26. *(Non) interactions between numerical and visual space: evidence from unilateral neglect*

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The notion that in left neglect the pattern of error for visual and numerical lines (i.e., progressive rightward displacement of the midpoint as the interval size increases) are homologous is still debated. As first, here we further examined the degree of association between numerical errors and visual neglect by administering to thirty-two right brain-damaged patients a number bisection task and a battery to asses neglect. As second, we reasoned that if the two representation (i.e., numerical and visual) are homologous, they should interact when concurrently activated (i.e., number processing should affect spatial orienting and viceversa). Thus, we analyzed whether the size of the numerical interval modulates both visual and numerical errors when visual and numerical space are activated at the same time. Eighteen patients displaying the aforementioned pattern of numerical error in the number bisection task were administered a visual-number bisection task, that consisted of two conditions: a) marking the midpoint of the empty space enclosed between two numerical extremes; b) Same as a), but here patients were asked to mark the midpoint by writing down the number that is numerically halfway between the two numerical extremes. The results showed that numerical errors are dissociable from visual neglect, and that the size of numerical intervals equally influenced numerical errors (both number bisection and visual-number bisection tasks), but not the visual errors (in visual-number bisection task), defined as the spatial position of the bisector. These findings suggest that attention shift along internal and external representations might be underpinned by different mechanisms.

27. *Mapping between fingers and numbers is topological*

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There is a vast amount of research showing that small numbers are associated with the left part of space and large number with the right part of space. It has also been shown that brain areas involved in number processing overlap with areas involved in finger movements. In the present study we investigated the spatial mapping between numbers and fingers. Subjects were asked to name random numbers between 1 and 30 paced by a metronome at 1 Hz. With every number they had to tap a random finger. The hands were placed either directly next to each other, 30 cm apart or 30 cm apart with the arms crossed. The results show that in each of the conditions smaller numbers were associated with tapping a finger to the left of the previous finger, while for larger numbers a finger more to the right was tapped. This mapping was independent of the distance between the fingers involved and was therefore not metrically scaled. We conclude that there is a topological mapping from left to right between the fingers and small to large