



Published in final edited form as:

*Psychol Aging*. 2016 September ; 31(6): 558–573. doi:10.1037/pag0000097.

## Hour Glass Half-Full or Half-Empty? Future Time Perspective and Preoccupation with Negative Events Across the Life Span

**JoNell Strough,**

Department of Psychology, West Virginia University

**Wändi Bruine de Bruin,**

Centre for Decision Research, Leeds University Business School, Department of Engineering and Public Policy, Carnegie Mellon University

**Andrew M. Parker,**

RAND Corporation

**Philip Lemaster,**

Department of Psychology, Concordia College

**Nipat Pichayayothin, and**

Faculty of Psychology, Chulalongkorn University

**Rebecca Delaney**

Department of Psychology, West Virginia University

### Abstract

According to socioemotional selectivity theory, older adults' emotional well-being stems from having limited future time perspective that motivates them to maximize well-being in the “here and now.” Presumably, then, older adults' time horizons are associated with emotional competencies that boost positive affect and dampen negative affect, but little research has addressed this. Using a US national adult life-span sample ( $N = 3,933$ , 18–93 yrs), we found that a two-factor model of future time perspective (focus on future opportunities; focus on limited time) fit the data better than a one-factor model. Through middle age, people perceived the life-span hourglass as half full—they focused more on future opportunities than limited time. Around age 60, the balance changed to increasingly perceiving the life-span hourglass as half empty—they focused less on future opportunities and more on limited time. This pattern held even after accounting for perceived health, self-reported decision-making ability, and retirement status. At all ages, women's time horizons focused more on future opportunities compared to men's, and men's focused more on limited time. Focusing on future opportunities was associated with reporting less preoccupation with negative events, whereas focusing on limited time was associated with reporting more preoccupation. Older adults reported less preoccupation with negative events and this association was stronger after controlling for their perceptions of limited time and fewer future opportunities, suggesting that other pathways may explain older adults' reports of their ability to

disengage from negative events. Insights gained and questions raised by measuring future time perspective as two dimensions are discussed.

## Keywords

future time perspective; preoccupation; gender differences; age differences; decision making; life-span development

Socioemotional selectivity theory posits that positive emotional well-being in later life is a consequence of having a limited future time perspective that motivates older adults to maximize well-being in the “here and now” (Carstensen, 2006; Carstensen, Charles, & Isaacowitz, 1999). Research from Germany, the US, Australia, and China has indeed shown that older age is associated with having a more limited future time perspective (e.g., Kellough & Knight, 2012; Kessler & Staudinger, 2009; Weiss & Lang, 2012; Stahl & Patrick, 2011; Windsor, Fiori, & Crisp, 2011; Yeung, Fung, & Kam, 2012). Presumably, older adults' limited time horizons are associated with cognitive and behavioral competencies that facilitate positive emotions (Carstensen, Fung, & Charles, 2003). However, as noted in recent reviews, few studies have attempted to empirically establish links between future time perspective and emotional processes (Isaacowitz & Blanchard-Fields, 2012; Scheibe & Carstensen, 2010).

Researchers from different disciplines have developed multi-dimensional measures to distinguish a number of phenomena related to time perspective, including (a) focusing on the future or past versus the present, (b) the ability to delay gratification and consider future consequences, and (c) willingness to sacrifice large rewards in the future for small rewards in the present (e.g., Lasane & Jones, 1999; McKay, Ballantyne, Goudie, Sumnall, & Cole, 2012; Shipp, Edwards, & Lambert, 2009; Steinberg, Graham, O'Brien, Woolard, Cauffman, & Banich, 2009; Strathman, Gleicher, Boninger, & Edwards, 1994; Worrell, Mello, & Buhl, 2013; Zimbardo & Boyd, 1999; see Löckenhoff, 2011 for a review). Within the adult development and aging literature, future time perspective typically has been measured as unidimensional—ranging from the feeling that time is limited to the feeling that the future brings unlimited opportunities; e.g., Lang & Carstensen, 2002). That is, if a person's view of the future is limited, it is necessarily assumed to be less focused on opportunities. However, Cate and John (2007) suggested that future time perspective is conceptualized better as two dimensions. Their factor analytic work supported a two-dimensional model over a unidimensional model, where the two factors were negatively correlated (ranging from  $-.29$  to  $-.34$ ). Cate and John's (2007) approach suggested a person can *simultaneously* perceive limitations on time and options, *and* future opportunities for growth and fulfillment. For example, in midlife, people may perceive opportunities for personal growth and strengthening relationships, even though they increasingly recognize limitations imposed by physical declines (Cate & John, 2007).

However, the study by Cate and John (2007) had important limitations. Most notably, middle-aged adults were the oldest age group, and participants were not representative of the general population. Specifically, all of the middle-aged adults were women who had graduated from Mills College at a time in history (1958-1960) when graduating from college

was not normative for women (National Center for Education Statistics, 1993). The young adults were students from the selective University of California-Berkeley (see US News & World Report, 2015). Because these elite samples may be unique in their simultaneous perceptions of limitations and opportunities in their future, findings about the two-dimensional structure of future time perspective may not generalize to a more representative sample with greater diversity in socioeconomic status.

In the current study, we used a national adult life-span sample to examine whether future time perspective was best measured as one or two dimensions. We also considered individual differences in future time perspective, focusing specifically on age and gender, and correlates of these variables (perceived changes in health and decision-making ability, retirement status). Finally, we tested whether future time perspective was systematically associated with age and gender differences in the ability to disengage from negative events by avoiding preoccupation. Indeed, this ability has been shown in prior research to help explain age differences in positive and negative affect (Kessler & Staudinger, 2009; Wrzus, Luong, Wagner, & Riediger, 2015). Avoiding preoccupation with negative events may be especially important in later life due to cognitive and physiological declines that make older adults more vulnerable to sustained stressors (Charles, 2010; Charles & Luong 2013; Labouvie-Vief, 2003).

## Individual Differences in Future Time Perspective Across the Life Span

### Age

The idea that focusing on a limited future may co-occur with focusing on a future full of opportunities is conceptually similar to the gain-loss dynamic posited within life-span developmental theory (Baltes, 1987; Baltes, Lindenberger, & Staudinger, 2006). Life-span theory posits that developmental gains and losses coexist at all ages, but that the relative balance differs by age. For example, research has shown that fluid cognitive abilities start showing age-related decline in early adulthood whereas practical knowledge from life experience continues to improve (Baltes et al., 2006; Li, Baldassi, Johnson, & Weber, 2013; Park, Lautenschlager, Hedden, Davidson, & Smith, 2002; Salthouse, 2011).

People seem to be aware of this age-related shift in the gain-loss dynamic (Ebner, Riediger, & Lindenberger, 2009; Heckhausen & Krueger, 1993). Adults expected gains and losses to be co-occurring with the balance shifting toward losses in older age (Heckhausen, Dixon, & Baltes, 1989; Heckhausen & Krueger, 1993). Younger adults' goals focused more on promoting gains than on preventing losses, whereas older adults' goals focused more on maintaining functioning and preventing losses (Ebner, Freund, & Baltes, 2006). Indeed, young adults may perceive their futures mostly in terms of opportunities due to delaying commitments to careers and relationships until their late 20s or early 30s (see Arnett, 2000). However, it is also possible that some young people perceive life as limited because they don't believe they will live long enough to reap the benefits of their choices (McDade, Chyu, Duncan, Hoyt, Doane, & Adam, 2011; see also Fischhoff, Bruine de Bruin, Parker, Millstein & Halpern-Felsher, 2010 for research with adolescents that supports this idea). Measuring future time perspective as two dimensions could help to clarify how young people balance focusing on limitations and opportunities when thinking about the future.

In midlife, Cate and John (2007) found that increases in perceiving a limited future were not mirrored by decreases in perceived opportunities. Their female participants maintained a focus on future opportunities from the 40s to the 60s, whereas they increasingly focused on a limited future from their 40s to their 50s (Cate & John, 2007). Lachman (2004) theorizes that during midlife (roughly 40-60 years of age), people become increasingly aware that life is limited but simultaneously believe that time remaining is still substantial. Hence, in midlife, focus on future opportunities and limitations may be relatively balanced (see Lachman, Teshale, & Agrigoroaei, 2015).

In later life, there are fewer opportunities to make major changes in one's life path (Neugarten, Moore, & Lowe, 1968). Thus, it is not surprising that older people perceive fewer opportunities than younger people to undo life regrets (Bauer, Wrosch, & Jobin, 2008; Wrosch, Bauer, & Scheier, 2005). Yet, opportunities for volunteering, part-time employment, and leisure increase after ceasing full-time employment (Moen & Flood, 2013). Limitations might not outweigh opportunities until later in life, when it becomes impossible to reverse earlier decisions (Wrosch & Heckhausen, 2002).

## Gender

Women may perceive their futures as more limited than men do because, on average, they perceive poorer health and more functional limitations than men (Crimmins, Kim, & Solé - Auró, 2011; Dahlin & Härkönen, 2013; Oksuzyan, Brønnum-Hansen, & Jeune, 2010). Alternatively, men may perceive their future as more limited because their average life expectancy is shorter than women's (e.g., Philips, 2006; Rochelle, Yeung, Bond, & Li, 2015). There is considerable heterogeneity of functioning among both men and women as they age, with many older adults remaining vigorous and active (see Baltes & Smith, 2003; Dannefer, 2003; Neugarten, 1975). As such, age and gender differences in future time perspective may reflect individual differences in health, cognitive functioning, and life events that mark movement through the life cycle.

## Retirement

Retirement, in particular, has been suggested to be a developmentally significant life event (e.g., Moen, 2012; Neugarten, 1976). In prior research, expansive time horizons were related to preferring to retire later (van Solinge & Henkens, 2010) and being motivated to achieve while still at work (Kooij & van de Voorde, 2011). Limited time horizons were associated with feeling less obligated to the workplace (Bal, Jansen, van der Velde, de Lange, & Rousseau, 2010) and less achievement motivation (Kooij & van de Voorde, 2011). Research has not addressed whether future time perspective is more limited among those who are retired compared to those who are not, but other life events that signal endings (e.g., college graduation) are related to perceiving a limited future (Ersner-Hershfield, Mikels, Sullivan, & Carstensen, 2008; Fredrickson 1995; Fung, Carstensen, & Lutz, 1999). However, others have argued that a focus on future opportunities may increase after retirement (Parker, Carvalho, & Rohwedder, 2013), perhaps due to having more time for volunteering and leisure (see Moen & Flood, 2013). Measuring future time perspective as two dimensions could help to address how retirement may relate to a seeing the future in terms of both opportunities and limitations.

### Perceived health

Older age is associated with worse health (e.g., Ailshire & Crimmins, 2013) and reporting worse subjective health (Liang et al., 2010; Pinquart, 2001). Poorer subjective health relates to perceiving limited future time (Kooij & van de Voorde, 2011), whereas better subjective health relates to having a more expansive time perspective (Bal, Jansen, van der Velde, de Lange, & Rousseau, 2010; Kooij & van de Voorde, 2011; Windsor, Fiori, & Crisp, 2012). Subjective health informs adults' expectations of the likelihood of surviving to age 75 and 85 (Hurd & McGarry, 1995; Hurd, 2009). These expectations predict mortality, perhaps because they capture individuals' knowledge of health changes (Hurd & McGarry, 2002). Perceived changes in health have not been investigated in relation to future time perspective. Perceiving improvements in health could bolster perceptions of future opportunities, whereas perceiving worsening health could intensify a focus on a limited future.

### Perceived decision-making ability

Whereas some research has linked future time perspective to subjective health, perceived cognitive functioning has not been investigated. Similar to subjective health (e.g., Kooij & van de Voorde, 2011), perceiving declines in aspects of cognitive abilities with age could increase the salience of a limited future. Decision making is a higher-order cognitive skill that partly depends on basic cognitive abilities (Bruine de Bruin, Parker, & Fischhoff, 2012; Del Missier, Mantyla, & Nilsson, 2015; Stanovich & West, 2000; Zaval, Li, Johnson, & Weber, 2015). Older adults rated their decision making as worse than younger adults did, even though not all aspects of decision making declined with age (Bruine de Bruin et al. 2012; see Strough, Bruine de Bruin, & Peters, 2015 for a review). Because theorists have recently suggested that age differences in decision making may be tied to age differences in future time perspective (e.g., Löckenhoff & Rutt, 2015; Mikels, Schuster, & Thai, 2015; Strough, Parker, & Bruine de Bruin, 2015), it is important to establish whether future time perspective is related to people's perceptions of how their decision-making ability has changed as they have gotten older.

### Decision-making ability compared to age peers

In addition to judging age-related changes in their decision-making abilities, people may also judge their abilities in comparison to others (Suls & Wheeler, 2012). As people grow older, they perceive their decision-making competence as worse compared to other people whose age is not specified (Bruine de Bruin et al., 2012). However, when comparing to most people their age, they tend to believe they are better off in terms of having fewer life problems and more desirable personality attributes (Bauer, Wrosch, & Jobin, 2008; Heckhausen & Brim, 1997; Heckhausen & Krueger, 1993). Maintaining the perception that one is better off than people the same age can help older adults reduce life regrets (Bauer et al., 2008). Research has not addressed how people perceive their decision abilities compared to same-age peers, or how it relates to future time perspective.

## Future Time Perspective and Responses to Negative Events

### Age

Socioemotional selectivity theory posits that an important consequence of having a limited future time perspective is increased motivation to maximize emotional well-being (Carstensen, 2006; Carstensen et al., 1999). On average, emotional well-being is maintained and even improves across adulthood, declines are not seen until the 70s or 80s (Carstensen et al., 2011; Smith, Borchelt, Maier, & Jopp, 2002; cf., Stanley & Isaacowitz, 2011; for a review, see Charles & Carstensen, 2009). Older adults' ability to maintain emotional well-being despite experiencing relatively more losses than gains has been referred to as the well-being paradox (Baltes & Baltes, 1990).

It has been posited that older adults may maintain emotional well-being through effective emotion regulation (Carstensen et al., 2003; Lawton, 2001; Scheibe & Blanchard-Fields, 2009; Urry & Gross, 2010). Emotion regulation refers to “processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998, p. 275; see also Gross & Barrett, 2011 for a discussion of how emotion regulation is distinct from emotion generation). For example, older adults have been found to use preemptive behaviors to avoid negative situations (Charles, 2010; Charles & Luong, 2013; Urry & Gross, 2010).

When they are exposed to negative situations in lab studies, older adults' are often found to be as good, or better, than younger adults at emotion regulation (Larcom & Isaacowitz, 2009; Luong & Charles, 2014; Philips, Henry, Hosie, & Milne, 2008). For example, older adults were better than younger adults at following instructions to focus on the positive aspects of a negative situation (Shiota & Levenson, 2009). However, older adults do not always effectively use specific strategies (Urry & Gross, 2010). Instructions to rethink a negative situation or disengage from it emotionally were less effective for older adults than for young adults (Opitz, Rauch, Terry, & Urry, 2012; Shiota & Levenson, 2009), perhaps because older adults needed more time to execute these strategies (Allard & Kensinger, 2014) or because these strategies taxed fluid cognitive abilities that declined with age (Opitz, Lee, Urry, & Gross, 2014). Older adults who received instructions to remain engaged with a stressor by ruminating about it had delayed physiological recovery, but similar affective recovery, compared to younger adults and an older adult control group (Robinette & Charles, 2014). The latter studies highlight how cognitive and physiological vulnerabilities challenge older adults' capacity for effective emotion regulation (Charles, 2010; Charles & Luong, 2013; Labouvie-Vief, 2003).

Due to these vulnerabilities, one way that older adults can mitigate their exposure to a negative event is to avoid dwelling on the event or becoming preoccupied with it. Older adults report less preoccupation and rumination about negative events, and fewer intrusive and perseverative thoughts (Brose, Schmiedek, Lovden, & Lindenberger, 2011; Kessler & Staudinger, 2009, Nolen-Hoeksema, & Aldao, 2011; Sutterlin, Paap, Babic, Kübler & Vögele, 2012). Dwelling on negative events is linked to prolonged negative affect and physiological stress responses (Ottaviani et al., 2016). Some research suggests that aging dampens the link between intrusive thoughts about stressors and negative affect (Brose et al.,



2011) but a recent study that took type of negative affect into account suggested that aging intensified the link—preoccupation with daily stressors increased sadness and disappointment, especially among older adults (Wrzus, Luong, Wagner, & Riediger, 2015). In addition, older adults' lesser preoccupation with negative events explained why they reported less negative affect and more low-arousal positive affect than younger adults (Kessler & Staudinger, 2009).

Whether older adults' lesser preoccupation with negative events reflects their future time perspective is unclear – which may be due to the use of a unidimensional measure in prior research. Kessler and Staudinger (2009) found that people who reported less preoccupation with negative events had *more expansive* future time perspectives, whereas socioemotional selectivity theory predicts that this type of response, and other responses that increase positive affect, would be associated with having a *limited* future time perspective, typical of older adults. Ramsey and Gentzler (2014) also found that expansive time horizons were associated with strategies that boosted positive affect. Yeung and colleagues (2012) found that future time perspective explained older adults' lesser endorsement of problem-focused strategies for dealing with interpersonal problems, but did not explain their emotion-regulation strategies. The unidimensional measure of future time perspective used in these studies could have masked a more complex relationship where focusing on limited time also related to emotional reactions to negative events.

If future time perspective consists of two dimensions, it is also possible that each dimension has different associations with emotional reactions depending on age. For instance, Charles and Luong (2013) suggested that the association between focusing on limited time and better affective experience may change during terminal decline—the worsening of physical states and cognition in the three to five years preceding death (see Gerstorf et al., 2010). These dramatic increases in vulnerabilities may limit adaptive capacity to respond to negative events. As noted, cross-sectional and longitudinal studies sometimes find slight declines in positive affect and increases in negative affect during the 70s and 80s (Carstensen et al., 2011; see Charles & Carstensen, 2010 for a review). Hence it is possible that as individuals approach the end of life, focusing on a limited future is associated with less adaptive emotional reactions.

## Gender

If, as noted earlier, future time perspective differs depending on gender, then gender could moderate associations between future time perspective and preoccupation with negative events. Women use more strategies to regulate emotion compared to men (Blanchard-Fields, Stein, & Watson, 2004). In a meta-analytic review, women were more likely than men to report using 11 of the 17 strategies investigated, including unproductive rumination and positive reframing (Tamres, Janicki, & Helgeson, 2002; for recent research with similar findings see Garnefski, Teerds, Kraaij, Legerstee & van den Kommer, 2004; Martin & Dahlen, 2005; Nolen-Hoeksema & Aldao, 2011; Zimmermann & Iwanski, 2014; Zlomke & Hahn, 2010). Studies that consider interactions between age and gender are mixed --- some indicate that age differences in strategies depend on gender (Nolen-Hoeksema & Aldao, 2011), others report similar changes for men and women (Diehl, Chu, Hay, Lumley, Gruhn,

& Labouvie-Vief, 2014). These studies highlight gender as an important individual difference characteristic to consider.

## Research Questions

In the current study, we examined three main research questions, as follows:

1. **Is future time perspective better conceptualized as a one- or two-factor construct when investigated in a broad U.S. life-span sample of both women and men?**
2. **Are there systematic individual differences in future time perspective?**  
Following from prior research using a unidimensional measure of future time perspective, the individual differences we investigated were: age, gender, subjective views of changes in one's health, and retirement status. Following from recent theories of aging and decision making, we also considered perceived changes in decision-making ability with age, and in relation to age peers.
3. **How is future time perspective related to age differences in reactions to negative events?** We considered whether (a) age differences in reactions to negative events could be explained by accounting for age differences in future time perspective, and (b) whether age moderates the association between future time perspective and reactions to negative events. Specifically, we investigated preoccupation with negative events because prior research has shown that older adults avoid preoccupation, and this helps to explain why they report more positive affect and less negative affect compared to younger adults.

## Method

### Participants

Research Questions 1 and 2 were tested as part of Survey 1. It was completed by 3,933 members of RAND's American Life Panel (ALP), a national sample of adults in the US (<https://mmicdata.rand.org/alp/>) who regularly receive invitations to complete internet surveys fielded by diverse researchers and earn about \$20 per 30 minutes of their time.<sup>1</sup> The invitation to Survey 1 was sent to 4,721 panel members, for a response rate of 83.3%. The sample for Survey 1 consisted of women (59.5%) and men (40.5%) who ranged from 18 to 93 years of age (see Table 1 for demographic information).

Research Question 3 was tested on a subset of 1,045 participants from the larger sample who responded to a second survey that included the measure of reactions to negative events. The second survey was designed for a different study and the invitation went to 1,362 potential participants, for a response rate of 76.2%. The sample for Survey 2 consisted of women (54.8%) and men (43.7%) who ranged in age from 18 to 93 years of age (see Table 1).

<sup>1</sup>In RAND's American Life Panel, data for Survey 1 can be found in MS226, and for Survey 2, in MS232.



## Measures

Survey 1 started with questions about participants' experiences as panel members (e.g., number of times they contacted the help desk; types of surveys they liked the most). Measures for this study followed those questions and were presented in the following order: annual health change, future time perspective, perceived changes in decision-making ability with age, and perceived decision-making ability relative to age peers. Self-reported retirement status was from the last quarterly survey the panel member had completed before responding to the measures included in this report.<sup>2</sup> Survey 2 included the measure of reactions to negative events, after first presenting questions about decision-making style (see Delaney, Strough, Parker, & Bruine de Bruin, 2015). It was in the field at the same time as Survey 1.

**Future time perspective**—Participants rated 12 items about their views of the future (e.g., “My future seems infinite to me”) on a 7-point Likert scale that ranged from 1 (*very untrue*) to 7 (*very true*). To allow for direct comparisons with research that used Carstensen and Lang's (1996) future time perspective scale, we used all 10 items from their scale. When computing a unidimensional score, higher scores on three of the ten items indicate a more limited future time perspective and are reverse scored. We added two items to the 10-item scale to increase the number of items corresponding to focus on a limited future. One added item, “I feel the importance of time's passing,” was shown by Cate and John (2007) to load on a focus on limitations factor. Another item, “I have limited time left to live my life” was created for this study.<sup>3</sup> Analyses (reported below) indicated two subscales, *focus on future opportunities* and *focus on limited time*, both of which had good internal consistency overall ( $\alpha = .81$  for future opportunities and  $\alpha = .79$  for limited time) and separately for men ( $\alpha = .81$  for future opportunities and  $\alpha = .79$  for limited time) and women ( $\alpha = .81$  for future opportunities and  $\alpha = .79$  for limited time).

**Annual health change**—To assess perceived annual change in health, participants were asked, “Overall, do you think you were healthier this year than last year?” Participants responded by selecting one of three statements: “Yes, I felt healthier this year” (33.8%), “No, I was healthier last year” (19.8%), or “About the same” (46.4%). Two dummy variables were created to compare people who perceived *better* health this year to people who perceived their health was worse or the same, and to compare people who perceived that their health was *worse* this year to those who perceived it was the same or better.

**Perceived changes in decision-making ability with age**—Three items adapted from Strough, Cheng, and Swenson (2002) assessed perceptions of how one's decision-making abilities had changed with age (e.g., “As I have gotten older, my ability to make decisions is:”). Participants completed statements by indicating whether they believed their abilities were “1 = *not as good*,” “2 = *the same*,” or “3 = *better*” (potential and actual range 1-3,  $M =$

<sup>2</sup>Members of the American Life Panel report quarterly on household characteristics; data are available under “household information” at <https://mmicdata.rand.org/alp/>.

<sup>3</sup>To measure focus on opportunities, Cate and John (2007) added three items to Carstensen and Lang's (1996) scale. We did not include these three because Cate and John's research indicated that they did not consistently load highly on the opportunities factor. To measure focus on limitations, Cate and John (2007) added three items. Of these three, we only included the one that most consistently loaded on the limitations factor in their study.

2.56,  $SD = .53$ ). The internal consistency of the scale was good ( $\alpha = .84$ ). When examined separately for men ( $\alpha = .84$ ) and women ( $\alpha = .84$ ), the values were the same as for the overall sample.

**Perceived decision-making ability compared to age peers**—Three items adapted from the literature (Strough et al., 2002; see also Bruine de Bruin et al., 2012) assessed perceived decision-making abilities in relation to age peers (e.g., “Compared with most people your age, would you say your ability to make decisions is:”) Participants completed statements by indicating whether they believed their abilities were “1 = *not as good*,” “2 = *the same*,” or “3 = *better*” (potential and actual range 1-3,  $M = 2.46$ ,  $SD = .51$ ). The internal consistency of the scale was good overall ( $\alpha = .82$ ), and for men ( $\alpha = .83$ ) and women ( $\alpha = .82$ ).

**Self-reported retirement status**—Participants indicated whether their current job status was working now, retired, unemployed and looking for work, laid off/on sick or other leave, disabled, homemaker, or other. A dummy variable was created to compare those who reported they were *retired* to those who reported they were not (all other categories). Women were more likely than men to report they were retired (see Table 1).

**Avoiding preoccupation**—To assess responses to negative events, participants completed 16 items from two subscales of the Action Control Scale (Dieffendorf, Hall, Lord, & Streat, 2000). The measure has good external validity in terms of predicting physiological (e.g., heart rate, lactate levels) and subjective well-being (e.g., self-reported affect, psychosomatic complaints; see Baumann, Kaschel, & Kuhl, 2005; Heckhausen & Strang, 1988; Jostmann, Koole, van der Wulp, & Fockenberg, 2005). It has been used before with adult life-span samples (Kessler & Staudinger, 2009). Answers are given by selecting one of two response alternatives presented after a statement about a negative event (e.g., “If I’ve worked for weeks on one project and then everything goes completely wrong with the project: (a) it would take me a long time to adjust myself to it vs. (b) it bothers me for a while but then I don’t think about it anymore”). Validation studies (e.g., Baumann et al., 2005; Jostmann et al., 2005) show that choosing option (b) over option (a) is associated with better well-being. The action relative to preoccupation subscale consists of eight items that assess ability to overcome preoccupation with a negative event ( $\alpha = .76$ ). The action relative to hesitation subscale consists of eight items that assess ability to overcome hesitation to act after a negative event ( $\alpha = .76$ ). In our sample, subscale scores were correlated ( $r = .52$ ), and an overall score computed from the two subscales had good internal consistency overall ( $\alpha = .83$ ), and for men ( $\alpha = .82$ ) and women ( $\alpha = .84$ ). Thus, we used the overall score. Higher scores indicated a greater number of responses corresponding to avoiding preoccupation with negative events. The potential and actual range of scores was 0-16 ( $M = 11.16$ ,  $SD = 3.84$ ). Results reported in the following section were similar when each subscale was considered separately.

## Results

### 1. Is future time perspective better conceptualized as a one- or two-factor construct when investigated in a broad U.S. life-span sample of both women and men?

We first conducted an exploratory factor analysis of the future time perspective items. The scree test indicated only two factors with initial eigenvalues that exceeded 1.0—specifically, 5.50 and 1.97. After PROMAX rotation<sup>4</sup>, the two factors accounted for 45.82% and 16.43% of the variance. An exploratory factor analysis that used only the original 10 items from Carstensen and Lang's (1996) scale also yielded a two-factor solution comprised of focus on future opportunities and limited time. Thus, the two factors were not the result of adding two items to the original scale.

Next, we used a confirmatory factor analysis in Amos to test whether future time perspective was a two-factor construct. To allow a direct comparison with Cate and John (2007), we followed their procedure and did not allow double loadings or correlated errors. The fit of the single-factor model of future time perspective was inadequate,  $\chi^2(54) = 117.17$ , CFI = .75,  $\chi^2 = 3600.25$ ,  $p < .01$ , RMSEA = .171, replicating Cate and John's (2007) findings. The two-factor model approached adequate fit (i.e., a CFI cutoff = .90 as recommended by Bentler, 1992, and used by Cate & John, 2007),  $\chi^2(53) = 51.45$ , CFI = .893, RMSEA = .113, but did not meet the more stringent CFI cutoff of .95 advocated by Hu and Bentler (1999). Because model fit of the two-factor model was only adequate, we investigated whether it could be improved by allowing items to covary. We used a more stringent CFI cutoff of .95 (Hu & Bentler, 1999) and RMSEA cutoff of .08 (Byrne, 2010). As shown in Figure 1, allowing items to covary produced a well-fitting model,  $\chi^2(47) = 26.19$ , CFI = .953, RMSEA = .082. Multi-group analysis that compared the fit of the model for men and women confirmed measurement equivalence for the groups.

We labeled the first factor '*focus on future opportunities*.' Seven of the eight items that loaded on this factor included the word 'future' or a word that evoked thoughts of the future (i.e., 'ahead'), and five referenced either 'possibilities', 'opportunities', 'anything' 'infinite' or 'new goals'. The items that loaded the highest on this factor were 'my future is filled with possibilities' followed by 'many opportunities await me in the future' and 'I expect that I will set many new goals in the future' (see Table 2 for rotated factor loadings of items). We computed a *focus on future opportunities* score that was the average of eight items that loaded on the first factor. One of these items, "There are only limited possibilities in my future," was reverse scored. As noted in the methods section, the internal consistency of the scale was acceptable ( $\alpha = .81$  overall,  $\alpha = .81$  for men,  $\alpha = .81$  women; range = 1 – 7,  $M = 4.62$ ,  $SD = 1.43$ ). Higher scores indicated greater perceptions of future opportunities.

We labeled the second factor '*focus on limited time*.' All four items that loaded on this factor included the word 'time'. Of these four, two items also included the word 'limited' and the others included wording that conveyed the idea of having limited time (time 'running out', time 'passing'). The two items that loaded the highest on this factor were 'As I get older, I begin to experience time as limited,' and 'I have the sense that time is running

<sup>4</sup>We used a non-orthogonal rotation since Cate and John's (2007) research indicated that the two factors may be negatively correlated.

out' (see Table 2 for rotated factor loadings of items). We computed a *focus on limited time* score that was the average of the four items that loaded on the second factor. As noted, the scale had acceptable internal consistency ( $\alpha = .79$  overall,  $\alpha = .79$  men,  $\alpha = .79$  women; range = 1 -7,  $M = 3.97$ ,  $SD = 1.39$ ). Higher scores indicated greater perceptions of limited time. Scale scores for focus on future opportunities and limited time were significantly correlated ( $r = -.41$ ,  $p < .001$  overall,  $r = -.38$ ,  $p < .001$  women,  $r = -.44$ ,  $p < .001$  men).

## 2. Are there systematic individual differences in future time perspective?

To investigate whether and how age, gender, retirement status, perceived annual change in health, perceived changes in decision-making ability with age, and perceived decision-making ability in comparison to age peers were associated with perceptions of having limited time or future opportunities, we conducted regression analyses.<sup>5</sup> Multicollinearity indices (tolerance, VIF) were examined and there were no issues found for either multiple regression analysis. Correlations among variables are shown in Table 3, correlations by gender are shown in Table 4. Tests of nonlinear effects of age indicated that for both dimensions of future time perspective, the quadratic function of age was significant and fit the data better than a simple linear function ( $p < .001$ ).<sup>6</sup> The quadratic functions indicated that correlations between older age and focusing more on limited time, and less on future opportunities were *stronger* as age increased (see Figure 2). Due to these nonlinear associations, the age-squared term was included in each regression analysis. Furthermore, up through middle age (until around age 60), people focused more on future opportunities than on limited time, but then the relative focus shifted such that people focused more on limited time than future opportunities.

**Focus on future opportunities**—Age, age squared, gender, retirement status, the two dummy codes representing perceived health relative to the previous year, perceived changes in decision-making ability with age, and perceived decision-making ability in comparison to age peers were entered as predictors. The model predicting focus on future opportunities was significant ( $R^2 = .33$ ,  $p < .001$ ).<sup>7</sup>

Older age was associated with focusing less on future opportunities, and this association intensified as age increased (see Figure 2 and the first column of Table 5). Across age, women ( $M = 4.71$ ,  $SD = 1.35$ ) focused more on future opportunities than men did ( $M = 4.49$ ,  $SD = 1.43$ ).<sup>8</sup> Compared to people who perceived their health was worse or the same as last year, people who perceived their health was better than last year focused more on future opportunities; the worse perceived health comparison was not significant. Perceiving improvements in one's decision making ability with age, and better decision-making ability

<sup>5</sup>In initial analyses of the data, the presence of children in the home was included as a predictor. It was not associated with either dimension of future time perspective and thus was excluded. We did not include cognitive status because there was not a concurrent assessment of this construct available.

<sup>6</sup>The cubic model was not significant.

<sup>7</sup>To examine potential interactions between age and gender, and between age squared and gender, they were entered on the second step of a hierarchical regression predicting focus on future opportunities. Adding the age by gender interaction and age squared by gender interaction at Step 2 did not increase the variance accounted for,  $R^2 = .00$ ,  $p = .83$ . Neither interaction term was significant.

<sup>8</sup>The significant gender difference in focus on opportunities remained even after accounting for demographic variables (race, marital status, education) that were not distributed the same across men and women. The gender difference was not significant when the nonsignificant age squared by gender interaction term was included in the model at Step 2.

compared to age peers each were associated with focusing more on future opportunities. Retirement status was not significantly related to focus on future opportunities.

**Focus on limited time**—Age, age squared, gender, retirement status, dummy variables that contrasted perceived health changes for better and worse relative to the previous year, perceived changes in decision-making ability with age, and perceived decision-making ability in comparison to age peers were entered as predictors. The regression model predicting focus on limited time was significant ( $R^2 = .13, p < .001$ ).<sup>9</sup>

Older age was associated with focusing more on limited time, and this association was stronger as age increased (see Figure 2 and the second column of Table 5). Men ( $M = 4.16, SD = 1.45$ ) focused more on having limited time than women did ( $M = 3.85, SD = 1.40$ ).<sup>10</sup> Compared to people who perceived their health was the same or better than last year, those who perceived that their health was worse than last year focused more on limited time, whereas those who perceived their health was better than last year focused less on limited time. Perceiving that one's ability to make decisions had gotten worse with age, and was worse than that of age peers were associated with focusing more on having limited time. Retirement status was not significantly related to focus on limited time.

### 3. How is future time perspective related to age differences in responses to negative events?

To investigate whether age differences in preoccupation with negative events were accounted for by age differences in future time perspective (focus on future opportunities and limited time), we computed a structural equation model in Amos to test indirect effects. The specified model included a direct association between age and the mean score for avoiding preoccupation, and indirect associations from age through the two latent future time perspective variables to the mean score for avoiding preoccupation. Controlling for correlates of future time perspective (i.e., perceived annual health change, perceived changes in decision-making ability with age, perceived decision-making ability in relation to age peers) did not change the results. The reported coefficients are not adjusted for covariates. This model fit well,  $\chi^2/df = 3.65$ , CFI = .950, RMSEA = .050, when judged against criteria outlined by Byrne (2010) and Hu and Bentler (1999). Multi-group analysis that compared the fit of the model for men and women confirmed that model fit was equivalent for the two groups, indicating that all associations between age, focus on limited time, future opportunities, and avoiding preoccupation were the same for men and women.

The constrained structural residuals model was probed to examine the direct and indirect associations. Examination of direct effects showed that, as expected, older age was associated with avoiding preoccupation, greater focus on limited time, and lesser focus on future opportunities (see Figure 3). Focusing more on future opportunities and less on

<sup>9</sup>To examine potential interactions between age and gender, and between age squared and gender, they were entered on the second step of a hierarchical regression predicting focus on limited time. Adding the age by gender interaction and age squared by gender interaction at Step 2 did not increase the variance accounted for,  $R^2 = .00, p = .20$ . Neither interaction term was significant.

<sup>10</sup>The significant gender difference in focus on limited time remained even after accounting for demographic variables (race, marital status, education) that were not distributed the same across men and women. The gender difference was not significant when the nonsignificant age squared by gender interaction term was included in the model at Step 2.

limited time were each associated with avoiding preoccupation. Next, indirect effects were examined. There were significant indirect effects of age to avoiding preoccupation through future opportunities ( $B = -.05$ , 95% CI  $[-.06, -.03]$ ,  $p = .005$ ) and limited time ( $B = -.02$ , 95% CI  $[-.03, -.004]$ ,  $p = .013$ ).<sup>11</sup> As shown in Figure 3, after including the two significant indirect paths, the direct effect of older age on avoiding preoccupation ( $B = .09$ ,  $p = .01$ ) was even *stronger* than when not taking these two paths into account ( $B = .03$ ,  $p = .005$ ). That is, there was a suppressor effect, where controlling for the paths through the two dimensions of future time perspective amplified the association between age and avoiding preoccupation. Hence, older age was associated with reporting less preoccupation with negative events in spite of older adults' perceptions of fewer future opportunities and more limited time.

Finally, to test whether age moderated the association between future time perspective and preoccupation, we used Hayes's (2013) PROCESS macro with 5,000 resamples. We tested a model where perceptions of limited time was the predictor, and another model where perceptions of future opportunities was the predictor (the dimension of future time perspective not examined as the predictor in a given model was controlled, as was gender). In both models, avoiding preoccupation with negative events was the criterion, and age was a moderator. Age was not a significant moderator in either analysis.<sup>12</sup> Thus, the associations between avoiding preoccupation with negative events and perceiving more future opportunities and less limited time were consistent for people of all ages.

## Discussion

### Future time perspective is a two-factor construct when investigated in a broad U.S. life-span sample of both women and men

Findings from our national life-span sample support measuring future time perspective as two dimensions—limited time and future opportunities. Similar to Cate and John (2007), a two-factor model fit the data, whereas a one-factor model did not fit. Our findings build on those of Cate and John (2007), whose oldest participants were middle-aged women, by establishing the fit of a two-factor model in an age-diverse sample comprised of both men and women. Our results show that adults of all ages simultaneously perceive the life-span hour glass in terms of future opportunities and limited time, offering new insights about aging and future time perspective compared to the commonly used unidimensional scale.

### Individual differences in future time perspective

**Age**—Chronological age was the most powerful predictor of both dimensions of future time perspective. People focused relatively more on future opportunities than limited time through middle age. Around age 60, this pattern reversed and older age was associated with increasingly perceiving limited time and fewer future opportunities. These results suggest

<sup>11</sup>We used Hayes's (2013) PROCESS macro with 5,000 resamples to test whether the variance accounted for by the direct path (from age to avoiding preoccupation) was significantly different after taking the two indirect paths (through the dimensions of future time perspective) into account. After including the indirect paths, the direct effect of older age on avoiding preoccupation was significantly stronger ( $p < .05$ ). Comparison of the two indirect effects showed that the path through future opportunities was significantly stronger ( $p < .05$ ) than the path through limited time.

<sup>12</sup>When age-squared was tested as a moderator, it was nonsignificant. Controlling for correlates of age and future time perspective (annual health change, perceived decision-making ability with age and in relation to age peers, retirement status) did not change the results.



how the dynamic between gains and losses (Baltes, 1987) is reflected in adults' perceptions of their future time. The increase with age in perceiving limited time and fewer future opportunities is similar to results from studies that have examined individuals' expectations, schemas, and goals regarding their own and others' developmental trajectories (Ebner et al., 2006, 2009; Heckhausen et al., 1989; Heckhausen & Krueger, 1993). Thus, from individuals' perspectives, the shifting dynamic where gains are expected to outweigh losses earlier in life, and losses to outweigh gains later, appears to be robust across a number of constructs.

Older age was associated with perceiving fewer future opportunities and more limited time. This may reflect that chronological age serves as an actual and perceived marker of both number of years lived and number of years left (see Carstensen, 2006). In the US, emerging adults in their twenties delay career and family commitments (Arnett, 2000). Hence, their high focus on future opportunities and low focus on limited time may reflect that their futures are relatively unconstrained by past choices. For people in their 40s and 50s, our findings are consistent with Lachman's (2004) ideas that during midlife, people are becoming more aware that life is limited, but overall still believe they have enough time left to pursue opportunities (see Lachman et al., 2015).

Around age 60, perceptions of limited time started to overshadow a focus on future opportunities, suggesting a fundamental psychological shift in views of the future. This finding seems in contradiction to descriptions of people in their 60s as 'the young old' (Baltes & Smith, 2003). The young old have better subjective well-being than people who are 80 and older (Smith et al., 2002) and emotional well-being is maintained until the 70s or 80s (e.g., Carstensen et al., 2011), suggesting that perceptions of limited time might not overshadow future opportunities until the 70s or 80s. Perhaps around age 60, cumulative life choices are viewed as constraining future opportunities to the point where limits on time loom larger (see Bauer et al., 2008; Wrosch et al., 2005). In the US, the media trumpets milestone birthdays of the Baby Boomer cohort (e.g., Barry, 2010). Because media messages are often negative (e.g., focusing on crises in health care and Social Security, Longino, 2005), this could increase the salience of limited time over future opportunities to people in their late 50s and early 60s as they think about their futures.

**Gender**—Although age-related differences in perceiving limited time and future opportunities were the same for men and women, men focused more on limited time and less on future opportunities compared to women. We suspect that this finding reflects awareness of the well-documented greater mortality of men (e.g., Phillips, 2006; Rochelle et al., 2015). Because our study is among the first to uncover gender differences in future time perspective, further research is necessary to investigate implications for other behaviors such as men's greater risk tolerance (e.g., Charness & Gneezy, 2012; Eckel, & Grossman, 2008; Lemaster & Strough, 2014).

**Retirement status**—Self-reported retirement status was not related to either dimension of future time perspective even though the crossover in the two dimensions occurred around the age when people in the US retire (Purcell, 2010). It is possible that measuring time since retirement or time until anticipated retirement might yield different results. However, retirement could also have opposing influences on future time perspective. For example, if a

person perceives a limited future, they might retire sooner (e.g., van Solinge & Henkens, 2010), but the act of retiring might facilitate pursuing new opportunities (see Parker et al., 2013). Research that tracks changes in future time perspective across this developmental transition could address this.

**Perceived health**—Our findings contribute new knowledge about the relation between perceived health and future time perspective. Past research has focused on global ratings of subjective health (e.g., Bal et al., 2010; Hurd & McGarry, 2002; Kooij & van de Voorde, 2011). We found that when people perceived their health as having worsened over just the past year, this was linked to perceiving limited time, whereas perceiving health as having improved was associated with perceptions of more future opportunities.

**Perceived decision-making ability**—Perceiving age-related declines in one's decision-making abilities, and worse ability compared to age peers, were related to perceptions of limited time and fewer future opportunities. People perceived that their decision-making abilities had gotten worse with age, which is consistent with other research (see Strough et al., 2015 for a review). Older age was also associated with viewing one's decision-making abilities as worse than those of other people the same age. This is consistent with findings showing older age is associated with worse perceived decision-making competence relative to people of unspecified ages (Bruine de Bruin et al., 2012), but is inconsistent with work on social comparisons in other domains (Bauer et al., 2008; Heckhausen & Brim, 1997; Heckhausen & Krueger, 1993). Perhaps decision-making ability is a domain where older adults are unlikely to view themselves as better off than others, which could be detrimental if it decreases motivation to engage in complex decisions (see Bruine de Bruin, McNair, Taylor, Summers, & Strough, 2014; Strough et al., 2015).

### **Future time perspective is related to age differences in reactions to negative events**

Older age was associated with lesser preoccupation with negative events, and this association was the same for men and women. When negative events occur, remaining focused on those events can prolong negative arousal (Ottaviani et al., 2016), which may be especially damaging to older adults due to increased physiological vulnerability to stressors in later life (Charles, 2010; Charles & Luong, 2013; Robinette & Charles, 2014). Our findings, along with those of others (Kessler & Staundinger, 2009; Wrzus et al., 2015), suggest that avoiding preoccupation with negative events after they occur may be a pathway to affective well-being in later life.

Older adults' limited time horizons were related to reporting *more* preoccupation with negative events. Hence, our findings did not align with socioemotional selectivity theory, which posits that perceptions of limited time motivate older people to maximize emotional well-being in the here and now (Carstensen, 2006). Other researchers have reported results similar to ours when using a unidimensional measure of future time perspective (Kessler & Staundinger, 2009; Ramsey & Gentzler, 2014). A recent study showed that having a limited future time perspective was associated with a maladaptive emotional profile of reporting more negative affect, more depression, and less positive affect—associations opposite to those predicted based on socioemotional selectivity theory (Grühn, Sharifian, & Chu, 2015).

In our sample, associations between focusing on limited time and reporting more preoccupation with negative events held across age and gender, suggesting this finding is relatively robust. Other types of emotional reactions and emotion-regulation strategies (Urry & Gross, 2010) may show different results.

Interestingly, in our study the association between older age and less preoccupation with negative events was even stronger after taking into account that older age was associated with greater perceptions of limited time and fewer future opportunities. That is, older adults reported less preoccupation with negative events *despite* the fact that they saw a more limited future with fewer opportunities. Because prior research has shown that older adults' lesser preoccupation with negative events facilitates their emotional well-being (Kessler & Staudinger, 2009; Wrzus et al., 2014) our findings highlight the need to investigate other potential pathways besides future time perspective that help explain why older adults report less preoccupation with negative events. For example, older adults' greater life experience and practice with emotionally-charged situations may help facilitate reactions that boost positive affect and dampen negative affect (Blanchard-Fields, 2007; Scheibe & Blanchard-Fields, 2009).

### Limitations and Future Directions

Like all studies, ours has limitations that can be addressed in future research. First, because our study used correlational, cross-sectional data, we were unable to address developmental changes or causality. As a result, the reported age differences and concurrent associations among variables could be cohort specific. The direct and indirect paths we reported must be understood in terms of variance accounted for when statistically controlling (versus not controlling) other variables, not in terms of developmental change and temporal ordering of causal events. Experimental designs could be used in future research to examine whether focusing on future opportunities or limited time changes emotional reactions (see Strough, Schlosnagle, Karns, Lemaster, & Pichayayothin, 2014); a longitudinal-sequential design could be used to disentangle the age-cohort confound.

Second, although we used two items beyond the original ten, the limited time dimension of future time perspective may have lower validity if the smaller number of items doesn't completely capture the construct. The smaller correlation of focus on limited time with age and reactions to negative events compared to focus on future opportunities suggests this could be an issue. Future research could be directed toward further developing the limitations dimension of the scale. In such research, it will be important to examine the divergent validity of the scales because some of the items (e.g., "my future is filled with possibilities") seem to overlap with other constructs such as optimism and depression, which could obscure understanding of age-related differences. For example, if focus on future opportunities decreases with age, but optimism remains stable, this could help explain the suppression effect we found. Future efforts to develop the scale could also consider creating a domain-specific version to complement the commonly-used domain-general version. For example, time perspective for interpersonal relationships may have different associations with age compared to time perspective for careers, and compared to the domain-general future time perspective we examined.

Third, our findings do not rule out the idea that focusing on limited time facilitates adaptive reactions and strategies through prioritizing emotion-regulation goals (see Carstensen et al., 1999). Goals vary systematically by age and have been linked to strategies in other studies (Berg, Strough, Sansone, Calderone, & Weir, 1998; Luong & Charles, 2014; Strough, Berg, & Sansone, 1996). Research that links future time perspective to emotion-regulation goals, goals to strategies, and strategies to well-being is needed to better understand processes that facilitate emotional well-being in older age (Isaacowitz & Blanchard-Fields, 2012; Scheibe & Carstensen, 2010).

Fourth, we only used one self-report measure of reactions to negative events, the Action Control Scale (Dieffendorf et al., 2000). Although future time perspective did not account for age differences in preoccupation with negative events as measured by this scale, other research has shown it accounts for age differences in strategies for solving interpersonal problems (Yeung et al., 2012). Research using other measures and methods is needed to address whether the dimensions of future time perspective we have uncovered relate to older adults' use of reappraisal, situation selection, and conflict avoidance to promote emotional well-being (see Birdett & Fingerman, 2005; Carstensen et al., 1999; Charles et al., 2009; English & Carstensen, 2014; Shiota & Levenson 2009; Urry & Gross, 2010). In addition, older age is associated with responding in socially desirable ways, which partly explains why older people report better well-being, higher life satisfaction, more positive affect, and less negative affect (Carstensen & Cone, 1983; Soubelet & Salthouse, 2011). This could have contributed to the age differences in reports of reactions to negative events we found when using the Action Control Scale. Controlling for social desirability in future research would help to address this issue.

## Conclusions

Our study advances research on aging by showing that that a commonly-used unidimensional measure of future time perspective is better conceptualized as two dimensions. Using this conceptualization, we found that the life-span hourglass was perceived as more full than empty through middle age, but around age 60 this pattern reversed, and limited time loomed larger than future opportunities. Taking this fundamental psychological shift into account may facilitate the design and implementation of effective interventions to promote healthy aging. For example, our findings suggest that interventions that emphasize long-term consequences (e.g., of financial or health behaviors) may be interpreted very differently by someone in their 60s versus 40s, despite increased longevity within the US. Moreover, the unanticipated links between aging, future time perspective, and reactions to negative events uncovered in our research highlight the need for additional empirical and theoretical work directed toward unlocking the well-being paradox.

## Acknowledgments

We are grateful for funding from the National Institute of Health (R01AG20717, PI: Kapteyn) and the European Union (FP7-People-2013-CIG-618522; PI: Bruine de Bruin). We thank Tania Gutsche, Arie Kapteyn, and Julie Newell for their support in conducting this research.

## References

- Allard ES, Kensinger EA. Age-related differences in neural recruitment during the use of cognitive reappraisal and selective attention as emotion regulation strategies. *Frontiers in Psychology*. 2014; 5
- Arnett JJ. Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*. 2000; 55(5):469–480. DOI: 10.1037/0003-066X.55.5.469 [PubMed: 10842426]
- Ailshire J, Crimmins E. Physical and biological indicators of health and functioning in U.S. oldest old. *Annual Review of Gerontology & Geriatrics*. 2013; 33:193–215. DOI: 10.1891/0198-8794.31193
- Bal PM, Jansen PG, Van Der Velde ME, De Lange AH, Rousseau DM. The role of future time perspective in psychological contracts: A study among older workers. *Journal of Vocational Behavior*. 2010; 76(3):474–486. DOI: 10.1016/j.jvb.2010.01.002
- Baltes. Theoretical propositions of life-span development psychology: On the dynamics between growth and decline. *Developmental Psychology*. 1987; 23(1):611–626. DOI: 10.1037/0012-1649.23.5.611
- Baltes, PB.; Baltes, MM. Psychological perspectives on successful aging: The model of selective optimization with compensation. In: Baltes, PB.; Baltes, MM., editors. *Successful Aging: Perspectives from the Behavioral Sciences*. New York, New York: European Science Foundation; 1990. p. 1-34.
- Baltes, PB.; Lindenberger, U.; Staudinger, UM. Life-span theory in developmental psychology. In: Lerner, RM.; Damon, W., editors. *Handbook of child psychology (6th ed): Vol 1 Theoretical models of human development*. Hoboken, NJ, US: John Wiley & Sons Inc; 2006. p. 569-664.
- Baltes PB, Smith J. New frontiers in the future of aging: From successful aging of the young old to the dilemmas of the fourth age. *Gerontology*. 2003; 49(2):123–135. DOI: 10.1159/000067946 [PubMed: 12574672]
- Barry, C. Boomers hit new self-absorption milestone. Vol. 65. *The New York Times*; 2010 Dec 31. Retrieved from [www.nytimes.com](http://www.nytimes.com)
- Bauer I, Wrosch C, Jobin J. I'm better off than most other people: The role of social comparisons for coping with regret in young adulthood and old age. *Psychology and Aging*. 2008; 23(4):800–811. DOI: 10.1037/a0014180 [PubMed: 19140651]
- Baumann N, Kaschel R, Kuhl J. Striving for unwanted goals: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology*. 2005; 89(5):781–799. DOI: 10.1037/0022-3514.89.5.781 [PubMed: 16351368]
- Bentler PM. On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin*. 1992; 112(3):400–404. DOI: 10.1037/0033-2909.112.3.400 [PubMed: 1438635]
- Berg CA, Strough J, Calderone KS, Sansone C, Weir C. The role of problem definitions in understanding age and context effects on strategies for solving everyday problems. *Psychology and Aging*. 1998; 13(1):29–44. DOI: 10.1037/0882-7974.13.1.29 [PubMed: 9533188]
- Blanchard-Fields F. Everyday problem solving and emotion: An adult developmental perspective. *Current Directions in Psychological Science*. 2007; 16(1):26–31. DOI: 10.1111/j.1467-8721.2007.00469.x
- Blanchard-Fields F, Stein R, Watson TL. Age differences in emotion-regulation strategies in handling everyday problems. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*. 2004; 59B(6):P261–P269. DOI: 10.1093/geronb/59.6.P261
- Birditt KS, Fingerman KL. Do we get better at picking our battles? Age group differences in descriptions of behavioral reactions to interpersonal tensions. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*. 2005; 60B(3):P121–P128. DOI: 10.1093/geronb/60.3.P121
- Bruine de Bruin W, Parker AM, Fischhoff B. Explaining adult age differences in decision-making competence. *Journal of Behavioral Decision Making*. 2012; 25(4):352–360. DOI: 10.1002/bdm.712

- Bruine de Bruin W, McNair SJ, Taylor AL, Summers B, Strough J. "Thinking about numbers is not my idea of fun." Need for cognition mediates age differences in numeracy performance. *Medical Decision Making*. 2015; 35(1):22–26. DOI: 10.1177/0272989×14542485 [PubMed: 25035261]
- Byrne, BM. Structural equation modeling with AMOS. 2nd. New York: Routledge; 2010.
- Cate RA, John OP. Testing models of the structure and development of future time perspective: Maintaining a focus on opportunities in middle age. *Psychology and Aging*. 2007; 22(1):186.doi: 10.1037/0882-7974.22.1.186 [PubMed: 17385994]
- Carstensen LL. The influence of a sense of time on human development. *Science*. 2006; 312(5782): 1913–1915. DOI: 10.1126/science.1127488 [PubMed: 16809530]
- Carstensen LL, Cone JD. Social desirability and the measurement of psychological well-being in elderly persons. *Journal of Gerontology*. 1983; 38(6):713–715. DOI: 10.1093/geronj/38.6.713 [PubMed: 6630907]
- Carstensen LL, Isaacowitz DM, Charles ST. Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*. 1999; 54(3):165–181. DOI: 10.1037/0003-066X.54.3.165 [PubMed: 10199217]
- Carstensen LL, Fung HH, Charles ST. Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*. 2003; 27(2):103–123. DOI: 10.1023/A: 1024569803230
- Carstensen, LL.; Lang, FR. Future Time Perspective Scale. Stanford, CA: Stanford University; 1996.
- Carstensen LL, Turan B, Scheibe S, Ram N, Ersner-Hersfield H, Samanez-Larkin GR, et al. Nesselroade JR. Emotional experience improves with age: Evidence based on over 10 years of experience sampling. *Psychology and Aging*. 2011; 26(1):21–33. DOI: 10.1037/a0021285 [PubMed: 20973600]
- Crimmins EM, Kim JK, Solé -Auró A. Gender differences in health: Results from SHARE, ELSA and HRS. *European Journal of Public Health*. 2011; 21(1):81–91. DOI: 10.1093/eurpub/ckq022 [PubMed: 20237171]
- Charles ST. Strength and vulnerability integration: A model of emotional well-being across adulthood. *Psychological Bulletin*. 2010; 136:1068–1091. DOI: 10.1037/a0021232 [PubMed: 21038939]
- Charles ST, Carstensen LL. Social and emotional aging. *Annual Review of Psychology*. 2009; 61:383–409. DOI: 10.1146/annurev.psych.093008.100448
- Charles ST, Luong G. Emotional experience across adulthood: The theoretical model of strength and vulnerability integration. *Current Directions in Psychological Science*. 2013; 22(6):443–448. DOI: 10.1177/0963721413497013
- Charles ST, Piazza JR, Luong G, Almeida DM. Now you see it, now you don't: Age differences in affective reactivity to social tensions. *Psychology and Aging*. 2009; 24(3):645–653. DOI: 10.1037/a0016673 [PubMed: 19739920]
- Charnes G, Gneezy U. Strong evidence for gender differences in risk taking. *Journal of Economic Behavior & Organization*. 2012; 83:50–58. DOI: 10.1016/j.jebo.2011.06.007
- Dahlin J, Härkönen J. Cross-national differences in the gender gap in subjective health in Europe: Does country-level gender equality matter? *Social Science & Medicine*. 2013; 98:24–28. DOI: 10.1016/j.socscimed.2013.08.028 [PubMed: 24331878]
- Dannefer D. Cumulative advantage/disadvantage and the life course: Cross-fertilizing age and social science theory. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2003; 58(6):327–337. DOI: 10.1093/geronb/58.6.S327
- Delaney R, Strough J, Bruine de Bruin W, Parker A. Variations in decision-making profiles by age and gender: A cluster-analytic approach. *Personality and Individual Differences*. 2015; 85:19–24. DOI: 10.1016/j.paid.2015.04.034 [PubMed: 26005238]
- Del Missier, F.; Mäntylä, T.; Nilsson, LG. Aging, memory, and decision making. In: Hess, TM.; Strough, J.; Loeckenhoff, CE., editors. *Aging and decision-making: Empirical and applied perspectives*. New York, NY: Elsevier, Academic Press; 2015. p. 127-142.
- Diefendorff JM, Hall RJ, Lord RG, Streat ML. Action–state orientation: Construct validity of a revised measure and its relationship to work-related variables. *Journal of Applied Psychology*. 2000; 85(2):250–263. DOI: 10.1037/0021-9010.85.2.250 [PubMed: 10783541]



- Diehl M, Chui H, Hay EL, Lumley MA, Grün D, Labouvie-Vief G. Change in coping and defense mechanisms across adulthood: Longitudinal findings in a European American sample. *Developmental Psychology*. 2014; 50(2):634–648. DOI: 10.1037/a0033619 [PubMed: 23834293]
- Ebner NC, Freund AM, Baltes PB. Developmental changes in personal goal orientation from young to late adulthood: From striving for gains to maintenance and prevention of losses. *Psychology and Aging*. 2006; 21(4):664–678. doi:10.1037/0882-7974.21.4.664. [PubMed: 17201488]
- Ebner NC, Riediger M, Lindenberger U. Schema reliance for developmental goals increases from early to later adulthood: Improvement for the young, loss-prevention for the old. *Psychology and Aging*. 2009; 24:438–449. DOI: 10.1037/a0015430 [PubMed: 19485660]
- Eckel CC, Grossman PJ. Forecasting risk attitudes: An experimental study using actual and forecast gamble choices. *Journal of Economic Behavior & Organization*. 2008; 68(1):1–17.
- English T, Carstensen LL. Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. *International Journal of Behavioral Development*. 2014; 38(2):195–202. DOI: 10.1177/0165025413515404 [PubMed: 24910483]
- Ersner-Hersfield H, Mikels JA, Sullivan SJ, Carstensen LL. Poignancy: mixed emotional experience in the face of meaningful endings. *Journal of Personality and Social Psychology*. 2008; 94(1):158–167. DOI: 10.1037/0022-3514.94.1.158 [PubMed: 18179325]
- Fischhoff B, de Bruin WB, Parker AM, Millstein SG, Halpern-Felsher BL. Adolescents' perceived risk of dying. *Journal of Adolescent Health*. 2010; 46(3):265–269. DOI: 10.1016/j.jadohealth.2009.06.026 [PubMed: 20159504]
- Fredrickson BL. Socioemotional behavior at the end of college life. *Journal of Social and Personal Relationships*. 1995; 12:261–276.
- Fung HH, Carstensen LL, Lutz AM. Influence of time on social preferences: implications for life-span development. *Psychology and Aging*. 1999; 14(4):595–604. DOI: 10.1037/0882-7974.14.4.595 [PubMed: 10632147]
- Garnefski N, Teerds J, Kraaij V, Legerstee J, van den Kommer T. Cognitive emotion regulation strategies and depressive symptoms: Differences between males and females. *Personality and Individual Differences*. 2004; 36(2):267–276. DOI: 10.1016/S0191-8869(03)00083-7
- Gerstorf D, Ram N, Mayraz G, Hidajat M, Lindenberger U, Wagner GG, Schupp J. Late-life decline in well-being across adulthood in Germany, the United Kingdom, and the United States: Something is seriously wrong at the end of life. *Psychology and Aging*. 2010; 25(2):477–485. DOI: 10.1037/a0017543 [PubMed: 20545432]
- Gross JJ. The emerging field of emotion regulation: An integrative review. *Review of General Psychology*. 1998; 2(3):271–299. DOI: 10.1037/1089-2680.2.3.271
- Grün D, Sharifian N, Chu Q. The limits of a limited future time perspective in explaining age differences in emotional functioning. *Psychology and Aging*. 2015; doi: 10.1037/pag0000060
- Hayes, AF. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY, US: Guilford Press; 2013.
- Heckhausen J, Brim OG. Perceived problems for self and others: Self-protection by social downgrading throughout adulthood. *Psychology and Aging*. 1997; 12(4):610–619. DOI: 10.1037/0882-7974.12.4.610 [PubMed: 9416630]
- Heckhausen J, Dixon RA, Baltes PB. Gains and losses in development throughout adulthood as perceived by different adult age groups. *Developmental Psychology*. 1989; 25(1):109–121.
- Heckhausen J, Krueger J. Developmental expectations for the self and most other people: Age grading in three functions of social comparison. *Developmental Psychology*. 1993; 29(3):539–548. DOI: 10.1037/0012-1649.29.3.539
- Heckhausen H, Strang H. Efficiency under record performance demands: Exertion control—an individual difference variable? *Journal of Personality and Social Psychology*. 1988; 55(3):489–498. DOI: 10.1037/0022-3514.55.3.489 [PubMed: 3171919]
- Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*. 1999; 6(1):1–55. DOI: 10.1080/10705519909540118
- Hurd MD. Subjective probabilities in household surveys. *Annual Review of Economics*. 2009; 1(1):543–562.

- Hurd MD, McGarry K. Evaluation of the subjective probabilities of survival in the Health and Retirement Study. *Journal of Human Resources*. 1995; 30:268–92.
- Hurd MD, McGarry K. The predictive validity of subjective probabilities of survival. *Economic Journal*. 2002; 112(482):966–985.
- Isaacowitz DM, Blanchard-Fields F. Linking process and outcome in the study of emotion and aging. *Perspectives on Psychological Science*. 2012; 7(1):3–17. DOI: 10.1177/1745691611424750 [PubMed: 22888369]
- Jostmann NB, Koole SL, van der Wulp NY, Fockenberg D. Subliminal affect regulation: The moderating role of action vs. state orientation. *European Psychologist*. 2005; 10(3):209–217. DOI: 10.1027/1016-9040.10.3.209
- Kellough JL, Knight BG. Positivity effects in older adults' perception of facial emotion: The role of future time perspective. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2012; 67(2):150–158. DOI: 10.1093/geronb/gbr079
- Keough KA, Zimbardo PG, Boyd JN. Who's smoking, drinking, and using drugs? Time perspective as a predictor of substance use. *Basic & Applied Social Psychology*. 1999; 21(2):149–164. DOI: 10.1207/S15324834BA210207
- Kessler EM, Staudinger UM. Affective experience in adulthood and old age: The role of affective arousal and perceived affect regulation. *Psychology and Aging*. 2009; 24(2):349. doi: 10.1037/a0015352 [PubMed: 19485653]
- Kooij D, Van De Voorde K. How changes in subjective general health predict future time perspective, and development and generativity motives over the lifespan. *Journal of Occupational & Organizational Psychology*. 2011; 84(2):228–247. DOI: 10.1111/j.2044-8325.2010.02012.x
- Labouvie-Vief G. Dynamic integration: Affect, cognition, and the self in adulthood. *Current Directions in Psychological Science*. 2003; 12(6):201–206. DOI: 10.1046/j.0963-7214.2003.01262.x
- Lachman ME. Development in midlife. *Annual Review of Psychology*. 2004; 55:305–331. DOI: 10.1146/annurev.psych.55.090902.141521
- Lachman ME, Teshale S, Agrigoroaei S. Midlife as a pivotal period in the life course: Balancing growth and decline at the crossroads of youth and old age. *International Journal of Behavioral Development*. 2015; 39(1):20–31. DOI: 10.1177/0165025414533223 [PubMed: 25580043]
- Lang FR, Carstensen LL. Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging*. 2002; 17(1):125–139. DOI: 10.1037/0882-7974.17.1.125 [PubMed: 11931281]
- Larcom MJ, Isaacowitz DM. Rapid emotion regulation after mood induction: Age and individual differences. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2009; 64B(6):733–741. DOI: 10.1093/geronb/gbp077
- Lasane TP, Jones JM. Temporal orientation and academic goal-setting: The mediating properties of a motivational self. *Journal of Social Behavior & Personality*. 1999; 14(1):31–44.
- Lawton MP. Emotion in later life. *Current Directions in Psychological Science*. 2001; 10(4):120–123. DOI: 10.1111/1467-8721.00130
- Li Y, Baldassi M, Johnson EJ, Weber EU. Complementary cognitive capabilities, economic decision making, and aging. *Psychology and Aging*. 2013; 28(3):595–613. DOI: 10.1037/a0034172 [PubMed: 24040999]
- Liang J, Quiñones AR, Bennett JM, Ye W, Xu X, Shaw BA, Ofstedal M. Evolving self-rated health in middle and old age: How does it differ across Black, Hispanic, and White Americans? *Journal of Aging and Health*. 2010; 22(1):3–26. DOI: 10.1177/0898264309348877 [PubMed: 19952367]
- Lemaster P, Strough J. Beyond Mars and Venus: Understanding gender differences in financial risk tolerance. *Journal of Economic Psychology*. 2014; 42:148–160. DOI: 10.1016/j.joep.2013.11.001
- Löckenhoff CE. Age, time, and decision making: From processing speed to global time horizons. *Annals of the New York Academy of Sciences*. 2011; 1235(1):44–56. DOI: 10.1111/j.1749-6632.2011.06209.x [PubMed: 22023567]
- Löckenhoff, CE.; Rutt, JL. Age differences in time perception and their implications for decision making across the life span. In: Hess, TM.; Strough, J.; Löckenhoff, CE., editors. *Aging and decision making: Empirical and applied perspectives*. San Diego, CA, US: Elsevier, Academic Press; 2015. p. 213–233.

- Longino CF. The future of ageism: Baby Boomers at the doorstep. *Generations*. 2005; 29(3):79–83.
- Luong G, Charles ST. Age differences in affective and cardiovascular responses to a negative social interaction: The role of goals, appraisals, and emotion regulation. *Developmental Psychology*. 2014; 50(7):1919–1930. DOI: 10.1037/a0036621 [PubMed: 24773101]
- Martin RC, Dahlen ER. Cognitive emotion regulation in the prediction of depression, anxiety, stress, and anger. *Personality and Individual Differences*. 2005; 39(7):1249–1260. DOI: 10.1016/j.paid.2005.06.004
- McDade TW, Chyu L, Duncan GJ, Hoyt LT, Doane LD, Adam EK. Adolescents' expectations for the future predict health behaviors in early adulthood. *Social Science & Medicine*. 2011; 73(3):391–398. DOI: 10.1016/j.socscimed.2011.06.005 [PubMed: 21764487]
- McKay MT, Ballantyne N, Goudie AJ, Sumnall HR, Cole JC. 'Here for a good time, not a long time': Decision-making, future consequences and alcohol use among Northern Irish adolescents. *Journal of Substance Use*. 2012; 17(1):1–18. DOI: 10.3109/14659891.2011.559566
- Mikels, JA.; Shuster, MM.; Thai, ST. Aging, emotion, and decision making. In: Hess, TM.; Strough, J.; Löckenhoff, CE., editors. *Aging and decision making: Empirical and applied perspectives*. San Diego, CA, US: Elsevier, Academic Press; 2015. p. 169-188.
- Moen, P. Retirement dilemmas and decisions. In: Hedge, JW.; Borman, WC., editors. *The Oxford handbook of work and aging*. New York, NY, US: Oxford University Press; 2012. p. 549-569.
- Moen P, Flood S. Limited engagements? Women's and men's work/volunteer time in the encore life course stage. *Social Problems*. 2013; 60(2):206–233. DOI: 10.1525/sp.2013.60.2.206
- National Center for Education Statistics. *Digest of Education Statistics 1993*. US Washington, D.C: Government Printing Office; 1993.
- Neugarten BL. The future and the young-old. *The Gerontologist*. 1975; 15(1-2):4–9. DOI: 10.1093/geront/15.1\_Part\_2.4 [PubMed: 1110022]
- Neugarten BL. Adaptation and the life cycle. *The Counseling Psychologist*. 1976; 6(1):16–20. DOI: 10.1177/001100007600600104
- Neugarten, BL.; Moore, JW.; Lowe, JC. Age norms, age constraints, and adult civilization. In: Neugarten, BL., editor. *Middle age and aging: A reader in social psychology*. Chicago: University of Chicago Press; 1968. p. 22-28.
- Nolen-Hoeksema S, Aldao A. Gender and age differences in emotion regulation strategies and their relationship to depressive symptoms. *Personality and Individual Differences*. 2011; 51(6):704–708. DOI: 10.1016/j.paid.2011.06.012
- Oksuzyan A, Brønnum-Hansen H, Jeune B. Gender gap in health expectancy. *European Journal of Ageing*. 2010; 7(4):213–218. DOI: 10.1007/s10433-010-0170-4
- Opitz PC, Lee IA, Gross JJ, Urry HL. Fluid cognitive ability is a resource for successful emotion regulation in older and younger adults. *Frontiers in Psychology*. 2014; 5
- Opitz PC, Rauch LC, Terry DP, Urry HL. Prefrontal mediation of age differences in cognitive reappraisal. *Neurobiology of Aging*. 2012; 33(4):645–655. DOI: 10.1016/j.neurobiolaging.2010.06.004 [PubMed: 20674090]
- Ottaviani C, Thayer JF, Verkuil B, Lonigro A, Medea B, Couyoumdjian A, Brosschot JF. Physiological concomitants of perseverative cognition: A systematic review and meta-analysis. *Psychological Bulletin*. 2016; 142(3):231–259. DOI: 10.1037/bul0000036 [PubMed: 26689087]
- Park DC, Lautenschlager G, Hedden T, Davidson NS, Smith AD, Smith PK. Models of visuospatial and verbal memory across the adult life span. *Psychology and Aging*. 2002; 17(2):299–320. DOI: 10.1037/0882-7974.17.2.299 [PubMed: 12061414]
- Parker, AM.; Carvalho, LS.; Rohwedder, S. Cognitive ability, expectations, and beliefs about the future: Psychological influences on retirement decisions; Michigan Retirement Research Center Research Paper. 2013. p. 2013-298. Retrieved from <http://www.mrrc.isr.umich.edu/publications/papers/pdf/wp298.pdf>
- Philips. Risky business: Explaining the gender gap in longevity. *Journal of Men's Health and Gender*. 2006; 3(1):43–46.
- Phillips LH, Henry JD, Hosie JA, Milne AB. Effective regulation of the experience and expression of negative affect in old age. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*. 2008; 63B(3):P138–P145. DOI: 10.1093/geronb/63.3.P138

- Pinquart M. Correlates of subjective health in older adults: a meta-analysis. *Psychology and aging*. 2001; 16(3):414.doi: 10.1037/0882-7974.16.3.414 [PubMed: 11554520]
- Purcell PJ. Older workers: Employment and retirement trends. *Journal of Pension Planning & Compliance*. 2010; 36(2):70–88.
- Ramsey MA, Gentzler AL. Age differences in subjective well-being across adulthood: The roles of savoring and future time perspective. *The International Journal of Aging and Human Development*. 2014; 78(1):3–22. DOI: 10.2190/AG.78.1.b [PubMed: 24669507]
- Rochelle TL, Yeung DY, Bond MH, Li LW. Predictors of the gender gap in life expectancy across 54 nations. *Psychology, Health & Medicine*. 2015; 20(2):129–138. DOI: 10.1080/13548506.2014.936884
- Salthouse TA. Effects of age on time-dependent cognitive change. *Psychological Science*. 2011; 22(5): 682–688. DOI: 10.1177/0956797611404 [PubMed: 21467547]
- Schechter D, Francis C. A life history approach to understanding youth time preference. *Human Nature*. 2010; 21(2):140–164. DOI: 10.1007/s12110-010-9084-2
- Scheibe S, Blanchard-Fields F. Effects of regulating emotions on cognitive performance: What is costly for young adults is not so costly for older adults. *Psychology and Aging*. 2009; 24(1):217–223. DOI: 10.1037/a0013807 [PubMed: 19290754]
- Scheibe S, Carstensen LL. Emotional aging: Recent findings and future trends. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2010; 65B(2):135–144. DOI: 10.1093/geronb/gbp132
- Shiota MN, Levenson RW. Effects of aging on experimentally instructed detached reappraisal, positive reappraisal, and emotional behavior suppression. *Psychology and Aging*. 2009; 24(4):890–900. DOI: 10.1037/a0017896 [PubMed: 20025404]
- Shipp AJ, Edwards JR, Lambert LS. Conceptualization and measurement of temporal focus: The subjective experience of the past, present, and future. *Organizational Behavior and Human Decision Processes*. 2009; 110(1):1–22. DOI: 10.1016/j.obhdp.2009.05.001
- Smith J, Borchelt M, Maier H, Jopp D. Health and well-being in the young old and oldest old. *Journal of Social Issues*. 2002; 58(4):715–732. DOI: 10.1111/1540-4560.00286
- Soubelet A, Salthouse TA. Influence of social desirability on age differences in self-reports of mood and personality. *Journal of Personality*. 2011; 79(4):741–762. DOI: 10.1111/j.1467-6494.2011.00700.x [PubMed: 21682727]
- Stahl ST, Patrick JH. Adults' future time perspective predicts engagement in physical activity. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2011; 67(4):413–416. DOI: 10.1093/geronb/gbr118
- Stanley JT, Isaacowitz DM. Age-related differences in profiles of mood-change trajectories. *Developmental psychology*. 2011; 47(2):318–330. DOI: 10.1037/a0021023 [PubMed: 21171749]
- Stanovich KE, West RF. Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences*. 2000; 23(5):645–665. DOI: 10.1017/S0140525x00003435 [PubMed: 11301544]
- Steinberg L, Graham S, O'Brien L, Woolard J, Cauffman E, Banich M. Age differences in future orientation and delay discounting. *Child Development*. 2009; 80(1):28–44. DOI: 10.1111/j.1467-8624.2008.01244.x [PubMed: 19236391]
- Strathman A, Gleicher F, Boninger DS, Edwards CS. The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology*. 1994; 66(4):742–752. DOI: 10.1037/0022-3514.66.4.742
- Strough J, Berg CA, Sansone C. Goals for solving everyday problems across the life span: Age and gender differences in the salience of interpersonal concerns. *Developmental Psychology*. 1996; 32(6):1106–1115. DOI: 10.1037/0012-1649.32.6.1106
- Strough J, Bruine de Bruin W, Peters E. New perspectives for motivating better decisions in older adults. *Frontiers in Psychology*. 2015; 6:783.doi: 10.3389/fpsyg.2015.00783 [PubMed: 26157398]
- Strough J, Cheng S, Swenson LM. Preferences for collaborative and individual everyday problem solving in later adulthood. *International Journal of Behavioral Development*. 2002; 26(1):26–35. DOI: 10.1080/01650250143000337

- Strough, J.; Parker, AM.; Bruine de Bruin, W. Understanding life-span developmental changes in decision-making competence. In: Hess, TM.; Löckenhoff, CE.; Strough, J., editors. *Aging and Decision-Making: Empirical and Applied Perspectives*. New York, NY: Elsevier, Academic Press; 2014. p. 253-251.
- Strough J, Schlosnagle L, Karns T, Lemaster P, Pichayayothin N. No time to waste: restricting life-span temporal horizons decreases the sunk-cost fallacy. *Journal of Behavioral Decision Making*. 2014; 27(1):78–94. DOI: 10.1002/bdm.1781
- Suls, J.; Wheeler, L. Social comparison theory. In: Van Lange, PM.; Kruglanski, AW.; Higgins, ET.; Van Lange, PM.; Kruglanski, AW.; Higgins, ET., editors. *Handbook of theories of social psychology*. Vol. 1. Thousand Oaks, CA: Sage Publications Ltd; 2012. p. 460-482.
- Sütterlin S, Paap MCS, Babic S, Kübler A, V gele C. Rumination and age: Some things get better. *Journal of Aging Research*. 2012;1–10.
- Tamres LK, Janicki D, Helgeson VS. Sex differences in coping behavior: A meta-analytic review and an examination of relative coping. *Personality & Social Psychology Review*. 2002; 6(1):2–30. DOI: 10.1207/S15327957PSPR0601\_1
- Urry HL, Gross JJ. Emotion regulation in older age. *Current Directions in Psychological Science*. 2010; 19(6):352–357. DOI: 10.1177/0963721410388395
- US News and World Report. Top 100: Lowest acceptance rate. 2015. <http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/lowest-acceptance-rate/page+2>
- van Solinge H, Henkens K. Living longer, working longer? The impact of subjective life expectancy on retirement intentions and behaviour. *European Journal of Public Health*. 2010; 20(1):47–51. DOI: 10.1093/eurpub/ckp118 [PubMed: 19822568]
- Weiss D, Lang FR. “They” are old but “I” feel younger: Age-group dissociation as a self-protective strategy in old age. *Psychology and Aging*. 2012; 27(1):153.doi: 10.1037/a0024887 [PubMed: 21988154]
- Windsor TD, Fiori KL, Crisp DA. Personal and neighborhood resources, future time perspective, and social relations in middle and older adulthood. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. 2011; 67(4):423–341. DOI: 10.1093/geronb/gbr117
- Worrell FC, Mello ZR, Buhl M. Introducing English and German versions of the Adolescent Time Attitude Scale. *Assessment*. 2013; 20(4):496–510. DOI: 10.1177/1073191110396202 [PubMed: 21266372]
- Wrosch C, Bauer I, Scheier MF. Regret and quality of life across the adult life span: The influence of disengagement and available future goals. *Psychology and Aging*. 2005; 20(4):657–670. DOI: 10.1037/0882-7974.20.4.657 [PubMed: 16420140]
- Wrosch C, Heckhausen J. Perceived control of life regrets: Good for young and bad for old adults. *Psychology and Aging*. 2002; 17(2):340–350. DOI: 10.1037/0882-7974.17.2.340 [PubMed: 12061416]
- Wrzuc C, Luong G, Wagner GG, Riediger M. Can't get it out of my head: Age differences in affective responsiveness vary with preoccupation and elapsed time after daily hassles. *Emotion*. 2015; 15(2):257–269. DOI: 10.1037/emo0000019 [PubMed: 25286070]
- Yeung DY, Fung HH, Kam C. Age differences in problem solving strategies: The mediating role of future time perspective. *Personality and Individual Differences*. 2012; 53(1):38–43. DOI: 10.1016/j.paid.2012.02.014
- Zaval, L.; Li, Y.; Johnson, E.; Weber, E. Complementary contributions of fluid and crystallized intelligence to decision making across the life span. In: Hess, TM.; Loeckenhoff, CE.; Strough, J., editors. *Aging and Decision-Making: Empirical and Applied Perspectives*. New York, NY: Elsevier, Academic Press; 2015. p. 149-186.
- Zimbardo PG, Boyd JN. Putting time in perspective: A valid, reliable individual- differences metric. *Journal of Personality and Social Psychology*. 1999; 77(6):1271–1288. DOI: 10.1037/0022-3514.77.6.1271
- Zimmermann P, Iwanski A. Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development*. 2014; 38(2):182–194. DOI: 10.1177/0165025413515405

Zlomke KR, Hahn KS. Cognitive emotion regulation strategies: Gender differences and associations to worry. *Personality and Individual Differences*. 2010; 48(4):408–413. DOI: 10.1016/j.paid.2009.11.007

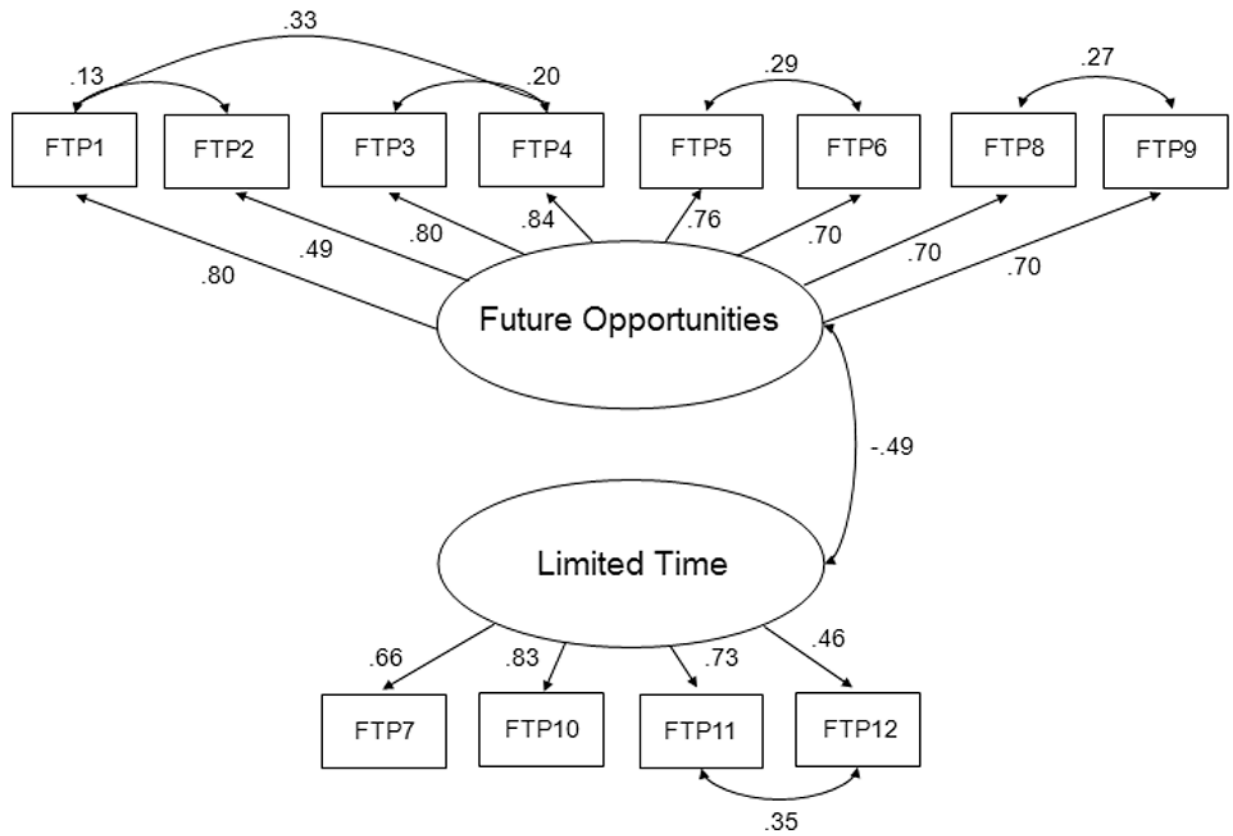
Author Manuscript

Author Manuscript

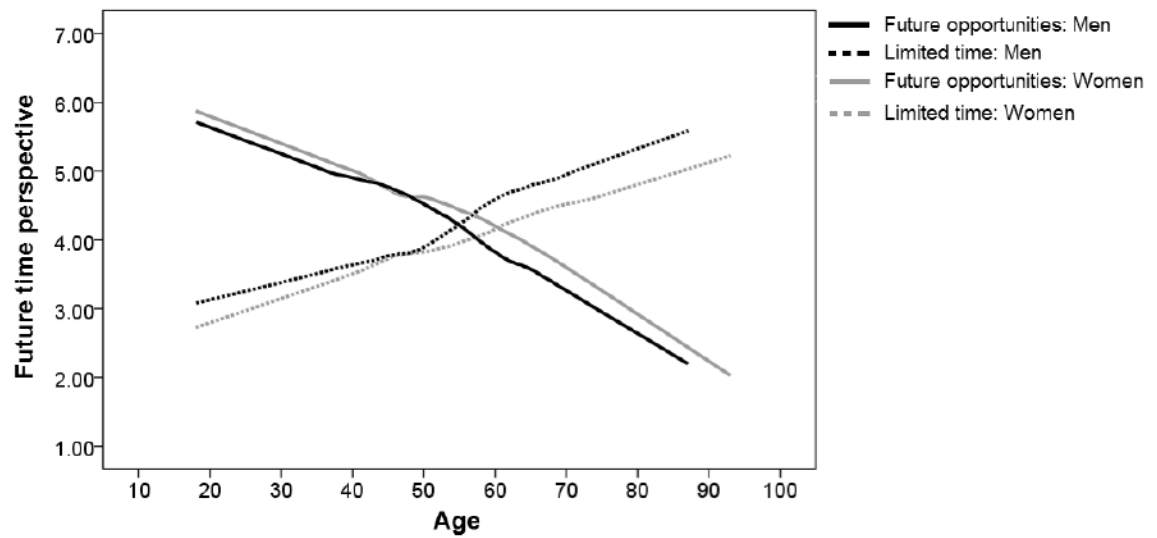
Author Manuscript

Author Manuscript

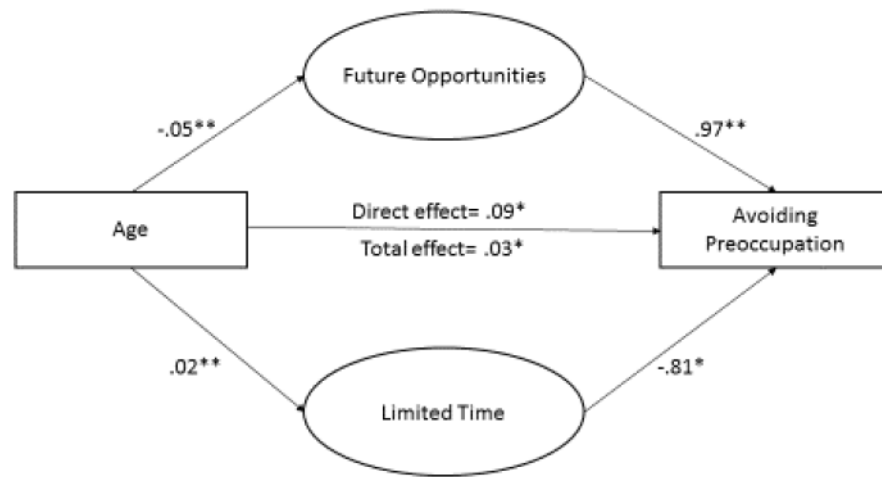


**Figure 1.**

Final model with allowed covariances among items. Item numbers correspond to numbers in Table 2.



**Figure 2.**  
Future time perspective focused on limited time and future opportunities by age and gender in a cross-sectional sample of adults using LOESS line fit estimation.  $N = 3,933$ .



**Figure 3.** Structural equation model examining direct association between age and avoiding preoccupation with negative events, and indirect associations through focus on future opportunities and limited time. Ovals represent latent variables (items loading on each latent variable are shown in Figure 1).

Table 1

Demographic Variables for both Survey Samples by Gender

	Survey 1 Sample				Survey 2 Sample			
	Women	Men	Total		Women	Men	Total	
Number	2342	1591	3933		582	463	1045	
Age								
	M	47.60 <sup>*</sup>	50.47 <sup>*</sup>	48.76	52.03 <sup>†</sup>	55.59 <sup>†</sup>	53.60	
	(SD)	(15.03)	(15.27)	(15.19)	(14.54)	(13.30)	(14.11)	
Retired	21.9% <sup>*</sup>	13.0% <sup>*</sup>	16.6%		29.0% <sup>†</sup>	17.5% <sup>†</sup>	22.6%	
Race								
	White	77.2% <sup>*</sup>	81.4% <sup>*</sup>	78.7%	82.3% <sup>†</sup>	88.8% <sup>†</sup>	85.2%	
	Black	12.1% <sup>*</sup>	8.5% <sup>*</sup>	10.7%	9.5% <sup>†</sup>	5.4% <sup>†</sup>	7.7%	
	Asian/Other	8.82%	10.1%	10.4%	8.4%	5.8%	7.2%	
Hispanic/Latino	16.1% <sup>*</sup>	13.5% <sup>*</sup>	15%		2.8% <sup>†</sup>	5.4% <sup>†</sup>	8.2% <sup>†</sup>	
Highest Education								
	No degree	5%	5.1%	5%	3.32%	2%	2.8%	
	High school diploma	18%	17%	17.6%	15.6%	11.8%	14.0%	
	Some college, no degree	26.9%	24.8%	26%	24.5%	21.7%	23.3%	
	Associate's degree	13.6%	10.9%	12.5%	13.7%	12.3%	12.6%	
	Bachelor's degree	22.2%	25.3%	23.4%	23.2% <sup>†</sup>	31.8% <sup>†</sup>	27.2%	
	Master's degree	11.4%	12.1%	11.7%	16.1%	14.0%	15.2%	
Doctoral or Professional Degree (PhD, MD, JD, etc.)	2.9 %	4.8 %	3.6%		3.5%	6.2%	4.8%	
Current Living Situation								
	Married/Living with Partner	55.5% <sup>*</sup>	66.6% <sup>*</sup>	60%	56.3%	67.5%	61.3%	
	Separated	3.4% <sup>*</sup>	1.9% <sup>*</sup>	2.8%	2.1%	1.1%	1.6%	
	Divorced	15.8% <sup>*</sup>	11.6% <sup>*</sup>	14.1%	16.8%	14.8%	15.9%	
	Widowed	5.8% <sup>*</sup>	2.6% <sup>*</sup>	4.5%	8.7% <sup>†</sup>	2.8% <sup>†</sup>	6.1%	
	Never Married	19.6% <sup>*</sup>	17.2% <sup>*</sup>	18.6%	16.1%	13.8%	15.1%	

Note.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Indicates a significant difference ( $p < .01$ ) in the full sample between men and women.  
\*  
Indicates a significant difference ( $p < .01$ ) in the subsample between men and women.  
†

**Table 2**  
**PROMAX Structure Matrix of Rotated Factor Loadings from an Exploratory Factor**  
**Analysis of Future Time Perspective Items**

Item	Factor 1: Focus on Future Opportunities	Factor 2: Focus on Limited Time
1. Many opportunities await me in the future.	<b>.84</b>	-.17
2. There are only limited possibilities in my future.	<b>-.55</b>	.32
3. I expect that I will set many new goals in the future.	<b>.83</b>	-.17
4. My future is filled with possibilities.	<b>.88</b>	-.18
5. Most of my life still lies ahead of me.	<b>.79</b>	-.39
6. My future seems infinite to me.	<b>.75</b>	-.36
7. I have limited time left to live my life. *	-.44	<b>.71</b>
8. I could do anything I want in the future.	<b>.76</b>	-.32
9. There is plenty of time left in my life to make new plans.	<b>.75</b>	-.40
10. I have the sense that time is running out.	-.40	<b>.81</b>
11. As I get older, I begin to experience that time is limited.	-.29	<b>.86</b>
12. I feel the importance of time's passing. *	-.07	<b>.74</b>

*Note.* The highest loading for each item is shown in bold.

\* Items are from Carstensen and Lang (1996) except Item 7, which was created for the current study and Item 12, which was from Cate and John (2007). *N* = 3,933.



Table 3

Intercorrelations of Study Variables

	1	2	3	4	5	6	7	8	9	10
1. Age	--									
2. Gender (0=male)	-.09*	--								
3. Retirement (0=not retired)	.56*	-.12*	--							
4. Focus on Opportunities	-.50*	.08*	-.31*	--						
5. Focus on Limited Time	.32*	-.11*	.19*	-.41*	--					
6. Health Better this Year	-.12*	-.00	-.08*	.21*	-.11*	--				
7. Health Worse this Year	-.02	.03	-.00	-.06*	.09*	-.36*	--			
8. Decision Ability with Age	-.29*	-.03	-.20*	.36*	-.18*	.15*	-.06*	--		
9. Decision Ability with Peer	-.09*	-.09*	-.03	.25*	-.11*	.13*	-.04	.48*	--	
10. Avoiding Preoccupation	.14*	-.13*	.07	.18*	-.14*	.05	-.02	.22*	.23*	--

Note.

\*  $p < .01$ . All correlations are based on  $N = 3,933$ , except correlations with avoiding preoccupation, which are based on  $N = 1,045$ .

Table 4

Intercorrelations of Study Variables by Gender

	1	2	3	4	5	6	7	8	9
1. Age	--	.61***	-.49***	.35***	-.15***	.01	-.30***	-.08**	.05
2. Retirement (0=not retired)	.52***	--	-.32***	.21***	-.13	.02	-.26***	-.03	.04
3. Focus on Opportunities	-.50***	-.28***	--	-.44***	.24***	-.07*	.37***	.23***	.23***
4. Focus on Limited Time	.29***	.15***	-.38***	--	-.12***	.10***	-.20***	-.10***	-.18***
5. Health Better this Year	-.11***	-.04	.18***	-.09***	--	-.33***	.13***	.11***	.02
6. Health Worse this Year	-.03	-.01	-.05*	.08***	-.35***	--	-.08**	-.06*	-.08
7. Decision Ability with Age	-.30***	-.17***	.35***	-.17***	.14***	-.05***	--	.47***	.26***
8. Decision Ability with Peer	-.11***	-.04	.26***	-.14***	.14***	.04	.49***	--	.26***
9. Avoiding Preoccupation	.15***	.06	.17***	-.15***	.09***	.02	.20***	.18***	--

Note. Men are above the diagonal and women are below the diagonal.

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$

**Table 5**  
**Multiple Regressions Predicting Future Time Perspective from Individual Difference**  
**Characteristics: Future Opportunities and Limited Time**

	Future Opportunities		Limited Time	
	B (SE)	$\beta$	B (SE)	$\beta$
Age	-0.02 (0.01)	-.23**	0.01 (0.01)	.12
Age squared	0.00 (0.00)	-.19*	0.00 (0.00)	.18 <sup>+</sup>
Gender (0 = male)	0.15 (0.04)	.05***	-0.26 (0.04)	-.09***
Retired	-0.03 (0.06)	-.01	-0.05 (0.08)	-.01
Health Better this Year	0.33 (0.04)	.11***	-0.09 (0.05)	-.03 <sup>+</sup>
Health Worse this Year	-0.04 (0.05)	-.01	0.29 (0.06)	.08***
Decision Ability with Age	0.43 (0.04)	.16***	-0.15 (0.05)	-.06**
Decision Ability with Peer	0.34 (0.04)	.12***	-0.16 (0.05)	-.06**

Note. For future opportunities regression:  $R^2 = .33$  ( $p < .001$ ). For limited time regression:  $R^2 = .13$  ( $p < .001$ ).

<sup>+</sup>  $p < .06$ ,

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ .  $N = 3,933$ .

When interactions of age  $\times$  gender and age squared  $\times$  gender were included in the models, each was nonsignificant. The values in the table above are values from the models without these interaction terms.