

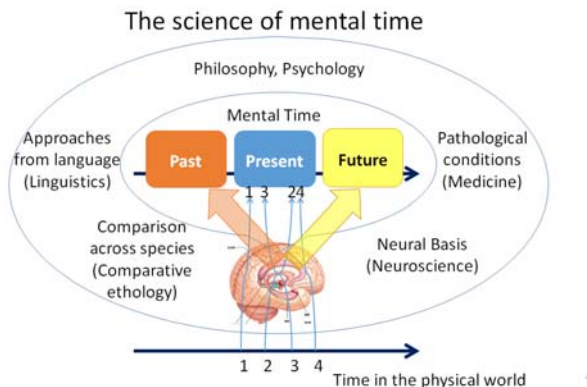
【Grant - in - Aid for Scientific Research on Innovative Areas (Research in a proposed research area)】
Interdisciplinary Area



Title of Project : The Science of Mental Time: Investigation into the past, present and future

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【Purpose of the Research Project】



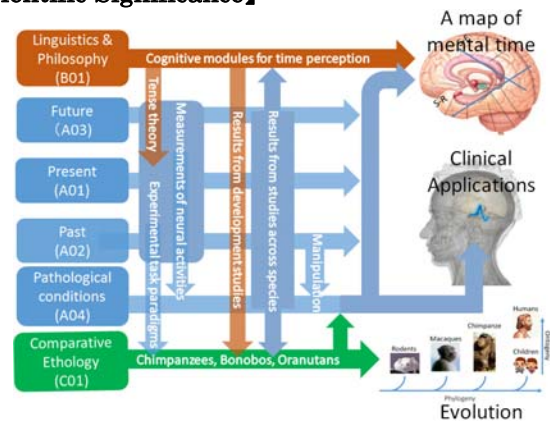
Our group refers to the awareness of time over the past, present and future as “mental time.” Mental time is a cognitive function that has evolved in humans in particular. We raise the following three arguments. 1) When doctors are diagnosing dementia, we ask a person what today's date is. An awareness of the date is essential for humans, but similar expectations are not held for other animals. 2) Most languages have precise tenses. This characteristic provides additional clear evidence that we are continually aware of the past, present, and future. 3) Humans fear death, which represents the end of the future. However, a chimpanzee was found to show no sign of fear of the future, even when the animal was severely disabled.

Where does mental time, the human-specific awareness of time, come from? In this research project, we aim to construct a new research area, “the science of mental time,” through active collaborations among neuroscientists, psychologists, clinical neurologists, linguists, philosophers, and comparative ethologists.

【Content of the Research Project】

This project consists of 6 sub-projects. Sub-projects A01-A03 examine the neural basis of the mental concepts of “present” (A01), “past” (A02), and “future” (A03) by applying neuroscience methods to studies of humans and other animals. In A04, pathological conditions of mental time will be investigated. In addition, we will approach mental time from the viewpoints of linguistics and philosophy (B01), as well as comparative cognitive science (C01).

【Expected Research Achievements and Scientific Significance】



Three achievements are expected from our collaborative studies.

- 1) We will draw a map of mental time in the brain, by combining the theory of tenses in linguistics with neuroscience and clinical neuropsychology.
- 2) We will develop methods for manipulating mental time through cutting-edge studies of lab animals and will initiate clinical applications. By applying these methods, we hope to ameliorate the symptoms of dementia that involve impairments in memory consolidation of the “past,” as well as the symptoms of PTSD that involve obsessions with the “past,” and the symptoms of depression that involve a lack of hope for the “future.”
- 3) We will reveal the process by which mental time evolved, by combining comparative ethology with approaches from other fields. We will study the phylogeny of mental time by comparing humans with rodents, macaques, and chimpanzees and the ontogeny of mental time by investigating development through infancy and childhood into adulthood.

【Key Words】

Mental time: an awareness of time as being past, present, and future, specifically evolved in humans. Mental time is constructed by the brain and does not therefore necessarily coincide with time in the physical world.

【Term of Project】 FY2013-2017

【Budget Allocation】 884,400 Thousand Yen

【Homepage Address and Other Contact Information】

http://mental_time.umin.jp/