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Mediated Wisdom of Experience Revisited: Delay Discounting, Acceptance of Death, and Closeness to Future Self

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This experiment, using excerpts from three Hollywood films, indicates that eudaimonic (meaningful) narratives increase willingness to accept delayed rewards (i.e., reduce delay discounting) and acceptance of death, mediated by the effect of eudaimonic narratives on perceived closeness to future self. Our findings provide support for the argument, and its derivation from socio-emotional selectivity theory, that the vicarious experience of life's transience and sources of meaning in eudaimonic narratives has an impact parallel to that of lived experience, which we call the mediated wisdom of experience. We did not find support for proposed interactions with a written reflection exercise.

Keywords: Narrative, Eudaimonia, Well-being, Decision-making.

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A growing body of research has explored how and why people spend time with stories addressing difficult aspects of the human condition that, while often inspiring, may be in some ways painful or sad as well—stories that are, in Aristotle's term, eudaimonic or meaningful (Aristotle, 1931; Oliver & Bartsch, 2011; Oliver & Raney, 2011). In the past few years, there has been increasing attention to the possible salutary impact of experiencing such stories. The kind of outcomes that are being associated with experiencing eudaimonic stories are of profound importance to the quality of human life: increased capacity for empathetic awareness of others (Kidd & Castano, 2013); reduced need to defend oneself against the threat of death (Rieger et al., 2015); and increased willingness to accept delayed rewards (i.e., reduced delay discounting; Slater, Oliver, & Appel, 2016).

The willingness to accept delayed rewards (also known as reduced delay discounting) is typically associated with greater maturity and wiser, less impulsive

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decision-making (Bickel & Marsch, 2001; Bickel, Odum, & Madden, 1999). In previous research, we predicted that eudaimonic narratives would increase willingness to accept delayed rewards, based on socio-emotional selectivity theory (SST; Carstensen, 2006; Carstensen, Isaacowitz, & Charles, 1999). This theory associates age and maturity with greater awareness of limited time horizons and capacity to act with awareness of loss and heightened sense of the value of what one has. Eudaimonic stories, we argued, convey via narrative a vicarious experience of life and loss: the reader or viewer, in a matter of hours, experiences what otherwise takes a lifetime. We refer to this possible phenomenon as the mediated wisdom of experience (Slater et al., 2016).

In the present study, we seek to replicate and extend this finding. In particular, we further examine possible mechanisms for such an effect, assessing the role of a sense of closeness to one's future self (a construct derived from SST; Ersner-Hershfield, Wimmer, & Knutson, 2009; Hershfield, Cohen, & Thompson, 2012; Hershfield et al., 2011), as well as reassessing the role of poignant emotion. We also add another outcome to extend Rieger et al.'s (2015) work as well as our own: the impact of eudaimonic narrative on increased acceptance of death, which we consider another outcome associated with maturity. In addition, we examine the role of reflection on the story, testing whether such reflection enhances the impact of eudaimonic stories on our outcomes. Finally, we use new stimuli, a different source of participants, and tighter experimental manipulations to reduce the likelihood that our prior findings regarding eudaimonia and willingness to accept delayed rewards are confined to a single set of messages or a particular study population.

SST and mediated wisdom of experience

As noted above, in prior research we found evidence that exposure to eudaimonic narratives reduces delay discounting; that is, participants exposed to even very brief eudaimonic video clips were more likely to accept delayed rewards than persons exposed to comparable clips that were less eudaimonic (Slater et al., 2016). Delay discounting—accepting a greater reward in the future compared to a lesser one immediately—is a construct (sometimes also referred to as temporal discounting) used in behavioral economics and psychology that is predictive of impulsive and risky behaviors such as substance use (Bickel & Marsch, 2001; Bickel et al., 1999; Reynolds, 2006). While delay (or temporal) discounting is the construction of the term most familiar in the literature, in some contexts the phrase "reduced delay discounting" is used, forcing the reader to continue to parse a double negative. Therefore, when the purpose of greater clarity and readability is better served by doing so, we will refer to reduced delay discounting to identify an increased willingness to accept delayed rewards.

We consider reduced delay discounting (greater willingness to accept delayed rewards) as an indicator of personal maturation (see Steinberg et al., 2009). One aspect of maturity, for example, is the recognition that, most of the time, the future will in fact come and one will have to live with the consequences of one's decisions

in the present. In one study, manipulating a person's image to age it increased willingness to save for the future (Hershfield et al., 2011).

We proposed that SST (Carstensen, 2006) provides a theoretical framework for such effects of eudaimonic narratives (Slater et al., 2016). SST argues that as people become increasingly attentive to the finiteness of their lifespan, they become more focused on emotional goals and emotional regulation, better understanding and appreciating life's fragility and value (Carstensen et al., 1999). Age, of course, will accentuate this awareness of life's transience; in addition, key life events such as deaths, births, weddings, and graduations may also do so even for young adults (Carstensen et al., 1999; Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009).

Our argument (Slater et al., 2016) is that narratives also portray critical life events—birth, death, crucial life transitions of many kinds—that should also make the temporary quality of one's stay on earth more salient. We also argue that eudaimonic narratives do so in ways that are particularly effective, focusing attention on human vulnerability, detailing the impact of events and decisions on oneself and others, and (as we discuss in more detail below) highlighting emotions and cognitive awareness that may heighten perspectives typically associated with greater personal maturity. Eudaimonic narratives allow readers and viewers to vicariously experience crucial life events in a context that extracts and highlights their meaning and that presents how loss and grief are inseparable from loving people and valuing life.

We recognize the proposition that exposure to eudaimonic narratives would decrease delay discounting, while defensible, is hardly intuitive, and that our earlier finding (Slater et al., 2016) might be met with some skepticism. Delay discounting is generally considered a dispositional trait, and traits are not usually the first candidate for impact by a mediated stimulus. Moreover, the finding that narratives can influence a fundamental orientation to decision-making, not by the specific relevant content of the message or modeling (as is normally the case in narrative persuasion) but by the capacity to evoke a perspective on the human condition, is a considerable departure from prior perspectives. Therefore, it seemed to us important that we begin the present study by replicating this finding, using a different set of messages (differing in content and length from the original set), a different study population, and a tighter experimental manipulation than the one we used in the prior study.

> H1: The eudaimonic version of a narrative will increase willingness to accept delayed rewards (i.e., decrease delay discounting) relative to a less eudaimonic version of the narrative.

Maturity, mortality salience, and death acceptance

A defining feature of human existence is that it ends. The awareness of one's life span inevitably implies the awareness of death. A considerable literature adumbrates

some of the coping mechanisms people use to manage the fear of death when it is brought vividly to mind (Hayes, Schimel, Arndt, & Faucher, 2010). Among the most notable and regrettable of these coping mechanisms is an increased embrace of one's in-group identity and a concomitant tendency to distance oneself from or disparage those perceived as out-group members (McGregor et al., 1998; Schimel et al., 1999). In our view, a distinguishing characteristic of maturity is the capacity to sustain an awareness of the inevitability of death without resorting to coping mechanisms that diminish regard for oneself or others; in fact, SST suggests that an awareness of the finiteness of life may in fact enhance appreciation for life and living (Carstensen, 2006). If so, eudaimonic narratives should increase the ability to accept the fact of one's eventual demise (see also Hofer, 2013).

Rieger et al. (2015) have found evidence that persons subjected to mortality salience manipulations (which involve vivid imagining of the physical fact of death) were less likely to show an anxiety coping response if they were exposed to a eudaimonic narrative, as compared to persons who were exposed to a pleasurable narrative or a non-narrative control video. In their study, anxiety coping was operationalized as the response latency to self-esteem–related words. We consider this a remarkable finding: that eudaimonic narratives reduce anxious coping strategies when confronted with stark reminders of one's mortality.

Given the importance of this finding for claims about the capacity of eudaimonic narratives to occasion a more mature human perspective, we believe it deserves replication and extension. It is possible, for example, that the Rieger et al. (2015) findings are due to eudaimonic narratives stimulating emotional states that permit people to be less anxious when confronted with mortality salience experimental manipulations. However, it seems to us the underlying claim is that eudaimonic narratives should ultimately increase acceptance of death by increasing, per SST, awareness and appreciation of the nature of the human lifespan. In this study, we wish to test that claim directly, by examining the impact of eudaimonic narratives on measures of self-reported death acceptance.

> H2: Exposure to the eudaimonic version of a narrative will increase the capacity of audience members to contemplate the inevitability of death with more acceptance.

Explanatory mechanisms

Closeness to future self

Our prior research (Slater et al., 2016) linked viewing of eudaimonic video clips with decreased delay discounting (increased acceptance of delayed rewards). Hershfield and colleagues have amassed evidence demonstrating that a construct they call "closeness to future self" predicts reduced delay discounting, increases ethical decision-making, and promotes willingness to save for the future (Ersner-Hershfield, Garton, et al., 2009; Ersner-Hershfield, Wimmer, et al., 2009; Hershfield et al., 2012).

Parallel to our arguments above, we propose that eudaimonic narratives can impact closeness to future self, much as did images that showed progression of age (Hershfield et al., 2011). Viewers and readers of emotional narratives normally identify with story characters, taking on their perspectives both cognitively and emotionally (Cohen, 2001). Eudaimonic narratives focus on recognition and acceptance of the passage of time and human life, and therefore convey all the associated emotional complexity accompanying such recognition. They may accomplish this by directly portraying the progression of a character or characters through important portions of the life span. They may portray critical life events (birth, death, marriage, breakups, departures) that, as Ersner-Hershfield (2009) found with college graduation, heighten awareness of loss, change, and the passage of time. In addition, eudaimonic narratives may portray actions, situations, or choices that represent moments of moral or emotional testing and growth. These, too, are critical moments in one's life history. To move through the life progression, critical events, or critical moments in the lives of the characters in a eudaimonic narrative, then, is to vicariously experience such moments in the narrative arc of one's life, heightening the experience of the finite, time-bounded nature of one's existence.

We acknowledge that closeness to self does not fully capture such a vicarious experience. However, closeness to future self should be associated with such an experience and serve as a marker of it. Admittedly, it is an imperfect indicator, but that should only serve to increase the conservativeness of this test. Moreover, given the use of closeness to future self in the SST research tradition, our confidence in SST as a theoretical basis for our explanatory framework is increased if we are able to find evidence for it as a mediator.

> H3: Exposure to the eudaimonic version of a narrative will increase the perception of closeness to the viewer's future self.

Since perception of closeness to one's future self increases acceptance of delayed rewards (i.e., decreases delay discounting, Ersner-Hershfield, Garton, et al., 2009; Ersner-Hershfield, Wimmer, et al., 2009), we should also expect:

> H4: Effects on delay discounting from exposure to a eudaimonic narrative will be mediated by the impact of such exposure on closeness to future self.

Existing empirical evidence does not link closeness to future self to death acceptance. However, it does seem plausible to argue that this link may exist. Part of the anxiety around death and the distress of mortality salience may result from the abrupt placing of oneself, in all one's present vigor and engagement with life, imaginatively into the grave. Awareness of the passage of time and the evolution of one's physical and social self provides a perspective in which death is a gradual culmination of life experience, and one that in its way enhances the perceived preciousness of life.

> H5: Effects on death acceptance from exposure to a eudaimonic narrative will be mediated by the impact of such exposure on closeness to future self.

Poignancy

Our prior research (Slater et al., 2016) suggested that the experience of poignancy is also distinctively evoked by eudaimonic narratives, and that this emotional experience could, in part, explain the impact of eudaimonic narratives on delay discounting (i.e., poignancy mediated the effects of narratives on delay discounting). Poignancy is an emotional response that is a mixture of happiness and sadness. Prior research has demonstrated that poignancy is a response associated with recognition of life's passage and significant life events that mark the passage of time (Ersner-Hershfield, Mikels, Sullivan, & Carstensen, 2008).

> H6: Eudaimonic versions of a narrative will evoke greater poignant responses than non-eudaimonic versions of the narrative.

In our prior study, we found evidence that these poignant emotional responses mediated the impact of eudaimonic narratives on delay discounting. In the present study, we examine whether such responses might help explain effects on death acceptance as well as delay discounting.

> H7: The effects of eudaimonic narratives on a) delay discounting and b) death acceptance will be mediated by poignant responses to the eudaimonic narrative.

Retrospective reflection on narratives

Research on entertainment education (narratives designed to have prosocial persuasive effects) suggests that postviewing discussion may often be important in potentiating the impact of the narratives on attitudes and behavior (Singhal, Cody, Rogers, & Sabido, 2004). Eudaimonic narratives are known to stimulate reflective thinking (Bartsch, Kalch, & Oliver, 2014). We have informally observed in our own lives and those of others that eudaimonic narratives are often the focus of thoughtful and intimate discussion with fellow viewers or readers, though we are unaware of empirical evidence documenting the frequency of such discussions or their effects. It may be that there is something about the dynamic of social exchange around meaningful life events, and perhaps the self-disclosure often involved in combination with deeply affecting topics, which may magnify the effects of such narratives.

Such social exchanges with intimates would be quite difficult to manipulate in an experiment. However, there are other ways discussion may have an impact. One such way is through cognitive rehearsal (Maibach & Flora, 1993). Discussing a narrative, particularly a eudaimonic narrative, is likely to improve encoding in memory. Moreover, there is reason to believe that persons given the opportunity to reflect on parts of a narrative they have just seen are likely to link elements of the narrative to their own lives (McDonald, Sarge, Lin, Collier, & Potocki, 2015). If so, reflection may increase the likelihood that the eudaimonic narrative will evoke in the reflective reader or viewer a sense of time passing in their own lives, greater

closeness to future self, and therefore greater effects on outcomes such as delay discounting and death acceptance.

> H8: Reflection on a eudaimonic narrative will increase the impact of that narrative on a) closeness to future self, b) delay discounting, and c) death acceptance, relative to irrelevant reflection or reflection on a less eudaimonic version of the same narrative.

Methods

Design

This study employed a 2 × 2 between-subjects factorial design with eudaimonia as the first factor (eudaimonic vs. non-eudaimonic clip) and reflection as the second factor (reflection instruction vs. control instruction). The design further included an additional three-level replication factor (the three movies that were the source for both eudaimonic and non-eudaimonic clips).

Participants

We obtained from Qualtrics a general population study sample over the age of 18, stratified to be balanced with respect to gender and with approximately equal numbers assigned to each of three movie clips. Participants in our final sample (n = 581, 50.77% female) ranged in age from 18–86 ($M = 48.12$, $SD = 17.17$). We excluded females after the 50% gender quota for females was reached (females were more readily willing to participate in this study). We also excluded potential respondents who had previously seen the movies ($n = 459$), were under 18 ($n = 9$), or, of course, did not provide consent. We removed from the data set respondents who failed random attention checks requesting that they select a specific response to demonstrate that they were not blindly selecting responses in order to receive their monetary compensation, or had a survey completion time that was faster than researchers familiar with the study ($n = 301$ excluded). Rather an MTurk sample as in our prior study (Slater et al., 2016), we used Qualtrics to test our findings with the general population drawn from a different opt-in pool.

Stimuli and experimental manipulations: eudaimonia

In this study, we sought to improve on our prior work in several ways. First, we wanted to use commercial films in wide release to increase the ecological validity of our study (the prior study employed relatively brief ads, news stories, and other clips found on YouTube). Second, we wanted to tighten our experimental manipulation. In the prior study, we matched clips in terms of topic, place of origin, length, and genre to the best of our ability. However, we were still in a position of comparing messages that were likely to differ in a variety of ways we could not control. Of course, perfect control of a more versus less eudaimonic film narrative is not possible. However, we improved the manipulation in the present study by identifying feature films that had both scenes that were particularly poignant or

moving and other scenes, featuring many of the same characters, that focused more on action and moving the plot forward. By keeping the manipulation within the same movie, with the same director, cinematographer, characters, and performers, the manipulation is a substantially tighter one. We also, as in the prior study, used multiple instantiations: in this case, three different movies with very different plots and characters. We identified these by a web search for movies with poignant or moving scenes, which were then reviewed for appropriateness for a general audience and, importantly, for the ability to create scenes of similar length and interest that were particularly moving and poignant or that focused on action. A former professional screenwriter handled editing of the scenes to create more and less eudaimonic clips that were comparable in drama, interest, and narrative flow. This permits us to assess our effects across the three movies to provide an indication as to whether our findings are or are not idiosyncratic to the narrative chosen (see Reeves, Yeykelis, & Cummings, 2016; Slater, Peter, & Valkenburg, 2015).

The three movies used were *Up* (Lasseter, Stanton, Docter, & Peterson, 2009), *The Shawshank Redemption* (Glotzer, Lester, & Darabont, 1994), and *Stand By Me* (Evans, Gideon, Scheinman, & Reiner, 1986). The eudaimonic clip from *Up* was a montage showing the main character falling in love with his wife, marrying her, and eventually losing her to illness (length: 6:22), while the less eudaimonic clip portrayed the main character using balloons to lift his house into the sky (length: 7:58). The eudaimonic scene from *The Shawshank Redemption* depicted the main character risking a beating from prison guards by broadcasting an opera over the prison radio in order to share something beautiful with his fellow inmates (7:00), while the less eudaimonic clip depicted the prison's warden taking bribes and embezzling funds (5:14). Last, from *Stand By Me*, the eudaimonic clip showed the protagonist struggling with the death of his older brother and the icy detachment of his grieving parents, but receiving support from his friends (4:29), and the less eudaimonic scene involved the protagonist and his friends running across a railroad bridge, being chased by a train (5:36). The lengths of the clips varied somewhat between conditions because the overriding priority in creating the movie clips was to keep the narrative content intact and, to the extent possible, equally compelling. There was not a systematic difference between the lengths of the eudaimonic clips and the less eudaimonic ones.

Prior to being assigned to one of three movies, participants indicated which (if any) of the movies they had previously seen. Based on their response they were then randomly assigned to one of the films they had not seen, and randomly assigned to either the eudaimonic or non-eudaimonic conditions within that film.

Experimental manipulations: reflection

We manipulated reflection concerning the movie by asking participants in the reflection condition, "We are interested in how you express yourself in writing; different people often have very different ways of communicating about the same topic. This will help us understand how you respond to other questions we'll be asking later. A

very common topic for conversation are movies, like the one you just saw part of now. Could you spend the next several minutes writing about what you liked most about the movie clip you just saw, and how watching the clip made you feel, as if you were talking to a friend about the movie? The continue button will become active after 2 minutes to allow you time to write out what you are thinking. You can take up to 5 minutes if you like." In the comparison condition, we asked the participant to write about what they liked best concerning the weather in the part of the country where they live, using a parallel set of instructions.

Measures

Delay discounting/willingness to accept delayed rewards

Our measure was derived from Kirby and Maraković (1996). They used 21 items asking if a respondent would prefer an immediate cash payout of some amount (e.g., $50) or a delayed payout (e.g., $55 in 10 days). The amount of the payout, the premium provided for the delayed reward, and the length of the delay was varied in each item. As detailed in our previous study (Slater et al., 2016), we dropped the items with the most skewed responses in the original study, and used 11 more normally-distributed items. We coded preference for the immediate payout as 1 and the delayed payout as 2, and computed the mean score across the 11 items. Therefore, higher scores represent a greater willingness to accept delayed rewards and lower scores a reduced willingness to accept delayed rewards, i.e., delay discounting. Our scale proved internally consistent (Cronbach alpha = .93, $M = 1.33$, $SD = .37$).

Death acceptance

We expanded upon a six-item measure of death acceptance found in Reker and Peacock (1981). These items included "Some people are very frightened of death, but I am not," "Even though death is inevitable, I cannot help but be concerned about dying (R)," "I think I am generally much less concerned about death than those around me," "Death makes little difference to me one way or another," "I neither fear death nor welcome it," and "I am more afraid of death than old age (R)." We added additional items intended to capture an attitude of acceptance about death more broadly: "I feel that when the time comes I'll be able to accept dying," "At this moment, the inevitable fact of death seems less frightening to me than it usually does," "Part of loving life is accepting death," "The love of friends and family makes the prospect of dying much less scary," and "I feel that the love and care that I've given will live after me, and that makes dying less hard to take." The response scale for all items on a scale from strongly disagree (1) to strongly agree (7). Since the original Reker and Peacock (1981) scale was conceptualized as a trait and we wanted to use it as a dependent measure, we used italics to emphasize the instructions, "The following questions concern your feelings about death and dying *at this particular moment*. Please indicate how much you agree or disagree with each item based on how you are feeling right now. *At this particular*

moment, I feel that…" An exploratory factor analysis indicated that the items comprised a single factor. We dropped "Even though death is inevitable, I cannot help but be concerned about dying" and "I am more afraid of death than old age" because of their weak loading on the overall factor. The remaining items showed good internal consistency (Cronbach alpha = .88, $M = 4.61$, $SD = 1.25$).

Closeness to future self

We employed a measurement strategy developed by Ersner-Hershfield and colleagues (Ersner-Hershfield, Garton, et al., 2009) for assessing perceived closeness to future self. This measurement features seven sets of two increasingly overlapping circles labeled as "current self" and "future self." Similar to the procedure developed by Aron, Aron, and Smollan (1992) to measure one's perceived relational closeness to a romantic partner, participants selected the set of circles that best indicated their perceived proximity to the person they would become in the future (i.e., their future self). Participants responded to two such items wherein they were asked to "Think about yourself and how you would compare yourself to the person you will be 10 years from now. Please indicate the set of circles that best indicate how similar you believe yourself to be to the person you will be 10 years from now" and "Please choose the set of circles that best indicate how connected you feel to the person you will be 10 years from now." In each case, six pairs of circles were shown, the one on the left labeled "Current Self" and the one on the right "Future Self." The decision to use six as opposed to seven sets of circles was an effort to optimize the survey for use on mobile devices, as the even number allowed for pairing that would not isolate one set of circles from the others and thus reduced potential response bias. The first pair of circles had no overlap; the last showed the circles overlapping so completely they were nearly superimposed; each of the intervening pairs showed increasing amounts of overlap. The items were adequately internally consistent (Cronbach alpha = .73, $M = 3.30$, $SD = 1.34$).

Search for life meaning

We incorporated a measure widely used in research on eudaimonia to assess searching for meaning in life (Steger, Frazier, Oishi, & Kaler, 2006). Examples of the five items include: "I am looking for something that makes my life meaningful" and "I am searching for meaning in my life." As before, respondents answered on a scale from strongly disagree (1) to strongly agree (7). The measure was internally consistent (Cronbach alpha = .93, $M = 4.47$, $SD = 1.62$).

Measures of affective responses

We had measures of affective responses to the narratives, derived from work by Oliver, Hartmann, and Woolley (2012) and Oliver and Raney (2011), used as controls in our analyses of poignancy as a possible mediator (Slater et al., 2016). We used items measuring meaningful affect (e.g., in response to the narrative, did the participant feel moved, touched, compassionate, inspired, tender, uplifted, encouraged, elevated; Cronbach alpha = .94, $M = 4.16$, $SD = 1.65$). We used items

assessing positive affective responses (cheerful, happy, upbeat, joyful, alert; Cronbach alpha = .94, $M = 3.75$, $SD = 1.83$) and negative affective responses (sad, gloomy, depressed, melancholy, emotional, upset; Cronbach alpha = .85, $M = 3.24$, $SD = 1.48$). We also included a single item asking how much the participant liked the video stimulus they saw ($M = 5.32$, $SD = 1.79$), to ascertain whether the more or less eudaimonic narratives differed in terms of overall appeal to the audience, and to permit statistical control over these differences in hypothesis tests if they were present. The response scale for each of these items was not at all (1) to very much (7).

Following Ersner-Hershfield et al. (2008), poignancy, a predicted mediator, was computed as the minimum of any given respondent's score on happy and sad emotional responses. For example, if someone's response to a narrative yielded a "5" on happy and "1" on sad, the poignancy score would be "1." If someone else's score showed a "5" on happy and a "3" on sad, the poignancy score would be "3"—that was the extent to which the person was showing clearly mixed happy and sad responses. This measurement approach does not distinguish whether the predominant feeling is happy or sad, but our focus was on the presence of mixed emotion.

Data analysis

Experimental main effects and interactions were tested using analyses of variance. The model included a two-level factor for the more versus less eudaimonic version of the film, a two-level factor for reflection on the film versus reflection on the weather, and a three-level factor for the three films (*Up, Shawshank Redemption*, and *Stand by Me*), and the factorial interactions. Testing interactions between the experimental treatments and the various stimuli are recommended when multiple base messages are used but the number and selection of such messages are not sufficient to justify use of multi-level models assessing random effects (Reeves et al., 2016; Slater et al., 2015). We used the PROCESS macro (Hayes, 2013) to test indirect effects using Model 4 and 10,000 bootstrapped samples.

Results

Manipulation checks and similarity of movie liking

More versus less eudaimonic clips

We used a single item regarding how meaningful the narrative was perceived to be to provide a check of the validity of the eudemonia experimental manipulation, as eudaimonia is defined primarily in terms of meaning as perceived by the viewer. The item assessing perceived meaningfulness of the narrative validated the manipulation ($F[1,565] = 19.7$, $p < .001$, $\eta_p^2 = .034$, eudaimonic = 5.05, less eudaimonic = 4.34).

We were concerned that the stimuli be comparably enjoyable apart from perceived meaning and meaningful affect, with the intent of controlling for differences if they were significant. We assessed this with a single-item measure of overall liking of the narrative viewed. There was no main effect of the eudaimonia

manipulation on overall liking ($F[1,553] = 0.45$, $p = .50$, $\eta_p^2 = .001$, eudaimonic = 5.25, less eudaimonic = 5.35). There was a main effect for film in which the *Up* clip was preferred ($F[2,553] = 5.39$, $p < .01$, $\eta_p^2 = .019$; *M*: *Up* = 5.63, *Stand by Me* = 5.21, *Shawshank Redemption* = 5.05). There was also an interaction with the eudaimonia manipulation in which *Up* and *Shawshank Redemption* were slightly preferred in the eudaimonic version (*Shawshank*: eudaimonic = 5.18, less eudaimonic = 4.93; *Up*: eudaimonic = 5.72, less eudaimonic = 5.54) and *Stand by Me* was preferred in the less eudaimonic condition (eudaimonic = 4.85, less eudaimonic = 5.58).

Overall, then, the manipulations were successful with respect to perceptions of the eudaimonic clips as more meaningful, and overall liking of the more and less eudaimonic clips were very similar.

Written reflections

We looked at the words written by the participants in response to each reflection (treatment vs. control) as a manipulation check to ascertain compliance with the manipulation, constructing a word cloud for each condition (see Figure 1). Comparing counts for key words for the movie reflection instruction versus the weather instruction (in parentheses), for "movie" we find 185 (3), "film" 25 (0), "clip" 77 (0), "weather" 0 (240), "cold" 0 (98), "hot" 0 (122); all differences, of course, are statistically significant.

We checked the possibility that intrinsic interest in engaging with the treatment versus control reflections might impact effects of the manipulation; elapsed times were not significantly different (mean = 173.6 seconds for the movie reflections, mean = 171.4 seconds for the weather reflections, $t[575] = -.435$, $p = .66$). We also compared elapsed time spent writing within the movie condition by more versus less eudaimonic movie exposure; the elapsed times were not significantly different

Figure 1 Word cloud of open-ended responses to discussion task. Discussion of responses to the movie (left) and the control condition wherein participants wrote about the weather where they are from (right).

either (t[299] = −.177, p = .91). There was no evidence of difference in response to the single-item measure of movie liking as a function of exposure to the reflection manipulation (F[1,565] = 1.02, p = .31), which preceded assessment of movie liking.

Hypothesis Testing

Eudaimonia and delay discounting/acceptance of delayed rewards

H1 proposed that the eudaimonic version of the narratives would increase willingness to accept delayed rewards (i.e., reduce delay discounting), replicating our earlier findings (Slater et al., 2016) with different stimuli and a tighter experimental manipulation. This hypothesis was supported (F[1,564] = 4.67, p < .05, η_p^2 = .008; eudaimonic mean = 1.36, less eudaimonic = 1.29). There were no qualifying interactions. F statistics showing all experimental effects for this and subsequent analyses of variance are summarized in Table 1.

Eudaimonia and death acceptance

H2 helped extend prior research (e.g., Rieger et al., 2015) by proposing that eudaimonic narratives would increase self-reports regarding reduced fear and greater acceptance of death. This hypothesis was also supported (F[1,564] = 4.13, p < .05, η_p^2 = .007; eudaimonic mean = 4.71, less eudaimonic = 4.50). This finding was qualified with an interaction with the film viewed (F[2,564] = 3.07, p < .05, η_p^2 = .011). The predicted pattern was found for *Stand by Me* and *Shawshank Redemption*, but not for *Up* (*Stand by Me*: eudaimonic M = 4.60, less eudaimonic = 4.41; *Shawshank Redemption*: eudaimonic M = 4.88, less eudaimonic = 4.35; *Up*: eudaimonic M = 4.64, less eudaimonic = 4.73). Possible reasons for the anomalous finding for *Up* are discussed below.

Eudaimonia and closeness to future self

We proposed, in H3, that eudaimonic narratives would increase perceived closeness to future self. We also argued that such perceived closeness should serve as an explanatory mechanism for mediated wisdom of experience, by providing an indirect path for impact on delay discounting (H4) and death acceptance (H5).

H3 was supported (F[1,564] = 7.22, p < .01, η_p^2 = .013; eudaimonic M = 3.45, less eudaimonic = 3.12); eudaimonic versions of the narrative increased perceptions of closeness to future self. There were no qualifying interactions.

H4 (predicting that effects of the more eudaimonic clip on delay discounting would be mediated by effects of the eudaimonic clips on perceived closeness to future self) and H5 (that death acceptance would be mediated by perceived closeness to future self) were assessed using Model 4 of the PROCESS macro (Hayes, 2013) with 10,000 bootstrap samples. With respect to H4, the test supported the hypothesis only at marginal levels (LLCI = .0000, ULCI = .0181). The effect of the eudaimonic version of the narrative on death acceptance was mediated by closeness to the future self, consistent with H5 (LLCI = .0055, ULCI = .0703; see Figures 2 and 3).

Table 1 Treatment *F* Statistics and Significance: Analyses of Variance

	Dependent Variables		Mediating Variables		
	Delay discounting	Death acceptance	Closeness to future self	Poignancy	Search for meaning
Eudaimonia	***F*(1,564) = 4.67**	***F*(1,564) = 4.13**	***F*(1,564) = 7.22**	***F*(1,564) = 44.30**	*F*(1,564) = 1.23
Reflection	*F*(1,564) = 2.38	*F*(1,564) = 2.78	*F*(1,564) = 0.77	*F*(1,564) = 0.37	***F*(1,564) = 5.31**
Film	*F*(2,564) = 0.44	*F*(2,564) = 0.97	*F*(2,564) = 0.75	***F*(2,564) = 12.07**	*F*(2,564) = 1.80
Eud × Ref	*F*(1,564) = 0.68	*F*(1,564) = 1.24	*F*(1,564) = 0.11	*F*(1,564) = 0.81	*F*(1,564) = 1.20
Eud × Film	*F*(2,564) = 0.51	***F*(2,564) = 3.07**	*F*(2,564) = 0.05	***F*(2,564) = 9.01**	*F*(2,564) = 2.53
Ref × Film	*F*(2,564) = 0.72	*F*(2,564) = 0.98	*F*(2,564) = 0.93	*F*(2,564) = 1.24	*F*(2,564) = 0.51
Eud × Ref × Film	*F*(2,564) = 1.31	*F*(2,564) = 0.51	*F*(2,564) = 1.43	*F*(2,564) = 0.53	*F*(2,564) = 0.48

Note: Statistically significant effects are indicated in bold. Details for significant effects, including means by condition, are in text.

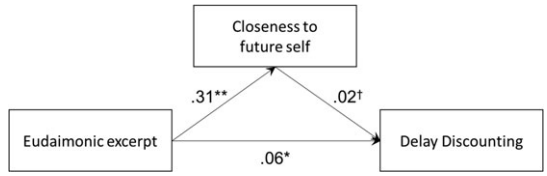

Figure 2 Indirect effect of eudaimonia via closeness to future self on delay discounting = .006 (SE = .004, LLCI = .0000, ULCI = .0181), 10,000 bootstrap sample, $^{\dagger}p < .1$, $^{*}p < .05$, $^{**}p < .01$.

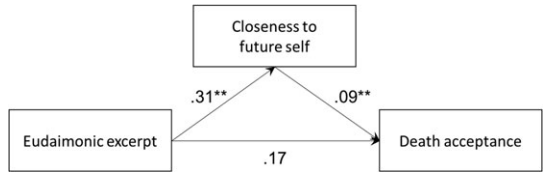

Figure 3 Indirect effect of eudaimonia via closeness to future self on death acceptance = .028 (SE = .016, LLCI = .0055, ULCI = .0703), 10,000 bootstrap sample, $^{**}p < .01$.

Eudaimonia and poignancy

First, we sought to confirm earlier findings that eudaimonic narratives elicit poignant responses (H6). H6 was clearly supported ($F[1,564] = 44.30$, $p < .001$, $\eta_p^2 = .073$; eudaimonic $M = 2.82$, less eudaimonic = 1.94). This main effect was qualified by an interaction with the film viewed ($F[1,564] = 9.01$, $p < .001$, $\eta_p^2 = .031$). While in each case poignancy was greater for the eudaimonic version of the narrative, the effect appeared much stronger for *Up* and *Shawshank Redemption* than for *Stand by Me* (*Stand by Me*: eudaimonic $M = 2.19$, less eudaimonic = 2.06; *Shawshank Redemption*: eudaimonic $M = 2.75$, less eudaimonic = 1.73; *Up*: eudaimonic $M = 3.52$, less eudaimonic = 2.13).

Second, we assessed poignancy as a mediator of effects on delay discounting/acceptance of delayed rewards and on death acceptance, per H7. The indirect effect via poignancy on delay discounting was non-significant (effect = −.004, SE = .008, LLCI = −.021, ULCI = .012). The indirect effect on death acceptance via poignancy was significant in this analysis (effect = .082, SE = .032, LLCI = .025, ULCI = .154).

However, poignancy is a variable created by taking the minimum of happy and sad emotions, and effects might be due to correlation with positive or negative emotions. Therefore, consistent with our prior research (Slater et al., 2016) we also used a parallel mediation model in which positive, negative, and meaningful affect were included as mediators of eudaimonia effects on death acceptance. In this model, the mediating effect of poignancy became non-significant (effect = −.051, SE = .042, LLCI = −.140, ULCI = .027), as did positive and meaningful affect (positive affect effect = −.044, SE = .037, LLCI = −.134, ULCI = .017; meaningful affect effect = −.021, SE = .038, LLCI = −.105, ULCI = .049). The indirect effect of negative affect survived (effect = .105, SE = .051, LLCI = .012, ULCI = .213). The negative affect index here included various indicators of sadness (sad, gloomy,

melancholy, depressed), as well as indicators of feeling emotional or upset; hostility and fear were not included, based on the original factor analysis, so this index presumably captures the sadness or emotionally wrenching quality of poignancy but not accompanying happiness.

Reflection on a eudaimonic narrative

We hypothesized (H8) that reflection on a eudaimonic narrative would increase its impact on our outcome variables. However, hypothesized interactions with the eudaimonia manipulation on closeness to future self ($F[1,564] = 0.011$), delay discounting ($F[1,564] = 0.677$), and death acceptance ($F[1,564] = 0.124$) were not statistically significant. The main effect of the reflection exercise was also not significant for two of these variables (closeness to future self, $F[1,564] = 0.772$; delay discounting, $F[1,564] = 2.36$), though the latter was marginally significant (death acceptance, $F[1,564] = 2.78$, $p < .10$).

The question, given these null effects, is whether the reflection exercise had any relevant impact on participants, given that it neither moderated effects of the more eudaimonic clip nor had direct effects on outcomes. There is some evidence that it had. We reasoned that it is possible that reflection on a eudaimonic movie might, consistent with a self-perception theory perspective (Bem, 1972), increase the salience of the propensity of search for meaning as people observe themselves being reflective. While the propensity to search for life's meaning is conceptualized as a trait, we have found in other research that related personality traits, notably empathy, may be primed by emotionally-moving content (Abo, Slater, & Goodall, 2015). In fact, being self-reflective about the movie—whether it was the clip that was higher or lower in eudaimonia—increased scores on our measure of the propensity to search for meaning in one's life ($F[1,565] = 5.39$, $p < .05$, $\eta_p^2 = .009$; M for reflection about the movie = 4.61, for reflection about the weather = 4.30).

Discussion

The theoretical contributions of this study are several. One is replicating with a tighter and more ecologically valid manipulation a key finding from prior research: that eudaimonic narratives can decrease delay discounting. A second contribution is the demonstration that such narratives can directly impact death acceptance, extending the work of Rieger et al. (2015). A third contribution is providing empirical evidence that socio-emotional selectivity theory (Carstensen et al., 1999) helps explain this finding by showing that closeness to future self, a variable used by SST researchers, at least in part mediates eudaimonic narrative effects on delay discounting. Two other contributions are negative: poignancy as a mediator of eudaimonic narrative effects, which was distinguishable from other forms of affective response in a prior study (Slater et al., 2016), was not distinguishable in the present study; and written reflections on the more eudaimonic narrative did not enhance effects relative to the less eudaimonic narrative. Suggestively, however, reflections

on either movie clip did increase reports of searching for meaning in one's life, indicating that reflection may have potential worth exploring.

Replication of the delay discounting finding was, in our view, essential to making a case for eudaimonic narratives providing vicarious life experiences that stimulate more mature approaches to life and decision-making. Delay discounting is normally conceptualized as a trait (e.g., Story, Vlaev, Seymour, Darzi, & Dolan, 2014). The proposition that eudaimonic narratives might decrease delay discounting (i.e., increase acceptance of delayed rewards) is not an intuitive one. Therefore, skepticism about our earlier results as possibly being contingent on the particular stimuli we had selected would be understandable. Therefore, retesting this proposition on quite different stimuli, with greater ecological validity and a tighter experimental manipulation, was a priority; we believe the replication provides much stronger support for our ideas regarding the mediated wisdom of experience.

Broadening outcomes beyond delay discounting is also important for claims that eudaimonic narratives can occasion greater maturity of perspective. It seems to us that a greater capacity to accept the human condition—and the inevitable end of life—is a fundamental indicator of the kind of maturity of which we speak. Recent work by Rieger et al. (2015) provided provocative evidence that eudaimonic narratives could buffer the effects of mortality salience manipulations. Their finding implies, though does not directly demonstrate, that these narratives increase one's capacity to accept death. In the present study, we find evidence that such narratives can directly reduce fear and increase acceptance of death. This is again consistent with our arguments for how the life experiences portrayed in eudaimonic narratives can increase maturity of perspective in the viewer or reader of such narratives, though, as we discuss further below, our finding is qualified by possible moderation due to specifics of the content of the eudaimonic narrative.

Important theoretical insight is provided by evidence that the effect of eudaimonic narratives on perceived closeness to the future self helps explain these effects on maturity. The importance, in our view, lies in the support provided to the grounding of our arguments in socio-emotional selectivity theory. SST emphasizes how aging (Carstensen et al., 1999) and significant life events (Ersner-Hershfield, 2009) increase the salience of the passage of time, the inevitability of loss, and the preciousness to us of what we have and value in our lives. In our view, these mediation results provide evidence that the effect of eudaimonic narratives closely corresponds to the effect of actual lived experience, thus leading to what we call mediated wisdom of experience. The evidence here is theoretically intriguing not because mediation effect sizes are large—they are not, and in one case statistical significance was marginal—but because this variable directly links our findings to SST, which was previously invoked conceptually, but without direct supportive evidence. We also propose that closeness to future self, while valuable in linking our findings to SST, is simply an indicator of what we believe may be a more robust mechanism: a heightened awareness of the potential for meaning in the narrative arc of one's own life. Finding more direct and robust measures for such a

construct, without excessive demand characteristics, remains a challenge for future research.

Our results were sometimes qualified by message content differences. For example, we found that while there was an overall impact of eudaimonic narratives on death acceptance, that impact was not found for our excerpt from *Up*. In retrospect, this is not difficult to understand. The clip we used was quite touching, but ended with the protagonist's despair and isolation at the loss of his beloved wife and the failure of their cherished dreams. This content would hardly be expected to reconcile the viewer to the prospect of death (though the remainder of the story, not included in the excerpt, might lead to such a resolution). It is noteworthy, though, that in the context of a eudaimonic narrative, even such a distressing portrayal of the impact of death had only a trivial effect on decreasing death acceptance, suggesting to us there is something that inherently buffers fear of death in the portrayal of life's passage and meaning. The fact that the *Shawshank Redemption* eudaimonic excerpt had the predicted effect on death acceptance despite having no reference to mortality at all seems to us consistent with our underlying theoretical claims. Nonetheless, this interaction finding does indicate that impacts of eudaimonic narratives can be content-specific, and that there may be interesting research opportunities in exploring the impact of various types of eudaimonic content.

One disappointment for us was the limited evidence for poignancy as a mediator of the impact of eudaimonic narratives on delay discounting and death acceptance. Unlike our previous study (Slater et al., 2016), the indirect effects poignancy had on death acceptance were not distinguishable from the indirect effects associated with negative or meaningful affect. Our inference is that the relative importance of various affective mediators of eudaimonic narrative effects are probably content-contingent, and that the stimuli used in our first study happened to stimulate responses particularly well-captured by the poignancy measure relative to the other measures. Again, this suggests further research to examine types of eudaimonic narrative may prove fruitful.

In addition, we found no evidence for impact of written reflections on eudaimonic narratives. Reflection on the movies did increase perceptions of the importance of meaning in one's life, but it did so for both the more and less eudaimonic excerpts from the films. There are three possibilities. One is that our comparison film excerpts had enough content relevant to life meaning that reflection had equivalent impact in both conditions: in other words, both conditions were somewhat eudaimonic, such that reflection on either induced reflection on life meaning. Another is that integration of the eudaimonic experience into one's own experience requires actual social interaction and not mere written reflection. In other words, there may be something about the social experience of sharing such a narrative that will facilitate effects, rather than the cognitive rehearsal provided by the opportunity for reflection. A third is that the reflections would need to be more specifically focused on relevant issues within the narratives. Future research might profitably address the social component, alternative reflection tasks, or test

reflection using comparison narratives that, while perhaps less tightly manipulated, are also further apart in terms of eudaimonic content.

Of course, this study remains limited by the use of a specific set of stimuli and one cannot be sure results would replicate across other stimuli that might be considered eudaimonic. However, the consistency of many of our key results across all three stimuli (and in the case of delay discounting, across four other stimuli of different types in our previous study, including advertisements, news stories, and movie trailers), gives us reason for confidence that key effects are reasonably robust. No doubt, however, there are boundary conditions regarding types of eudaimonic content yet to be identified. Likewise, other potential processes and mechanisms are not explored; for example, it is possible that social cognitive mechanisms (Bandura, 2001), in which people see support from others or personal growth resulting from how they successfully cope with loss or other life difficulties, may play a role and help clarify content boundary conditions. This remains to be explored in future research.

Moreover, the use of excerpts from the same film in both conditions not only provided a tighter test than in previous work—controlling differences associated with performers, writers, direction, and cinematography—but also a conservative test. The comparison conditions were not without meaningful emotions; scores were lower than the treatment conditions but were still non-trivial. Stronger effects would be likely comparing a eudaimonic narrative with one lower in meaning throughout; our comparison clips were not action films that focused on sensational scenes and visual effects that might be truly low in eudaimonic content. However, the many confounds introduced by comparing eudaimonic clips to more truly noneudaimonic stimuli made that strategy nonoptimal for our purposes in this study.

The study populations for both the prior study, which employed an MTurk sample, and the present study, using samples provided through Qualtrics, are based on the general population and are not as problematic with respect to generality as a college student–based experiment. However, these samples are based on opt-in online panels with unknown biases (based on selectivity and computer access) relative to a true random population sample. It seems probable to us that one would be likely to find similar patterns of results in a true random sample, but at minimum the actual parameter estimates are likely to change and some findings might not reach statistical significance (or might be stronger; one cannot know either way).

Overall, the findings of this study, in the company of prior research (Kidd & Castano, 2013; Rieger et al., 2015; Slater et al., 2016) underscore the potential of meaningful stories to help human beings adapt to the most challenging realities of humanness—loss and mortality—and to be at least briefly wiser and more thoughtful as a result. Our respect for the best stories, and storytellers, deepens as we consider these results.

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