

# Poignancy: Mixed Emotional Experience in the Face of Meaningful Endings

Hal Ersner-Hershfield, Joseph A. Mikels, Sarah J. Sullivan, and Laura L. Carstensen  
Stanford University

The experience of mixed emotions increases with age. Socioemotional selectivity theory suggests that mixed emotions are associated with shifting time horizons. Theoretically, perceived constraints on future time increase appreciation for life, which, in turn, elicits positive emotions such as happiness. Yet, the very same temporal constraints heighten awareness that these positive experiences come to an end, thus yielding mixed emotional states. In 2 studies, the authors examined the link between the awareness of anticipated endings and mixed emotional experience. In Study 1, participants repeatedly imagined being in a meaningful location. Participants in the experimental condition imagined being in the meaningful location for the final time. Only participants who imagined “last times” at meaningful locations experienced more mixed emotions. In Study 2, college seniors reported their emotions on graduation day. Mixed emotions were higher when participants were reminded of the ending that they were experiencing. Findings suggest that poignancy is an emotional experience associated with meaningful endings.

*Keywords:* mixed emotions, poignancy, endings, aging, socioemotional selectivity theory

When John Updike described baseball legend Ted Williams’ last time at bat, he wrote that the experience “crowd[ed] the throat with joy” (Updike, 1960, p. 112). In doing so, Updike eloquently captured the phenomenon of poignancy: Watching his baseball hero’s final swing simultaneously evoked positive and negative emotions. Recent research has shown that in everyday life, older people experience mixed emotions, such as happiness and sadness, more so than their younger counterparts and that this co-occurrence of positive and negative emotion becomes more frequent with age (Carstensen, Pasupathi, Mayr, & Nesselrode, 2000; Ong & Bergeman, 2004). In socioemotional selectivity theory (SST), Carstensen and colleagues (2000) argued that this occurs because older adults are more aware of limited time than younger adults and that the experience of “last times” increases with age (Carstensen, 2006; Carstensen, Fung, & Charles, 2003; Carstensen, Isaacowitz, & Charles, 1999). Consequently, even relatively positive everyday events become tinged with mixed emotions. However, a causal link between limited time and emotional experience has not been documented. The present studies

offer evidence that limited time in the context of meaningful experience gives rise to poignancy.

## Aging, Emotion, and Limited Time

Over the past two decades, research on emotional functioning and emotional experience reveal more consistency than change in aging individuals. Most aspects of emotional experience are quite stable. Older adults do not differ from younger adults in the subjective intensities of self-reported emotions (see Levenson, 2000, for a review) or in the profiles of physiological reactivity (Levenson, Carstensen, Friesen, & Ekman, 1991; Levenson, Carstensen, & Gottman, 1994). The spontaneous production of emotional faces and other aspects of emotional expressive behavior (Levenson et al., 1991; Tsai, Levenson, & Carstensen, 2000) also appear to change little.<sup>1</sup> However, despite stability in the experience of elicited emotions, everyday emotional experience does change with age. Most notably, relative to their younger counterparts, older adults report fewer negative emotional experiences (Carstensen et al., 2000; Gross et al., 1997; Mroczek & Kolarz, 1998), especially reductions in anger (Lawton, Kleban, & Dean, 1993; Magai, 1999), coupled with increases in positive affect (Mroczek & Kolarz, 1998) or sustained levels of positive emotions (Carstensen et al., 2000). Furthermore, there is some evidence that older adults experience more complex emotional experiences. For example, among the young–old, written descriptions of emotion are more complex (Labouvie-Vief, DeVoe, & Bulka, 1989), and positive and negative emotions co-occur more frequently (Carstensen et al., 2000; Ong & Bergeman, 2004).

SST is a life-span theory of motivation that maintains that as time passes and people approach endings, activities that are devoid

---

Hal Ersner-Hershfield, Joseph A. Mikels, Sarah J. Sullivan, and Laura L. Carstensen, Department of Psychology, Stanford University.

Joseph A. Mikels is now at the Department of Human Development, Cornell University, and Sarah J. Sullivan is now at the Department of Psychology, University of California, Los Angeles.

This research was supported in part by National Institute on Aging Grant RO1-8816 awarded to Laura L. Carstensen and by a grant from the Norman H. Anderson fund. We thank Sam Maglio and Gina Schiel for their assistance in collecting data as well as Jennifer Heil, Anthony Ong, Nilam Ram, Rick Robins, Ewart Thomas, Jeanne Tsai, and the members of the Bay Area Affective Science Training Program for helpful discussions of statistical and conceptual issues.

Correspondence concerning this article should be addressed to Hal Ersner-Hershfield, Department of Psychology, Stanford University, 450 Serra Mall, Stanford, CA 94305. E-mail: haleh@psych.stanford.edu

---

<sup>1</sup> Note, however, that Malatesta-Magai, Jonas, Shepard, and Culvert (1992) found older adults to be more expressive.

of meaning are less interesting and desirable. Interest in novel information—because it is closely linked to future needs—declines. Instead, the increasing awareness of time constraints focuses attention on the present, and this temporal shift increases the value that people place on the most important aspects of life. Thus, SST posits that when the future is seen as expansive and endings are not acutely anticipated, greater focus is placed on knowledge-related goals and information seeking. By contrast, when individuals approach endings, they are motivated to pursue emotionally meaningful goals and focus more on the here and now (Carstensen, 1995; Carstensen et al., 1999). This increased focus on pursuing emotionally meaningful goals in the present leads to an intensified desire for and ultimate experience of more positive emotion and less negative emotion over time, as is observed with older adults. However, when time is constrained and people become progressively aware of the finitude of life, emotional experiences become increasingly more complex. Such states are positive given the pursuit of emotional goals but come to entail a mix of negative emotions because endings, by their very nature, also increase the anticipation of last times.

### Mixed Emotions

The concept of poignancy presumes the experience of mixed emotions. Evidence exists that positive and negative emotions do occur closely together, if not simultaneously.<sup>2</sup> At an empirical level, Williams and Aaker (2002), for instance, found that participants felt both happy and sad after viewing certain advertisements. Additionally, Larsen, McGraw, and Cacioppo (2001) demonstrated that participants felt both happy and sad on move-out day, on graduation day, and after watching the movie *Life is Beautiful*. Thus, although most emotional experiences are either positive or negative, there appear to be circumstances that give rise to mixed emotional experiences.

### Defining Poignancy

Mixed emotions can take on many different forms, be it a combination of anger and joy, disgust and satisfaction, or embarrassment and sadness. But unlike these other instances of mixed emotions, poignancy seems to be particular to the experience of endings, of no longer having something that one once had. And, we maintain that whereas the anticipation of an ending is not a necessary component of other mixed emotions, it is integral to the experience of poignancy. For example, nostalgia (Wildschut, Sedikides, Arndt, & Routledge, 2006), which although also composed of mixed emotions, involves thinking back on momentous experiences that have already occurred, rather than experiencing or anticipating endings. Our view is consistent with that of philosopher Karl Duncker, who argued that poignancy results from recognizing that something once possessed is or will no longer be present: “A feeling of not having takes on a greater poignancy if it is a no-longer-having, a loss (whether of something actually or almost possessed)” (Duncker, 1941, p. 418). In Duncker’s framework, then, it is the awareness or anticipation of not having something that one once had that breeds poignancy. Duncker’s theorizing speaks directly to the intimate relationship between poignancy and endings in life that mark the passage of time. The heightened sense of mortality that occurs naturally as individuals

progress through life gives rise to an appreciation of life’s fragility along with an awareness that the most cherished aspects of life are fleeting. Lazarus’s (1991) appraisal theory suggests that such a sense of loss is normally associated with sadness. However, because feelings of poignancy also involve the knowledge that one is progressing through life, a sense of happiness is evoked as well. Accordingly, we postulate that poignancy comprises a mixture of happiness and sadness that occurs when one faces meaningful endings.

To date, causal relationships among aging, anticipated endings, and mixed emotions remain theoretical. In particular, SST posits that the associations between aging and poignancy are accounted for by perceived constraints on time. If the sense of limited time rather than changes in processes associated with aging causes changes in emotional experience, then younger adults in limited-time situations should also, theoretically, experience comparable emotional states as older adults under experimental conditions that constrain time.

Although previous research has demonstrated that older adults experience poignancy more frequently than younger adults (Carstensen et al., 2000; Ong & Bergeman, 2004), there is no empirical evidence to suggest that older adults experience poignancy in an ever-present ubiquitous fashion. Mailing a letter or brushing one’s teeth may be no more likely to elicit poignancy in an older person than a younger person. Seeing an old friend, however, may generate different experiences for the old and the young. In theoretical terms, poignancy occurs in the face of significant endings that signify the passage of time. SST suggests that a sense of limited time causes an individual to focus on emotionally meaningful aspects of life. Poignancy, then, may arise not only when time is limited but also when individuals are faced with the potential loss of something emotionally meaningful.

### Overview of the Present Research

In the present studies, we tested the link between limited-time horizons and the experience of mixed emotions. In Study 1, participants in one of two conditions were induced through systematic imagery to imagine that they were in a meaningful location. Limited time was manipulated by instructing participants in the experimental condition to imagine that they were in the location for the final time. In Study 2, participants were asked to report their emotions during the real-life ending of college graduation.

We sought to test two hypotheses: First, under controlled conditions in a laboratory setting, does limited time give rise to the experience of poignancy? If poignancy results from appreciating the fragility of life through the lens of limited time, then imagining doing something meaningful for the final time, such as spending time at a favorite location, should produce poignancy, regardless of age. Accordingly, in Study 1, we expected that participants in the experimental condition would experience more poignancy dur-

<sup>2</sup> Although it remains contested whether differently valenced emotions can co-occur (Cacioppo & Berntson, 1994; Russell & Carroll, 1999), it should be noted that the plausibility of mixed emotional *experiences* does not play a role in this debate. Rather, the central question in this dispute concerns whether individual positive and negative emotions can co-occur at the exact same moment in time (Feldman Barrett & Russell, 1998).

ing the limited-time guided imagery induction than participants in the control condition.

Second, we examined whether a real-life ending could produce the experience of poignancy and whether placing emphasis on this ending could heighten the experience of poignancy. As such, in Study 2, we hypothesized that college seniors would experience poignancy on their graduation day and that drawing attention to the natural ending would increase this sense of poignancy.

## Study 1

### Method

#### Research Participants

Sixty younger participants (25 men, 35 women;  $M = 19.62$  years; 50% Caucasian, 25% African American, 25% "other") and 60 older participants (26 men, 34 women;  $M = 77.47$  years; 81.67% Caucasian, 16.67% African American, 1.66% "other") took part in the study. Younger participants received course credit or were paid \$25 for their participation. Older participants were paid \$25 for their participation. There were no significant differences between age groups in household income,  $t(107) = -0.02$ ,  $p = .98$ . Table 1 depicts the descriptive statistics for participant information from Study 1.

#### Materials

An IBM R-40 Thinkpad with E-Prime software (Schneider, Eschman, & Zuccolotto, 2002) was used for stimulus presentation and data acquisition. Participants completed a number of measures to assess demographic background variables, physical health, and cognitive abilities. Together, these measures provide descriptive information.

*Wahler Physical Health Inventory* (Wahler, 1973). The Wahler Physical Health Inventory measures each participant's subjective interpretation of his or her physical health. Participants are asked to rate the extent to which they are bothered by 42 different physical health symptoms.

*Wechsler Digit Span Test* (Wechsler, 1997). The Wechsler Digit Span Test requires participants to repeat a string of numbers forward and backward. Considered a test of short-term memory, it

has been normed for older adults and correlates well with general intelligence.

*F, A, S, and Category Naming Task* (Spreeen & Benton, 1977). Verbal fluency was assessed by asking participants to name as many "F," "A," and "S" words as they could in 60 s. Participants were then asked to name as many members of the category "animal" as they could in 60 s.

#### Experimental Procedures

Participants first read and signed a consent form and then completed a demographics questionnaire. To eliminate variation in the experimental induction, instructions for each scenario were recorded using iTunes software and were played for participants. Participants were seated in front of the computer and were instructed to do the following: "Think of a place that has personal significance to you. Please think of a specific, meaningful location that you go to with people whom you care about." After the participant had selected a meaningful location, the experimenter recorded the location.

Participants were then taken through three guided imagery induction trials. In the first trial, participants were given the following instructions:

Please close your eyes. Now please take a moment to imagine being at the location that you just described. As best you can, place yourself in the location. Notice your surroundings. Notice any people whom you are with, their faces, and voices. Take in everything that you see. Listen carefully to the sounds of your surroundings. Take a deep breath and notice the smells. Notice the air on your skin. Now take whatever time you need to fully experience the sights, sounds, and smells of the environment and the overall experience of the location. When you are ready, please open your eyes.

Upon completing this induction, all participants completed an emotion questionnaire on the computer in which they rated the degree to which they were experiencing each of 19 different emotions (positive: accomplishment, amusement, contentment, excitement, happiness, interest, joy, and pride; negative: anger, anxiety, boredom, disgust, embarrassment, fear, frustration, guilt, irritation, sadness, and shame) on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*).

The second guided imagery induction trial immediately followed this emotion questionnaire and was identical to the first trial in all but one respect: In this trial, participants were asked to imagine the experience of being at their favorite location as if they were there in 2 months' time. After this guided imagery induction, all participants completed the same emotion questionnaire again.

In the third guided imagery induction, participants in the control condition were asked to imagine the experience of being at their favorite location as if they were there in 4 months' time. Control participants then completed the emotion questionnaire for the final time. In the experimental limited-time condition, however, participants were asked to imagine the experience of being at their favorite location as if they were there in 4 months' time and, importantly, as though this would be the last time that they would be able to visit the meaningful location. After finishing the third trial, participants in the experimental condition then completed the emotion questionnaire for the final time. Thus, the experimental manipulation occurred during the third trial.

Table 1  
Participant Characteristic Information in Study 1

Variable	Younger ( $n = 60$ )		Older ( $n = 60$ )	
	$M$	$SD$	$M$	$SD$
Age	19.63	1.40	77.47	6.88
Household income (\$ in K)	63.39	59.77	63.58	47.80
Digit Span				
Forward	9.88	2.42	7.88	2.19
Backward	8.72	2.73	6.15	2.41
Verbal Fluency				
Animal	21.92	4.73	14.95	4.83
F, A, S naming	14.88	3.45	11.78	3.60
Wahler Physical Symptoms	44.10	22.33	37.60	22.22

Note. K = thousands.

All participants then completed a series of tasks and questionnaires, composed of the Digit Span Test (Wechsler, 1997), the Verbal Fluency task (Spree & Benton, 1977), and the Wahler Physical Health Inventory (Wahler, 1973).

## Results and Discussion

### Preliminary Analyses

On the Wahler Physical Health Inventory, younger and older adults were not significantly different in their self-reported physical health,  $t(118) = 0.16, p = .88$ . On the cognitive tasks, younger adults generated more words in the “F, A, S naming” verbal fluency task,  $t(118) = 4.82, p < .001$ , and named significantly more animals in the “animal” verbal fluency task,  $t(118) = 7.98, p < .001$ . Younger adults also performed significantly better in the forward Digit Span Test,  $t(118) = 4.75, p < .001$ , and the backward Digit Span Test,  $t(118) = 5.46, p < .001$ . Table 1 depicts the descriptive statistics for these measures.

### Operationalizing Poignancy

Previous research has operationalized poignancy generally as the co-occurrence of positive and negative emotion (Carstensen et al., 2000). To measure co-occurrence in their experience-sampling procedure study, Carstensen et al. (2000) computed, for each participant, a Pearson’s  $r$  correlation between positive and negative emotion across 35 sampling occasions. Accordingly,  $r$  values near zero were associated with a greater degree of co-occurrence, whereas highly negative  $r$  values indicated that positive and negative emotion were not often present during the same sampling occasion. However, because the present investigation was concerned with one emotional reaction as a function of a specific time-limiting manipulation, a correlational analysis was not feasible. Rather, a more immediate measure of mixed emotions was needed.

In the literature on attitudinal ambivalence, Kaplan (1972) proposed a metric that could be used to assess the degree to which attitudes or feelings were mixed about an object or event. Recently, Kaplan’s (1972) metric has been used to capture mixed emotions (Wildschut et al., 2006). Using Kaplan’s (1972) formula, mixed emotions were defined as:

$$ME = PA + NA - |PA - NA|.$$

In this equation, ME refers to mixed emotions, PA to average positive affect, and NA to average negative affect. However, as noted by Priester and Petty (1996), Kaplan’s (1972) formula can be reduced to simply two times the minimum amount of PA and NA. Thus, it is easier to conceptualize mixed emotions as the minimum of PA and NA. Such an approach has been taken by both Schimmack (2001) and Larsen, McGraw, Mellers, and Cacioppo (2004).

More important, the MIN formula assigns a high mixed emotion score to experiences in which positive and negative emotions are both relatively high. For example, if  $PA = 3$  and  $NA = 2$ , then the mixed emotion score would equal 2; if  $PA = 4$  and  $NA = 3$ , then the mixed emotion score would equal 3. Indeed, we have argued that a poignant experience represents such a mix of emotions, indicating that the MIN formula is appropriate for our purposes. Emotional experiences that are unidirectional in nature (i.e., cases

in which the score of one emotion is very low and the other is moderate or high) receive the lowest possible mixed emotion score. So, for a case in which  $PA = 3$  and  $NA = 1$ , the mixed emotion score would equal 1; likewise, for a case in which  $PA = 5$  and  $NA = 1$ , the mixed emotion score would again equal 1. Both experiences are similarly unidirectional and, as such, receive low mixed emotion scores.

However, because our conceptualization of poignancy involves the positive emotion of happiness<sup>3</sup> and the negative emotion of sadness, the mixed emotions measure that we use here is defined as:

$$ME = \text{MIN}[\text{Happiness}, \text{Sadness}],$$

where ME refers to mixed emotions and MIN refers to minimum.

### Tests of Main Hypotheses

*Changes in happiness and sadness.* Before exploring the mixed emotion scores, we examined changes in happiness and sadness independently. A repeated measures analysis of variance (ANOVA) with two between-subjects factors (age group: young, old; condition: control, experimental) and two within-subjects factors (time: first imagery induction time trial, second imagery induction time trial, third imagery induction time trial; valence: positive, negative) was used to examine the effect of the experimental limited-time manipulation on happiness and sadness. Results indicated that there was a main effect of valence, such that all participants experienced a greater degree of happiness relative to sadness,  $F(1, 116) = 218.35, p < .001$ . There was no Age Group  $\times$  Valence interaction, indicating that older adults and younger adults experienced similar amounts of sadness and happiness. Table 2 depicts the happiness and sadness emotion mean scores for all three time trials for both conditions and age groups.

Moreover, results indicated that the limited-time manipulation significantly affected participants’ emotional experience. Specifically, a Time  $\times$  Valence interaction,  $F(2, 115) = 48.43, p < .001$ , was qualified by a significant Time  $\times$  Valence  $\times$  Condition three-way interaction,  $F(2, 115) = 30.17, p < .001$ . To examine the nature of this interaction, we ran paired samples  $t$  tests so that happiness and sadness before the experimental limited-time manipulation could be directly compared with happiness and sadness after the experimental limited-time manipulation. Specifically, participants in the control condition exhibited a significant decrease in happiness from the second imagery induction time trial to the third imagery induction time trial,  $t(59) = 2.73, p < .01$ . It is possible that this decrease in positive emotion was a function of simple habituation to the initial happiness experienced (Frijda, 1988). Tellingly, control condition participants showed no comparable change in terms of sadness, indicating that in the absence of a limited-time manipulation, the experience of this emotion does not change from the second imagery induction time trial to the third imagery induction time trial,  $t(59) = -0.38, p = .70$ . By contrast, the participants in the experimental condition showed changes in both happiness and sadness. These participants showed

<sup>3</sup> Although other emotions, such as joy, are closely related to happiness, for the sake of parsimony, we opted to use a single indicator of positive emotion (happiness) and a single indicator of negative emotion (sadness).

Table 2  
*Happiness and Sadness Means and Standard Deviations by Time Trial and Condition for Both Age Groups in Study 1*

Variable	Happiness						Sadness					
	Time 1		Time 2		Time 3		Time 1		Time 2		Time 3	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Younger												
Control	6.13	0.90	6.10	0.96	5.47	1.70	2.03	1.75	1.93	1.67	2.13	1.66
Exp.	6.00	1.05	5.87	1.50	4.60	1.55	2.77	1.63	2.63	1.71	5.43	1.72
Older												
Control	6.00	1.41	5.97	1.22	5.63	1.50	2.47	2.17	2.50	2.06	2.40	2.19
Exp.	6.23	1.04	5.73	1.34	4.47	2.39	1.87	1.41	2.03	1.47	5.33	2.25
Total												
Control	6.07	1.18	6.03	1.08	5.55	1.59	2.25	1.98	2.22	1.88	2.27	1.93
Exp.	6.12	1.04	5.80	1.41	4.53	2.00	2.32	1.58	2.33	1.61	5.38	1.94

Note. For the Younger group,  $n = 60$ , with  $n = 30$  in each condition. For the Older group,  $n = 60$ , with  $n = 30$  in each condition. Exp. = Experimental.

a significant decrease in happiness from the second imagery trial to the third imagery trial,  $t(59) = 4.81, p < .001$ , and a significant increase in sadness from the second imagery trial to the third imagery trial,  $t(59) = -10.20, p < .001$ . As such, the paired samples  $t$  tests revealed that the limited-time manipulation caused participants to experience more sadness and less happiness. Note, however, that although experimental condition participants showed a trend toward experiencing more sadness than happiness,  $t(29) = -1.99, p = .052$ , these participants were nevertheless endorsing happiness at a level that was above the midpoint of the scale. Put another way, participants in the experimental condition maintained levels of happiness above the midpoint of the scale despite a spike in sadness. More important, there were no age group interactions, indicating that both older and younger adults were affected by the limited-time manipulation in similar ways. Again, see Table 2 for the happiness and sadness mean scores and standard deviations for all three time trials for both conditions and age groups.

*Changes in mixed emotions.* The decrease in happiness and increase in sadness suggest a more mixed emotional experience as a function of the limited-time manipulation. But because these changes in emotional experience correspond to mean-level changes across participants, they do not speak to changes in emotional experience within individuals. To examine changes in emotional experience within individuals, we calculated mixed emotion scores for each participant, as described above, using the MIN measure. We ran a repeated measures ANOVA on these scores with two between-subjects factors (age group: young, old; condition: control, experimental) and one within-subjects factor (time: first imagery induction time trial, second imagery induction time trial, third imagery induction time trial). Results indicated that there was a main effect of time, such that mixed emotions increased over the course of the three imagery inductions,  $F(2, 115) = 8.68, p < .001$ . This main effect of time was qualified by a significant Time  $\times$  Condition interaction,  $F(2, 115) = 12.33, p < .001$ . To elucidate this Time  $\times$  Condition interaction, we ran paired samples  $t$  tests so that the experience of mixed emotions before the limited-time induction could be directly compared with the experience of mixed emotions after the limited-time induction. Participants in the control condition showed no significant change

in mixed emotions from the second imagery induction trial to the third imagery induction trial,  $t(59) = 0.64, p = .53$ . Participants in the experimental condition, in contrast, showed a significant increase in mixed emotions from the second imagery induction trial to the third imagery induction trial,  $t(59) = -5.03, p < .001$ . This increase in mixed emotions, then, can be attributed to the limited-time manipulation that occurred between the second guided imagery induction trial and the third guided imagery induction trial. Figure 1 depicts the mixed emotion scores for all three guided imagery induction time trials for both conditions. Finally, there was no significant Age Group  $\times$  Condition interaction, nor was there a Time  $\times$  Condition  $\times$  Age Group three-way interaction, indicating that both age groups responded to the limited-time manipulation in similar ways.

*Examining the relationship between happiness and sadness.* As noted above, the limited-time manipulation caused participants' happiness to decrease and their sadness to increase, leading to a mixed emotional state. However, was this emotional experience reflective of a qualitatively distinct, "mixed" state? Or, was this result just a reflection of an inverse relationship between happiness and sadness? For participants in both conditions, there was no relationship between happiness and sadness on the first two guided imagery induction trials, control participants:  $r(58) = -.14, p = .29$  and  $r(58) = -.22, p = .09$ ; experimental participants:  $r(58) = -.23, p = .08$  and  $r(58) = -.16, p = .23$ . However, for the third imagery induction, because of the changing nature of happiness and sadness, participants in both conditions exhibited moderate negative correlations between happiness and sadness, control participants:  $r(58) = -.36, p < .005$ ; experimental participants:  $r(58) = -.39, p < .005$ .

In summary, we examined whether limited time resulted in the mixed emotional experience of poignancy. Results indicated that the limited-time manipulation gave rise to a significant increase in the experience of sadness and a significant decrease in the experience of happiness. Furthermore, upon examining the mixed emotions metric, we found that those participants in the experimental condition experienced an increase in mixed emotions as a function of the limited-time manipulation. More important, envisioning endings did not turn a positive experience into a negative experience; rather, it added a component of sadness to an already happy

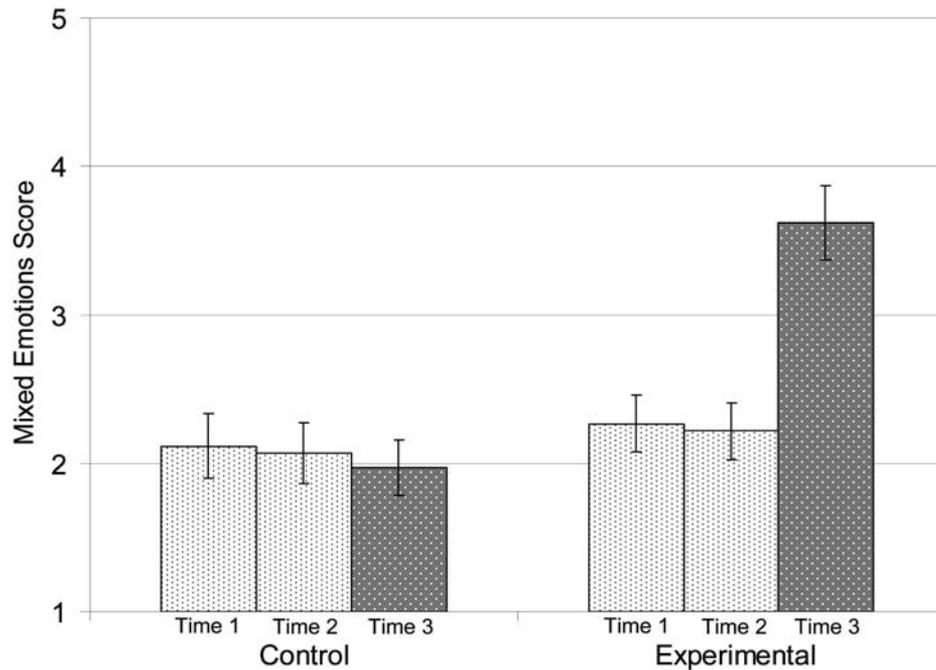


Figure 1. Mixed emotions scores for control and experimental conditions in all three time trials in Study 1. Shading for Times 1 and 2 are similar in order to represent the contrast of interest with Time 3. Error bars represent standard error of the mean.

experience. These findings held true for both younger and older age groups, suggesting that a meaningful limited-time situation<sup>4</sup> such as an ending can produce poignancy regardless of age. However, this study was conducted in a laboratory setting using hypothetical endings. To what extent, then, does poignancy arise during an actual ending in the real world? To address this issue, we conducted a second study in which emotions were assessed during a real ending.

### Study 2

In Study 1, we demonstrated that a meaningful ending gave rise to the experience of poignancy. In that study, we used a guided imagery induction in a laboratory setting to evoke poignancy. Although past research has demonstrated that guided imagery inductions can be used as an effective tool to generate an emotional experience (Gerrardshesse, Spies, & Hesse, 1994), a question remains: Do endings in a natural setting also elicit poignancy? Furthermore, can the salience of an ending be emphasized to amplify the feeling of poignancy? To answer these questions, in Study 2, we surveyed graduating college students about their emotional experiences on graduation day. For some participants, we emphasized the ending that they were experiencing (limited-time condition), whereas for other participants, we did not emphasize the ending that they were experiencing (control condition). It is important to note that because all participants were experiencing an ending, we expected feelings of poignancy to be relatively high in both conditions. However, because we placed emphasis on the ending in the limited-time condition, we expected poignancy to be even higher in that condition than in the control condition.

### Method

#### Participants

One hundred ten graduating seniors at Stanford University (49 men,  $M = 22.06$  years; 56 women,  $M = 21.80$  years, and 5 participants who failed to report their age or gender) participated in the study. Seniors were approached on graduation day, June 18, 2006, and asked whether they would like to participate in a brief survey about their experiences.

#### Experimental Procedure

Study 2 was composed of two between-subjects conditions. In each condition, participants were asked to rate the degree that they were experiencing each of 19 different emotions on a 7-point scale (positive: accomplishment, amusement, contentment, excitement, happiness, interest, joy, and pride; negative: anger, anxiety, bore-

<sup>4</sup> In Study 1, the endings that participants imagined were also meaningful. SST suggests that the sense of limited time causes an individual to focus on things in life that are emotionally meaningful. Do even mundane everyday experiences become meaningful under limited-time conditions? Alternatively, are mixed emotions restricted to emotionally meaningful situations? In order to disentangle these factors, we conducted a side study in which meaning and time limitations were experimentally manipulated. Results indicated that for participants imagining the experience of being at a nonmeaningful location, very little emotion was experienced, and, accordingly, a limited-time manipulation did not produce significant changes in emotional experience.

dom, disgust, embarrassment, fear, frustration, guilt, irritation, sadness, and shame). In the control condition ( $n = 59$ ), participants were given the following instructions: "Keeping in mind your current experiences, please rate the degree to which you feel each of the following emotions," and were then presented with the list of 19 emotions. In the limited-time condition ( $n = 51$ ), in which emphasis was placed on the ending that they were experiencing, participants were given the following instructions: "As a graduating senior, today is the last day that you will be a student at Stanford. Keeping that in mind, please rate the degree to which you feel each of the following emotions," and were then presented with the list of 19 emotions.

## Results and Discussion

### Differences in Happiness and Sadness

As in Study 1, we first sought to examine differences in happiness and sadness as a function of the limited-time manipulation. Independent samples  $t$  tests were used to examine the effect of the limited-time manipulation on happiness and sadness. Participants in the two conditions showed no difference in positive emotion,  $t(108) = 0.08, p = .93$ . However, as a function of the limited-time manipulation, there was a significant difference in sadness,  $t(108) = -2.34, p < .05$ , such that participants in the limited-time condition experienced more sadness than participants in the control condition. More important, similar to Study 1, participants in the experimental condition were still experiencing happiness at a level that was greater than the midpoint of the scale. In fact, in this naturalistic examination of poignancy, despite the ending they were facing, participants in both conditions exhibited more happiness than sadness, control condition:  $t(58) = -9.68, p < .001$ ; experimental condition:  $t(50) = -6.28, p < .001$ . Table 3 depicts the happiness and sadness mean scores for participants in both conditions.

### Differences in Mixed Emotions

Just as in Study 1, mixed emotion scores were calculated for each participant. An independent samples  $t$  test was used to examine whether these scores differed as a function of condition. As hypothesized, making the ending of graduation day more salient caused participants in the limited-time condition to show higher mixed emotion scores than participants in the control condition,  $t(108) = -2.34, p < .05$ . Figure 2 depicts the means of the mixed emotion scores in both conditions from Study 2.

Table 3  
Happiness and Sadness Means and Standard Deviations by Condition in Study 2

Condition	Happiness		Sadness	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Control	5.49	1.22	3.07	1.70
Limited time	5.47	1.39	3.82	1.67

Note. For the control group,  $n = 59$ . For the limited-time group,  $n = 51$ .

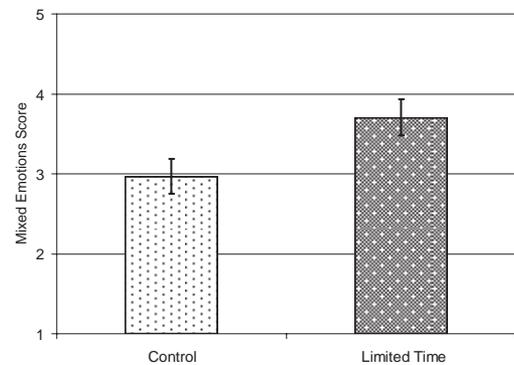


Figure 2. Mixed emotions scores for control and limited-time conditions in Study 2. Error bars represent standard error of the mean.

It is important to note that although participants in the control condition were not reminded of the ending that they were experiencing, they were experiencing an ending just the same, as evidenced by their relatively high mixed emotion scores. In fact, mixed emotion scores from control condition participants in this study were significantly higher than the mixed emotion scores from control condition participants in Study 1,  $t(117) = -3.50, p < .005$ . These results indicate that a natural ending can produce the experience of poignancy. Furthermore, when participants were reminded of the ending that they were experiencing, feelings of poignancy were heightened.

### Examining the Relationship Between Happiness and Sadness

In Study 1, we found a negative relationship between happiness and sadness for participants in both the control and experimental conditions. Because participants repeatedly imagined being at a meaningful location and were then asked to imagine a final time there, it is possible that a bias in affective forecasting might have led to this negative correlation. In previous studies, Gilbert, Wilson, and colleagues have demonstrated that when thinking about future events, people tend to overestimate how negative they will actually feel and underestimate how positive they will actually feel (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Wilson & Gilbert, 2003, 2005). It is possible, then, that because participants in Study 1 were asked to make judgments regarding feelings they would experience during a hypothetical ending, they reported feeling more sadness and less happiness than they would when facing an actual ending in the real world. Such an inflation of sadness and deflation of happiness perhaps led to the negative correlation between the two emotions. Because our measure of emotion in Study 2 involved a real-world examination of poignancy, we did not expect there to be a strong negative relationship between happiness and sadness. Indeed, in Study 2, the correlations between happiness and sadness were nonsignificant, control condition:  $r(57) = .17, p = .21$ ; experimental condition:  $r(49) = .26, p = .07$ . Unlike our hypothetical exercise in the laboratory setting, in the case of a real-life ending, it seems that both emotions related to each other in a slightly positive direction.

## General Discussion

We maintain that the experience of poignancy can be considered a mixed emotional experience that occurs when one is reminded of the passing of time during a meaningful experience. To test the causal link between endings and the experience of mixed emotions, we measured participants' emotional responses while imagining a visit to a meaningful location for the last time. Results from Study 1 indicated that the limited-time manipulation gave rise to a significant decrease in the experience of happiness and a significant increase in the experience of sadness from baseline. Moreover, upon examining the mixed emotions scores, we found that a sense of limited time did indeed produce a mixed emotional experience. It should be noted that this mixed emotional experience was not unidirectionally negative in nature but rather remained positive as well. Hence, one critical component to the experience of poignancy appears to be a sense of limited time. Results from Study 2 showed that real-life endings outside of the laboratory also produce a sense of poignancy. As such, we provide evidence that the experience of poignancy involves mixed emotions in the face of a meaningful ending.

Our conceptualization of poignancy arises out of the observation that chronological age is correlated with mortality. Subsequently, in daily life, we postulate that older people are more aware of endings than younger people are. We hypothesized that endings provoke a mixed emotional experience because a sense of limited time focuses individuals on emotionally meaningful goals. Such goals tend to be positive in nature, yet, because an ending highlights the passing of time, it also gives rise to an increase in negative emotion. Previous research has demonstrated that older adults experience such poignant states more often than younger adults (Carstensen et al., 2000; Ong & Bergeman, 2004), but the extent to which this change in emotional experience is due to a sense of limited time and not simply the result of changes in other processes associated with aging has not been explored. More important, in both studies we demonstrated that the experience of poignancy occurs equally in younger and older adults. Thus, here we provide the first evidence that some of the changes in emotional experience associated with aging (viz. poignancy) are a result of facing a meaningful ending rather than a result of chronological age per se.

Although these results provide experimental support for the assertion that certain age-related changes in emotional experience are due to a shift in time perspective, alternative possibilities have been offered to address mixed emotions in old age. Williams and Aaker (2002), for instance, have proposed that older adults experience co-occurring positive and negative emotions because they are more likely than younger adults to accept the duality of emotional experience. In other words, compared with younger adults, older adults are better able to recognize that emotions do not have to be experienced in a unidirectional way. Such an explanation for poignancy is not necessarily at odds with SST's account that poignancy arises as a result of limited time. It is possible, for example, that limited time can also cause an individual to be more accustomed to accepting duality. Just the same, future research should attempt to disentangle these two explanations of poignancy.

Our findings lend support to Cacioppo and colleagues' contention that mixed emotional experiences can and do occur (Cacioppo & Berntson, 1994; Cacioppo, Gardner, & Berntson, 1999). As demonstrated in both studies, when individuals face endings, emotional experience includes a mixture of happiness and sadness. But although emotional *experience* is mixed, these results do not speak to the nature of the behavioral output, or *action tendency* (Lazarus, 1991) that would arise from the experience of poignancy. Previous research makes us doubtful that the action tendency of poignancy—or the action tendency of any emotion for that matter—would be mixed (Feldman Barrett & Russell, 1998). Lazarus (1991), for example, has noted that the action tendency of happiness is to approach others and share with them one's positive outcomes. On the contrary, sadness leads to a state of withdrawal and avoidance of others (Frijda, 1988). In theory, then, the action tendency of poignancy would most likely be singularly valenced. Future studies are necessary, however, to discern the nature of behavioral responses to mixed emotional experiences.

We found that poignant experiences entailed a mix of happiness and sadness. Was this experience truly mixed? Or, were our results a reflection of an inverse relationship between the two emotions? Although it is true that there was a significant negative correlation between happiness and sadness for participants experiencing poignancy in the experimental condition of Study 1,  $r(58) = -.39, p < .005$ , it should be noted that this correlation is moderate in magnitude (Cohen, 1988) and not large, as might be expected if positive emotions simply replaced negative emotions. Furthermore, we found a trend toward a positive relationship between happiness and sadness in our real-world examination of poignancy. As noted above, the discrepancy between the correlations from Study 1 and Study 2 might be a function of a bias in affective forecasting that occurred during Study 1 but not Study 2. Unlike Study 1, in Study 2, participants were asked to report how they felt during a real-life ending. Understandably, we did not obtain a similar negative correlation. Nevertheless, future research should be conducted to further examine the relationship between happiness and sadness during mixed emotional experiences. Furthermore, in both Study 1 and Study 2, we found that the mix of happiness and sadness that participants felt was characterized by the addition of sadness to an already happy experience. Put another way, the endings did not in themselves *produce* the experience of happiness. However, it could be the case that some special cases of endings will actually give rise to both happiness and sadness. Future research should attempt to document various types of endings and the effects that they have on poignancy.

Lastly, researchers such as Larsen, Hemenover, Norris, and Cacioppo (2003) and Spiegel (1998) have noted that the coactivation of positive and negative emotion can often be an important step in the coping process, for the ability to face and accept negative life events is a crucial aspect of the healing course. Spiegel, Bloom, Kraemer, and Gottheil (1989) found, for example, that breast cancer patients who underwent group therapy and expressed the full range of their emotions lived twice as long as control patients who were in no such therapy group. Similarly, Bower, Kemeny, Taylor, and Fahey (1998) demonstrated that bereaved HIV-seropositive men showed positive health outcomes

when they both confronted stressors in their lives and found a sense of meaning in the trauma that they had undergone. Finally, Carstensen et al. (2000) found that emotional complexity in everyday life is associated with less neuroticism and better emotional control. Thus, to the degree that mixed emotional experiences can aid in the coping process, poignancy may be a special case of a mixed emotional experience that may help individuals in dealing with anticipated loss.

In summary, findings from the present studies lend further support to the notion that certain age-related changes in emotional experience are due to the experience of limited time and are not necessarily a result of organic processes associated with aging, such as the degradation of physical or cognitive abilities. As SST predicts, a sense of limited time, when coupled with the loss of something emotionally meaningful, produces the experience of poignancy.

### References

- Bower, J. E., Kemeny, M. E., Taylor, S. E., & Fahey, J. L. (1998). Cognitive processing, discovery of meaning, CD4 decline, and AIDS-related mortality among bereaved HIV-seropositive men. *Journal of Personality and Social Psychology, 66*, 979–986.
- Cacioppo, J. T., & Berntson, G. G. (1994). Relationship between attitudes and evaluative space: A critical review, with emphasis on the separability of positive and negative substrates. *Psychological Bulletin, 115*, 401–423.
- Cacioppo, J. T., Gardner, W. L., & Berntson, G. G. (1999). The affect system has parallel and integrative processing components: Form follows function. *Journal of Personality and Social Psychology, 76*, 839–855.
- Carstensen, L. L. (1995). Evidence for a life-span theory of socioemotional selectivity. *Current Directions in Psychological Science, 4*, 151–156.
- Carstensen, L. L. (2006, June 30). The influence of a sense of time on human development. *Science, 312*(5782), 1913–1915.
- Carstensen, L. L., Fung, H. L., & Charles, S. T. (2003). Socioemotional selectivity theory and emotion regulation in the second half of life. *Motivation and Emotion, 27*, 103–123.
- Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*, 165–181.
- Carstensen, L. L., Pasupathi, M., Mayr, U., & Nesselroade, J. (2000). Emotional experience in everyday life across the adult life span. *Journal of Personality and Social Psychology, 79*, 644–655.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Duncker, K. (1941). On pleasure, emotion, and striving. *Philosophy and Phenomenological Research, 1*, 391–430.
- Feldman Barrett, L., & Russell, J. A. (1998). Independence and bipolarity in the structure of current affect. *Journal of Personality and Social Psychology, 74*, 967–984.
- Frijda, N. H. (1988). The laws of emotion. *American Psychologist, 43*, 349–358.
- Gerrardshesse, A., Spies, K., & Hesse, F. W. (1994). Experimental inductions of emotional states and their effectiveness: A review. *British Journal of Psychology, 85*, 55–78.
- Gilbert, D. T., Pindel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology, 75*, 617–638.
- Gross, J. J., Carstensen, L. L., Pasupathi, M., Tsai, J., Skorpén, C. G., & Hsu, A. Y. C. (1997). Emotion and aging: Experience, expression, and control. *Psychology and Aging, 12*, 590–599.
- Kaplan, K. J. (1972). On the ambivalence-indifference problem in attitude theory and measurement: A suggested modification of the semantic differential technique. *Psychological Bulletin, 77*, 361–372.
- Labouvie-Vief, G., DeVoe, M., & Bulka, D. (1989). Speaking about feelings: Conceptions of emotion across the life span. *Psychology and Aging, 4*, 425–437.
- Larsen, J. T., Hemenover, S. H., Norris, C. J., & Cacioppo, J. T. (2003). Turning adversity to advantage: On the virtues of the coactivation of positive and negative emotions. In L. G. Aspinwall & U. M. Staudinger (Eds.), *A psychology of human strengths: Perspectives on an emerging field* (pp. 211–216). Washington, DC: American Psychological Association.
- Larsen, J. T., McGraw, A. P., & Cacioppo, J. T. (2001). Can people feel happy and sad at the same time? *Journal of Personality and Social Psychology, 81*, 684–696.
- Larsen, J. T., McGraw, A. P., Mellers, B. A., & Cacioppo, J. T. (2004). The agony of victory and thrill of defeat: Mixed emotional reactions to disappointing wins and relieving losses. *Psychological Science, 15*(5), 325–330.
- Lawton, M. P., Kleban, M. H., & Dean, J. (1993). Affect and age: Cross-sectional comparisons of structure and prevalence. *Psychology and Aging, 8*, 165–175.
- Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.
- Levenson, R. W. (2000). Expressive, physiological, and subjective changes in emotion across adulthood. In S. H. Qualls & N. Abeles (Eds.), *Psychology and the aging revolution: How we adapt to longer life* (pp. 123–140). Washington, DC: American Psychological Association.
- Levenson, R. W., Carstensen, L. L., Friesen, W. V., & Ekman, P. (1991). Emotion, physiology, and expression in old age. *Psychology and Aging, 6*, 28–35.
- Levenson, R. W., Carstensen, L. L., & Gottman, J. M. (1994). Influence of age and gender on affect, physiology, and their interrelations: A study of long-term marriages. *Journal of Personality and Social Psychology, 67*, 56–68.
- Magai, C. (1999). Affect, imagery, attachment: Working models of interpersonal affect and the socialization of emotion. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment theory and research* (pp. 787–802). New York: Guilford Press.
- Malatesta-Magai, C. Z., Jonas, R., Shepard, B., & Culvert, C. (1992). Type A personality and emotional expressivity in younger and older adults. *Psychology and Aging, 7*, 551–561.
- Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology, 75*, 1333–1349.
- Ong, A. D., & Bergeman, C. S. (2004). The complexity of emotions in later life. *Journal of Gerontology: Psychological Sciences, 59B*, 117–122.
- Priester, J. R., & Petty, R. E. (1996). The gradual threshold model of ambivalence: Relating the positive and negative bases of attitudes to subjective ambivalence. *Journal of Personality and Social Psychology, 71*, 431–449.
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin, 125*, 3–30.
- Schimmack, U. (2001). Pleasure, displeasure, and mixed feelings? Are semantic opposites mutually exclusive? *Cognition & Emotion, 15*, 81–97.
- Schneider, W., Eschman, A., & Zuccolotto, A. (2002). E-Prime user's guide [Computer software and manual]. Pittsburgh, PA: Psychology Software Tools.
- Spiegel, D. (1998). Getting there is half the fun: Relating happiness to health. *Psychological Inquiry, 9*, 66–68.
- Spiegel, D., Bloom, J. R., Kraemer, H. C., & Gotthel, E. (1989). Effects of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet, 2*, 888–891.
- Spreen, O., & Benton, A. L. (1977). *Neurosensory Center Comprehensive*

- Examination for Aphasia*. Victoria, BC: Neuropsychology Laboratory, University of Victoria.
- Tsai, J. L., Levenson, R. W., & Carstensen, L. L. (2000). Autonomic, subjective, and expressive responses to emotional films in older and younger Chinese Americans and European Americans. *Psychology and Aging, 15*, 684–693.
- Updike, J. (1960, October 22). Hub fans bid kid adieu. *The New Yorker*, 109–131.
- Wahler, H. J. (1973). *Wahler Physical Symptoms Inventory*. Los Angeles: Western Psychological Services.
- Wechsler, D. (1997). *WAIS-III Administration and scoring manual*. San Antonio, TX: Psychological Corporation.
- Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology, 91*, 975–993.
- Williams, P., & Aaker, J. L. (2002). Can mixed emotions peacefully coexist? *Journal of Consumer Research, 28*, 636–649.
- Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. *Advances in Experimental Social Psychology, 35*, 345–411.
- Wilson, T. D., & Gilbert, D. T. (2005). Affective forecasting: Knowing what to want. *Current Directions in Psychological Science, 14*(3), 131–134.

Received January 12, 2006  
Revision received July 13, 2007  
Accepted July 18, 2007 ■

### E-Mail Notification of Your Latest Issue Online!

Would you like to know when the next issue of your favorite APA journal will be available online? This service is now available to you. Sign up at <http://notify.apa.org/> and you will be notified by e-mail when issues of interest to you become available!