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Is there a mental time line? Evidence from patients with or without spatial neglect

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Numbers might be represented spatially, with small numbers on the left and large numbers on the right side of a mental number line (MNL) [1]. Thisassumption is supported by neglect patients' difficulties to process numerosities just smaller than a standard value in symbolic and non-symbolic comparison tasks [2]. Recently, interactions between time and space have been interpreted as supporting the existence of a mental time line (MTL) [3]. However, investigating duration processing in neglect has revealed a leftward bias (i.e., underestimation; e.g., [4]), which is inconsistent with a left-to-right oriented MTL. Whether neglect has the same impact on duration as on numerosity processing, is thus still unclear. Here, we assessed in right brain-damaged patients with (N+) or without (N-) neglect whether the spatial bias observed when comparing the numerosity of rapidly flashed dot sequences extends to the comparison of the duration of dots. In each task, N+, N- and healthy controls (HC) judged whether the stimulus was smaller/shorter or larger/longer than a standard. The results show that only N+ had higher error rates for sequences smaller and close to the standard in the numerical task, indicating a difficulty to orient attention to the left part of the MNL. In the duration task, no such left-oriented difficulty was found. Importantly, no difference was found between N+ and N-. The different patterns observed for numerosity and duration processing in N+ do not support the idea of a MTL.

[1] Dehaene, 1992 [2] Masson et al., submitted [3] Bonato et al., 2012 [4] Danckert et al., 2007

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Willed action, mechanisms of initiation and production of cognitive responses in schizophrenia: A cue-based protocol

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Our actions are guided by objectives and goal-directed. Even the simplest non-reflex movement is preceded by the formulation of goals which lead to the intention to act, to 'volition' in other words. Since Bleuler has described the poverty of actions in schizophrenia in 1911, many studies and clinical descriptions have underlined impairments in the action field in schizophrenics (namely the initiation and control of action on the one hand, and the attribution of action and intentions on the other hand). So much so that nowadays, many first-degree deficits such as ocular motricity, attentional or autobiographical memories retrieval impairments and psychomotor slowing are thought to be linked with a broader issue involving action initiation and action control in their large meaning. Nevertheless, we do not know much about this field of interpretation since, for thirty years now, almost all of the experimental studies on volition and action impairments have focused on understanding their neural correlates by means of medical imaging techniques. In parallel with those approaches, our study aims to analyze voluntary actions in schizophrenia with a clinical point of view that includes cueing processes and progressive contextual constraints given during cognitive tasks. This study should lead to the creation of a unifying model of voluntary actions and response planning in schizophrenia that integrates theoretical and clinical elements.