Commentary

Reporting and Subjectivity Traps: A Brief Opinion Article on Consciousness as Belief

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This work examines what we consider to be the two main limitations in consciousness science: the reliance on subjective reporting and the assumption of a coherent self. We propose that consciousness may function more as a belief system than an empirically verifiable fact, shaped by the subjective nature of experience and constrained by how we report it. Lacking objective evidence beyond self-reports, even advanced machines might mimic conscious behaviour under specific conditions. Concepts like phenomenological zombies—beings physically identical to us but devoid of consciousness—highlight the challenge of distinguishing true conscious experience from mere behavioural mimicry. Experimental designs frequently conflate metacognition (beliefs about perception) with consciousness itself, as seen in Higher-Order Thought theories. These frameworks suggest that our sense of being conscious may stem from metacognitive processes, often resulting in cognitive biases. Studies on brain regions associated with metacognitive accuracy further blur the distinction between consciousness and belief. Additionally, phenomena like delusional misidentification syndromes challenge the assumption of a stable, coherent self that reliably perceives and reports reality. By questioning these assumptions, we propose that consciousness might be an adaptive construct, facilitating survival rather than representing an intrinsic quality. This perspective calls for a reevaluation of the fundamental nature of consciousness and our approach to studying it.

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Key concepts

Consciousness: The subjective experience of awareness, where the mind not only perceives but interprets reality through self-referential beliefs, distinct from mere wakefulness or arousal.

Report: The process of accessing and communicating conscious content, either externally through observable expression or internally as a self-reflective acknowledgment, allowing awareness to be "reported" or accessed within one's own mind.

Self: The perceived anchor of consciousness, a mental construct that unifies together experience, memory, and identity, allowing the mind to perceive an "I" at the center of awareness.

Belief: The brain's interpretive structure, a cognitive lens through which raw experiences are shaped into a coherent narrative, often blending perception with subjective confidence.

Introduction

In contemporary science, the contents of consciousness are often studied through access consciousness —the information we can report or act upon—rather than phenomenal consciousness, the raw, subjective feel of experience[1]. Any unreported phenomenal experience is indistinguishable from unconscious processing, making it inaccessible to study. Thus, scientists rely on access consciousness as the only viable way to measure awareness, as it allows for systematic observation and reporting, even though this approach cannot fully capture the depth of subjective experience.

Despite its usefulness, access consciousness introduces two key methodological limitations. The first is the need for action or reporting: even in a resting state, we require some demonstration from individuals to infer their conscious awareness, whether through overt or covert actions. This reliance on reporting creates the reporting trap, as it binds conscious experience to the act of accessing and relaying information. The second limitation centers on the concept of the self. Conscious experiences are generally assumed to involve a perceiving "self," yet this assumption may be a cognitive construct rather than a fixed entity. This subjectivity trap thus blurs the distinction between neural mechanisms related to self-perception and those linked to pure consciousness, complicating efforts to isolate consciousness from self-based beliefs and expectations. Together, these limitations underscore our tendency to view consciousness through the lens of belief, which in turn may shape the very nature of what we consider conscious experience.

These limitations also raise a fundamental question: if consciousness is defined and experienced through self-belief, how can we distinguish between true consciousness and mere behavioural mimicry? Philosophers and scientists alike have speculated on the existence of phenomenological (p) zombies—entities physically identical to conscious beings but lacking subjective experience[2][3]. From this perspective, proving that we are not p-zombies would necessitate two elements: a coherent reporting behaviour and a reporter who believes in their own experiences. In this way, our current reliance on the self and reporting reinforces a view of consciousness as belief-based, suggesting that without both a belief in experience and a reporting mechanism, true consciousness remains difficult to verify. Consequently, these methodological constraints challenge our ability to distinguish between genuine conscious beings and entities that simply display complex, self-like behaviours, whether in humans, animals, or artificial systems.

The reporting trap

In scientific experiments designed to investigate the mechanisms of conscious experience, researchers commonly rely on participants′ reports of whether they perceived a stimulus. This method is often viewed as the only theoretically valid measure of consciousness[4][5]. Without these reports, we′re left in the dark about whether participants actually experienced the stimuli. Comparing brain activity between what we assume are conscious and unconscious experiences in resting state paradigms without direct reports leaves us uncertain if participants truly perceived the stimuli. Moreover, we often assume a priori which stimuli are consciously experienced based on our access to that information, leading us to constantly seek confirmation through reports, whether overt or covert. However, this reliance on reports creates a fundamental limitation: it entangles our understanding of consciousness with metacognitive beliefs—beliefs about one's own perception—blurring the line between consciousness itself and our beliefs about being conscious[6].

Higher-Order Thought (HOT) theories of consciousness provide a framework that reflects this intertwined relationship. HOT theories propose that conscious experiences involve a minimal inner awareness of one′s mental states, achieved through a higher-order representation that monitors or meta-represents first-order sensory states[7]. One of the more recent proposals, the Perceptual Reality Monitoring (PRM) theory, further refines this by suggesting that consciousness arises when a reliable (predicted) higher-order metacognitive representation is activated alongside a first-order representation. According to PRM, consciousness functions as a belief system dependent on predictions of reliability.

This implies that our conscious awareness could be influenced by metacognitive judgments, leading us to believe we are conscious of a mental state even when cognitive biases might distort our perception[8].

To illustrate the implications of this reporting trap, consider a well-known experiment by Rounis et al.[9]. In this study, participants were asked to report whether a square appeared on the left or right side of a fixation cross while also rating the visibility of the square. The participants′ ability to correctly discriminate the location of the square remained stable, controlled by a staircase procedure. However, their subjective visibility ratings were affected when the dorsolateral prefrontal cortex was disrupted using transcranial magnetic stimulation (TMS). Despite making accurate location judgments, the participants′ visibility ratings became uncoupled from their task performance, indicating a decline in metacognitive ability—their capacity to reflect accurately on their own perception. This result suggests that the metacognitive representation, which should align with the first-order perceptual representation, was impaired. Such findings highlight that our conscious experiences might be more about our beliefs in what we perceive than about the actual sensory information processed by the brain (which can be unconsciously driven). It is important to note, however, that these positive findings have not been yet replicated[10] and that many other cognitive processes tradicionally linked to consciousness might very well be insufficient to explain our subjective experiences, such as attention[11].

The core challenge of the reporting trap is that it confines our operational definition of consciousness to subjective reports, which can be influenced by errors in self-assessment or cognitive biases. To address this, researchers have developed subjective visibility scales (e.g., the Perception Awareness Scale; [12]) that go beyond objective measures (such as task performance) to capture personal aspects of perception like confidence or clarity. While these scales aim to provide a more nuanced picture of conscious experience, they also acknowledge the role of metacognitive beliefs in shaping what participants report as conscious. This approach reveals the intricate connection between belief and awareness, reinforcing the idea that what we consider conscious experience is deeply influenced by our internal judgments and predictions.

In summary, the reporting trap highlights a significant limitation in consciousness research: our dependence on subjective reports can obscure the true nature of consciousness by conflating it with metacognitive-type beliefs. This entanglement challenges us to refine our methods and theories.

The subjectivity trap

Researchers delving into consciousness through subjective reports often operate under the assumption of a self that knows what is to be known. This assumption is exemplified in the minimal-self hypothesis, which claims that "it is necessarily the case that whenever there is a conscious experience, there is a self"[13]. The operational definition of self generally includes processes tied to personal identity, such as memories of one's name or body image, and may extend to body maps. While we may not have reached consensus on defining the self, it is widely acknowledged that involuntarily losing one's sense of self constitutes profound psychological suffering[14]. However, the assumption that a coherent self exists within the brain, capable of subjective perception, may be misleading. Observations from delusional misidentification syndromes (DMS) reveal significant inconsistencies in this belief. For instance, asomatognosia, a form of DMS arising from right hemisphere lesions, can lead patients to disown parts of their bodies, perceiving them as foreign. Conversely, some individuals experience a form of delusional reduplication, believing compromised body parts exist as separate entities in an illusory child or other person[15].

These reporting inconsistencies are not just reflections of external influences; they suggest that our conscious experience itself might be rooted in internal biases—specifically, the belief in an enduring self. The brain, shaped by evolutionary pressures, seems predisposed to create distinctions between "self" and "non-self," constructing an illusory identity that organizes incoming information around a central "I." In this way, consciousness may operate more like a belief system, with its foundations resting on potentially flawed assumptions, most notably, the assumption that "I exist." This presents a significant methodological challenge for consciousness research.

If consciousness is fundamentally intertwined with the subjective belief in an "I," researchers face a circular problem: studying consciousness inevitably reinforces the assumption of a perceiving self, as reports and introspections are interpreted through this lens. We call this the subjectivity trap where consciousness is constrained by the very self it seeks to understand. This circular logic—"I exist, therefore I am conscious," and "I am conscious, therefore I exist"—introduces a foundational bias into experiments. The subjective reports we rely on to infer consciousness are thus inseparable from an implicit self-reference, blurring the line between what is consciously experienced and what is merely believed to be self-related.

Moreover, if we accept that we are all fundamentally composed of biology and chemistry, the distinction between a conscious being and a p-zombie becomes increasingly insignificant. We may well believe we are conscious and that our experiences are unique, yet this belief alone does not prove the existence of consciousness. It raises the unsettling possibility that our rich inner lives could be mere illusions, akin to the idea that our perceptions may not directly reflect an underlying reality and that cognitive sciences could fully explain our experiences without invoking any mysterious essence[16][17][18].

Methodologically, this creates a dilemma: we rely on subjective reports to study consciousness, but these reports are inherently biased by self-belief, potentially distorting our findings. Any data derived from self-reports is constrained by the participant's metacognitive beliefs about their own consciousness, reinforcing the assumption of a coherent self, a narrative[19]. Until we can differentiate between consciousness and this belief-based "self," our ability to objectively measure conscious experience remains compromised. In other words, the reliance on subjective reports may obscure our understanding of consciousness itself, potentially conflating genuine conscious experience with constructs of self-reference and belief. This fundamental issue challenges researchers to question whether their methods capture consciousness as it is—or merely consciousness as it is believed to be by the reporting subject.

All in all, the subjectivity trap suggests that our understanding of consciousness is inherently biased by the belief in a perceiving self. This circular assumption—seeing consciousness as inseparable from the self—makes it difficult to study consciousness objectively, as subjective reports may reflect self-belief rather than true conscious experience. If we are, at our core, no different from philosophical zombies, then the very essence of what we consider consciousness may warrant deeper scrutiny and reevaluation.

Alternative views

Some researchers argue that focusing exclusively on access consciousness may overlook essential aspects of phenomenal consciousness—those raw, subjective experiences central to understanding what it means to be conscious. Critics like [20] and [21] assert that phenomenal consciousness, though challenging to study directly, cannot be ignored. They suggest refining introspective methods or incorporating indirect measures like physiological responses to capture these elusive experiences. Additionally, advocates for indirect behavioural and neural measures (e.g., [22]) argue that neuroimaging and computational models might offer insights into conscious states without requiring explicit reports, potentially bypassing the limitations of self-report biases.

Moreover, the subjectivity trap may have its critics. Some argue that self-referential processing, rather than distorting consciousness, might provide an essential framework for organizing experience (e.g., [23]). From this view, the self isn't merely an illusory construct but serves a functional purpose, aiding in the coherent integration of conscious experience. Others, like [17][18], challenge the concept of p-zombies, arguing that consciousness is fundamentally linked to behaviour and brain function. By focusing on observable criteria rather than subjective self-belief, we might still attribute consciousness meaningfully without relying solely on self-report measures.

Conclusion

In sum, the challenges of the reporting and subjectivity traps in, at least, access consciousness research underscore the tension between consciousness as experienced and consciousness as believed. Our reliance on subjective reports and the assumption of a perceiving self can distort the very phenomena we seek to understand, binding consciousness to self-belief and internal judgments rather than objective reality. In this sense, our exploration of consciousness becomes entangled in what Daniel Dennett might have called an "illusion" of sorts, where our constructs of self and awareness shape, and perhaps even mask, our true experience. Dennett's work frequently questioned the assumptions underpinning conscious experience, suggesting that much of what we take for granted about our awareness may be built upon cognitive tricks or illusions that aid in survival rather than pure reflection of the mind's depths. In this light, consciousness could be seen as a "user interface" designed not to reveal reality as it is, but as our brains interpret it—a synergy of perception, belief, and functional coherence that allows us to navigate the world.

In the spirit of Dennett's skepticism, we might push consciousness studies to ask whether what we are studying is truly a raw experience or a cognitive construct that serves our evolutionary purposes. By refining our methods and acknowledging the circularity between self and consciousness, we may one day disentangle the genuine facets of experience from the beliefs that accompany them. Until then, the subjectivity and reporting traps remind us to approach consciousness with cautious humility, recognizing that what we access and report may not fully capture the essence of conscious experience.

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