Conceptual Format and the Supramodal Brain

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What are concepts, and how are they represented in the human brain? For a long time, the debate on such issues has been dominated by two opposite conceptions. On the one hand, traditional theories in philosophy and cognitive science consider the conceptual system as functionally dissociated by the sensorimotor systems. According to such view, conceptual representations are amodal and arbitrary struc-tures that bear no relationship to the physical and perceptual features of their referents (e.g., Fodor, OUP 1981), and that are stored in the multimodal or associative brain regions (=convergence zones) in frontal, temporal, and parietal lobes (e.g., Binder, Psy Bull Rev, 2016). On the other hand, advocates of the so-called Simulation Framework have argued that concepts are sensorimotor representations. For instance, the concept CAT is a complex mental representation formed by visual information (how cats look like), auditory information (meow), tactile information (softness), and so one. According to such view, the conceptual system is distributed in brain regions that overlap or fall very close to the sensory primary and secondary regions (e.g., visual cortex, auditory cortex), and to motor cortex. In my talk, I will argue that this might be a false dichotomy. In recent years, many neuroscience data have undermined the classical distinction between sensorimotor and associative cortex, showing that multisensory convergence processes (bi- or three-modal) are already present at the level of traditionally unimodal areas (es., Ghazanfar e Schroeder, Trends in Cog Sci, 2006). I will argue that, in order to explain such data, one have to postulate the existence of various kinds of representations with a supramodal format, i.e. a format that is intermediate between amodal and perceptual (unisensory) representations. For instance, it is plausible that traditionally visual regions of the human ventral temporal lobes (LOtv, hMT), which surprisingly respond also to tactile stimuli, are functionally dedicated to integrating visual and tactile information in a more abstract, supramodal representation of object form and movement (e.g., Ricciardi et al., Neuro. and Bio. Rev., 2013). Similarly, it has been argued that certain regions of the motor cortex integrate visual, auditory, and proprioceptive information in a supramodal representation of the body (e.g., Holmes e Spence, Cogn. Proces., 2004). In my talk, I will argue that there are good reasons to believe that supramodal representa-tions are exploited not only in perceptual functions, such as visual or tactile recognition, but also in cogni-tive functions that require conceptual knowledge, such as mental imagery and language. Nevertheless, the role of supramodality in conceptual competence is a largely unexplored topic. In the final section of my talk, I will consider some important implications these observations and these data have for the traditional and the Simulation accounts of conceptual competence.