

Attention in the absence of consciousness?

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Christof Koch and Naotsugu Tsuchiya claim in a recent article [1] that ‘top-down attention and consciousness are distinct phenomena that need not occur together’. To support this claim, they assemble evidence purportedly showing that (i) there can be consciousness without attention and (ii) there can be attention without consciousness. There is a fallacy in their argument for the second of these claims.

The fallacy arises from a failure to distinguish between the following hypotheses:

- (i) It is possible to attend to a thing (or location) without consciously experiencing some of the properties of that thing (or objects at that location).
- (ii) It is possible to attend to some thing (or location) without consciously experiencing *that very thing* (or location).

The first of these hypotheses is uncontroversial. Attending to something clearly does not guarantee awareness of its every feature. The second hypothesis is what Koch and Tsuchiya are trying to establish. The problem is that the first hypothesis is sufficient to explain the evidence they cite.

One can see this by considering what happens in standard demonstrations of the retinal blindspot. When locating the blindspot one attends to a location in the visual field and finds that one is no longer experiencing the dot that is presented there. It would obviously be a mistake to invoke the second hypothesis to account for this. One is not conscious of the dot, but neither is one attending to it – after all, no information from the dot is entering the nervous system. One *is* attending to the location that falls within the blindspot, but one *does* have a conscious experience of that location – after all, it is conscious experience of the location that notifies one of the dot’s disappearance.

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Letter Response

Response to Mole: Subjects can attend to completely invisible objects

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Mole [1] raises an interesting point that we did not address in our original publication [2]. However, he never states

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The weak hypothesis, not the strong one, accounts for failures of awareness during attention to the location of the blindspot. The crucial feature of the case is that subjects attend to a *location*, while failing to see an *object* presented at that location. The problem for Koch and Tsuchiya is that the same feature is found in the experiments that they cite. Those experiments show (in Koch and Tsuchiya’s own words) that ‘subjects can attend to a *location* for many seconds and yet fail to see one or more *attributes of an object at that location*’ [my italics] [1]. As in the blindspot case, the weak hypothesis is able to account for this.

Some of the cases that Koch and Tsuchiya discuss are surprising ones, in which the unexperienced objects at attended locations (or unexperienced properties of attended objects) can be shown to elicit priming effects and where these priming effects are attention dependent [2,3]. Such cases demonstrate that information from attended locations can fail to reach awareness, even when represented in the brain. More complicated mechanisms are needed to account for this than those responsible for the retinal blindspot. But the effects can nonetheless be accounted for without recourse to the hypothesis that attention can be given to items that do not figure in conscious experience.

References

- 1 Koch, C. and Tsuchiya, N. (2007) Attention and consciousness: two distinct brain processes. *Trends Cogn. Sci.* 11, 16–22
- 2 Naccache, L. *et al.* (2002) Unconscious masked priming depends on temporal attention. *Psychol. Sci.* 13, 416–424
- 3 Jiang, Y. *et al.* (2006) A gender- and sexual orientation-dependent spatial attentional effect of invisible images. *Proc. Natl Acad. Sci. USA* 103, 17048–17052

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