

# Future Time Perspective

## Time Horizons and Beyond

Hsiao-Wen Liao and Laura L. Carstensen

Department of Psychology, Stanford University, Stanford CA, USA

**Abstract.** The articles in the present volume enhance the understanding of the role of perceived time in human development. Together, they point to the multifaceted nature of perceived future time and the associations different aspects of time have with goals, preferences, and well-being. Specifically, the articles showcase antecedents and consequences of perceived time left in life, consider ways to optimize measurement of future time horizons, and advance novel questions about the neural correlates of domain-specific aspects of subjective time. Findings are considered within the framework of socioemotional selectivity theory. Future directions for research on time horizons are discussed.

**Keywords:** adult development, goal pursuit, future time perspective, socioemotional selectivity theory, well-being

It is curious that developmental science – a field squarely grounded in the passage of time – has attended so little to the subjective sense of time on individual functioning. Limitations of chronological age – the blunt yardstick of months and subsequently years since birth – have been acknowledged conceptually by lifespan developmentalists (Featherman & Petersen, 1986; Huston-Stein & Baltes, 1976; Wohlwill, 1970), yet it remains the dominant temporal instrument in the field of human development. The vast majority of empirical studies are based on cross-sectional age comparisons that employ time since birth as the independent variable.

Of course, tacit consideration of time is pervasive in psychological science across cognitive and behavioral, personality, and social psychology. The monitoring of time is essential in causal reasoning (Piaget & Cook, 1954), reinforcement learning (Skinner, 1933), and self-continuity (Neissier, 1988). The treatment of time is core to personality traits such as the delay of gratification (Mischel, Shoda, & Rodriguez, 1989), the internalized sense of urgency associated with Type A personalities (Friedman et al., 1986), and temporal orientations that favor the past, the present, or the future (Zimbardo & Boyd, 1999). The effects are potent. Feeling situationally pressed for time changes behavior. One classic study in social psychology, for example, observed that seminary students on their way to give a lecture on the “Good Samaritan” were far less likely to help a man slumped over in an alley when they were in a hurry than when there was no time pressure (Darley & Batson, 1973).

With the notable exception of terror management theory (Greenberg et al., 1990), which addresses imminent threats to life, the psychological consequences of the appreciation of human mortality from mid-childhood onward have received relatively little attention in the social sciences. The omission thereof as subject matter is especially notable given the fascination that

writers, scholars, and psychoanalysts have with the human awareness of inevitable death. Among our favorites is the line in a W. H. Auden poem in which death is characterized as “the sound of distant thunder at a picnic.”

Socioemotional selectivity theory (SST; Carstensen, 2006; Carstensen, Isaacowitz, & Charles, 1999) was formulated to operationalize and understand the consequences of the distinctly human ability to monitor lifetime. Carstensen initially proposed in the early 1990s that perceived time horizons, namely, time left in life, exert a profound influence on motivation. The theory posits that, because time left is strongly – and inversely – associated with chronological age, and because goals are always set in a temporal context, age is associated with systematic changes in goals (Carstensen, 1991, 1993).

Because time horizons shift gradually, not starkly, as people age, tenets of SST predict gradual changes along a number of key dimensions previously presumed to begin in old age. Tests of SST, for example, revealed that social networks do not narrow suddenly in old age, but rather gradually, the steepest shifts appearing in the 30s and 40s, long before old age loss can account for them (English & Carstensen, 2014a). By limiting time horizons, preferences among younger people for exploration shift to those concerning savoring, similar to those observed in older adults (Fung & Carstensen, 2006); and when expanding the time horizons of older adults their preferences resemble those of young people (Fredrickson & Carstensen, 1990). In other words, SST offers a mechanism to account for age differences other than age-related decline. At some point in adulthood, time left becomes more informative of functional status, health, and motivation than chronological age, influencing subjective well-being, preferences, choices, and behaviors as people move through adulthood.

Empirical research based on SST has enhanced our under-

standing of how people structure their lives in accordance with their perception of time horizons. The premise of the theory is that goals are always set in a temporal context. Early in life, the knowledge that we are mortal is easily set aside and largely cognitive in representation. With seemingly unlimited time horizons, people set goals that help them prepare to make a place for themselves in complex and crowded worlds. The focus lies on preparation, learning, and exploring (Carstensen, 1991; Ebner, Freund, & Baltes, 2006). In the second half of life, however, the sense that time is running out grows more salient (Neugarten, 1979). Strough et al. (2016) observed that people begin to report limitations on future possibilities at roughly 50 years of age, which is accentuated further around age 60 when people increasingly report the perception that time is running out. When time is perceived as limited, goals shift to ones that are realized in the doing; and goals about emotional meaning and satisfaction take precedence over those concerning exploration (Scheibe, English, Tsai, & Carstensen, 2013). Theoretically, the awareness of time left leads people to desire more time with close social partners and less time with acquaintances and novel social partners (Lang & Carstensen, 2002; Fung & Carstensen, 2006). Preferences emerge for emotionally meaningful (Fung & Carstensen, 2003) and positive (Mather, Charles, & Carstensen, 2003; Löckenhoff & Carstensen, 2007) information.

Since 2000, research on the role of subjective time in adult development has grown significantly. A special issue of *Psychology and Aging* focused on the topic in 2016 (see Fung & Isaacowitz, 2016), and the present issue underscores three new research directions that can advance knowledge in the time domain. First, the influence of time horizons on goal selection and preferences has been extended to everyday contexts. Chu, Grühn, and Holland explore bucket lists under distinct time horizons, and Ju, Bluck, and Liao advance our understanding of consumer preferences. Second, the multidimensional nature of future time perspectives (Lu, Li, Fung, Rothermund, & Lang, 2018; Düzel, Drewelies, Gerstorf, Kühn, & Lindenberger, 2018) as well as the associated neural underpinnings are explored (Düzel et al., 2018). The third direction is to identify potential antecedents of future time perspectives (e.g., Barber & Tan, 2018), a topic about which little is known. In the following commentary, we highlight the contributions of each article within the framework of SST and posit questions for future research.

Furthering our understanding of the influence of time horizons in the context of everyday life, Chu et al. (2018) conducted elegant experiments focusing on the popular notion of bucket lists. Time horizons were manipulated to examine their influence on the goals that people say they want to accomplish before they die. Prior research has inferred goals based on performance on card sorting tasks (see Lang & Carstensen, 2002) and social partner preferences (Fung & Carstensen, 2006), but to our knowledge this is the first demonstration using explicit lists of goals generated by research participants. Their findings based on this innovative method support theoretical claims that

emotionally meaningful goals are prioritized when future time is limited. Regardless of age, emotionally meaningful goals are generated more so than knowledge-seeking goals when the finitude of life is primed. Sensing that life is running out, older adults listed even fewer knowledge-seeking goals and more emotionally meaningful goals than younger people. In later life, the limited time is cherished. Another interesting aspect of their findings was the influence of time horizons on self-relevant goals. Using Erikson's framework, they found that limited time horizons led participants, regardless of their age, to generate more ego-integrity goals, i.e., goals that entail meaningful reflections on the self, and fewer goals about self-striving. Note that identity goals formed a very large proportion of bucket-list goals across conditions, meaning that when time left was perceived as limited, self-relevant goals represented a mixture of expanding self-agency (i.e., identity goals) and the pursuit of personal meaning (i.e., ego-integrity goals). If these two types of self-related goals were considered jointly, it could be reasonably named "development and maintenance of self-concept." Interestingly, the earliest conceptualization of SST included three as opposed to two motivational trajectories: information, meaning, and self-concept (Carstensen, 1995), but was later revised to exclude the self-concept trajectory because we were unable to empirically distinguish self-relevant goals from emotionally meaningful goals. Thus, using content analysis based on Erikson's framework, Chu et al. support the earliest tenets of SST, showing that subjective time influences the self-trajectory. More importantly, their findings demonstrate that development of the self in adulthood are both by age and subjective time.

In 2003, Fung and Carstensen tested hypotheses derived from SST in a study in which preferences and memory for advertisements were assessed in older and younger adults. As hypothesized, older people preferred and remembered advertisement slogans that were emotionally meaningful better than those about exploration. When the time horizons were expanded, age differences in preferences for emotionally meaningful ads were eliminated. Taking a different approach to understanding consumer preferences, Ju et al. (2018) focused on the technique of nostalgic advertising in the field of marketing. They tested the effectiveness of past-focused versus present-focused advertisements on consumer responses and whether nostalgic feelings were mechanisms of past-focused advertisements. Speculating that not only remembering but also thinking about the future can be influential, they examined whether and how time horizons interacted with ad-evoked nostalgia in predicting middle-aged consumers' preferences for emotionally meaningful over novel and entertaining products. Limited time horizons strengthened the associations between ad-evoked nostalgia and consumer responses to emotionally meaningful products, and weakened the association between ad-evoked nostalgia and consumer response to novel, entertaining products. Chronological age did not show the same moderating functions. Consistent with mechanisms posited in SST, these findings also suggest that chang-

es in preferences, motivation, and emotional experience begin earlier in adulthood than at old age. Ju et al. showcased both the ways in which time horizons can, at times, inform behavioral inclinations better than chronological age, and that in midlife perceived time horizons are in the eye of the beholder. Their findings have direct implications for the development of marketing strategies, suggesting that consumer preferences may be shaped not only by how people experience the past, but also by the perceived future.

As tests of hypotheses derived from SST were undertaken and empirical evidence accrued, it appeared that constraints on time horizons may not only change experience through the moderating effects of goals, but may also have direct effects on emotional experience (e.g., Carstensen et al., 2011; see also Scheibe & Carstensen, 2010). Empirical evidence has been mixed, however. English and Carstensen (2014b) observed positive associations between limited time horizons and well-being. Other recent studies, however, failed to confirm such associations (Grühn, Sharifian, & Chu, 2016; Hoppmann, Infurna, Ram, & Gerstorf, 2017). Addressing this issue, Lu et al. (2018) suggest that discrepancies across studies may reflect the lack of consideration of how the future is qualitatively evaluated aside from the quantity of time left. The role of limited time horizons in predicting subjective satisfaction in the domains of health and friendship was expected to manifest with the consideration of the extent to which the future was perceived as positive and perceived as open and modifiable. Their hypotheses were tested in German, Chinese, and American samples, and were fully supported in the health domain. That is, regardless of cultural background and age, limited time horizons were associated with greater satisfaction with health when less positive yet concrete, modifiable futures were anticipated. The same moderating patterns described above were found to predict satisfaction with friendship in younger participants across cultures. These findings point to potential explanations of the relationship between time horizons and well-being. The perception that the future is full of opportunities may be important. Another potential influence that we are studying in our laboratory concerns the contextual opportunities to realize goals. That is, according to SST goals shift as a function of time. If contexts limit the opportunity to pursue those goals, however, there may be negative consequences for well-being.

Lu et al. (2018) point to the potential nuances in future time perspective. The construct of future time perspective posited in SST concerns an awareness of the finitude of life, that is, simply perceiving more or less time left to realize goals. Of course, the broader concept of future time perspective is multifaceted (e.g., Brandstädter & Rothermund, 2003; Brothers, Chiu, & Diehl, 2014; Gabrian, Dutt, & Wahl, 2017; Lang & Damm, 2017). Düzel et al. (2018) employed neuroimaging to explore shared yet distinguishable neural correlates for anticipated time left for specific aspects of healthy lifestyles, viz., engagement in physical activities and

novel exploration. Their intriguing findings show that these two dimensions of time horizons are correlated with specific neural regions of physiological functioning and episodic memory, respectively. An alternative, perhaps even complementary interpretation is that subjective reports about time left speak less to time horizons than to subtle changes detected in functioning. That is, presumably, older participants make such judgments by referencing how well they are functioning at the time they report. If so, such findings may help to explain why subjective health predicts mortality even better than objective health indicators (Idler & Benyamini, 1997). Importantly, their findings further suggest that general optimism did not account for subjective time perceptions. Little research has examined the relationship between brain activities and future time perspective. Düzel et al.'s approach offers a model for future research on the neural underpinnings of subjective time.

SST theorizes that perceived time in life shapes goal pursuits, preferences, and emotional well-being. The theory presumes that approaching mortality generates a sense that time is running out. In lifespan samples, future time horizons strongly and inversely correlate with chronological age but there are, of course, individual differences. Some 70-year-olds see their futures as time limited, whereas other 70-year-olds subjectively sense considerable time left. Very little attention has been paid to the factors that account for these individual differences. Barber and Tan's set of studies (2018) enlightens us. In five studies, they tested the hypothesis that older adults who hold negative views of aging perceive relatively limited future possibilities and time constraints. Consistent across the studies, they found that subjective views of aging influenced older but not younger participants' future time perspective. Specifically, when holding negative views about aging and the identity as an older person, older people sensed more limited future possibilities than those who have positive views toward aging and paid little to no attention to their age identities. Mood changes stemming from negative age stereotypes mediated the ways that views of aging affected perceived future opportunities. In line with the experimental evidence, survey studies show that older adults who experienced more age discrimination in everyday life perceived more limited futures. Manipulating views of aging altered older adults' qualitative evaluations about their future opportunities but did not always affect their perceived quantity left in life. With public health and medical advances, people are living longer. One wonders whether life expectancy shapes time horizons. As the authors pointed out, younger people too may view their futures as limited when exposed to negative images of young people. If other facets of future time perspective are considered, such as how changeable the future is perceived, different pictures may appear. These are questions that will become clearer with more research that considers how future time perspective is shaped by factors above and beyond subjective distance to death.

## Future Directions

The theoretical framework of SST provides falsifiable postulates about the influence of time left on motivation which has generated testable hypotheses. The body of empirical evidence amassed over the past 25 years supports some aspects of SST and challenges others. At this point, new questions have emerged that extend beyond the scope of the original postulates of SST. The subjective temporal distance and related clarity of future events, for example, appear to affect people's motivational and behavioral responses to those events. It may be fruitful to jointly consider SST and construal theory (Trope & Liberman, 2003). Another intriguing aspect of subjective time is the age-associated experience of time acceleration (Janssen, 2017; John & Lang, 2015; Lang & Damm, 2017). As Einstein maintained, the pace of time is not constant: "An hour sitting with a pretty girl on a park bench passes like a minute, but a minute sitting on a hot stove seems like an hour." To our knowledge, the developmental consequences of the pace of time have yet to be explored. The set of articles in the present volume suggests that we can look forward to many more advances in the understanding of the functions of time perception and the influences they exert on adult development. The articles in the present volume shed light on multiple aspects of time horizons that inform the antecedents, consequences, and domain specificity of future time horizons.

## Declaration of Conflicts of Interest

The authors declare that no conflicts of interest exist.

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#### Dr. Hsiao-Wen Liao

Department of Psychology  
Stanford University  
Bldg. 420, Jordan Hall  
Stanford, CA 94305  
USA  
hsliao@stanford.edu