


Narrative Consciousness Studies: Pioneering a New Framework for Consciousness

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Purpose and Background of the Research

● Outline of the Research

The content of consciousness has complex properties such as structure (e.g., semantic structure) and dynamics (e.g., temporal changes in content). However, little scientific research has been performed to explore the neural mechanisms that produce such complex properties of consciousness. The main reason is that standard experiments on consciousness rely on simple reports from experimental subjects (e.g., pressing a button), which do not capture the complex properties of consciousness. To address this issue, it would be desirable to use detailed verbal reports (narratives) to assess the properties of consciousness. However, narratives collected from subjects with no specialized knowledge lack reliability and detail. Moreover, narrative data, which are not themselves quantified, are difficult to use directly in scientific studies that require quantitative analysis.

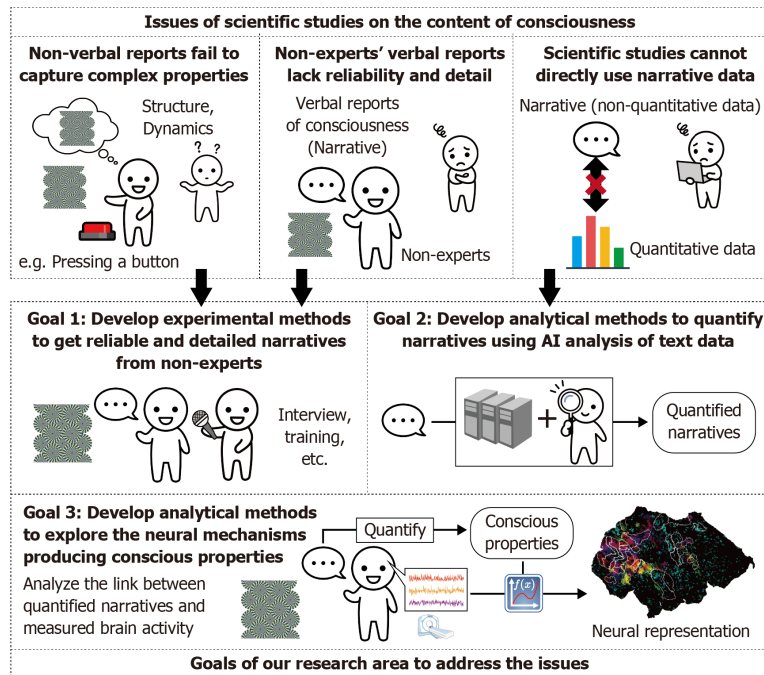


Figure 1. Issues to be addressed and the goals of our research area

To address these issues, our research area develops experimental methods to collect rich and reliable narratives about consciousness from non-experts. Additionally, we develop analytical methods that use AI-based text analysis to quantify the semantic content of these narratives, which reflect the properties of consciousness. We also propose a framework for exploring the neural mechanisms of these properties by analyzing the correlation between quantified narratives and measured brain activity. By achieving these research goals, we can establish a foundation for narrative-based scientific studies of consciousness, which has the potential to transform consciousness research.

Expected Research Achievements

● Aims of Each Group

**(1) Phenomenology Group**

This group develops experimental methods inspired by ideas from phenomenology, which include interviews and training to conduct research using narratives of consciousness. It also aims to validate philosophical theories of consciousness using these methods.

**(2) Natural Language Processing (NLP) Group**

This group creates a human-participatory narrative analysis system that utilizes NLP-based text analysis to quantify narratives of consciousness. In addition, it is collecting a large-scale dataset of narratives labeled with semantic content, which will be made available to the public.

**(3) Neuroscience Group**

This group proposes methods to visualize neural representations associated with the complex properties of consciousness by analyzing the links between quantified narratives of consciousness and measured brain activity. It also develops brain decoding techniques to visualize the state of these properties from brain activity.

● Ripple Effects

**Science of Consciousness:** The use of narratives allows us to capture the complex properties of consciousness, laying the groundwork for scientific research to explore new aspects of consciousness.

**Philosophy of Consciousness:** Philosophical theories and hypotheses about the complex properties of consciousness can be validated via our experimental methods.

**NLP:** Novel analytical methods for the semantic content of narratives will be established, and the large-scale narrative dataset will be widely used in NLP research.

**Qualitative research:** The versatile narrative analysis system will be also available for non-consciousness research using narratives (i.e., qualitative research).

**Clinical research:** The narrative-based analysis can be applied to psychiatric and neurological disorders in which the content of consciousness is altered, facilitating understanding of the mechanisms for these disorders and establishing early diagnosis.