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IN BRIEF

SENSORY PROCESSING

'Seeing' bodies via sounds

In sighted people, seeing human bodies or body parts selectively activates the extrastriate body area (EBA) of the visual cortex; however, it is not known whether EBA activation and hence development of a body-image network occurs in the absence of visual stimuli. Striem-Amit and Amedi trained congenitally blind individuals to 'see' two-dimensional images by translating them into auditory 'soundscapes'. In this group, exposure to soundscapes of full-body silhouettes induced functional MRI responses in the EBA, and sighted individuals showed similar responses when shown the same silhouettes. In the blind individuals, EBA activation was selective for body shapes over objects, faces and textures, and the right EBA displayed functional connectivity to parts of the body-image network. Thus, EBA activation may be independent of sensory mode.

ORIGINAL RESEARCH PAPER Striem-Amit, E. & Amedi, A. Visual cortex extrastriate body-selective area activation in congenitally blind people "seeing" by using sounds. *Curr. Biol.* **24**, 687–692 (2014)

LEARNING AND MEMORY

The hippocampus encodes objects in time

The hippocampus has an essential role in episodic memory, but its encoding mechanisms remain unclear. Two studies used pattern similarity analysis of functional MRI data from tasks involving learning objects in temporal orders. Hsieh *et al.* found that hippocampal activity patterns contained information about objects and their sequence positions rather than object or sequence information alone. In addition, they found that activity patterns in the right perirhinal cortex and the parahippocampal cortex were associated with object and sequence position information, respectively. In a different study, Ezzyat and Davachi found that pattern similarity in the left hippocampus was higher when subjects recalled temporally close objects that were presented in different 'scenes'. By contrast, the lateral occipital cortex exhibited higher pattern similarity when recalling objects presented temporally close together in the same 'scene'. Overall, these studies demonstrate that the hippocampus may represent items in specific temporal positions, whereas other nearby brain regions have different roles in encoding objects or temporal information.

ORIGINAL RESEARCH PAPERS Hsieh, L.-T. *et al.* Hippocampal activity patterns carry information about objects in temporal context. *Neuron* **81**, 1165–1178 (2014) | Ezzyat, Y. & Davachi, L. Similarity breeds proximity: pattern similarity within and across contexts is related to later mnemonic judgments of temporal proximity. *Neuron* **81**, 1179–1189 (2014)

OLFACTION

The nose knows one trillion smells

How many smells can a person discriminate? Bushdid *et al.* created mixtures comprising 10, 20 or 30 components from a collection of 128 different odorous molecules and asked participants to identify the 'odd-one-out' from three mixtures. Each participant completed 264 of these tests in order to find the average olfactory resolution; that is, the maximum percentage of components shared by two mixtures that could still be discriminated. They found that most individuals could discriminate between two mixtures sharing less than ~52% of their components. The authors then worked out the number of hypothetical mixtures that were discriminable by an average person, which was more than a trillion (1.72×10^{12}).

ORIGINAL RESEARCH PAPER Bushdid, C. *et al.* Humans can discriminate more than 1 trillion olfactory stimuli. *Science* **343**, 1370–1372 (2014)

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