obstacles and 'attended objects' which may be 'unfounded' (Ref. 1, p. 270). I agree; I pointed out that in order that the nervous system treat something as an obstacle it must have been noticed and attended to[2]: obstacle avoidance will be observed *only* when a non-target is an 'attended object'. The critical distinction is between task-relevant items (target and potential obstacles) and task-irrelevant items ('distractors'). In an obstacle-avoidance account the effects of a non-target on performance are explained as being due to a planned response to the non-target; in a 'distractor' account the observed effects are explained as being due to some sort of failure of the nervous system to be completely or effectively selective. This is a very real distinction which is not always easy to make[2]. For example, Howard and Tipper found that when people reached to grasp a target they veered away from a small light-emitting diode (LED) that was not a physical obstacle to the reach (it was flush with the table surface)[3]. Importantly, subjects veered away from the LED only when it was possible for their reaching limb to obscure a clear view of it. Because they were instructed to attend to the LED, I interpreted the veering as a planned response to ensure an unobstructed view of the LED so as to comply with this instruction.

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Reply to Tresilian

In my review I discussed recent attempts to determine the role played by selective mechanisms for the control of action[1]. In particular, I examined recent studies that have looked at reach-to-grasp responses to target objects in the presence of distracting objects within a three-dimensional space. The paper highlighted how motoric aspects of the reach-to-grasp response may be influenced by the distractors, rather than merely addressing the perceptual consequences of the distractors[2,3].

Tresilian's remark[4] is concerned with the work of Tipper and his colleagues[2,3] as I discussed it in my review. In particular, the main argument seems to be that data from reaching experiments need careful interpretation, for the obvious reason that non-target items may not only be potential distractors but also potential obstacles, even when they don't actually get in the way. While I agree with this remark I would like to point out that Tresilian's argument is also consistent with Tipper and colleagues' hypothesis. Both accounts consider access to an object representation that enhances mechanisms that produce changes in the reach path. Whether obstacle or distractor, that object is acknowledged and sensorimotor responses adequately adapted.

Another issue raised by Tresilian is that it may be more parsimonious to explain these reaching effects as avoidance manoeuvres[4]. However, this statement seems to be in contradiction with the following part of Tresilian's remark: he argues that parsimony is not necessarily a good thing when a theory explains a wide variety of complex data, but then argues for parsimony in support of obstacle-avoidance effects. Citing Ramachandran[5] he highlights that the nervous system employs a patchwork of approximate mechanisms, tricks and heuristics, not a unitary mechanism that operates by a single set of rules. However, as recently pointed out by Hahnloser *et al.*, 'the fundamental similarities in structural organisation and physiology across the neocortex suggest that the cortical circuits use common principles of operation that can be modified according to specific processing tasks'[6]. Accordingly, specific mechanisms in the population-coding model, such as lateral inhibition, may be basic, ubiquitous properties throughout the brain. Similar processes mediate eye and hand movements when selecting targets from distractors. The avoidance account certainly can provide interesting post-hoc explanations for the reach deviations but cannot explain why the eye veers away from irrelevant stimuli, as in this case there is no requirement to avoid the obstacle.

Finally, Tresilian regards the distinction between obstacle and distractor object as an issue[4]. He refers to Howard and Tipper's work in which it was found that when people reached to grasp a target they veered away from a small light-emitting diode (LED)[3]. This was interpreted as some sort of failure of the nervous system to be completely or effectively selective. Tresilian proposes that because subjects were instructed to attend to the LED, the veering is a planned avoidance response, rather than a failure in selectivity to ensure an unobstructed view of the LED in order to comply with this instruction. In other words, even though the LED was not the primary focus of attention, some attention was directed to it and this demanded a clear view of the LED – hence the veering. However, it is worth noting that in this experiment, after observing the colour of the LED, the subject's strategy was to then ignore it while undertaking the primary task of grasping the target. It is therefore unlikely that subjects would attempt to maintain fixation on the LED, as this would disrupt prehension performance.

To summarize, when all the evidence is reviewed, there is more agreement than disagreement between the avoidance and the distractor accounts and between the position of the Tresilian and Tipper models. Clearly the question of selection-for-action remains unresolved, and is an important target for future research.

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