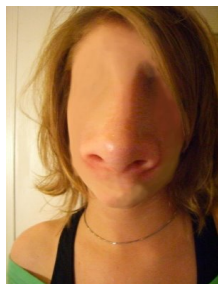


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[The Danger Sharpens Your Nose](#)

A connection between emotion and smell

The **smell** of a certain perfume can make you remember a lost love, while some stench can bring you back unpleasant memories about an annoying ex co-worker. A new research made at Northwestern University and published in the journal "Science" shows that emotions are strongly connected to the **olfactory** sense, which can sharpen in case of negative incidents. "We're talking about a change in our perceptual abilities based on emotional learning," said Dr. David Zald, a Vanderbilt University neuroscientist involved in investigations of how the brain controls sensory and emotional learning. The connection between smell and emotion has been described for long. You know the classical example of the scent of baking cookies or a pie, which brings back memories of your long-dead grandma, or how the smell of diesel fuel boosts a seizure in an ex-soldier suffering from PTSD. In order to check whether the emotionally charged event was "smelt" more strongly, the team put 12 healthy young subjects to smell various laboratory chemicals with specific odors that normally are not experienced in everyday life, an "oily grassy" scent. Two of the bottles had the same chemical and the third contained a substance with an odor similar to the first. When put to make the difference, the subjects hardly guessed the different odor in about 30% of the cases. Then, the subjects received mild electric shocks while sniffing just the odd chemical. The latter test revealed that they could distinguish that odor in about 70% of the cases. MRI scans revealed it was not a random fact. The researchers detected changes in how the brain's olfactory area stored the data, strongly imprinting the shock-associated scent so it could be detected more rapidly from similar scents, like a mechanism of danger sniffing. "That almost is certainly a survival trait evolved to help humans rapidly and subconsciously pick a dangerous odor from the sea of scents constantly surrounding us," said lead researcher Wen Li, a Northwestern postdoctoral fellow in neuroscience. This explains how a person who has experienced a kitchen fire can rapidly say whether a smoke comes from the fireplace or from an accidental fire. "But the MRI scans found the brain's emotional regions did not better discriminate among the different odors," said Li. An impairment of this capacity to store danger information can cause anxiety disorders because if someone's olfactory area cannot distinguish a dangerous chemical from a similar one, the brain's emotional defense area can overreact. "Work like this really says that the human sense of smell has much more capacity than people usually give it credit for," said senior author Jay Gottfried, a neuroscientist at Northwestern.