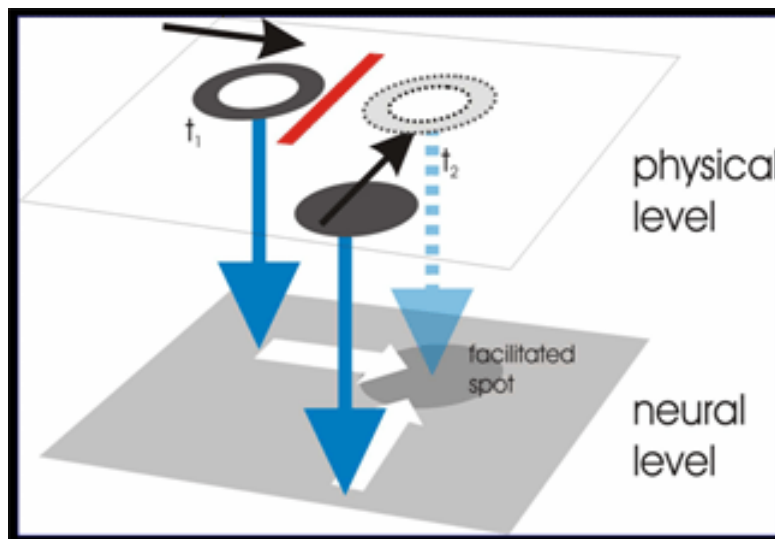


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## Our visual system may react more rapidly when visualising two objects which might



International research co-led by professor Alejandro Maiche, of the Department of Basic, Evolutionary and Educational Psychology at the UAB, has put forward the hypothesis that the brain responds to the possibility that two objects might collide, in a different way to how it would react to two objects in movement with divergent trajectories. This conclusion comes from an experiment on a visual phenomenon, the Flash-lag effect (FLE), which has shown that this effect increases when the visual system perceives two movements with convergent trajectories.

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Visual perception requires a process (from when the eye receives the information until the moment the brain "digests" it) which, although it occurs in a very short space of time, means a delay between the moment when the events happen in reality and the moment when they are perceived.

This "retard" is not really a problem when we perceive static objects, but it may be important for our survival in some everyday situations in which we interact with objects in movement at high speed (for example, when driving a car). The brain seems to have implemented mechanisms whose aim is to compensate this retard, at least in the perception of stimuli in movement.

The Flash-lag effect (FLE) allows us to empirically test this difference in the time we in which we perceive static objects and objects in movement. This is a perceptive phenomenon that causes a flash (an object which only appears for a few milliseconds) which appears on an object in continuous movement to be perceived behind the object.

A possible explanation would be that, in the case of the perception of objects in movement, our visual system tries to compensate for the inherent delay in the neuronal process of transmitting information. How does it do so? By projecting the movement of the object in the most probable way in order to try to "predict" its trajectory.

According to a study undertaken by researchers at the UAB, at the Universidad de la República (Uruguay) and at the Unité de Neurosciences Integratives et Computationnelles (France), the Flash-lag effect increases when the flash is superimposed on an object in movement whose trajectory will presumably cause it to collide with another object in movement. The researchers have made this discovery by means of an experiment, carried out at the UAB in which five individuals took part.

The result allows them to put forward the hypothesis that the brain responds to the possibility of collision between two objects differently to how it would react to two objects in movement with divergent trajectories. This difference determines a greater Flash-lag effect in the situation of possible collision as has been observed.

The researchers put forward the hypothesis that the neuronal pre-activation which all movement causes (that is the projection of the direction of movement made by the brain) may be added to that of another mobile object with which it may collide due to the fact that both have convergent trajectories. The sum of both pre-activations would result in a diminution of the time in which the movement is perceived, hence also causing an increase in the Flash-lag effect.

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