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Category Learning and Representation of Neuropsychology

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DESCRIPTION

The study of the neurological underpinnings of psychological processes is known as neuropsychology. It is the study of brain-behavior relationships and is included in the discipline of neuroscience in today's terminology. Neuropsychologists are usually fascinated by the relationship between behaviour and brain shape and function. Structured tests and systematic observations that study brain-behavior links and estimate their integrated functioning are included in neuropsychological examinations. These functions describe how the mind and body work together to internally process and respond on input and information. The terms 'neurobehavioral' and 'neuropsychological' are sometimes used interchangeably because of the constructs included.

Neuropsychology introduces two significant classification challenges. To begin with, there is evidence that the mental images that regulate categorization are functionally and neurally separate from those accessed in normal 'explicit' memory tests like recall and recognition. If this is the case, memory theories are unlikely to contribute to our knowledge of categorization. The key piece of evidence is that anterograde amnesic patients appear to act properly in category learning tasks despite being severely deficient on recall and identification assessments.

For example, one heavily Amnesic Patient learned to identify dot patterns produced from a prototype normally, but failed a recognition test for those patterns by accident. The hippocampus, which governs

explicit memory and is destroyed in amnesia, has been concluded that it has no involvement in category learning.

However, showing that exemplar models such as the GCM can, like EP, reveal dissociations between classification and recognition have recently cast doubt on the idea that categorization and memory are functionally and neurally unrelated. Only one parameter, the sensitivity parameter, was changed in Nosofsky and Zaki's modelling technique to account for a general learning difference between amnesics and controls. This metric denotes the ability to distinguish between different exemplars preserved in memory, which is likely to be impaired in amnesics due to their poor memory capacity. Nosofsky and Zaki demonstrated that lowering this parameter's value affected classification performance just little but significantly reduced recognition performance.

Second, there is now a wealth of evidence about the location of category knowledge in the brain. According to brain imaging research, knowledge is structured structurally at the neuronal level. Normal volunteers were shown photographs of animals and tools to name while brain activity was measured using Positron Emission Tomography (PET). Participants were shown nonsense objects as a control. Brain activity for significant things was higher in the ventral temporal lobes bilaterally and in Broca's region in the left hemisphere compared to the control condition.

This is most likely related to word generation. Animal imagery enhanced activation in the left medial occipital lobe when compared to tool pictures. Photographs of tools caused more activation in the left dorsal temporal lobe and the left premotor area than pictures of animals. This premotor area is likewise activated by imagined hand movements, suggesting that a definition of the hand movements that tools allow is part of the mental representation of tools. Overall, the findings show that the brain organises conceptual information in gross category divisions.