Better methods won't achieve consensus in consciousness science

A commentary on: François Stockart et al.: Studying unconscious processing: Contention and consensus

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Abstract:

Stockart et al.'s recommendations for improved methods in studying unconscious processing are generally welcome. But, despite their optimism, such improvements will not overcome perennial disagreement in the field. Deep and wide-ranging lack of consensus persists in an imagined future where their recommendations are universally implemented. For conscious science to make progress, we must wrestle with its theoretical foundations.

Main Text:

Stockart et al. contend that perennial disagreement in conscious science "stems, at least in part, from the use of a diversity of sometimes suboptimal methods and measures," voicing "optimism" that their recommendations will "lead to progress" and help a siloed field "move forward". There is much to agree with in their critique, and many of their recommendations are most welcome. But let us imagine a future where their recommendations are universally implemented. How much progress and consensus will we find? I suggest only modest progress and minimal consensus. Better methods alone will not bridge the field's foundational divides.

In our imagined methodological utopia, scientists collect both subjective and objective measures wherever possible (recommendation 1). Such measures sometimes disagree. It is well-established—and theoretically predictable (Macmillan, 1986; King and Dehaene, 2014)—that

across a range of conditions and protocols, subjects perform above chance on objective measures despite reporting little or no awareness or confidence. In the neuropsychological literature, this pattern is notorious from blindsight (Weiskrantz, 1986), though also present in numerous other conditions such as unilateral neglect (Marshall and Halligan, 1988) and prosopagnosia (de Haan et al., 1992). In neurotypical subjects, the pattern is observed in masking (Del Cul et al., 2007; Sandberg et al., 2010; Song and Yao, 2016), continuous flash suppression (Hesselmann et al., 2011), the attentional blink (Nieuwenhuis and Kleijn, 2011), inattentional blindness (Nartker et al., 2025), and simply when stimulus differences are small, as in Peirce and Jastrow's (1885) pioneering studies.

Do such patterns reflect unconscious processing, unreported conscious processing or both? As decades of disagreement attest, there is no theoretically neutral answer (Eriksen, 1960; Cheesman and Merikle, 1986; Holender, 1986; Lau, 2008; Seth et al., 2008; Peters et al., 2017). We hit a methodological wall. As Stockart et al. concede, the situation "is not just a methodological matter, but a theoretical one". Yet the above-listed conditions and protocols are not mere curiosities but the beating heart of consciousness science. If better methods and measures do not help us probe consciousness here, then deep disagreement still plagues our imagined future.

Stockart et al.'s other recommendations do not assuage such pessimism. Our utopian scientists use the Perceptual Awareness Scale (PAS; Ramsøy and Overgaard, 2004) as their subjective measure of choice (recommendation 3) and refuse to lump together "brief glimpse" and "unaware" trials (recommendation 7). This leads—we can suppose—to a modicum of agreement that certain cases involve weak conscious experience as opposed to unconscious processing. But, since the PAS is a subjective, criterion-based measure, it will leave many cases of contention (Fahrenfort et al., 2024). Our researchers also include (within reason) sufficient trials to ensure that low but non-zero sensitivity is picked up by their objective measures (recommendation 6) and add catch trials (recommendation 5), allowing them to separate objective sensitivity from response bias. Welcome steps both. But without theoretical agreement as to how bias and sensitivity correspond to consciousness, little advance towards consensus.

Take blindsight. In both clinical cases and purported analogues in neurotypical observers, objective performance without reported awareness is widely interpreted as reflecting unconscious perception. Critics argue that such performance instead reflects weak, degraded experience falling below a conservative response criterion (Phillips, 2021a; Balsdon and Azzopardi, 2015). In reply, relevant criterion effects are claimed to be perceptual, and so below-criterion performance to indicate unconscious perception after all (Michel and Lau, 2021; Peters et al., 2016; see Phillips, 2012b for a response). Wherever the truth lies here, it will not be attained simply by improved methods and measures.

Worse still, consider Block's (1995, 2007) enormously influential distinction between phenomenal (P) and access (A) consciousness. A state is P-conscious if there is something it is like to be in it, and A-conscious if its content is available for reasoning, rational action guidance and report. As four of the target article's authors elsewhere highlight, Block's distinction underpins one of the most "fundamental controversies" impeding "progress in the scientific study of consciousness": the "major divide" between sensory theories and cognitive theories (Mudrik et al., 2025). Sensory theories (e.g., Integrated Information Theory and Recurrent Processing Theory) hold that local processing in occipito-temporal regions can realize P-consciousness without the parieto-frontal activity required for A-consciousness. Cognitive theories (e.g., Global Neuronal Workspace Theory and Higher Order Theories) insist that this is at most pre-conscious processing. Methodological improvements seem powerless to resolve this dispute (Phillips, 2018). Both sides have a consistent story to tell concerning the behavioral and informational facts—and so responses on subjective and objective measures. They disagree as to how these correspond to facts about consciousness. Mudrik et al. claim that we can make progress by redefining P- and A-consciousness, in effect insisting on A-consciousness as a necessary condition for awareness. But this will hardly convince sensory theorists who reject any such condition. Again, a fundamental disagreement at the heart of consciousness science still haunts our methodological utopia.

What lesson should we draw? Plausibly, where improved measures and methods give out, greater focus on theory is required. This does not mean more theories. As He (2025: 1; cf. Overgaard et al., 2025) observes, theories "have played an outsized role in consciousness science" and their proliferation has left a landscape of entrenched battle lines where confirmation bias is rife. Instead, we should reflect more deeply on the field's foundations. Does the fact that consciousness is a subjective state mean it "must … be evaluated by subjective reports" (Dehaene et al. 2006: 206), or do world-directed reports and actions properly express a subject's point of view? Should we distinguish between perceptual and response criteria, and if so, how? How precisely should we distinguish P-consciousness and A-consciousness (Burge, 1997; Chalmers, 1997; Overgaard, 2018)? Should we approach consciousness axiomatically (Tononi et al., 2016; but see Bayne, 2018), as a natural kind (Shea and Bayne, 2010; Shea, 2012; but see Phillips, 2018), or in some other way? Last but not least, how should we answer profound and long-standing challenges to the very possibility of a science of consciousness (Nagel, 1974; Irvine, 2013)?

Competing Interests

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