

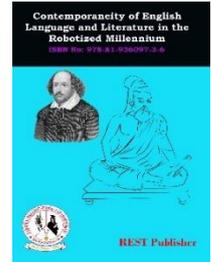


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Why Time Feels Faster as We Age

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Abstract: As individuals age, they often report the subjective experience that time seems to pass more quickly. This phenomenon has been widely observed but remains complex and multifaceted. Several psychological and neurological theories attempt to explain it. One prominent explanation is based on proportional theory: as we age, each year becomes a smaller fraction of our entire life, leading to a perceived acceleration of time. Additionally, the brain's processing of novel experiences plays a role—childhood and adolescence are filled with new, memorable events, whereas adulthood tends to involve more routine and repetition, resulting in fewer standout memories and a compressed sense of time in retrospect. Neurological changes, such as slowing dopamine production and altered time perception mechanisms, may also contribute. This abstract explores the interplay between cognitive, emotional, and neurological factors that influence the perception of time as we grow older, highlighting the need for further interdisciplinary research to fully understand this subjective acceleration.

Keywords: Time perception, Aging, Proportional theory, Subjective time, Cognitive processing Memory density, Novelty.

1. INTRODUCTION

Time is a constant, yet our perception of it changes as we grow older. Many people feel that time moves more quickly with age, making childhood summers feel endless while adulthood years fly by. This phenomenon has been explored through psychological, neurological, and mathematical perspectives. Several theories attempt to explain why time appears to accelerate as we age, including proportional theory, neurological processing, and memory-based perception.

Proportional Theory:

One widely accepted explanation is the proportional theory, which suggests that our perception of time is relative to our total lifespan. When a person is five years old, a single year represents 20% of their life, making it seem long. However, for a 50-year-old, one year is only 2% of their life, making it feel significantly shorter in comparison. This relative experience creates the illusion that time speeds up as we grow older.

Neurological Processing:

Another key factor in time perception is how our brain processes information. In childhood, the brain encounters a vast number of new experiences, leading to increased attention and engagement with the present moment. New experiences require more cognitive processing, making time feel slower. As we age, routine and familiarity take over, and the brain processes information more efficiently. Since fewer novel experiences demand attention, time feels as if it is passing more quickly. Neuroscientific research also suggests that the dopaminergic system, which is involved in attention and reward processing, declines with age. This may result in reduced sensitivity to time and a sense of acceleration in its passage.

Memory-Based Perception:

The way we recall events also plays a crucial role in our experience of time. The holiday paradox explains why time appears longer when looking back at eventful periods but feels shorter while experiencing uneventful stretches. Childhood is filled with “firsts” and new experiences, creating richer, more detailed memories that make time seem expansive in retrospect. In contrast, adulthood consists of repeated routines, leading to fewer memorable moments and the feeling that time is slipping away.

Emotional and Psychological Factors:

Emotions also influence time perception. Stress, anxiety, and a fast-paced lifestyle can create the illusion that time is moving rapidly. Conversely, mindfulness and focusing on the present moment can slow down our sense of time. Studies suggest that individuals who engage in varied and meaningful activities often feel they have more time than those stuck in monotonous routines.

Strategies to Slow Down Time Perception:

Although we cannot alter the passage of time, we can adjust how we perceive it. Some strategies to make time feel slower include: Seeking Novelty: Engaging in new activities and learning new skills can create richer memories and slow down perceived time. Practicing Mindfulness: Paying close attention to the present moment can enhance our awareness and make experiences feel longer. Breaking Routine: Changing daily habits, traveling, or introducing new experiences can increase the brain's cognitive engagement.

2. METHODOLOGY

To investigate why time feels faster as we age, a mixed-methods approach can be employed, combining both quantitative and qualitative research techniques. The study may begin with a cross-sectional survey involving participants from various age groups to assess their subjective perception of time passage using standardized psychological scales (e.g., Subjective Passage of Time Questionnaire). In-depth interviews or focus groups can complement the surveys to gather rich, qualitative data about personal experiences and contributing factors. Experimental tasks may also be included, such as time estimation and reproduction exercises under different conditions (e.g., novel vs. routine activities), to observe real-time temporal perception. Additionally, neuroimaging studies (e.g., fMRI or EEG) may be used to examine age-related changes in brain regions associated with time perception, memory, and attention. Longitudinal studies tracking changes in time perception over years would provide valuable insight into how perceptions evolve with age. Data analysis would involve statistical testing (e.g., ANOVA, regression) to identify significant correlations between age, memory density, routine levels, and perceived time speed. Qualitative data would be thematically analyzed to identify common narratives and psychological patterns. This integrative approach allows for a comprehensive understanding of the cognitive, emotional, and neurological mechanisms underlying the accelerated feeling of time with aging.

3. LITERATURE REVIEW

The perception that time accelerates with age is a well-documented psychological phenomenon that has attracted interest across cognitive psychology, neuroscience, and philosophy. Early work by William James (1890) suggested that time appears to move faster in adulthood because fewer novel experiences are encountered, leading to a lower density of memorable events. This theory, often called the novelty hypothesis, posits that when life becomes more routine, the brain creates fewer distinct memories, and thus retrospection compresses the perception of time. A related explanation is the proportional theory, proposed by Paul Janet and later expanded upon by researchers such as Robert Lemlich (1975). It argues that each year represents a smaller proportion of a person's total life as they age, making time feel faster subjectively. Recent cognitive neuroscience studies have identified that the brain's ability to encode time relies heavily on attention and memory. Research by Block and Zakay (1997) emphasizes the role of attention in time estimation; when people are deeply engaged or distracted, they tend to underestimate elapsed time. Aging affects attention resources and working memory, potentially altering how time is processed. Neurobiological factors have also been implicated. Studies suggest that dopamine levels, which are crucial for time perception, decline with age (Wiener et al., 2010). This change may affect the internal clock mechanism located in the basal ganglia and prefrontal cortex, contributing to altered temporal experiences. In addition, studies on autobiographical memory, such as those by Rubin and Bentsen (2006), indicate that people recall disproportionately more memories from adolescence and early adulthood—a phenomenon known as the “reminiscence bump.” This may further skew the perception of time, making earlier life seem longer and later life shorter in comparison. Overall, the literature points to a multifactorial explanation involving memory, routine, neurobiology, and perception, highlighting the complexity of how humans experience the passage of time across the lifespan. Further interdisciplinary research is needed to integrate these findings and fully explain the mechanisms behind this phenomenon.

4. CONCLUSION

The perception that time feels faster as we age is rooted in a combination of psychological and neurological processes. As we grow older, each year becomes a smaller proportion of our lived experience, making time seem to accelerate—a concept explained by proportional theory. Additionally, life tends to become more routine

with age, leading to fewer novel experiences and less richly encoded memories, which compresses our sense of time in retrospect. Neurological changes, such as a decline in dopamine and alterations in time-processing brain regions, may also contribute to this shift. Altogether, these factors create a compelling explanation for why time feels like it's speeding up, underscoring the importance of staying mentally engaged, seeking novelty, and being mindful to help slow down our perception of time. The feeling that time speeds up as we age is a widely reported psychological phenomenon, and several theories from psychology and neuroscience attempt to explain it. Here are some of the most referenced explanations:

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