvement in mortality experience	−.083	.082	−.083		.072	.077	.074		.100	.070	.101	
Emotion of mortality experience	−.168	.078	−.168*		.206	.073	.210**		.108	.067	.109	
Seriousness of mortality experience	.064	.078	.065		.196	.073	.201**		−.048	.067	−.049	
Near-death experience	.118	.085	.118		−.073	.080	−.074		−.021	.073	−.021	
Step 2				.061**				.000				.006
Gender	.307	.152	.154*		−.161	.148	−.082		−.274	.135	−.138*	
Age	.060	.079	.060		−.110	.077	−.112		−.116	.070	−.117	
Health status	−.065	.084	−.066		.125	.082	.130		.076	.074	.078	
Neuroticism	−.362	.085	−.364**		.476	.083	.488**		.591	.076	.599**	
Time of mortality experience	.023	.082	.023		−.063	.080	−.065		−.074	.073	−.075	
Involvement in mortality experience	−.080	.079	−.080		.072	.077	.074		.099	.070	.100	
Emotion of mortality experience	−.114	.077	−.114		.206	.075	.210**		.090	.068	.091	
Seriousness of mortality experience	.036	.076	.036		.195	.074	.201**		−.039	.067	−.040	
Near-death experience	.098	.082	.099		−.073	.080	−.074		−.014	.073	−.014	
Vividness of mortality experience	.266	.078	.262**		.001	.076	.001		−.086	.069	−.085	

* $p < .05$; ** $p < .01$

Another possibility is that the vividness of the memory simply serves as an availability heuristic that people use to assess their feelings and behavior (Tversky and Kahneman 1973). Nisbett and Ross (1980) argue that information that is more prominent or available in memory is more likely to shape future judgments, suggesting that if an encounter with death comes to mind in vivid detail, this thought might have a strong influence on shifting one's goals and priorities. Indeed, a potential consequence of being able to recall a vivid memory with mortality is that it can incite episodic future thinking. Our results indicate that the more one reports vividly recalling an experience with mortality, the greater she reports interest in authentic pursuits (e.g., long-term goals and strivings) in the present and future. The experience of mentally travelling into the past and

projecting into the future may motivate one to pursue more fulfilling endeavors.

Study 2 revealed that vividly thinking about a close other's mortality was also related to the perception of greater active engagement with life. Thinking about the mortality experience of a close other may predict one's authentic becoming because losing a close social connection is analogous to losing one's sense of self. For instance, research suggests that bereavement can prompt a life review of one's past in relation to the loss of a loved one (Neimeyer and Anderson 2002; Parkes 1996) or trigger identity change (Neimeyer et al. 2006; Schultz 2007). Similarly, people may engage in meaning-making strategies such benefit-finding after the loss of a close other (Davis et al. 1998). This may involve restructuring one's

Table 8 Regression analyses in study 3

Predictor	Important strivings				Intrinsic aspirations				Extrinsic aspirations			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.155**				.138*				.209**
Gender	.100	.158	.052		.216	.164	.108		−.006	.160	−.003	
Age	.030	.082	.031		−.026	.086	−.026		−.082	.083	−.081	
Health status	.255	.086	.268**		.277	.090	.283**		.301	.087	.303**	
Neuroticism	−.150	.088	−.156		−.022	.092	−.022		.136	.090	.135	
Time of mortality experience	−.033	.085	−.034		−.101	.089	−.102		−.145	.086	−.144	
Involvement in mortality experience	−.009	.083	−.009		−.160	.086	−.160		−.069	.084	−.068	
Emotion of mortality experience	−.204	.078	−.212*		−.110	.082	−.110		.008	.079	.007	
Seriousness of mortality experience	−.037	.079	−.038		.156	.082	.158		−.099	.080	−.099	
Near-death experience	.050	.086	.502		.015	.089	.015		.312	.087	.309**	
Step 2				.047**				.091**				.000
Gender	.065	.154	.034		.166	.156	.083		−.003	.161	−.001	
Age	.020	.080	.021		−.041	.081	−.041		−.081	.084	−.080	
Health Status	.214	.085	.225*		.218	.086	.222*		.305	.089	.306**	
Neuroticism	−.130	.087	−.135		.007	.088	.007		.135	.090	.134	
Time of mortality experience	−.029	.083	−.030		−.096	.084	−.097		−.145	.087	−.144	
Involvement in mortality experience	−.006	.080	−.007		−.156	.082	−.156		−.069	.084	−.068	
Emotion of mortality experience	−.158	.078	−.164*		−.044	.079	−.044		.004	.081	.004	
Seriousness of mortality experience	−.061	.077	−.064		.121	.078	.122		−.097	.080	−.097	
Near-death experience	.033	.084	.034		−.009	.085	−.009		.313	.087	.310**	
Vividness of mortality experience	.227	.079	.231**		.326	.081	.322**		−.019	.083	−.018	

* $p < .05$; ** $p < .01$

values or reexamining one's life goals (Park et al. 1996; Tedeschi and Calhoun 1996). It is important to note that although the majority of participants wrote about distinct experiences that made them think about their own mortality and the mortality of a close other in Study 2, several individuals indicated that the loss of a loved one influenced their awareness of mortality for themselves and their close other (i.e., wrote about the same experience for both prompts). This is unsurprising, as losing a loved one is often the first time people arrive at a personal dilemma between life and death (Thorne et al. 2004).

In sum, the current findings build on existing literature by focusing the memory characteristics of mortality-relevant experiences. Previous research has typically relied on informant reports or retrospective interviews to assess changing beliefs and attitudes following NDEs (e.g.,

Furn 1987; Greyson 1983; Noyes 1980) or used experimental methods to temporarily increase the accessibility of death-related thoughts. We take first-person memory approach (see Gardiner 2001; Tulving 1985) to understanding the how recall experiences with mortality-relevant events are related to attitudes and behaviors linked to authenticity.

Our findings build off previous research demonstrating that rumination and cognitive elaboration differentially relate to personality and well-being. For example, King and colleagues (e.g., King and Raspin 2004; see King and Hicks 2006, 2007, for a review) have shown that rumination over a lost possible self (LPS; e.g., a divorced woman who thinks about her life if the break-up never occurred) is associated with lower satisfaction with life; however, the ability to construct an elaborate (i.e., vividly detailed)

Table 9 Regression analyses in study 3

Predictor	Authentic living				Accepting external influence				Self-alienation			
	B	SE (B)	β	ΔR²	B	SE (B)	β	ΔR²	B	SE (B)	β	ΔR²
Step 1				.216**				.287**				.413**
Gender	.347	.157	.174*		−.161	.147	−.082		−.287	.135	−.145*	
Age	.072	.082	.071		−.110	.077	−.112		−.120	.070	−.121	
Health Status	−.017	.086	−.017		.126	.080	.130		.061	.073	.062	
Neuroticism	−.386	.088	−.388**		.476	.082	.488**		.599	.076	.607**	
Time of mortality experience	.018	.085	.019		−.063	.079	−.065		−.072	.073	−.073	
Involvement in mortality experience	−.083	.082	−.083		.072	.077	.074		.100	.070	.101	
Emotion of mortality experience	−.168	.078	−.168*		.206	.073	.210**		.108	.067	.109	
Seriousness of mortality experience	.064	.078	.065		.196	.073	.201**		−.048	.067	−.049	
Near-death experience	.118	.085	.118		−.073	.080	−.074		−.021	.073	−.021	
Step 2				.087**				.003				.002
Gender	.310	.149	.155*		−.154	.147	−.078		−.282	.135	−.142*	
Age	.048	.078	.048		−.106	.077	−.107		−.117	.071	−.117	
Health status	−.028	.081	−.028		.128	.080	.133		.062	.074	.064	
Neuroticism	−.359	.084	−.360**		.471	.083	.483**		.595	.076	.603**	
Time of mortality experience	.027	.080	.027		−.065	.080	−.067		−.073	.073	−.075	
Involvement in mortality experience	−.122	.078	−.122		.080	.078	.081		.105	.071	.106	
Emotion of mortality experience	−.137	.074	−.138		.200	.073	.204**		.104	.067	.105	
Seriousness of mortality experience	.046	.074	.046		.199	.073	.205**		−.046	.067	−.047	
Near-death experience	.082	.081	.082		−.066	.080	−.067		−.016	.074	−.016	
Perceptual detail of experience	.308	.074	.307**		−.058	.073	−.059		−.041	.067	−.041	

$* \ p < .05; ** \ p < .01$

narrative of the LPS is positively related to psychological maturity. The current findings extend this work to the domain of death awareness and specifically link vivid recall to active engagement with life.

Whereas reports of vivid recall of a mortality-related experience predicted authentic becoming, greater death rumination significantly predicted alienated becoming. Specifically, in two studies, death-focused rumination was related to reduced feelings of authenticity, less important goals, and more extrinsic aspirations relative to those who ruminated less about death. It is possible that death-focused rumination creates more anxiety about death such that individuals become fixated on their mortality and do not focus on living an authentic life. In other words, instead of engaging in life, these individuals are more preoccupied with thoughts about the inevitability of death. Of course,

these findings didn't replicate in Study 3. These null effects unfortunately make it difficult to conclude whether ruminating about death actually detracts from living authentically, or whether some other variable (e.g., general cognitive rumination) accounts for this relationship.

There are important limitations to consider with the current research. For example, it is important to note that the fact that people rated their memories as highly vivid does not necessarily suggest that these memories were true or accurate memories of mortality-relevant events, as research shows that highly vivid memories can often be false (e.g., Geraci and McCabe 2006; Roediger and McDermott 1995), particularly if they are emotionally laden memories (e.g., Rimmele et al. 2011; Talarico and Rubin 2003). The influential constructionist view of autobiographical memory suggests that people's personal

Table 10 Regression analyses in study 3

Predictor	Important strivings				Intrinsic aspirations				Extrinsic aspirations			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.155**				.138*				.209**
Gender	.100	.158	.052		.216	.164	.108		−.006	.160	−.003	
Age	.030	.082	.031		−.026	.086	−.026		−.082	.083	−.081	
Health status	.255	.086	.268**		.277	.090	.283**		.301	.087	.303**	
Neuroticism	−.150	.088	−.156		−.022	.092	−.022		.136	.090	.135	
Time of mortality experience	−.033	.085	−.034		−.101	.089	−.102		−.145	.086	−.144	
Involvement in mortality experience	−.009	.083	−.009		−.160	.086	−.160		−.069	.084	−.068	
Emotion of mortality experience	−.204	.078	−.212*		−.110	.082	−.110		.008	.079	.007	
Seriousness of mortality experience	−.037	.079	−.038		.156	.082	.158		−.099	.080	−.099	
Near-death experience	.050	.086	.502		.015	.089	.015		.312	.087	.309**	
Step 2				.062**				.106**				.003
Gender	.070	.153	.036		.175	.155	.088		−.013	.160	−.006	
Age	.011	.080	.011		−.053	.081	−.053		−.087	.084	−.085	
Health status	.246	.083	.259**		.264	.084	.270**		.299	.087	.301**	
Neuroticism	−.128	.086	−.133		.008	.087	.008		.142	.090	.140	
Time of mortality experience	−.026	.082	−.027		−.092	.084	−.093		−.143	.087	−.142	
Involvement in mortality experience	−.041	.080	−.042		−.203	.081	−.203*		−.076	.084	−.075	
Emotion of mortality experience	−.179	.076	−.186*		−.076	.077	−.076		.013	.080	.013	
Seriousness of mortality Experience	−.052	.076	−.054		.136	.077	.137		−.103	.080	−.102	
Near-death experience	.020	.083	.021		−.025	.084	−.025		.305	.087	.302**	
Perceptual detail of experience	.251	.076	.259**		.339	.077	.339**		.059	.080	.058	

* $p < .05$; ** $p < .01$

memories are constantly modified by their current motivations and goals (Brewer 1996; Conway 1990; Conway and Pleydell-Pearce 2000; Wright and Gaskell 1992), meaning that although these personal memories are often highly vivid and significant to individuals, they may not be entirely accurate. Vividness is a subjective memory experience. Prior research on autobiographical memory suggests that people tend to report that emotionally significant and episodically detailed autobiographical memories (including flashbulb memories) as highly vivid (see Holland and Kensinger 2010, for a review). Although we controlled for many of these variables in our last study, future research needs to examine which key aspects of vivid mortality-relevant memories are particularly associated with high levels of authenticity and goal-pursuits.

There are of course alternative explanations for why the vividness component of morality-related memories is indicative of authentic becoming. For instance, other characteristics of memories may co-vary with vivid recollections. It is possible that certain types of emotions (e.g., sadness, fear) or the sensory detail of memories (e.g., sound, smell, touch) may prompt greater introspection of one's current sense of self and goals in life. The length of the mortality experience, such as the long-term experience of a terminal illness compared to a brief, vicarious accident, may also affect the subjective feeling of authenticity and goal-pursuits. In line with the research on flashbulb memories (Rubin and Kozin 1984; Talarico and Rubin 2003), it might be possible that rapid, but highly significant events such as mortality-related experiences exert greater

Table 11 Regression analyses in study 3

Predictor	Authentic living				Accepting external influence				Self-alienation			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.180**				.274**				.389**
Gender	.363	.155	.182*		−.080	.144	−.041		−.279	.133	−.141*	
Age	.072	.077	.072		−.110	.071	−.111		−.139	.066	−.140*	
Health status	−.039	.083	−.040		.155	.077	.160*		.088	.071	.090	
Neuroticism	−.496	.114	−.497**		.222	.105	.227*		.601	.097	.607**	
Rumination	.114	.108	.114		.353	.100	.359**		.040	.092	.040	
Step 2				.000				.000				.000
Gender	.363	.156	.182*		−.081	.145	−.041		−.279	.134	−.140*	
Age	.072	.078	.071		−.111	.072	−.112		−.139	.066	−.139*	
Health status	−.039	.084	−.040		.155	.077	.160*		.088	.072	.090	
Neuroticism	−.497	.116	−.498**		.218	.108	.222*		.602	.100	.608**	
Rumination	.113	.110	.114		.349	.102	.355**		.041	.094	.042	
Death rumination	.002	.087	.002		.017	.080	.017		−.005	.074	−.005	

* $p < .05$; ** $p < .01$

Table 12 Regression analyses in study 3

Predictor	Important strivings				Intrinsic aspirations				Extrinsic aspirations			
	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2	B	SE (B)	β	ΔR^2
Step 1				.115**				.224*				.121**
Gender	.144	.162	.072		.358	.153	.177*		.000	.163	.000	
Age	.023	.080	.023		−.025	.076	−.024		−.159	.081	−.156	
Health status	.228	.087	.230*		.241	.082	.243**		.329	.087	.330**	
Neuroticism	−.235	.118	−.235*		−.435	.111	−.432**		.179	.119	.177	
Rumination	.100	.112	.100		.554	.106	.551**		−.004	.113	−.004	
Step 2				.000				.000				.017
Gender	.145	.163	.073		.358	.153	.177*		−.010	.162	−.005	
Age	.024	.081	.023		−.025	.076	−.024		−.167	.081	−.164*	
Health status	.228	.087	.231*		.241	.082	.243**		.328	.087	.329**	
Neuroticism	−.230	.122	−.230		−.435	.114	−.432**		.137	.121	.135	
Rumination	.104	.115	.104		.555	.108	.551**		−.043	.114	−.042	
Death rumination	−.017	.090	−.017		−.003	.085	−.003		.151	.090	.150	

* $p < .05$; ** $p < .01$

influence on how people evaluate their life and current endeavors.

Another possible explanation is that it is not vividness itself that is producing greater authentic pursuits, but rather vividness' association with memories such as turning point events and self-defining memories that influences one's beliefs and behaviors. As mentioned previously, it is often the case that mortality experiences become turning points in people's lives or self-defining memories (Thorne et al. 2004). These types of major events and memories are likely to produce similar effects on perceptions of authenticity and goal-pursuits. Future research might employ experimental methods to explore how different types of life events and memories (and perhaps the vividness of these experiences) influences authentic becoming.

Similarly, the current research cannot rule out the possibility of a reciprocal relationship between authenticity and vividness such that feelings of authenticity lead directly to greater vivid recollections of mortality experiences. Authenticity is a critical component of

psychological security (Kernis 2003), and TMT research has found that more psychologically secure individuals process death more fully than less secure individuals (Niemiec et al. 2010). Future research might examine differences in how individuals high and low in authenticity recall mortality-related episodes and think about death. It is plausible that highly authentic individuals experience mortality-related memories more vividly, and individuals low in authenticity engage in more death-related thoughts. In a similar vein, future research might also examine the nature of these relationships using an experimental or longitudinal design. For instance, it is possible to recruit participants who had a recent experience with morality and examine how vivid recollections of their memories over time influence their subjective sense of authentic becoming.

Conclusion

In Chinese philosophy, the concept of yin and yang suggests that two seemingly opposing forces are, in fact, quite complementary. Our studies lend preliminary support to life and death serving as two such interrelated forces. The paradox of fully engaging in life may stem from how we think about death. If individuals report vividly recalling experiences related to their own (or a close other's) mortality, they are more likely to perceive movement towards their true selves. How we contemplate death may play an important role in illuminating (or darkening) the path to authentic becoming. The key is perhaps finding the delicate balance between living life and maintaining an acute, yet manageable, awareness that one day it will end.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

References

Abdel-Khalek, A. (1998). The structure and measurement of death obsession. *Personality and Individual Differences, 24*, 159–165.

Atance, C. M., & O'Neill, D. K. (2001). Episodic future thinking. *Trends in Cognitive Science, 5*, 533–539.

Binswanger, L. (1963). *Being-in-the-world: Selected papers of Ludwig Binswanger*. New York: Basic Books.

Bluck, S., Dirk, J., Mackay, M. M., & Hux, A. (2008). Life experience with death: Relation to death attitudes and to the use of death-related memories. *Death Studies, 32*, 524–549.

Brewer, W. F. (1996). What is recollective memory. In D. C. Rubin (Ed.), *Remembering our past: Studies on autobiographical memory* (pp. 19–66). New York: Cambridge University Press.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6*, 3–5.

Burke, B. L., Martens, A., & Faucher, E. H. (2010). Two decades of terror management theory: A meta-analysis of mortality salience research. *Personality and Social Psychology Review, 14*, 155–195.

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*, 165–181.

Conway, M. A. (1990). *Autobiographical memory: An introduction*. Maidenhead, BRK: Open University Press.

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review, 107*, 261–288.

Cozzolino, P. J. (2006). Death contemplation, growth, and defense: Converging evidence of dual-existential systems? *Psychological Inquiry, 17*, 278–287.

Cozzolino, P. J., Staples, A. D., Meyers, L. S., & Samboceti, J. (2004). Greed, death, and values: From terror management to transcendence management theory. *Personality and Social Psychology Bulletin, 30*, 278–292.

D'Argembeau, A., Ortoleva, C., Jumentier, S., & Van der Linden, M. (2010). Component processes underlying future thinking. *Memory and Cognition, 38*, 809–819.

D'Argembeau, A., & Van der Linden, M. (2006). Individual differences in the phenomenology of mental time travel: The effect of vivid visual imagery and emotion regulation strategies. *Consciousness and Cognition, 15*, 342–350.

Davis, C. G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology, 75*, 561–574.

DeCarvalho, R. J. (2000). The growth hypothesis and self-actualization: An existential alternative. *The Humanistic Psychologist, 28*, 59–66.

Dickstein, L. S. (1972). Death concern: Measurement and correlates. *Psychological Reports, 30*, 563–571.

Emmons, R. A., Colby, P. M., & Kaiser, H. A. (1998). When losses lead to gains: Personal goals and the recover of meaning. In P. T. Wong & P. S. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp. 163–178). Mahwah, NJ: Lawrence Erlbaum Associates.

Furn, B. G. (1987). Adjustment and the near-death experience: A conceptual and therapeutic model. *Journal of Near-Death Studies, 6*, 4–19.

Gaesser, B., & Schacter, D. L. (2014). Episodic simulation and episodic memory can increase intentions to help others. *Proceedings of The National Academy of Sciences of The United States of America, 111*, 4415–4420.

Gardiner, J. M. (2001). Episodic memory and autonoetic consciousness: A first-person approach. *Philosophical Transactions of the Royal Society of London Series B, Biological Sciences, 356*, 1351–1362.

Geraci, L., & McCabe, D. P. (2006). Examining the basis for illusory recollection: The role of remember/know Instructions. *Psychonomic Bulletin and Review, 13*, 466–473.

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D. (1990). Evidence for terror management theory II: The effects of mortality salience on

reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology, 58,* 308–318.

Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). *Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. Advances in experimental social psychology* (pp. 61–139). San Diego, CA: Academic Press.

Greyson, B. (1983). Near-death experiences and personal values. *American Journal of Psychiatry, 140,* 618–620.

Greyson, B. (1992). Reduced death threat in near-death experiencers. *Death Studies, 16,* 523–536.

Heidegger, M. (1982). *Being and time* (J. Macquarrie, E. Robinson, Trans.). New York: Harper & Row (Original work published 1927).

Holland, A. C., & Kensinger, E. A. (2010). Emotion and autobiographical memory. *Physics of Life Reviews, 7,* 88–131.

Johnson, M. K., Foley, M. A., Suengas, A. G., & Raye, C. L. (1988). Phenomenal characteristics of memories for perceived and imagined autobiographical events. *Journal of Experimental Psychology: General, 117*(4), 371–376.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22,* 280–287.

Kasser, T., & Sheldon, K. M. (2004). Nonbecoming, alienated becoming, and authentic becoming: A goal based approach. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 486–499). New York, NY: Guilford Press.

Keough, K. A., Zimbardo, P. G., & Boyd, J. N. (1999). Who's smoking, drinking, and using drugs? Time perspective as a predictor of substance use. *Basic and Applied Social Psychology, 21,* 149–164.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry, 14,* 1–26.

Kierkegaard, S. (1961). *Concluding unscientific postscript* (D. Swenson, W. Lawrie, Trans.). Princeton, NJ: Princeton University Press.

Kierkegaard, S. (1983). *Fear and trembling* (H. V. Hong, E. H. Hong, Trans.). Princeton, NJ: Princeton University Press.

King, L. A., & Hicks, J. A. (2006). Narrating the self in the past and the future: Implications for maturity. *Research in Human Development, 3,* 121–138.

King, L. A., & Hicks, J. A. (2007). Whatever happened to "what might have been?" Regret, happiness, and maturity. *American Psychologist, 62,* 625–636.

King, L. A., & Raspin, C. (2004). Lost and found possible selves, subjective well-being, and ego development in divorced women. *Journal of Personality, 72,* 603–632.

King, L. A., & Smith, N. G. (2004). Gay and straight possible selves: Goals, identity, subjective well-being, and personality development. *Journal of Personality, 75,* 967–994.

Kinnier, R. R., Tribbensee, N. E., Rose, C. A., & Vaugh, S. M. (2001). In the final analysis: More wisdom from people who have faced death. *Journal of Counseling and Development, 79,* 171–177.

Klug, L., & Sinha, A. (1987). Death acceptance: A two-component formulation and scale. *Omega: Journal of Death and Dying, 18,* 229–235.

Kosloff, S., & Greenberg, J. (2009). Pearls in the desert: Death reminders provoke immediate derogation of extrinsic goals, but delayed inflation. *Journal of Experimental Social Psychology, 45,* 197–203.

Kray, L. J., George, L. G., Liljenquist, K. A., Galinsky, A. D., Tetlock, P. E., & Roese, N. J. (2010). From what might have been to what must have been: Counterfactual thinking creates

meaning. *Journal of Personality and Social Psychology, 98,* 106–118.

Lehman, D. R., Davis, C. G., DeLongis, A., Wortman, C. B., Bluck, S., Mandel, D. R., & Ellard, J. H. (1993). Positive and negative life changes following bereavement and their relations to adjustment. *Journal of Social and Clinical Psychology, 12,* 90–112.

Luy, M., & Gast, K. (2014). Do women live longer or do men die earlier? Reflections on the causes of sex differences in life expectancy. *Gerontology, 60*(2), 143–153.

Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology, 69,* 176–190.

Lyubomirsky, S., Tucker, K. L., Caldwell, N. D., & Berg, K. (1999). Why ruminators are poor problem solvers: Clues from the phenomenology of dysphoric rumination. *Journal of Personality and Social Psychology, 77,* 1041–1060.

Martin, L. L., Campbell, W. K., & Henry, C. D. (2004). The roar of awakening: Mortality acknowledgment as a call to authentic living. In J. Greenberg, S. L. Koole, & T. Pyszczynski (Eds.), *Handbook of experimental existential psychology* (pp. 437–454). New York, NY: Guilford Press.

Martin, L. L., & Kleiber, D. A. (2005). Letting go of the negative: Psychological growth from a close brush with death. *Traumatology, 11,* 221–232.

Martin, L. L., Sanders, M. A., Kulkarni, A., Anderson, W. C., & Heppner, W. L. (2014). I-D compensation: Exploring the relations among mindfulness, a close brush with death, and our hunter-gatherer heritage. In A. Ie, C. T. Ngnoumen, & E. J. Langer (Eds.), *The Wiley Blackwell Handbook of Mindfulness.* Wiley: Chichester, UK.

McAdams, D. P. (1993). *The stories we live by: Personal myths and the making of the self.* New York, NY: William Morrow & Co.

McCrae, R. R., & Costa, P. T, Jr. (2004). A contemplated revision of the NEO five-factor inventory. *Personality and Individual Differences, 36,* 587–596.

McLean, K. C., & Breen, A. V. (2009). Processes and content of narrative identity development in adolescence: Gender and well-being. *Developmental Psychology, 45,* 702–710.

McLean, K. C., & Pratt, M. W. (2006). Life's little (and big) lessons: Identity statuses and meaning-making in the turning point narratives of emerging adults. *Developmental Psychology, 42,* 714–722.

Missler, M., Stroebe, M., Lilian, G., Mastenbroek, M., Chmoun, S., & van der Houwen, K. (2011). Exploring death anxiety among elderly people: A literature review and empirical investigation. *Omega: Journal of Death And Dying, 64,* 358–379.

Mor, N., & Winquist, J. (2002). Self-focused attention and negative affect: A meta-analysis. *Psychological Bulletin, 128,* 638–662.

Neimeyer, R. A., & Anderson, A. (2002). Meaning reconstruction theory. In N. Thompson (Ed.), *Loss and grief: A guide for human services practitioners* (pp. 45–64). New York: Palgrave.

Neimeyer, R. A., Baldwin, S. A., & Gillies, J. (2006). Continuing bonds and reconstructing meaning: Mitigating complications in bereavement. *Death Studies, 30*(8), 715–738.

Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The role of trait mindfulness in reducing defensive responses to mortality salience. *Journal of Personality and Social Psychology, 99,* 344–365.

Nisbett, R., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment.* Englewood Cliffs, NJ: Prentice-Hall.

Noyes, R. (1980). Attitude change following near-death experiences. *Psychiatry, 43*, 234–242.

Noyes, R., Jr. (1982–1983). The human experience of death, or what can we learn from near-death experiences? *Omega, 13*, 251–259.

Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality, 64*, 71–105.

Parkes, C. M. (1996). *Bereavement: Studies of grief in adult life*. Madison, CT: International Universities Press.

Pashler, H., & Harris, C. R. (2012). Is the replicability crisis overblown? Three arguments examined. *Perspectives on Psychological Science, 7*, 531–536.

Peters, J., & Büchel, C. (2010). Episodic future thinking reduces reward delay discounting through an enhancement of prefrontal-mediotemporal interactions. *Neuron, 66*, 138–148.

Pillemer, D. B. (2001). Momentous events and the life story. *Review of General Psychology, 5*, 123–134.

Pillemer, D. B. (2003). Directive functions of autobiographical memory: The guiding power of the specific episode. *Memory (Hove, England), 11*, 193–202.

Rajaram, S. (1998). The effects of conceptual salience and perceptual distinctiveness on consciousness recollection. *Psychonomic Bulletin and Review, 5*, 71–78.

Rajaram, S., & Geraci, L. (2000). Conceptual fluency selectively influences knowing. *Journal of Experimental Psychology. Learning, Memory, and Cognition, 26*, 1070–1074.

Rimmele, U., Davachi, L., Radoslav, P., Dougal, S., & Phelps, E. A. (2011). Emotion enhances the subjective feeling of remembering, despite lower accuracy for contextual details. *Emotion, 11*, 553–562.

Roediger, H. L., & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology. Learning, Memory, and Cognition, 21*, 803–814.

Roediger, H. L., Rajaram, S., & Geraci, L. (2007). Three forms of consciousness. In P. D. Zelazo, M. Moscovitch, & E. Thompson (Eds.), *The cambridge handbook of consciousness* (pp. 251–287). New York, NY: Cambridge University Press.

Rubin, D. C., & Kozin, M. (1984). Vivid memories. *Cognition, 16*, 81–95.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68–78.

Schultz, L. E. (2007). The influence of maternal loss on young women's experience of identity development in emerging adulthood. *Death Studies, 31*, 17–43.

Stein, C. H., Abraham, K. M., Bonar, E. E., McAuliffe, C. E., Fogo, W. R., Faigin, D. A., et al. (2009). Making meaning from personal loss: Religious, benefit finding, and goal-oriented attributions. *Journal of Loss and Trauma, 14*, 83–100.

Szpunar, K. K. (2010). Episodic future thought: An emerging concept. *Perspectives on Psychological Science, 5*, 142–162.

Talarico, J. M., LaBar, K. S., & Rubin, D. C. (2004). Emotional intensity predicts autobiographical memory experience. *Memory and Cognition, 32*, 1118–1132.

Talarico, J. M., & Rubin, D. C. (2003). Confidence, not consistency, characterizes flashbulb memories. *Psychological Science, 14*, 455–461.

Tedeschi, R. G., & Calhoun, L. G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*, 455–472.

Thauberger, P. C. (1975). *The avoidance of ontological confrontation: An empirical exploration of the avoidance/confrontation of nonbeing* (Doctoral dissertation). Retrieved from PsycINFO (1977-11807-001).

Thorne, A., & McLean, K. C. (2002). Gendered reminiscence practices and self-definition in late adolescence. *Sex Roles, 46*, 261–271.

Thorne, A., & McLean, K. C. (2003). Telling traumatic events in adolescence: A study of master narrative positioning. In R. Fivush & C. A. Haden (Eds.), *Autobiographical memory and the construction of a narrative self: Developmental and cultural perspectives* (pp. 169–185). Mahwah, NJ: Lawrence Erlbaum Associates.

Thorne, A., McLean, K. C., & Lawrence, A. M. (2004). When remembering is not enough: Reflecting on self-defining memories in late adolescence. *Journal of Personality, 72*, 513–541.

Trapnell, P. D., & Campbell, J. D. (1999). Private self-consciousness and the five-factor model of personality: Distinguishing rumination from reflection. *Journal of Personality and Social Psychology, 76*, 284–304.

Tulving, E. (1985). Memory and consciousness. *Canadian Psychology, 26*, 1–12.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*, 207–232.

Vail, K. E., Juhl, J., Arndt, J., Vess, M., Routledge, C., & Rutjens, B. T. (2012). When death is good for life: Considering the positive trajectories of terror management. *Personality and Social Psychology Review, 16*, 303–329.

Wingard, D. L. (1984). The sex differential in morbidity, mortality, and slifestyle. *Annual Review of Public Health, 5*, 433–458.

Wood, A. M., Linley, P. A., Maltby, J., Baliousis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the authenticity scale. *Journal of Counseling Psychology, 55*, 385–399.

World Values Survey Association. (2012). European and World Values Survey. The European values Study Group and World Values Survey Association. http://www.wvsevsdb.com/wvs/WVSData.jsp.

Wright, D., & Gaskell, G. (1992). The construction and function of vivid memories. In M. A. Conway, D. C. Rubin, H. Sprinnler, & W. A. Wagenaar (Eds.), *Theoretical perspectives on autobiographical memory* (pp. 275–292). Boston: Springer.

Zimbardo, P. G., Keough, K. A., & Boyd, J. N. (1997). Present time perspective as a predictor of risky driving. *Personality and Individual Differences, 23*, 1007–1023.