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Hand Posture Alters Perceived Finger Numerosity

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Patients with lesions of the left posterior parietal cortex commonly fail in identifying their fingers, a condition known as finger agnosia, yet are relatively unimpaired in skilled action. Such dissociations have classically been taken as evidence that representation of body structure is distinct from sensorimotor representations, such as the body schema. Here, we investigated whether the representations of finger numerosity is modulated by the internal posture of the hand. We used the 'in between' test in which participants estimate the number of unstimulated fingers between two touched fingers. Across blocks, the fingers were placed in three postures: (1) with fingers touching each other, (2) fingers separated by one centimetre, (3) fingers spread to the maximum comfortable splay. Participants judged the number of unstimulated fingers 'in between' the two touches and responded vocally as quickly and accurately as possible. Critically, participants gave larger numerosity estimates when the fingers were positioned far apart compared to when they were close together or touching. Our results demonstrate that increasing the spatial distance between the fingers makes participants experience the fingers as more numerous. These results show that there are dynamic functional links between offline representations of body structure and online representations of body posture.