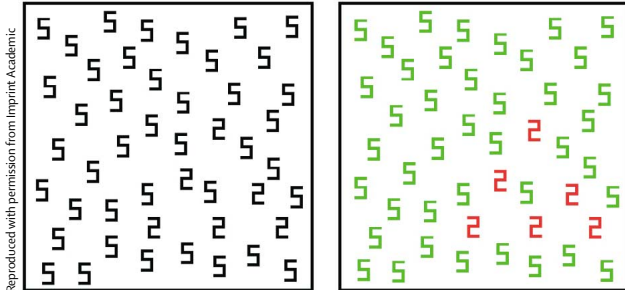


Hearing taste and colouring text



For some synaesthetes the triangle is obvious in both diagrams

Researchers have studied the neural processing in a person, referred to as ES, with a rare and exceptional type of synaesthesia—experiencing specific tastes when hearing specific music intervals (*Nature* 2005; **434**: 38). For each musical interval ES hears, the taste is distinct: a major third tastes sweet, a minor third tastes salty, and a fourth like mown grass. This report by Beeli and colleagues (University of Zurich, Switzerland) comes 36 years after Luria's famous report of a person who, among other extraordinary sensory abilities, tasted specific meals when hearing certain sounds.

Repeated testing of ES for over 1 year confirmed that music intervals induce taste, and not vice versa, and that she uses the tastes to help her identify the music intervals heard. Beeli and colleagues simultaneously presented one of four music intervals at the same time as one of four tastes. ES accurately identified all the music intervals and was substantially faster

when the intervals and tastes matched her synaesthetic experiences than when these did not match or when no taste was given. To test whether taste, rather than the idea of a taste, was linked to music intervals, these tests were repeated with words describing tastes. They found that the words did not aid identification of music interval.

Interestingly, ES is a professional musician. Testing of five control musicians supported her extraordinary sensory linkage: tastes did not affect the speed of interval identification and there was no difference between ES and controls when no tastes were given. In addition, each note of music ES hears elicits a colour. Oliver Sacks (Albert Einstein College of Medicine, NY, USA) told *The Lancet Neurology* that for the patient Luria reported, stimuli in any modality resulted in various synaesthetic experiences. "One wonders whether ES originally had a wider range of synaesthetic transformations, which got narrowed or pruned as music came to dominate her life", he said.

A neuropsychological and neuroimaging study of six people with a common type of synaesthesia—seeing specific numbers and letters in specific colours—has found that synaesthetic processing is stable in each person but differs between people with the same type of synaesthesia (*Neuron* 2005; **45**: 975–85). In their neuropsychological research, Edward Hubbard and co-workers (UC San Diego and Salk Insti-

tute, CA, USA) matched 20 controls to each participant with synaesthesia. Participants were briefly shown an arrangement of two different numbers in black on a white background (figure); five of the six people with synaesthesia were able to detect the shape made by the same numbers (because they were seen in the same colour against a background of a different colour). Similarly, synaesthetic colours helped to identify items presented in a crowded array, though only half of those with synaesthesia could identify the target item. MRI studies of participants' neural processing while viewing letters, numbers, or colours found that a colour-selective area of the brain (human V4) was more activated when those with synaesthesia looked at letters and numbers than when controls did. Further, the magnitude of human V4 activation was correlated with participants' results on the neuropsychological tasks, suggesting that the neural locus of synaesthesia is heterogeneous.

An understanding of how people with synaesthesia use their sensory links might improve the understanding of sensory mechanisms in general. "Even though most people don't have full-blown synaesthetic experiences, it is possible that similar neural connections are present to a lesser degree", Hubbard speculates.

Gillian Carmichael

RNA interference protects against ALS in mouse model

The possibility of the therapeutic use of RNA interference (RNAi) techniques in human neurodegenerative disease has taken a double-step forward with two studies that confirm its effectiveness in a transgenic mouse model of amyotrophic lateral sclerosis (ALS).

RNAi enables the expression of specific genes to be blocked. Small duplexes of RNA complementary to

the sequence of the target gene are introduced into the cell where they form a complex with cytoplasmic proteins. These complexes then search out and inhibit the translation of the target gene or degrade the mRNA translated from it. To date, RNAi has even been successfully used to block the products of a disease-causing allele while allowing the production of

mRNA from a normal gene copy to continue—but only in vitro. Now, two new studies show the same can be successfully achieved in vivo, raising hopes that this technology could be of use in the clinic. Both studies independently show that lentiviruses can deliver RNAi duplexes that reduce the expression of superoxide dismutase 1 (SOD1) in a murine ALS