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Original Research Report

Age Differences in Emotional Well-Being Vary by Temporal Recall

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Abstract

Objective: Older adults often appraise and remember events less negatively than younger adults. These tendencies may influence reports that rely more on nonexperiential, reconstructive processes. As such, the current study examined whether age differences may be more pronounced for reports of emotions that span across increasingly longer temporal epochs compared to reports of more proximal emotional experiences.

Method: Participants (aged 25–74 during Burst 1) from the Midlife in the United States Survey and the National Study of Daily Experiences reported the negative affect they experienced across a month, a week, and throughout the day at two measurement bursts 10 years apart.

Results: Across all negative affect measures, older age was related to lower levels of negative affect. The effect of age, however, varied across the three temporal epochs, such that age differences were smallest when people reported their daily negative affect and greatest when they reported their monthly negative affect.

Discussion: Taking into account how emotion reports differ based on method provides a more realistic picture of emotional experience in adulthood. Findings suggest that age differences in emotional experiences vary based on whether questions ask about short versus longer time periods. Age advantages are most pronounced when people recall emotions across increasingly longer periods of time.

Keywords: Affect—Age differences—Aging—Appraisals—Emotion

The relatively high level of well-being observed among older adults has often puzzled researchers. At a time in life when many objective indicators of functioning such as cognitive speed, memory performance, physical health, and social prestige decline, many older adults nonetheless report higher levels of happiness and lower levels of distress than people in their 20s (e.g., Stone, Schwartz, Broderick, & Deaton, 2010). To understand this "paradox of aging," researchers often turn to explanations regarding how people appraise their lives. Emotional reports, such as assessments of life satisfaction or contentment, include an evaluative component (Rojas & Veenhoven, 2013). Because older adults often appraise and remember emotional stimuli less negatively than younger adults and increasingly value emotion-related goals (see review by Charles & Carstensen, 2013), these factors may partially explain the age differences that researchers have found in emotional well-being.

The model of strength and vulnerability integration (SAVI) posits that age differences in emotional experiences vary according to when an emotional experience is captured, with age differences least pronounced when people are immediately exposed to stimuli and in response to events that elicit high physiological arousal, and most pronounced when they are asked to remember previous emotional experiences over long time intervals (Charles, 2010). Memory for emotional experience is a reconstructive process that is often based on current goals and appraisals (e.g., Levine, Lench, & Safer, 2009). Researchers have discussed the different factors that contribute to reports of more immediate emotional experiences versus retrospective reports of emotional experience (Robinson & Clore, 2002); whereas reports of more immediate experience are based on experiential and contextual information, reports asking people to recall how they were feeling in the past relies more on personal beliefs and emotion-related goals. Thus, both the immediate demands of an ongoing event and the reconstructive process used when thinking about prior emotions are posited to influence when age differences are most and least pronounced.

According to socioemotional selectivity theory, older adults are motivated to focus on and remember more positive aspects of their environment (Carstensen, 2006). As a result, they typically fail to display a "negativity bias" often observed among younger adults, instead remembering more positive and less negative stimuli than their younger counterparts (e.g., Charles, Mather, & Carstensen, 2003; see reviews by Reed & Carstensen, 2012; Reed, Chan, & Mikels, 2014). In contrast, emotions experienced closer to the time they occur may be less susceptible to reconstructive processes and instead rely on experiential and contextual cues (Robinson & Clore, 2002). To test whether age differences are more pronounced for reports assessing longer temporal epochs, the current study examines age differences in reports of well-being that required recollection across different temporal periods—that is, the same day, the prior week, and the prior month.

Reappraisals, Memory, and Age

Older adults often interpret negative situations more positively and appraise their daily stressors as being less severe than younger and middle-aged adults, despite there being no objective differences in experimenter-rated severity (Almeida & Horn, 2004). After watching videotapes that captured them discussing a conflict with their spouse, for example, older adults rated the contentious behaviors of their spouse less negatively than objective observers (Story et al., 2007). Older adults also interpret neutral stimuli more positively than younger adults (van Reekum et al., 2011), and are less likely to ruminate about previous events compared to younger adults (Nolen-Hoeksema & Aldao, 2011).

Memory, like appraisal, is also less negative with age. For example, after viewing positive, negative, and neutral images, older adults recalled fewer negative relative to positive images than did younger adults (Charles et al., 2003). Results from this study and others suggest that this pattern follows a linear progression with age, such that older adults show greater memory for positive versus negative stimuli than middle-aged adults, and middle-aged adults show this positivity bias more so than younger adults. In addition to laboratory stimuli, autobiographical incidents are remembered more positively among older adults than younger adults (e.g., Comblain, D'Argembeau, & Van der Linden, 2005; Kennedy, Mather, & Carstensen, 2004).

Socioemotional selectivity theory posits that emotional goals increase in importance with age, motivating older adults to focus more on positive and less on negative aspects of emotional experiences (Carstensen, 2006; Charles & Carstensen, 2013). Based on the premise that emotional goals are chronically activated to a greater degree with age, socioemotional selectivity theory has been used to explain why older adults react more strongly to positive than negative stimuli on a neurological level (e.g., Mather et al., 2004), attend to more positive and less negative information (Mather & Carstensen, 2005), appraise information less negatively (Charles & Carstensen, 2008), and remember information more positively than younger adults (Reed & Carstensen, 2012). Consistent with this view, older adults reliably report lower levels of negative affect than do younger adults when asked about the emotions they experience in general (e.g., Gross et al., 1997) or across the previous month (e.g., Mroczek & Kolarz, 1998).

Emotions in the Moment

Older adults often report and remember experiences less negatively and more positively than younger adults (e.g., Stone et al., 2010). These findings, however, contrast with many laboratory studies examining age differences in immediate emotional reactions to negative stimuli. For example, film clips of loss elicit greater levels of sadness among older adults compared with younger adults (Kunzmann & Gruhn, 2005; Seider, Shiota, Whalen, & Levenson, 2011; Tsai, Levenson, & Carstensen, 2000), and film clips depicting scenes of justice elicit stronger emotional responses among older adults (Charles, 2005). In addition, older and younger adults report similarly intense emotions when asked to relive previous negative experiences (Levenson, Carstensen, Friesen, & Ekman, 1991) and when asked to watch a short video clip eliciting disgust (Scheibe & Blanchard-Fields, 2009). These age differences in reactions are consistent with reports of current emotional experience in more naturalistic settings: For example, although older adults report less frequent negative experiences, they report similar levels of intensity when these emotions are experienced in their daily lives (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Carstensen et al., 2011).

The Current Study

Discrepant findings in the aging and emotion literature may be due—at least in part—to the temporal nature of the emotion assessed (Charles, 2010). The current study examines age-graded trends in daily and longer-term retrospective reports of affective well-being. Using a large sample of adults, who ranged from 25 to 74 years-old at the first wave of data collection (i.e., Burst 1), we were able to examine age differences in emotional experience across a large segment of adulthood. By simultaneously examining two bursts of data collection (Burst 1 and then another burst 10 years apart) in one multi-level model, it is possible to examine this effect over time, as well as more clearly elucidate patterns of cross-sectional age differences and age-related changes. Examining both the cross-sectional and longitudinal differences simultaneously in the model offers a more parsimonious and innovative design than the use of separate models to test each effect. We predict that age-graded benefits in affective well-being are larger for self-reports that rely on more distant retrospection (across a month) compared to retrospection across a shorter time span (across a week), and even more so than for self-reports of relatively proximal emotional states (end-of-day). We test this hypothesis regarding age differences using the cross-sectional analyses because they capture a wide age range to detect these effects. Because we based our hypothesis on developmental theory, we test the hypothesis longitudinally as well. Although we only can examine this hypothesis across 10 years, any trends in the correct direction would strengthen the argument that these differences reflect a developmental change and not cohort or period effects.

Method

Participants

Between 1994 and 1995, over 7,000 adults (25–74 years-old) completed the Midlife Development in the United States (MIDUS) Survey, consisting of a telephone interview and mailed survey assessing multiple dimensions of psychosocial, physical, and financial well-being (Brim, Ryff, & Kessler, 2004). After returning the surveys, 1,787 respondents were contacted to participate in the National Study of Daily Experiences (NSDE), and 1,483 (562 women, 469 men; response rate = 83%) agreed to participate. The NSDE included short telephone interviews across eight consecutive evenings and a longer final interview on the last day asking about their prior week. Data collection spanned an entire year. NSDE participants were more likely to be female (54%), averaged 47.3 years of age (*SD* = 13.2), with the majority having at least a high school degree or the equivalent (66%). They were predominantly Caucasian (90%), with a small subsample of African Americans (6%); and the rest from other racial groups or declined to state their ethnicity. MIDUS 1 and NSDE 1 were repeated approximately 10 years later (MIDUS 2 and NSDE 2). Of the original 1,483 respondents, 793 again participated in both MIDUS and NSDE (retention rate = 53.4%). Reasons for nonparticipation included refusal (53%), loss of contact (30%), deceased (13%), and no longer eligible (4%). New respondents (n = 1229) increased the sample size to 2,022 (including 180 African Americans to compensate for low minority representation). NSDE 2 respondents averaged 56 years-old (35–84 years-old) and 57% (n = 1,154) were women. This second time point included 14,912 of the 16,176 possible daily telephone interviews (92%). For the current study, all people who participated in at least one burst of the study were included. All participants in NSDE I (n = 1,483) and the additional new participants at NSDE 2 (n = 1,229), were included in analyses examining differences between their reports of daily, weekly, and monthly negative affect. To investigate longitudinal change across burst measurements, we included negative affect measures from the second burst of data collection for those people who participated at both times (n = 793).

Measures

Emotional experience

Data from both MIDUS 1 and 2 and NSDE 1 and 2 were included in the analyses. Daily diary NSDE data were collected, on average, 6 months after the MIDUS survey was returned. Given the interest in examining the same questions across different temporal epochs, only measures that included identical items at all three time points at both data collection bursts were included in these analyses. Below we describe the negative affect measure (each comprised of one averaged score across six different negative emotions or emotion states) for the three varying temporal epochs (for the day, the prior week, and the prior month).

Daily affect

Negative affect was assessed in NSDE I using the Non-Specific Psychological Distress Scale, which has been validated in diverse populations (Kessler et al., 2002). This scale includes the average of six emotions or emotion descriptors, including worthless, hopeless, nervous, restless, or fidgety, that everything was an effort, and so sad that nothing could cheer you up. Participants rated the extent to which they experienced each emotion that day using a 5-point scale ranging from 1 (none of the time) to 5 (all of the time). Additional positive and negative emotions were added during NSDE 2, but for consistency, only the six emotions assessed during NSDE 1 were examined in the current study.

Weekly affect

At the end of the week after participants had reported their daily experiences (including daily negative affect), they were asked to reflect upon the past week and to endorse how much of the time that week they experienced each of

the six emotions described previously, with these emotions averaged to form one score (α =.79–.80).

Monthly affect

Monthly average negative affect was calculated by asking respondents in the MIDUS questionnaires how much of the time during the past 30 days they experienced the same six emotions or emotional descriptors mentioned above (α =.85–.87).

Analytic Strategy

Multivariate multilevel models were employed to appropriately represent the nested structure of the current data (i.e., bursts nested within persons) using SAS, version 9.3 (SAS, Cary, NC). We were specifically interested in comparing the magnitude of age effects on each of the three NA variables, which required an extension of the traditional multilevel model to a multivariate framework (Mehta & Neale, 2005; Snijders & Bosker, 1999). The nesting structure for this model appears in Figure 1. Person represents the highest level in this model. Bursts are then nested within each individual and the NA variables are nested within each burst. More conventional approaches would require fitting three separate MLMs for each negative affect variable (i.e., daily, weekly, and monthly) for each measurement burst. The multivariate approach allowed us to explicitly model the inter-correlations of the NA variables both within a burst as well as across bursts and persons. Additionally, by examining all three variables for both bursts simultaneously, we provided the strictest test of our hypotheses while limiting Type I error. This model enabled us to simultaneously examine age differences in each of the NA measures, as well as compute a statistical test comparing age differences across the temporal windows. Using this method also allowed the explicit estimation of the between-person and within-person covariation among the three different measures of NA. The NA variables were modeled as a function of age at baseline, the amount of change from Burst 1 to Burst 2 (operationalized by a dichotomous variable to capture change in overall levels of affect within an individual across bursts) as well as changes in each of the three negative affect variables as a function of burst by means of the following interactions: daily × burst, weekly × burst, and monthly × burst), and the age at baseline by burst interaction. Random effects were included at the person and burst levels which allowed a unique intercept for every person at each burst. Individuals identifying as Caucasian and those with at least a high school degree tended to be older (*p*s< .0018) and women tended to have significantly higher ratings of monthly NA ($t(2469) = 5.25$, $p < .001$). The main effects of these variables and their interactions with time were included as well as covariates (gender, education, and ethnicity) in the model.

Results

Results are presented in Table 1. There was significant variation in the intercepts across bursts as well as individuals. We estimated the within- and between-person correlations among the three measures of NA, which appear at the bottom of Table 1. At the within-person level, daily reports of NA and weekly reports of NA were strongly and significantly correlated. Monthly reports were significantly correlated with daily and weekly reporting windows though not as strongly. At the between-person level, all three measures of NA (daily, weekly, and monthly negative affect) were strongly and significantly correlated.

Cross-Sectional Findings: Age and Negative Affect Across the Temporal Epochs

Older age was related to less NA for each of the three measurement reports, but the size of this effect varied across types of measurement. Using focused contrasts, we computed age differences in each NA variable using 1 *SD* below the mean to represent younger adults (~34 years old) and 1 *SD* above the mean to represent older adults (~60 years old). We then compared the magnitude of the age difference in each of the NA reporting intervals. The hypothesized age differences, whereby older adults had lower NA scores than relatively younger adults, were significantly greater in monthly reports than both daily (Estimate = .0042, *SE* = .001, $p < .0001$) and weekly reports (Estimate = .0024, *SE* = .001, $p = .0039$). Age differences in weekly reports were significantly greater than age differences in daily reports (Estimate = .0018, *SE* = .0004, $p < .0001$).

Longitudinal Findings: Age and Negative Affect Across the Temporal Epochs

We had hypothesized that age differences showing lower NA scores with age would be reflected in decreased NA over time, but there was no main effect of time over the

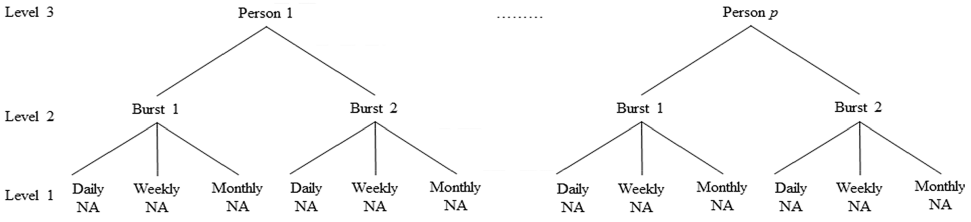

Figure 1. The model used to simultaneously estimate levels of negative affect.

Table 1. Estimates From the Model Predicting Daily, Weekly, and Monthly Negative Affect

	Daily	Weekly	Monthly
	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	.2115 (.014)**	.3022 (.021)**	.5909 (.028)**
Age	−.0024 (.001)**	−.0043 (.001)**	−.0061 (.001)**
Time	−.0030 (.002)	.0039 (.003)	−.0018 (.005)
Age × Time	.0002 (.0001)*	.0002 (.0001)	.0001 (.0002)
Education	.0359 (.008)**	.0188 (.012)	.0662 (.016)**
Education × Time	−.0029 (.001)*	−.0001 (.002)	.0002 (.002)
Gender	−.0056 (.008)	−.0127 (.011)	−.0625 (.015)**
Gender × Time	.0008 (.001)	−.0010 (.002)	.0041 (.002)
Ethnicity	−.0239 (.014)	−.0211 (.021)	−.0560 (.028)†
Ethnicity × Time	.0027 (.014)	.0031 (.003)	−.0007 (.005)
Variance components			
Person level	.0401 (.003)**	.0847 (.007)**	.1854 (.013)**
Burst level	.0431 (.002)**	.0904 (.005)**	.1558 (.008)**
Correlations			
Within person	Daily	Weekly	
Weekly	.75**		
Monthly	.23**	.20**	
Between person	Daily	Weekly	
Weekly	.94**		
Monthly	.79**	.81**	

Notes: Correlations presented rather than covariances to ease interpretation. Education reference category was high school diploma or greater, gender reference category women, ethnicity reference category was non-White.

*$p < .01$, **$p < .0001$, †$p < .05$.

10-year interval at the average age. However, this was qualified by a time by age at baseline interaction for the daily reports of NA. Findings indicated that the relatively younger adults in this sample—those in their mid-30s and younger—showed greater decreases in daily reports of NA over time than those who were older at baseline.

Covariates: Cross-Sectional and Longitudinal Findings

To ensure that age differences were not confounded by education level and to test that any observed age differences were not qualified by gender or ethnicity, we included these variables as covariates in the models. When examining education level, gender and ethnicity, there were significant effects of education on daily and monthly reports of NA; individuals with lower education reported higher levels of NA compared to those with higher education. Additionally, individuals with higher levels of education showed significant decreases in daily reports of NA over time. Compared with women, men reported significantly lower NA on monthly reports and Caucasians reported significantly lower monthly NA compared with non-Caucasians. Neither gender nor ethnicity interacted with time, and age differences were similar across people varying according to ethnicity, gender, and education level.

Discussion

The current study examined how emotional experiences vary by age among a large sample of adults. Similar to findings converging from a growing body of research, older age was related to significantly lower levels of negative affect in all analyses. The strength of these age differences, however, varied according to the temporal epoch captured by each measure. As hypothesized, age differences in emotional well-being were more pronounced for emotional assessments of increasingly longer temporal epochs, such that age-graded benefits were larger for monthly assessments than weekly assessments, which, in turn, were larger than daily assessments.

This pattern helps to reconcile some inconsistent findings from previous literature. Cross-sectional studies of global negative affect reports, such as how people feel "in general" or during the past 30 days, consistently show age-related decreases across middle-age and into adulthood (e.g., Kobau, Safran, Zack, Moriarty, & Chapman, 2004; Mroczek & Kolarz, 1998; Schieman, 1999). In laboratory settings, however, findings vary. When exposed to emotional stimuli or recalling upsetting experiences, older adults' reports of negative affect are sometimes lower (e.g., Charles & Carstensen, 2008), sometimes higher (e.g., Charles, 2005; Kunzmann & Gruhn, 2005), and other times similar to those of younger adults (e.g., Levenson et al., 1991). The contrast between the discrepant laboratory findings

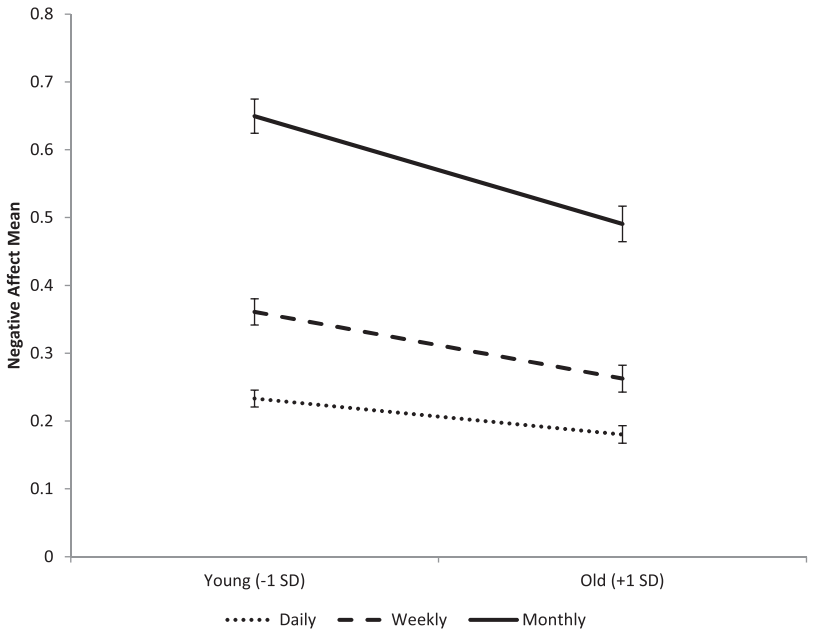

Figure 2. Age differences in emotional experience across the three different temporal epochs.

and the more consistent findings for global assessments suggests that age differences for more immediate, reactive experiences are less robust than responses that rely on more retrospective reports of emotional experience.

Explaining the Temporal Recall Pattern

SAVI posits that when remembering an event or considering how they feel "in general," people often reappraise the situation less negatively, a strategy older adults use more frequently and arguably more effectively than younger adults (Charles, 2010). Closer to the time of the negative experience, age differences in emotional experience should not be apparent and may even reverse in direction. Yet, we found age-related reductions in reports of negative affect across all temporal frames in the current study. At first glimpse, this result runs counter to SAVI's prediction. One reason may lie in how we assessed the most proximal measure. Daily—not momentary—affect was assessed. The emotion-eliciting event could have happened up to 24 hr prior to when daily NA was assessed, so it is likely that age-related differences in appraisals may have already occurred.

In a study examining momentary assessments, participants reported their current affective state and experience of stressors throughout the day (Scott, Sliwinski, & Blanchard-Fields, 2013). Immediately following stressor exposure, older adults reported less of an increase in NA than did younger adults. After adjusting for levels of global perceived stress, the age differences in immediate reports of NA disappeared, however, indicating that ongoing, stressful situations may have hindered older adults' ability to cope with an acute stressor. Thus, only when older adults perceived their life as less stressful were age differences observed. Moreover, the age advantage did not extend to stressor severity—all adults were just as affected by increases in stressor severity (Scott et al., 2013).

Another study showed that age was related to lower levels of NA when people reported experiencing a number of stressors across their week (stressor pile-up), but not in their reactivity to more immediate daily stressors (Schilling & Diehl, 2014). The authors concluded that emotion regulation skills may have helped older adults distance themselves from previous stressors, but were unable to be employed for more immediate stressors. Similarly, another study found that when older adults are preoccupied by a hassle—and therefore unable to effectively engage in emotion regulation strategies—they experience higher levels of deactivating (e.g., sadness, disappointment) negative emotions than younger adults (Wrzus, Luong, Wagner, & Riediger, 2014).

Importance of This Finding to Current Literature and Future Directions

These findings have potential implications for the field. First, the majority of cross-sectional studies examining age and emotion find that older age is related to lower levels of negative affect. The majority of studies also examine more global levels of well-being. Understanding that age differences vary based on how and when these questions are asked may help to provide a more realistic picture of age differences in emotional experience. Older adults may have less negative reappraisals over time, but their experiences for more proximal reports may be more similar to younger adults than what may be construed from prior knowledge.

These findings may also have implications for studying the interrelationships among aging, emotional experience, and health outcomes in the future. A small but

growing body of research suggests that these different measures of affective experience are related to different outcomes. For example, several studies find that momentary assessments of emotional experience predict physical health outcomes more strongly than global measures of emotional experience, and more retrospective reports are more strongly related to decision-making (see review by Conner & Barrett, 2012). Moreover, research indicates that these associations may vary according to age. One study, for example, found that although self-reported emotion (a measure of anger expression) was not associated with health outcomes for younger adults, it was associated with metabolic syndrome among the older adults in the sample (Boylan & Ryff, 2015). It is unclear at this time whether associations between other aspects of emotional experience with cognitive and health-related processes are invariant with age. Understanding whether age differences exist in different types of emotion reports is another step towards understanding how the health-emotion associations may vary, or not, across different age groups. Future studies examining how health-related outcomes relate to emotions that are assessed the moment they are experienced, versus how emotions are recalled using more global reports, will inform our knowledge of how these related but different constructs are associated with health-related outcomes, and how these associations vary with age.

Longitudinal Versus Cross-Sectional Findings

The longitudinal findings did not reflect the cross-sectional findings. Average levels of weekly and monthly negative affect were not significantly different across the 10-year period. For daily NA, however, the youngest adults in the sample—those in their 20s, 30s and early 40s—showed decreases across time, but the oldest half of the sample—those in their fifties and older, showed no significant change during the same time period. The current findings vary from a prior study that examined a slightly older age range (45–97) and found a decrease in overall levels of NA (asking participants about their experiences over the previous month) when assessed over a 10-year period for people under the age of 70, but an increase for people over the age of 70 (Griffin, Mroczek, & Spiro, 2006). These findings are consistent, however, with two other longitudinal studies asking about negative affect in slightly different ways. In one longitudinal study, age-related decreases across 20 years were larger for younger and middle-aged adults than older adults. For people who started the study in their early 60s, decreases in negative affect were very small—about an estimated half-point across twenty years, or about .25 of a point across 10 years (Charles, Reynolds, & Gatz, 2001). In another longitudinal study of daily emotional experience across 10 years, age-related increases in daily positive emotional experience (a combination of positive and negative emotion reports) was evident only among those under 64 years-old (Carstensen et al., 2011). People who began the study at age 64 or older remained stable in their emotional experience. In the current study, age differences in reported daily negative affect did decrease over time among the younger participants in the current sample but not the older participants.

Possible reasons for decreases in daily negative affect in younger and middle-adulthood, but not older adulthood, could be that people are gaining experience in emotion regulation strategies during this earlier period of life. When they reach older ages, however, they have a higher probability or experiencing challenges to their emotional well-being, such as a chronic physical health conditions that may limit functional abilities, financial stressors resulting from decreased income after retirement, or loss of people who provide them with a sense of belonging. Another possibility is that negative affect levels may reach a floor effect, given that most people report low levels of negative affect. A life without the experience of negative affect, whether this negative affect stems from compassion over the sorrows of others, the signal of a health condition that needs attention, or information necessary to correct an inequality or mistreatment, may not only be unfeasible, but also maladaptive for a healthy lifestyle. Finally, the terminal decline of life is related to decreases in well-being constructs (e.g., Infurna et al., 2014), so we would not expect negative affect to continue to decrease during this dying process.

The lack of longitudinal findings in the weekly and monthly reports may indicate that this phenomenon is a cohort effect, such that people develop schemas about emotions early in life that are primed when they are asked about emotions across longer periods of time. Using this explanation, people born earlier in the 20th century were presumably taught different appraisal processes that shape their emotional experiences compared to those taught to the people in successively later-born cohorts. When asking people to reconstruct emotional experience for longer temporal periods (asking about affect across a week or month), people use their beliefs about emotions and other semantic knowledge when recalling this experience than they do for more immediate or more temporal (daily) emotional experiences (e.g., Robinson & Clore, 2002). Social desirability may also play a role for cohort effects, such that older adults may feel greater pressure to respond in socially desirable ways that may be more primed when people are asked about emotions experienced over longer periods of time (e.g., Soubelet & Salthouse, 2011). Another possibility is that changes do occur, but these changes are small (e.g., Pinquart, 2001) and take more than a decade to become significantly different. Previous cross-sectional analyses, for example, examined differences observed across people representing a 50-year range, not one of 10 years (see review by Charles & Carstensen, 2013).

In addition, historical effects may be at work. At the time of the second data collection, the United States shared in the global economic crisis, the wars in Iraq and

Afghanistan were underway, and terrorism became a public concern. Given that the first burst of data collection occurred during a time of economic prosperity, well-funded and large retirement portfolios, and little concern about the nation's vulnerability to terrorism, the stability in reports of negative affect may partly be due to the major sociopolitical changes that have reshaped our nation.

Limitations and Conclusion

The current study included a predominantly Caucasian sample from the United States. If cohort and historical effects played a role in these findings, examining adults from other cultures and ethnicities may reveal very different profiles. In addition, longitudinal analyses based on two time points offer less reliability than studies including more time points, and prevents examinations of nonlinear effects. In addition, negative affect was defined with questions that focused on symptoms of depression and anxiety, and more expansive measures that included additional emotional experiences (e.g., anger, positive emotions), would offer a more expansive understanding of the emotional lives of adults, and how they vary depending on the temporal epoch examined. Moreover, the weekly and daily questions were collected during the same time period, but monthly recall was collected, on average, 6 months earlier. It is unclear how the overlap, or lack thereof, may influence the findings. Asking people about their emotional experiences every night may influence their weekly recall, and this additional memory aid may serve to minimize age differences in weekly affective reports. As a result, findings may be stronger if the daily and weekly reports were not assessed in the same week.

Finally, the most stringent test of SAVI would be to compare emotional experiences across age groups immediately following an emotion-eliciting event and during subsequent recollections of the event (e.g., same day, after 1 week, after 1 month). SAVI emphasizes the importance of physiological arousal, so a measure of emotional intensity near the time of an emotion-eliciting event would a more stringent test of our predictions. In the current study, participants were asked about the frequency of their emotions, not the intensity, during the previous 24 hr (often completed the interview at night asking about the events of the day), which, as stated previously, likely resulted in reconstructive processes occurring, thereby decreasing the likelihood that we would find support for SAVI. Yet, even with these limitations, age differences in daily recall of negative emotions were smaller than recall of weekly emotions which, in turn, were smaller than recall of monthly negative emotions. Still, further, more stringent tests of SAVI are warranted, with affect measured immediately following the event and emotions regarding the event assessed at increasingly longer time frames. Despite these limitations, however, the current study is one of the first to offer insight into how different types of affect assessments yield altered patterns of age differences. By holding the type of emotion consistent across the temporal epoch and by studying these questions within the same individual, problems that arise as a function of sampling biases or different emotions asked were eliminated.

The current study revealed that age is related to lower levels of negative affect, but that this effect is more pronounced for increasingly longer temporal epochs. Assessing emotions across different intervals, then, yield different portrayals of the degree to which older adults report less negative affect than younger adults. Given that different temporal assessments are hypothesized to share different associations with cognitive and health-related outcomes, these findings highlight the need to think carefully before selecting a measure of well-being, and to be cognizant of the fact that some types of emotional experience are more influenced by age-related factors than others. Researchers and clinicians alike may therefore need to be aware of these differences when asking people about their emotional experiences.

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