

Age Differences in Poignancy: Cognitive Reappraisal as a Moderator

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Poignancy is defined as a mixed emotional experience that arises when one faces meaningful endings. According to socioemotional selectivity theory (Carstensen, 2006), when people are aware of the finitude of time, they tend to experience more poignancy. In Study 1, we found that Chinese younger, but not older, participants experienced more poignancy under time limitations. In Study 2, we found that an emotion regulation strategy—namely, cognitive reappraisal—moderated the relationship between limited time and poignancy, such that the increases in poignancy under time limitations were found only among older Chinese participants with lower levels of cognitive reappraisal but not among those with higher levels of cognitive reappraisal. These findings contribute to the existing literature on poignancy by showing that not every older adult exhibits poignancy in the face of an ending: The poignancy phenomenon may occur among only older adults who are less likely to use an emotion regulation strategy, such as cognitive reappraisal, to reinterpret the anticipated ending.

Keywords: poignancy, mixed emotions, age difference, emotion regulation, cognitive reappraisal

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To what extent can individuals feel happy and sad at the same time? Early theoretical research emphasized the bipolar nature of emotions: In a given experience, people either feel positive, or they feel negative. For example, according to the circumplex model (Russell, 1980), we cannot feel two emotions that are of the opposite valence, such as sadness and elation, at the same time. In the 1990s, social psychologists debated on whether positive and negative emotions could coexist (Russell & Barrett, 1999; Watson, Wiese, Vaidya, & Tellegen, 1999; Williams & Aaker, 2002). In the aging literature, however, socioemotional selectivity theory (SST; Carstensen, 2006) maintains that with age, people increasingly feel a mixture of happiness and sadness. This is the case because as people age, they perceive future time as increasingly limited. This limited future time perspective both makes them feel sad and motivates them to savor the moment. Indeed, in recent empirical work, Ersner-Hershfield, Mikels, Sullivan, and Carstensen (2008) have revealed that *poignancy*, or a mix of happiness and sadness, occurs in the face of a meaningful ending. Yet, past research on poignancy and mixed emotions was conducted in Western societ-

ies, and thus, the generalizability of the phenomenon and its boundary conditions (i.e., the circumstances under which it may disappear) are still unknown. In the present study, we aim (a) to examine poignancy among younger and older adults in China—a culture different from America—and (b) to explore whether the existence of other forms of emotion regulatory strategies as well as cultural definitions of emotions may make the poignancy phenomenon less likely to occur.

SST and Poignancy

The phenomenon of poignancy was empirically examined in studies that tested SST (Carstensen, 1995, 2006; Carstensen, Isaacowitz, & Charles, 1999). SST is a life span theory of motivation, which argues that the relative importance of specific types of goals changes as a function of future time perspective. This theory distinguishes between two different types of goals. When people perceive time as expansive, such as when they are young, they tend to value novelty and to invest time and energy in acquiring information and expanding their horizons, which are long-term, future-oriented goals. However, when the same individuals are facing limited future time, such as when they are growing older and facing death, they are more likely to focus on emotionally meaningful goals to obtain short-term or immediate gratification. One behavioral manifestation of such a prioritization of emotionally meaningful goals is to have more complex and poignant emotional experiences. Indeed, studies that examined descriptive age differences in emotion experiences confirmed this theoretical postulate. For example, findings from an experience sampling study (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000) revealed a more positive correlation between negative and positive

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emotion ratings across 35 sampling occasions among older adults than among younger adults. The first study that directly examined the linkage between endings and poignant emotions was conducted by Ersner-Hershfield et al. (2008). They found in both laboratory and natural settings, among both younger and older American participants, that people experienced a higher level of poignancy when they experienced a limited future time perspective compared with those who did not. Findings from this experimental study further confirmed that it was future time perspective, not age per se, that drove age-related poignancy. It should be clarified that the poignancy phenomenon found by Ersner-Hershfield et al. entailed increases in sadness and decreases in happiness. However, this emotion profile was different from a typical stress profile in the sense that although happiness did decrease, and sadness did increase, people were still feeling happy—they scored at or above the midpoint of the scale that measured happiness. In other words, poignancy is a phenomenon that entails a mixture of happiness and sadness such that individuals experience both valences in a strong way.

Cross-Cultural Generalizability of Poignancy

To the best of our knowledge, all prior studies on poignancy were conducted in the United States. Using the studies reported in this article, we aimed to test the cross-cultural generalizability of the phenomenon by attempting to replicate the findings of Ersner-Hershfield et al. (2008) in a Chinese sample to examine whether and to what extent the experience of poignancy is generalizable across cultures. Lutz (1988) asserted that “emotions can be viewed as cultural and interpersonal products of naming, justifying, and persuading by people in relationship to each other. Emotional meaning is then a social rather than an individual achievement—an emergent product of social life” (p. 5). Testing the existence of poignancy in two diverse cultures, such as the American and Chinese cultures, can begin to clarify whether the observed phenomenon is indeed about human development (i.e., anyone facing an ending is more likely to experience poignancy) or is merely a culture-specific way of expressing emotions among Americans. Previous studies on SST have demonstrated consistent patterns across cultures in terms of prioritization of emotionally meaningful social partners in the face of endings (Fredrickson & Carstensen, 1990; Fung, Carstensen, & Lutz, 1999; Fung, Lai, & Ng, 2001). Hence, we hypothesized that younger and older Chinese participants would show poignancy when facing an anticipated ending, in the same way as their American counterparts did in Ersner-Hershfield et al.’s study. To test this hypothesis, in the two studies reported in this article, we attempted to replicate the findings of Ersner-Hershfield et al. in a Chinese sample of younger and older adults.

Moreover, in Study 2, we explored the boundary conditions for the experience of poignancy to see whether under certain circumstances poignancy would be less likely to happen even after limited future time perspective manipulation. Two possible boundary conditions were examined. First, it may be that people who are better at using antecedent-focused emotion regulation strategies, such as cognitive reappraisal (John & Gross, 2004), are less likely to be emotionally affected by perceived endings and thus are less likely to show poignancy. In addition, the Eastern Asian culture is known to exhibit more socially engaging emotions—emotions that can only exist in a social context—such as respect and guilt (Kitayama, Karasawa, & Mesquita, 2004; Kitayama, Markus, &

Kurokawa, 2000; Kitayama, Markus, & Matsumoto, 1995) than socially disengaged emotions—emotions that can exist independent of the social context—such as happiness and sadness. Chinese individuals may thus show poignancy only in terms of socially engaged emotions but not socially disengaged emotions. In Study 2, we explored these boundary conditions by testing the moderating roles of cognitive reappraisal and type of emotions (socially engaged or socially disengaged) in the relationship between perceived endings and poignancy.

Study 1: A Chinese Replication

In Study 1, we aimed to examine whether Chinese younger and older adults exhibited increased poignancy in the face of endings. Following Ersner-Hershfield et al.’s (2008) experimental design, we manipulated the experience of endings through guided imagery techniques. Specifically, we randomly assigned younger and older adults into four conditions in which they imagined going to a place that was either emotionally meaningful or nonmeaningful to them. They imagined going to the place three times. Then at the third time, we told half of them that they were to imagine going to the place for the final time (ending condition) or just another time (control condition). We tested the increase in poignancy across the three times in each meaning (meaningful vs. nonmeaningful) by ending (ending vs. control) condition. We predicted that like their American counterparts in Ersner-Hershfield et al.’s study, the younger and older adults in our Chinese sample would show poignancy in the meaningful ending condition but not in the other three conditions.

Method

Participants. Sixty Chinese younger participants (20 men, 40 women; mean age = 20.18 years, range = 17–24 years) and 60 Chinese older participants (11 men, 49 women; mean age = 72.85 years, range = 59–90 years) residing in Hong Kong, China, took part in the study. Younger participants were recruited from a local university, and older participants were recruited from the community in the same district as the local university, both by convenience sampling. Participants did not know one another, and they did not know the purpose of the study. Younger participants received course credit or were paid 20 Hong Kong dollars for their participation, and older participants were paid 100 Hong Kong dollars for their participation.

Materials. Participants completed a number of measures to assess demographic variables (e.g., age, gender, and marital status), physical health, and cognitive abilities. Together, these measures provided descriptive information and served as potential covariates in the analyses. Specifically, the following measures were included.

Wahler Physical Symptoms Inventory (Wahler, 1973). This inventory consists of 42 physical symptoms and problems. Participants were asked to indicate the frequency that they were bothered by each symptom on a 6-point scale ranging from 0 (*almost never*) to 5 (*nearly every day*). A composite score on physical health was obtained by taking the mean of the ratings, with higher scores indicating poorer perceived health. Internal consistency of the scale, as indexed by Cronbach’s alpha, was .87.

Wechsler Digit Span Test (Wechsler, 1997). In this test, participants were asked to repeat a string of numbers forward and

backward, which was an indicator of their short-term memory. The test has been normed for older adults and correlates well with general intelligence.

Category Naming Task (Spreen & Benton, 1977). Verbal fluency was assessed by asking participants to name as many members of the category “animal” as they could in 60 s. The number of different animals they named became an index of their verbal fluency.

Procedure. Our procedure was identical to that of Ersner-Hershfield et al. (2008), with two exceptions. Ersner-Hershfield et al. (2008) did not include any manipulation check in their studies; we, in contrast, included manipulation checks to ensure that our results could not be explained by the methodological failure of the experimental manipulation. Moreover, whereas Ersner-Hershfield et al. did not include the condition about going to a nonmeaningful place for just another time, we included it to provide a design that fully crossed ending (going to the place for the final time or not) and the emotional meaningfulness of the place (i.e., whether the ending was personally significant and thus might demand emotion regulation). Participants were randomly assigned into one of the four conditions. Each condition included 30 participants (15 younger adults and 15 older adults).

Specifically, participants first read and signed a consent form, and then they completed a demographic questionnaire in which they recorded their age, gender, marital status, and education level. For those participants who could not read or write, student helpers read aloud these materials to them and recorded their answers. Participants from each age were randomly divided into four different conditions: a meaningful ending condition, a meaningful control condition, a nonmeaningful ending condition, and a nonmeaningful control condition.

To eliminate variation in the experimental induction, we recorded and played instructions for each condition for participants over computer speakers. Participants in the meaningful ending condition and the meaningful control condition were instructed to generate a personally meaningful location: “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.” Participants in the nonmeaningful ending condition and the nonmeaningful control condition were instructed to “think of a place that is familiar to you but without any significant meaning.” After the participant had selected the location, the experimenter recorded the location.

Participants were then taken through three guided imagery induction trials (for more detailed information about each trial, please refer to the Appendix in the supplemental materials). To induce an ending in the meaningful and nonmeaningful ending conditions, we used an experimental manipulation in the third guided imagery induction trial. Participants were asked to imagine the experience of being at the location they had picked as though this would be the final time that they would be able to visit their meaningful location. By contrast, participants in the meaningful control condition only imagined being at their meaningful location one more time. Upon completing each guided imagery induction, all participants completed an emotion questionnaire 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*).

Four manipulation check questions were administered to the participants right after they completed the last guided imagery trial. The first question asked the participants to rate the extent that their personally chosen location was important/meaningful to them. The other three questions asked the participants to rate the extent that they perceived limited time in visiting their personally chosen location. Finally, all participants completed the Wechsler Digit Span Test, the Category Naming Task index of verbal fluency, and the Wahler Physical Symptoms Inventory.

Results and Discussion

Manipulation check. The manipulation check indicated that the manipulation was effective. As expected, regardless of age, participants who imagined a location of personal significance indeed rated the place as being more emotionally meaningful to them ($M = 6.30$, $SD = 0.98$) than did those who imagined a familiar location of no personal significance ($M = 3.55$, $SD = 1.82$), $t(118) = 10.32$, $p < .01$, $\eta^2 = .47$. Moreover, regardless of age, participants who imagined going to the location just another time perceived future time perspective as being less limited ($M = 2.24$, $SD = 2.00$) than did those who imagined going to the location for the final time ($M = 3.65$, $SD = 2.22$), $t(118) = 3.20$, $p < .01$, $\eta^2 = .04$.

The Wahler Physical Symptoms Inventory showed that younger and older participants were not significantly different in their self-reported physical health, $t(118) = 1.34$, *ns*. On the cognitive tasks, younger participants named significantly more animals in the “animal” verbal fluency task than did older participants, $t(118) = 2.45$, $p = .02$, $\eta^2 = .05$. Younger participants also performed significantly better in the forward digit span task, $t(118) = 6.44$, $p < .01$, $\eta^2 = .26$, and the backward digit span task, $t(118) = 9.56$, $p < .01$, $\eta^2 = .44$, than did older participants. Table 1 depicts the descriptive statistics for these measures. Statistically controlling for these cognitive variables in the analyses did not affect the results described below.

Changes in poignancy. We adopted Ersner-Hershfield et al.’s (2008) formula to compute an index of poignancy:

$$\text{Poignancy} = \text{Minimum (Happiness, Sadness)}.$$

This index of poignancy was the minimum value between scores of happiness and sadness. For example, if an individual scored a 2 on happiness and a 5 on sadness, the poignancy score would be 2 for that individual. Thus the range of poignancy was from 1 to 7, with 1 referring to the absence of poignancy and 7 to the highest level of poignancy.¹

A repeated-measures analysis of variance (ANOVA) with two between-subjects factors (Age Group: younger vs. older; Condi-

¹ This index was also used in other studies (e.g., Larsen, McGraw, Mellers, & Cacioppo, 2004; Schimmack, 2001) and has yielded good reliability and validity. To further cross-validate it, in Study 2, we administered another measure, asking participants to rate the extent to which they felt bitter-sweet. The two measures generally yielded the same pattern of results (i.e., the direct measure of bitter-sweetness also revealed a significant increase in poignancy in the third trial in younger but not in older Chinese participants).

Table 1
Demographic Information of Younger and Older Participants in Study 1 and Study 2

Variable	Study 1		Study 2	
	Younger (<i>n</i> = 60)	Older (<i>n</i> = 60)	Younger (<i>n</i> = 58)	Older (<i>n</i> = 58)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Age	20.18 (1.50)	72.85 (6.79)	19.69 (1.33)	68.57 (4.75)
Wechsler Digit Span Test				
Forward ^b	9.78 (1.47)	7.83 (1.82)	9.93 (1.24)	7.61 (1.49)
Backward ^b	7.25 (1.87)	3.70 (2.18)	7.00 (1.68)	3.69 (1.49)
Category Naming Task index of verbal fluency				
Animal ^a	15.00 (2.66)	13.12 (5.34)	15.78 (3.36)	16.16 (3.89)
Wahler Physical Symptoms Inventory	1.01 (0.48)	0.86 (0.68)	0.99 (0.50)	0.84 (0.54)

^a Denotes a significant age difference at $p < .05$ in Study 1. ^b Denotes a significant age difference at $p < .05$ in both Study 1 and Study 2.

tion: meaningful control, meaningful ending, and nonmeaningful ending vs. nonmeaningful control) and one within-subjects factor (Trial: first, second vs. third imagery induction trial) was conducted to test whether changes in poignancy across trials occurred in each condition for each age group. None of the main effects were significant: main effect of Trial, $F(2, 224) = 0.36, ns$; main effect of Condition, $F(3, 112) = 0.33, ns$; and main effect of Age Group, $F(1, 112) = 1.82, ns$. The Trial \times Condition interaction was significant, $F(6, 224) = 2.97, p < .01, \eta^2 = .07$. The Condition \times Age Group interaction was barely significant, $F(3, 112) = 2.68, p = .05, \eta^2 = .07$, and the Trial \times Age Group interaction was not significant, $F(2, 224) = 0.65, ns$. However, these two-way interactions were qualified by a significant Trial \times Condition \times Age Group three-way interaction, $F(6, 224) = 2.22, p = .04, \eta^2 = .06$, indicating that different age groups responded to the limited time manipulation differently.

To elucidate the significant three-way interaction, we conducted a post hoc repeated-measures ANOVA for each age group with Condition as the between-subjects factor and Trial as the within-subjects factor. The results show that the interaction of Trial \times Condition was significant for younger participants, $F(6, 112) = 5.10, p < .01, \eta^2 = .22$, but not for older participants, $F(6, 112) = 0.91, ns$. Furthermore, a simple repeated-measure ANOVA with Trial as the within-subjects factor among the younger adults was conducted to investigate which condition gave rise to poignancy. The only significant main effect was found in the meaningful ending condition, $F(2, 28) = 12.17, p < .01, \eta^2 = .47$. In this condition, the level of poignancy in the third trial was significantly higher than those of the previous trials for younger participants, as indexed by the test of within-subjects contrasts, $F(1, 14) = 13.40, p < .01, \eta^2 = .49$. Older participants did not show such an effect, $F(2, 28) = 0.40, ns$ (see Figure 1). Table 2 shows the descriptive statistics for poignancy in each condition for each age group. Surprisingly, only younger Chinese participants, not older Chinese participants, showed increased poignancy in the face of meaningful endings.

To further understand which pattern of changes in happiness and/or sadness drove this increase in poignancy, we conducted a repeated-measures ANOVA in the meaningful ending condition with one between-subjects factor (Age Group: younger vs. older) and two within-subjects factors (Trial: first, second vs. third imagery induction trial; Valence: happiness vs. sadness). The follow-

ing effects were all significant: main effect of Trial, $F(2, 56) = 7.62, p < .01, \eta^2 = .21$; main effect of Valence, $F(1, 56) = 89.11, p < .01, \eta^2 = .76$; and main effect of Age Group, $F(1, 28) = 10.18, p < .01, \eta^2 = .27$. The Trial \times Valence interaction, $F(2, 56) = 17.68, p < .01, \eta^2 = .39$, and the Valence \times Age Group interaction, $F(1, 56) = 15.29, p < .01, \eta^2 = .35$, were also significant. Only the Trial \times Age Group interaction was not significant, $F(2, 56) = 0.17, ns$. Yet, these two-way interactions were qualified by a significant Trial \times Valence \times Age Group three-way interaction, $F(2, 56) = 17.56, p < .01, \eta^2 = .39$, suggesting that older and younger participants experienced happy and sad emotions differently across times. Conducting repeated-measure ANOVAs for each age group revealed that the Time \times Valence interaction was only significant for younger adults, $F(2, 28) = 26.43, p < .01, \eta^2 = .65$, but not for older adults, $F(2, 28) = 0.01, ns$. These findings revealed that when facing an ending, Chinese younger adults showed significant increases in sadness and decreases in happiness, whereas Chinese older adults showed no changes in either emotion (which is also found in Study 2; see Table 3 for the descriptive statistics). However, despite increases in sadness and decreases in happiness, younger adults in this study, like those in Ersner-Hershfield et al.'s (2008) study, did not score

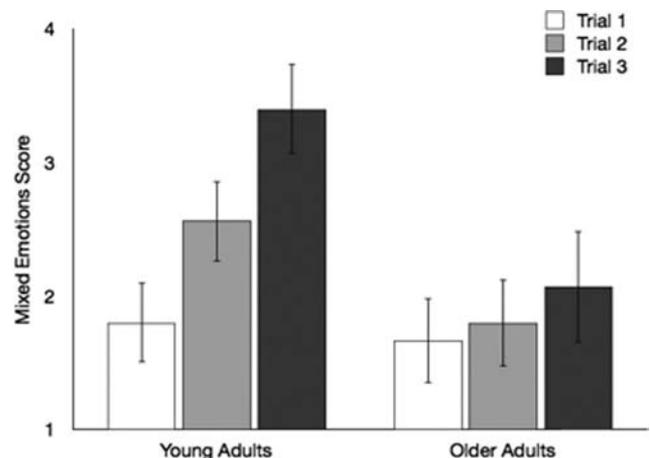


Figure 1. Poignancy scores of participants in the meaningful ending condition in Study 1. Error bars represent standard error of the mean.

Table 2
Poignancy Means and Standard Deviations by Trial and Condition for Younger and Older Participants in Study 1 and Study 2

Condition/emotion type	Younger			Older		
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3
	<i>M (SD)</i>					
Study 1						
Meaningful control	2.20 (1.42)	1.67 (0.82)	1.80 (1.08)	2.20 (1.37)	2.93 (2.09)	2.13 (1.36)
Meaningful ending ^a	1.80 (1.15)	2.87 (1.46)	3.40 (1.30)	1.67 (1.23)	1.80 (1.26)	2.07 (1.62)
Nonmeaningful control	2.07 (1.10)	2.00 (1.00)	1.93 (1.10)	2.07 (1.53)	1.87 (1.68)	1.93 (1.87)
Nonmeaningful ending	2.73 (1.28)	2.33 (1.11)	2.20 (0.94)	1.60 (1.12)	1.60 (1.12)	1.73 (1.16)
Study 2						
Socially disengaged emotions (happiness and sadness) ^a	2.24 (1.54)	2.16 (1.42)	3.38 (1.50)	1.44 (0.98)	1.38 (0.84)	1.70 (1.02)
Socially engaged emotions ^a	1.83 (1.03)	1.76 (0.99)	2.06 (0.99)	1.99 (0.86)	1.89 (0.87)	1.91 (0.83)

Note. For both younger and older groups, $n = 15$ in each condition in Study 1, and $n = 58$ in Study 2.
^a Denotes a significant Age Group \times Trial interaction at $p < .05$.

significantly lower than the midpoint (4.00) of the 7-point happiness scale. This further suggests that the poignancy phenomenon is better characterized as an increased mixture of happiness and sadness rather than a purely negative emotion profile.

Recall that Ersner-Hershfield et al. (2008) found among Americans that younger and older adults exhibited comparable increases in poignancy in the face of meaningful endings. We replicated the findings for younger adults among the Chinese participants. Yet, the findings from our older participants suggest that even when time perspective is experimentally limited and the manipulation check confirms this fact, there exists a subgroup in the population—Chinese older adults—who does not show increases in poignancy. It is important to note that such a null effect was not attributable to older Chinese participants having already exhibited a high level of poignancy at the onset of the study. As shown in Table 2, older and younger participants exhibited similar levels of poignancy in the first trial in almost all conditions.

At the very least, our findings suggest that there are individual differences in whether older adults how poignancy as they per-

ceive future time as limited. We propose two possible sources for these individual differences. First, it might be that older Chinese adults, unlike their American counterparts, are not emotionally affected by perceived time limitations because they are better at using antecedent-focused emotion regulation strategies, such as cognitive reappraisal. In fact, as a typical Eastern Asian culture, the Chinese culture has a strong Confucian heritage that stresses the importance of “the fundamental moral idea of moderation, balance and subtleness” (deBary, Chan, & Watson, 1960, p. 117). This heritage leads Chinese individuals to hold stronger beliefs than Westerners that it is important to control both internal and external emotional states (e.g., Chiu & Kosinski, 1994). The cross-cultural literature on emotion further reveals that whereas Western European values (such as independence and self-assertion) encourage open emotion expression in most situations, East Asian values (such as interdependence and relationship harmony) encourage emotion regulation in most interactions (Tsai & Levenson, 1997; Wierzbicka, 1994). Asian Americans also reported higher levels of habitual emotion regulation than did Caucasians (Tsai & Levenson, 1997). It is possible that older Chinese individuals, being

Table 3
Happiness and Sadness Means and Standard Deviations by Trial for Younger and Older Participants in the Meaningful Ending Condition in Study 1 and Study 2

Emotion type	Younger			Older		
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3
	<i>M (SD)</i>					
Study 1						
Happiness	6.20 (0.86)	5.20 (1.21)	3.80 (1.37)	5.40 (1.30)	5.60 (1.40)	5.93 (1.22)
Sadness	1.80 (1.15)	3.13 (1.66)	5.60 (1.40)	1.67 (1.23)	1.80 (1.27)	2.20 (1.78)
Study 2						
Happiness	5.69 (1.03)	5.21 (1.39)	3.71 (1.59)	5.67 (1.53)	5.60 (1.34)	5.35 (1.41)
Sadness	2.33 (1.66)	2.37 (1.66)	5.14 (1.36)	1.54 (1.17)	1.47 (1.07)	1.81 (1.14)

Note. For both younger and older groups, $n = 15$ in Study 1, and $n = 58$ in Study 2.

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more likely to regulate their emotions than their American counterparts, are less affected by anticipated endings and, thus, do not exhibit poignant feelings. Younger Chinese individuals, being less experienced at antecedent-focused emotion regulation (John & Gross, 2004) and being socialized to a lesser extent by the Chinese culture, do not enjoy this benefit.

Second, it is possible that happiness and sadness are too general in representing all positive and negative emotions, respectively. Kitayama et al. (2004) argued that happiness and sadness are both socially disengaged emotions (i.e., they are emotions that can occur in noninterpersonal settings). For example, one may feel happy without necessarily thinking about or referring to another person. However, there are other types of emotions that are more socially engaged, defined as “emotions raised from success or failure in meeting interdependent goals” (Kitayama et al., 2004, p. 255). These emotions, such as respect and guilt, can occur only in interpersonal settings. For instance, one seldom feels the emotion respect without respecting someone. Socially engaged and disengaged emotions were found to be empirically distinct, and people from East Asian cultures, such as the Japanese, were found to exhibit more socially engaged emotions than socially disengaged emotions (Kitayama et al., 2004, 2000, 1995). We reason, therefore, that poignancy might be detected among older Chinese individuals if poignancy is measured in terms of socially engaged emotions (rather than just happiness and sadness).

We acknowledge that the ideal way to test the above two sources of individual differences is to measure emotion regulatory strategies and types of emotions in both an American and a Chinese sample and to test whether they mediate cultural differences in age-related poignancy. However, a less ideal but still acceptable way of exploring factors that may drive an observed cultural difference is to examine moderators in a specific culture. The rationale is that if cultures with a higher level of Factor A are indeed more likely to exhibit Phenomenon B, then individuals with a higher level of Factor A in a specific culture should also be more likely to exhibit Phenomenon B. This method is known as *unpacking* in social cross-cultural psychology: “Moderation effects illustrate the manner in which we can unpack some of the numerous variables that contribute to national differences in social psychological outcomes” (Smith, Bond, & Kagitcibasi, 2006, p. 101). Given its convenience, this method is more widely used in the literature than testing mediators across cultures (Smith et al., 2006). Adopting this method, we conducted Study 2 to test the moderating roles of emotion regulatory strategies and types of emotions in the relationship between future time limitations and poignancy among the Chinese participants.

Study 2: Moderators of Poignancy

In Study 1, we found that meaningful endings gave rise to the experience of poignancy in younger Chinese adults but not in older Chinese adults. In Study 2, we sought to test whether poignancy among older Chinese participants could be moderated by cognitive reappraisal and/or by socially engaged versus socially disengaged emotions.

Cognitive Reappraisal

A sense of emotional control may distinguish how different groups of people (e.g., younger vs. older people, Chinese vs.

American people) experience emotions. According to Gross's (1998) model of emotion regulation, there are two kinds of emotion regulation strategies: antecedent-focused emotion regulation strategy and response-focused emotion regulation strategy. Antecedent-focused emotion regulation can help individuals to avoid the experience and behavioral expression of negative emotions proactively. One important form of antecedent-focused emotion regulation is cognitive reappraisal (Gross & John, 2003), in which an individual reconceptualizes or reframes a given situation to alter the emotional impact. For example, to reduce potential anger, an individual may interpret an insult made by another person as a careless mistake. Cognitive reappraisal is associated with more positive emotions and fewer negative emotions (Gross & John, 2003; John & Gross, 2004), and it can moderate responses toward mood-eliciting films (Papousek, Freudenthaler, & Schuler, 2008) and activation of the cardiovascular system (Roberts, Levenson, & Gross, 2008). People with higher levels of cognitive reappraisal are also better able to handle negative feedback (Raftery & Bizer, 2009).

Although mixed findings exist (see Emery & Hess, 2008; Haga, Kraft, & Corby, 2009), older people seem to be more likely to use emotion regulation strategies in general and cognitive reappraisal in particular than are younger people. Gross et al. (1997) found in several samples that older people were more likely to report that they exercise emotion control than were younger people. Moreover, Phillips, Henry, Hosie, and Milne (2006) found that older adults expressed anger outwardly less often and reported more inner control of anger compared with their younger counterparts. Numerous other studies have demonstrated that older adults perceive stressors to be less severe and to appraise them with less blame and hostility than do younger adults (see Charles & Carstensen, 2007, for a review). Compared with younger adults, older adults were more likely to report that they used cognitive reappraisal (John & Gross, 2004). Meanwhile, as reviewed above, the cross-cultural literature revealed that East Asian individuals were more likely to use emotion control in general, and cognitive reappraisal in particular, than were Americans (Tsai & Levenson, 1997; Wierzbicka, 1994). For example, Mesquita et al. (2006) found in an anger-provoking situation that Japanese adults tended to show less anger toward the offender than did their American counterparts, which was due to their greater usage of reappraisal. Because, at least in terms of self-report, Chinese adults are more likely to use cognitive reappraisal than are Americans, and because older people are more likely to use cognitive reappraisal than are younger people, older Chinese adults should be particularly likely to use cognitive reappraisal.

To the extent that poignancy indeed arises from a feeling of anticipated loss (Duncker, 1941), those with higher levels of cognitive reappraisal may be able to reinterpret this loss in a positive light before the emotional experience kicks in, making the mix of emotions less likely to occur. We hypothesize that when facing an ending, individuals with a higher level of cognitive reappraisal might interpret the anticipated loss as less negative, thus making them less likely to experience increased sadness or decreased happiness.

Hence, in Study 2, we tested whether cognitive reappraisal moderated age-related poignancy. We predicted that older Chinese adults who had higher levels of cognitive reappraisal would expe-

rience poignancy to a lesser extent in the face of an ending than those with lower levels of cognitive reappraisal.

Socially Engaged Versus Socially Disengaged Emotions

In addition, we also tested whether the particular measure of poignancy might affect our results. As noted above, poignancy is usually measured in terms of happiness and sadness, which are both socially disengaged emotions (Kitayama et al., 2004, 2000, 1995). That is, they are the emotions that one can experience without necessarily engaging in a social interaction. There is evidence in the cross-cultural literature that East Asians may place less emphasis on socially disengaged emotions and more emphasis on socially engaged emotions, such as respect and guilt, than Americans (Kitayama et al., 2000, 1995). Therefore, in Study 2, we tested whether older Chinese participants would exhibit poignancy in the face of an ending, like what their American counterparts did in Ersner-Hershfield et al.'s (2008) study, when poignancy was measured in terms of socially engaged emotions.

In summary, we predicted that older Chinese adults with lower levels of cognitive appraisal would show higher levels of poignancy in the face of perceived endings than those with higher levels of cognitive reappraisal. We also predicted that when poignancy was measured in terms of socially engaged emotions, older Chinese adults would show increased poignancy in the face of perceived endings; however, this would not be the case when poignancy was measured in terms of socially disengaged emotions.

Method

Participants. Fifty-eight younger Chinese participants (26 men, 32 women; mean age = 19.69 years, range = 17–24 years) and 58 older Chinese participants (22 men, 36 women; mean age = 68.56 years, range = 61–78 years) residing in Hong Kong, China, participated in the study. They were recruited in exactly the same way as in Study 1. Participants did not know one another or participants in Study 1. They also did not know the purpose of the study. Younger participants received course credit for their participation, and older participants were paid 100 Hong Kong dollars for taking part in the study.

Procedure. The procedure was identical to Study 1 with two exceptions. First, in Study 2, all participants were assigned to the meaningful ending condition. In other words, they were all instructed to think of a personally meaningful location that they went to with people whom they cared about. Then, in the third trial, they all imagined going to this place for the final time. After each guided imagery trial, participants were asked to complete the emotion questionnaire as in Study 1. Other than the emotions examined in Study 1, some socially engaged emotions proposed by Kitayama et al. (2000, 1995) were added to the emotion questionnaire, including “friendly feeling,” “close feeling,” “sympathy,” “indebted,” “afraid of causing trouble on another,” and “superior.” To have a direct measure of poignancy, we also added a Chinese expression that refers to a state of “bitter-sweetness” to the emotion questionnaire (see Footnote 1). Participants rated these emotions on a 7-point scale ranging from 1 (*not at all*) to 7 (*extremely*). In addition, after completing all three guided imagery trials, par-

ticipants filled out the Cognitive Reappraisal subscale of Emotion Regulation Scale (Gross & John, 2003) described below.

Cognitive Reappraisal subscale of the Emotion Regulation Scale. This subscale measures cognitive reappraisal (six items), which involves changing the way that the individual thinks about a potentially emotion-eliciting situation to modify its emotional impact. A sample item asks participants to rate the extent that they control their emotions by changing the way they think about the situation they are in.² Participants rated each item on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency of the subscale, as indexed by Cronbach's alpha, was .74.

We acknowledge that the measure of cognitive reappraisal was a dispositional measure. To assess whether participants indeed engaged in cognitive reappraisal during the ending manipulation, we asked participants to write down their thoughts and feelings after the final guided imagery trial. Two independent raters classified these descriptions of thoughts and feelings into three categories: Positive, Negative, and Neutral. For instance, a positive description could be about feeling very calm despite having to leave one's chosen meaningful location, a negative description could be about hesitating and feeling reluctant to leave that location, and a neutral description could be about finding it hard to describe one's feelings toward the ending situation. The interrater agreement of the classification was quite high as indicated by kappa coefficients: Positive, $\kappa = .89$; Negative, $\kappa = .82$; and Neutral, $\kappa = .72$. The Cognitive Reappraisal subscale score positively correlated with the percentage of positive descriptions, $r(103) = .22, p = .01$, and negatively correlated with the percentage of negative descriptions, $r(103) = -.16, p = .05$. Although the correlations were not high, the fact that they were significant indicates that those who had a higher score in cognitive reappraisal indeed considered the ending conditions less negative and more positive.

Results and Discussion

Demographic covariates. Younger participants had significantly higher education levels than did older participants, $t(114) = 8.31, p < .01, \eta^2 = .37$. The Wahler Physical Symptoms Inventory showed that younger and older participants were not significantly different in their self-reported physical health, $t(114) = 1.50, ns$. On the cognitive tasks, no age differences were found on the animal naming task, $t(114) = 0.56, ns$. However, younger participants performed significantly better in the forward digit span task, $t(114) = 9.13, p < .01, \eta^2 = .45$, and the backward digit span task, $t(114) = 11.23, p < .01, \eta^2 = .51$, than did older participants (see Table 1 for descriptive statistics of these measures). Statistically controlling for educational level and for forward and backward digit span scores in the analyses did not affect the results described below.

² Although the focus of our study was on the Cognitive Reappraisal subscale, the Suppression subscale was also administered to participants because it could also be the case that older adults just did not express their emotions publicly. However, the suppression strategy did not correlate with their poignancy score when facing ending, $r(114) = .15, ns$, and it did not moderate the relationship between poignancy and ending; in other words, the interaction of Trial \times Age Group \times Suppression was not significant, $F(2, 218) = 0.38, ns$.

Changes in poignancy. First, a repeated-measures ANOVA with Age Group (younger vs. older) as a between-subjects factor and Trial (first, second vs. third imagery induction trial) as a within-subjects factor was conducted to test changes in poignancy across trials. We replicated results from Study 1 and found a significant Trial \times Age Group interaction, $F(2, 226) = 7.28, p < .01, \eta^2 = .06$. As in Study 1, younger participants showed an increase in poignancy in the third trial when they imagined coming to a meaningful location for the final time, $F(2, 114) = 18.31, p < .01, \eta^2 = .24$. Older participants, however, did not show an increase in poignancy across guided imagery induction trials, $F(2, 114) = 2.93, ns$ (see Table 2 for the descriptive statistics).

Cognitive reappraisal as a moderator. A mixed model analysis with Age Group (younger vs. older) and Cognitive Reappraisal (continuous variable) as between-subjects predictors and Trial (first, second vs. third imagery induction trial) as a within-subjects predictor was conducted to test the moderating role of emotion regulation on poignancy across the three trials. To elaborate, we tested the main effects of Trial, Age Group, and Cognitive Reappraisal; the two-way interactions between Trial and Age Group, Trial and Cognitive Reappraisal, and Age Group and Cognitive Reappraisal; as well as the three-way interaction of Trial \times Age Group \times Cognitive Reappraisal. The main effects were not significant: Trial, $F(2, 218) = 0.19, ns$; Age Group, $F(1, 109) = 2.72, ns$; and Cognitive Reappraisal, $F(1, 109) = 0.06, ns$. The following interactions were also not significant: Trial \times Age Group, $F(2, 218) = 1.90, ns$; Trial \times Cognitive Reappraisal, $F(2, 218) = 0.86, ns$; and Age Group \times Cognitive Reappraisal, $F(1, 109) = 0.42, ns$. More relevant to our hypothesis, the Trial \times Age Group \times Cognitive Reappraisal three-way interaction was significant, $F(2, 218) = 3.42, p = .04, \eta^2 = .03$.

Following up on the significant Trial \times Age Group \times Cognitive Reappraisal interaction, post hoc analyses for each age group revealed a significant Trial \times Cognitive Reappraisal interaction only for the older participants, $F(2, 106) = 3.74, p = .03, \eta^2 = .06$, but not for the younger participants, $F(2, 106) = 0.94, ns$, suggesting that older adults' likelihood to experience poignancy was influenced by their cognitive reappraisal, whereas younger adults did not show such a tendency. A median split was conducted on cognitive reappraisal (cutoff = 5.00), and post hoc analyses with Trial as the within-subjects factor revealed that older participants who used cognitive reappraisal more showed no change in their feelings of poignancy, $F(2, 50) = 0.20, ns$, whereas those who used cognitive reappraisal less showed a significant increase in poignancy when they imagined coming to a meaningful location for the last time, $F(2, 60) = 5.59, p = .01, \eta^2 = .18$ (see Figure 2). These findings taken together suggest that cognitive reappraisal moderated whether older adults exhibited increased poignancy in the face of endings. Older adults who regulate their emotions proactively might not be as affected by endings as those who do not regulate their emotions proactively. They thus show less poignancy when facing meaningful endings.

As stated above, we suspected that the moderating role of cognitive reappraisal occurred because older adults with a higher level of cognitive reappraisal interpreted the loss associated with the ending as less negative, and at least equally positive, as those with a lower level of cognitive reappraisal. Such interpretation allowed them to feel less sad but at least equally happy about the ending, making the co-occurrence of sadness and happiness (i.e.,

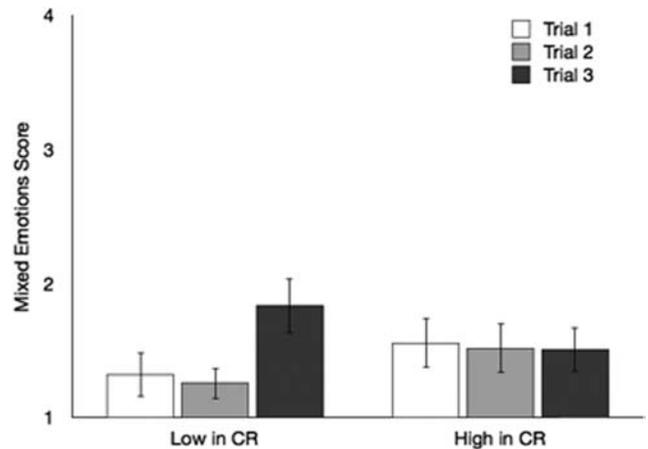


Figure 2. Poignancy scores as a function of cognitive reappraisal (CR) in older Chinese participants in Study 2. Error bars represent standard error of the mean. CR was included in the analysis as a continuous variable. It was divided into high versus low CR by a median split (cutoff = 5.00) in this figure for illustrative purposes only.

poignancy) less likely to occur. We conducted additional analyses to illustrate this point. For sadness, older participants who used cognitive reappraisal more showed no change in their feelings of sadness across trials, $F(2, 50) = 0.20, ns$, whereas those who used cognitive reappraisal less showed a significant increase in sadness when they imagined coming to a meaningful location for the last time, $F(2, 60) = 3.35, p = .04, \eta^2 = .10$. For happiness, however, there was no change in happiness across trials for those who used cognitive reappraisal more, $F(2, 50) = 1.73, ns$, or for those who used cognitive reappraisal less, $F(2, 60) = 0.70, ns$ (see Table 4 for the descriptive statistics).

These findings suggest that cognitive reappraisal did moderate the relationship between poignancy and perceived time limitations (i.e., endings). It did so primarily by making older adults less sad but equally happy about the perceived ending, rendering the co-occurrence of sadness and happiness (i.e., poignancy) less likely to occur. As for why cognitive reappraisal did not moderate the relationship between poignancy and perceived time limitations for younger adults, this might be the case because younger participants as a group had already been experiencing poignancy, leaving no variability for the moderation of cognitive reappraisal to take effect. In addition, older adults may be more use to, and better at, using cognitive reappraisal than younger adults (Gross et al., 1997; John & Gross, 2004). Those among them who use cognitive reappraisal more are thus better able to use it to reappraise the ending situation, thereby reducing sadness as well as poignancy. Evidence for this can be found in the thoughts and feelings that participants reported after they completed the guided imagery trials. Independent sample t tests between older and younger participants showed that older participants reported a higher percentage of positive descriptions, $t(101) = 8.68, p < .01, \eta^2 = .43$, and a lower percentage of negative descriptions, $t(101) = -17.12, p < .01, \eta^2 = .74$, than did younger participants. Moreover, cognitive reappraisal positively correlated with the percentage of positive descriptions only among older participants but not younger participants. Such a positive interpretation of the ending

Table 4
Happiness and Sadness Means and Standard Deviations by Trial for Older Participants of Low and High Cognitive Reappraisal in Study 2

Emotion type	Cognitive reappraisal type	Trial 1	Trial 2	Trial 3
		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Sadness	High cognitive reappraisal	1.69 (1.12)	1.62 (1.10)	1.77 (1.11)
	Low cognitive reappraisal ^a	1.42 (1.20)	1.35 (1.05)	1.84 (1.19)
Happiness	High cognitive reappraisal	5.88 (1.48)	5.94 (1.29)	5.46 (1.56)
	Low cognitive reappraisal	5.48 (1.57)	5.32 (1.42)	5.46 (1.29)

Note. For the low cognitive reappraisal group, $n = 26$; for the high cognitive reappraisal group, $n = 32$.

^a Indicates a significant trial main effect at $p < .05$.

situation among older participants who used cognitive reappraisal more might have reduced sadness and poignancy for them.

Socially engaged emotions. We also tested whether Chinese older adults might show poignancy if we measured poignancy in terms of socially engaged emotions (Kitayama et al., 2000, 1995). A new poignancy score was calculated by taking the minimum value between ratings of socially engaged positive emotions (such as “friendly feeling,” “close feeling,” and “sympathy”) and ratings of socially engaged negative emotions (such as “guilt,” “shame,” and “afraid of causing trouble on another”). However, the results reveal the same pattern as when happiness and sadness were used (see Table 2 for descriptive statistics). Younger participants showed an increase in poignancy in the third trial, $F(2, 114) = 3.84, p = .03, \eta^2 = .06$, but older participants did not, $F(2, 114) = 0.91, ns$.

The results suggest that even when socially engaged emotions were used to measure poignancy, older Chinese participants did not experience any increase in poignancy. One possible explanation might be that older Chinese participants as a group might have already regulated their emotions by using cognitive reappraisal. There was thus no need for them to express negative emotions, either socially engaged or not. Another possible explanation might lie in the experimental manipulation. Because participants were asked to think about going to a meaningful place for the last time, it is possible that participants might think about the ending condition in terms of their own losses without considering others (thus rendering socially engaging emotions irrelevant). Further studies might consider using other more socially engaged scenarios to test this hypothesis.

General Discussion

In the studies reported above, we examined whether perceived limited time led to the experience of age-related poignancy in Chinese participants. Results from Study 1 indicate that such an effect occurred only for younger Chinese participants but not for older Chinese participants. Moreover, in Study 2, we found that older Chinese participants who had a lower tendency to regulate their emotions proactively with cognitive reappraisal showed increased poignancy in the face of meaningful endings, whereas those who had a higher tendency did not. Operationalizing poignancy in terms of different types of emotions (socially engaged or socially disengaged) did not moderate the relationship between poignancy and perceived time limitations for either younger or older Chinese participants.

Theoretical Implications for Aging and Emotion

In the present studies, age-related poignancy was examined under limited future time perspective manipulation. In the literature, studies that found that older Americans were more likely to experience poignancy than were younger Americans did so without manipulating future time perspective (e.g., Carstensen et al., 2000). The only American study that examined the phenomenon under experimentally induced time limitation is Ersner-Hershfield et al. (2008), and they found that both younger and older Americans increased poignancy in the face of time limitations. In other words, what the American literature suggests is that older Americans may descriptively be more likely to show poignancy than younger Americans because they naturalistically perceive time as more limited. Indeed, when Ersner-Hershfield et al. experimentally limited time perspective, both age groups increased poignancy (in other words, younger Americans now showed poignancy to the same extent as older Americans). Findings from Study 1 add to this literature by showing that even when time perspective was experimentally limited and the manipulation check confirmed this fact, there existed a subgroup in the population—Chinese older adults—who did not increase poignancy. In Study 2, we then attempted to understand whether we could identify circumstances under which even this subgroup would show poignancy. We eventually found that older Chinese participants would show poignancy under time limitations when they were dispositionally less likely to use cognitive reappraisal. These findings together (a) suggest that there are individual differences in whether older adults show poignancy even when they are facing time limitations and (b) identify cognitive reappraisal as one source of these individual differences.

Facing an ending or a negative event in one’s life can quite reasonably cause an influx of sadness and other negative emotions. Thus, feeling poignant—that is, experiencing some happiness along with the sadness—may be a healthy and adaptive response to endings in life. The present research shows, however, that some individuals may engage in emotion regulation strategies that occur even before a given event. For these older adults who use cognitive reappraisal antecedently, there may be a diminished need to “take the good with the bad” when facing an ending. Future studies should explore the exact role of emotion regulation in handling endings.

Further, previous studies have consistently demonstrated that compared with Westerners, Chinese individuals have a higher base rate of emotional control (e.g., Ching & Fung, 2004). In addition,

studies from the adult development literature have revealed that older adults use emotional regulatory strategies, particularly antecedent-focused emotional regulatory strategies, more often and perhaps more effectively than do younger adults³ (Gross et al., 1997; Lawton, Kleban, Rajagopal, & Dean, 1992). These age differences might occur because of older adults' richer life history (Schulz, 1982) and the accumulated experience with situations that potentially evoke negative emotions (Kunzmann, Kupperbusch, & Levenson, 2005). They might also occur because of age-related changes in motivation (e.g., a greater focus on positive emotions) and cognition (e.g., Carstensen & Mikels, 2005; Labouvie-Vief, DeVoe, & Bulka, 1989). Chinese older adults seem to have benefited from both of these mechanisms such that they are able to regulate their emotions proactively to minimize the effects of endings on their emotional experience. Possibly because of this reason, aging individuals in China manage to maintain a high level of emotional well being, sometimes higher than that of their American counterparts (Fung, Ching, & Yeung, 2007). More studies are needed to test whether the moderation role of cognitive reappraisal could be generalized to other culture groups.

Limitations and Future Directions

Previous studies (Carstensen et al., 2000; Charles, 2005; Levenson, Carstensen, Friesen, & Ekman, 1991) have revealed that older adults experience poignant states more often than do younger adults; however, in this sample, we did not find this trend among Chinese participants in either of the two studies. One possible explanation may lie in the nature of the guided imagery technique. Many clinical studies have asserted that guided imagery is able to create mental images that bring about a state of focused concentration, which in turn allows relaxation and produces a sense of physical and emotional well-being (Tusek, Church, Strong, Grass, & Fazio, 1997). In the present study, the guided imagery trial might have helped the participants to relax, making it unlikely for them to experience intense positive or negative emotions. Although this still does not explain why it was older Chinese individuals only, not younger Chinese individuals, or older or younger Americans in Ersner-Hershfield et al.'s (2008) study, who were affected by the relaxing feature of the guided imagery technique. Future studies should examine this phenomenon in more natural settings—such as graduation day, move-out day (Larsen, McGraw, & Cacioppo, 2001), or the day before the end of a joyful trip—across cultures.

We also acknowledge that both of the studies are cross-sectional, and the observed age differences could be attributed to cohort effects; therefore, the findings should be interpreted with caution. Moreover, the health of our older samples did not differ much from that of the younger samples, as indicated by the Wahler Physical Symptoms Inventory. This might suggest that our older samples are not representative of the general older population. Even though this sampling bias is very common in the aging literature (e.g., Fung & Carstensen, 2003; Löckenhoff & Carstensen, 2007), our findings should be interpreted with this limitation in mind.

In sum, findings from the present studies show that older Hong Kong Chinese adults, especially those who have a high tendency to regulate their own emotions proactively using cognitive reappraisal, do not show increased poignancy when faced with a

meaningful ending. These findings suggest that antecedent-focused emotion regulation may play an important role in helping older adults deal with anticipated endings or losses.

³ In the present study, cognitive reappraisal positively correlated with the percentage of positive descriptions in only older participants, $r(46) = .27$, $p = .04$, but not in younger participants, $r(57) = .08$, ns .

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