

Letter Response

Clarifications about there being two necessary conditions for consciousness

Liad Mudrik ^{1,2,3,*},
Nathan Faivre⁴,
Michael Pitts⁵, and
Aaron Schurger^{6,7}

We recently proposed a modification to an influential conceptual framework in consciousness science: Ned Block's distinction between phenomenal (P) consciousness and access (A) consciousness [1]. Instead, we proposed that there is only one type of consciousness, requiring two necessary conditions [2]. Importantly, we did not propose a new definition of consciousness; we agree with the current consensus that it is a 'subjective experience' in the here and now, or 'what it is like' from a first-person perspective. The novelty of our proposal stems from the subtle but important shift to conceptualizing consciousness as jointly requiring two conditions. Specifically, we proposed that neural representations of 'content' (e.g., perceptions, thoughts, and feelings) must (i) be formatted in a particular way, and (ii) have the potential to influence what happens next (specifically including the ability to flexibly modify one's behavior, which in adult humans also typically entails the ability to introspect and report, given certain background conditions are met). To provide a bridge between Block's P versus A framework and ours, we referred to condition 1 as establishing 'potentially phenomenal content' (P-condition) and condition 2 as providing 'minimal access' to that content (A-condition).

In response, three different critiques were mounted: Dolega *et al.* [3] agree with our

critique of Block's distinction, but argue that we did not go far enough and should consider entirely discarding any notions of P versus A (either as types of, or as conditions for, consciousness). Phillips [4] supports Block's original distinction and questions whether our subtle conceptual shift really changes anything. Melloni *et al.* [5] raise concerns about how we define 'access', how our proposal might affect current theories of consciousness, and whether it is capable of inspiring novel empirical work. Here, we respond to these critiques to further clarify our conceptual framework (due to space limitations, we focus on the most crucial points, yet we welcome further discussion on other points elsewhere).

Our proposal is that P and A are two necessary *conditions for* (rather than *types of*) consciousness—this is a conceptual, rather than an empirical, response to a conceptual claim made by Block (though it has empirical implications, as we explain below). Because it obviates the distinction between two *types* of consciousness, it also renders moot debates over the alleged nature of these 'types' (e.g., whether P-consciousness is functional or not; see Dolega *et al.*'s criticism).

But what exactly do we mean by the 'P-condition' then? We wrote that, to fulfill it, 'information must be structured in such a way that it can provide distinctive qualities from a first-person perspective'. This could refer to intermediate-level and high-level perceptual representations that are established after the initial (unconscious) processing of lower-level features. We noted that several existing theories have proposed mechanisms for encoding this information in 'just the right way' (e.g., certain types of local recurrent processing or a specific combination of integration and differentiation).

How do contents satisfying the P-condition but not the A-condition differ from

previous proposals of 'preconscious' content [6]? First, the key factor that converts 'preconscious' to 'conscious' states in Dehaene *et al.*'s framework is attention, which selects information for broadcasting throughout a global workspace. Our framework allows for a wider range of attentional influences, with selective attention operating at various stages (both before and after the P-condition is established). Second, in Dehaene *et al.*'s proposed taxonomy of unconscious, preconscious, and conscious states, little is said about what distinguishes unconscious from preconscious states besides 'sufficiently strong bottom-up stimulus strength', 'intense occipito-temporal activation', and 'resonant loops within medium-range connections'. The overwhelming focus was placed on what distinguishes conscious processing from preconscious processing. Our proposed 'P-condition' goes further in explaining why a given conscious experience feels the way it does (i.e., how it is structured phenomenologically), rather than focusing only on whether it occurs or not. Our 'A-condition' also differs from their notion of access, as we do not commit to a specific access mechanism, such as 'global broadcasting'. To clarify, we emphasize that access differs from the ability to demonstrate access, a distinction that speaks directly to a criticism raised by Melloni *et al.* (Box 1).

We would like to emphasize that, at this point, we are offering a conceptual framework, not a theory. However, any theory that adopts this framework would yield clear predictions; for example, certain manipulations of awareness are likely to block conscious perception by interfering with the P-condition, while others may interfere only with the A-condition. Additionally, when triangulating across various manipulations of awareness, two main correlates of consciousness should consistently be found.

Box 1. On a confusion about having access versus demonstrating access

A common misconception is that access entails the ability to ‘demonstrate access’. However, those are two different things, and accordingly, requiring access does not mean that creatures/systems that cannot overtly demonstrate it do not have it (e.g., nonhuman animals, infants, and patients who are unable to report). Before the command-following test was developed [7], many nonresponsive patients were unable to demonstrate access—but they still had it, as the test later showed. Thus, access is necessary for consciousness, even if some barriers prevent its demonstration (e.g., through reports). Conversely, it is unclear what Melloni *et al.* mean by ‘showing signs of phenomenality’, if not exhibiting some form of access (i.e., what would be those signs, then?).

To clarify, unlike Block’s original P versus A distinction [1], there is no ‘methodological dilemma’ created by our proposal. We consider no-report paradigms to be essential for distinguishing between neural mechanisms involved in reporting tasks and those involved in the minimal access necessary for consciousness [8–10]. Melloni *et al.* argue that if ‘access is independent of report...we are owed a method other than report for assessing whether a subject has accessed phenomenal content’. Fortunately, the field has already begun developing such methods (e.g., no-report paradigms, indirect measures of eye metrics, cross-task decoding, and incidental memory tests [11]). Of course, these initial methods rely on validation (at some point) with corresponding report-based measures, but once the neural correlates of access in the absence of report are well established, it should be possible to rely on the neural data alone to infer that the A-condition has been met, allowing us to study both the A and P conditions while minimizing task-related confounds.

Both Phillips and Melloni *et al.* worry that our proposal would impose asymmetric difficulties for existing theories of consciousness. First, we do not think that congruence with existing theories should be a criterion for assessing the validity of a conceptual stance. However, we do believe that our framework offers an avenue for unification by (i) providing a more productive way to conceptualize consciousness and (ii) demonstrating that Block’s formulation may have led the field into an unnecessary impasse. Our proposal encourages consciousness researchers, in a heavily divided theoretical landscape, to take a step back, assess the state of the field, and consider a subtle conceptual shift that might offer a more productive framework. Time will tell whether this move is helpful, but one thing is clear: 30+ years on, defining two types of consciousness has yielded a massive corpus of discussion and debate, but relatively little in the way of empirical traction. On this, we agree with Dolega and colleagues. Where we disagree is that defining two necessary *conditions* for consciousness *does*, at least potentially, offer such traction.

In the words of Dolega *et al.*, does our proposal ‘change how consciousness science is actually conducted’? We believe that it provides a novel lens for interpreting existing empirical data and may inspire future experimental designs and analysis strategies. For example, instead of meandering debates about posterior versus frontal, or early versus late neural correlates of consciousness (NCCs), our proposal encourages researchers to identify two sets of NCC subelements: one that indexes the establishment of the P-condition and one that marks the fulfillment of the A-condition. Identifying the neural mechanisms needed to establish the P-condition can be achieved by decoding or contrasting between different kinds of perceptual content in consciously perceived versus not-perceived stimuli. Conversely, direct contrasts between physically identical stimuli that are perceived versus not perceived, especially under no-report conditions, are likely to help identify the neural processes needed to fulfill the A-condition.

Contrary to what is implied by some of the commentators, and as we explained

above, our framework accepts the commonly used definition of consciousness but tries to better specify what it entails. Our proposal is also consistent with the original definition of an NCC: ‘the minimal *set* of neuronal events *jointly* sufficient for a given conscious percept’ [12]. In our view, many in the field, together with the theories that currently dominate it, have strayed from this original NCC definition, looking instead for ‘that one special thing’ in the brain that correlates with consciousness [13]—and some of the commentaries interpret our proposal as if access is that special thing. Yet as we mentioned in our target paper, both access and phenomenology are crucial. Thus, our proposed two-stage framework broadens the theoretical landscape rather than narrows it. It encourages a multifaceted approach that allows both arbitrating between theories focused on identifying the neural basis for either the P or the A condition and unifying across theories that best explain one of these two necessary aspects of consciousness. On a larger scale, this framework combines data-driven approaches (integrating over empirical findings) with conceptual reasoning (positing consciousness to require both P and A). Perhaps a synergy between Darwin’s Beagle and Plato’s cave, rather than an ‘either/or’ approach, is exactly what the field of consciousness needs.

Declaration of interests

The authors declare no competing interests.

¹School of Psychological Sciences, Tel Aviv University, Tel Aviv, Israel

²Sagol School of Neuroscience, Tel Aviv University, Tel Aviv, Israel

³Canadian Institute for Advanced Research (CIFAR), Brain, Mind, and Consciousness Program, Toronto, Ontario, Canada

⁴Université Grenoble Alpes, Université Savoie Mont Blanc, CNRS, LPNC, Grenoble 38000, France

⁵Psychology Department, Reed College, Portland, OR, USA

⁶Department of Psychology, Crean College of Health and Behavioral Sciences, Chapman University, Orange, CA, USA

⁷INSERM U992, Cognitive Neuroimaging Unit, NeuroSpin Center, Gif-sur-Yvette, France

*Correspondence:
mudrikil@tauex.tau.ac.il (L. Mudrik).
<https://doi.org/10.1016/j.tics.2026.06.003>

© 2026 Elsevier Ltd. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

References

1. Block, N. (1995) On a confusion about a function of consciousness. *Behav. Brain Sci.* 18, 227–287
2. Mudrik, L. *et al.* (2025) On a confusion about there being two types of consciousness. *Trends Cogn. Sci.* <https://doi.org/10.1016/j.tics.2025.11.012>
3. Dolega, K. *et al.* (2026) Does reframing access and phenomenality advance consciousness science? *Trends Cogn. Sci.*
4. Phillips, I. (2026) In defense of a distinction. *Trends Cogn. Sci.*
5. Melloni, L. *et al.* (2026) What consciousness is should be determined empirically, not a priori. *Trends Cogn. Sci.*
6. Dehaene, S. *et al.* (2006) Conscious, preconscious, and subliminal processing: a testable taxonomy. *Trends Cogn. Sci.* 10, 204–211
7. Owen, A.M. *et al.* (2006) Detecting awareness in the vegetative state. *Science* 313, 1402
8. Consortium, C. *et al.* (2025) Adversarial testing of global neuronal workspace and integrated information theories of consciousness. *Nature* 642, 133–142
9. Pitts, M. *et al.* (2014) Gamma band activity and the P3 reflect post-perceptual processes, not visual awareness. *Neuroimage* 101, 337–350
10. Stockart, F. *et al.* (2025) Cortical evidence accumulation for visual perception occurs irrespective of reports. *Nat. Commun.* 16, 8458
11. Tsuchiya, N. *et al.* (2015) No-report paradigms: extracting the true neural correlates of consciousness. *Trends Cogn. Sci.* 19, 757–770
12. Koch, C. (1996) A neuronal correlate of consciousness? *Curr. Biol.* 6, 492
13. Herzog, M.H. *et al.* (2026) *Scientific Theories of Consciousness*, Cambridge University Press