



Discussion forum

Definition: Spatial neglect



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1. Definition

Spatial Neglect or simply *Neglect* (extended name: *Unilateral Spatial Neglect*, or *Hemispatial Neglect*) designates a consistent, exaggerated spatial asymmetry in processing information in bodily and/or extrabodily space due to an acquired cerebral lesion. Across a wide range of activities in everyday life and in clinical assessment, performance on one spatial side is better, in terms of accuracy or latency, than performance on the other side. Typically, the neglected space is contralateral to the brain lesion. Neglect following a right hemisphere lesion, hence involving the left space, is more frequent than that following a left hemisphere lesion. In exceptional cases, neglect appears ipsilateral.

Defining neglect as a spatially specified deficit allows encompassing both omission errors (the inability to detect, attend or respond to stimuli in the neglected space) and commission errors (i.e., productive phenomena such as *allochiria* and *perseveration*). The processing of neglected information can occur implicitly, without reaching consciousness, and can influence task performance.

The spatial coordinates in neglect rely on the viewer position (*egocentric neglect*) or on the intrinsic structure of the stimuli (*allocentric neglect*). In *egocentric neglect*, the neglected area is coded as left or right with reference to the eyes, head or trunk of the perceiver. There are two main forms of *egocentric neglect*: *space-based neglect*, which affects all the stimuli located in one spatial side, and *stimulus-centered neglect*, which affects one side of each individual stimulus, independently of its spatial location. *Allocentric neglect* concerns words and non-words that have serially ordered letters; hence, a

canonical (or intrinsic) right-left orientation. Errors involve the same side of the orthographic representation, independently of the location and orientation of the actual stimuli (*word-centered neglect*).

Neglect is independent of primary sensory and motor impairments and can be observed, even selectively, in tasks that differ for the sensory modality of the stimulus presentation and in tasks that differ for the body part involved in spatial exploration, either gaze or limb. Usually neglect shows in tasks with external stimuli, but it can emerge also in the exploration and processing of mental images (*representational* or *imaginal neglect*).

The deficit is called *personal neglect*, *peripersonal neglect* or *extra-personal neglect* depending on the affected space: respectively, the patient's body, the space immediately surrounding it, and the space beyond reaching point where objects are detected only through sight and hearing. There are two forms of *personal neglect*: *emisomatoagnosia*, with no care for the contralateral body, and *motor neglect*, with no spontaneous use of the contralateral limbs. *Motor neglect* should be distinguished from *directional hypokinesia*, which is a form of *peripersonal neglect* characterized by a reduced exploration of the neglected space with either limbs.

2. Label

Spatial Neglect or *Neglect* (or *Unilateral Spatial Neglect* or *Hemispatial Neglect*) is the most widely used label. It is popular because it describes the deficit and its behavioral phenomena without suggesting any interpretation. *Dyschiria* is

etymologically correct but it is associated to specific theoretical models. Labels such as *fixed hemianopia*, *hemi-inattention* and *unilateral spatial agnosia* entail interpretations that are outdated and unable to encompass all the behavioral signs. The label *object-centered neglect* designates any instances of allocentric neglect. *Extinction* refers to the defective detection of contralesional stimuli on double simultaneous stimulation, and can dissociate from neglect. *Pseudoneglect* is a mild spatial asymmetry favouring the left side, shown in a range of experimental tasks by neurologically intact participants.

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