His master's voice (and armpits) put fear in dogs

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Dogs can use their noses to attune themselves to their owners' emotions
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Dogs really can smell fear. In showing this, a study has demonstrated that they can also get a whiff of happiness and use their noses to attune themselves to their owners' emotions.

The research by Italian scientists was prompted by other work showing that dogs were able to distinguish happy and sad human faces, as well as have a sophisticated understanding of gestures and the emotional tone of commands.

The scientists reasoned that dogs should also receive human cues through their noses, yet no one had looked at this.

"Dogs have an extraordinary ability to detect airborne odours and not surprisingly their olfactory system is a significant contributor to the regulation of their social relations," the researchers wrote in the journal *Animal Cognition*.

To test whether this also affected social relations with humans, Biagio D'Aniello, from Naples university, stored sweat samples from men who had been watching a happy movie, *The Jungle Book*, or a scary one, *The Shining*. He then put 40 dogs individually in a room with their owner and a stranger, and one of the two sweat samples.

He found that the smell of a fearful person's armpits, largely unnoticeable to humans, had a profound effect compared with a happier human's armpits. "The dogs were not only able to detect human emotional chemosignals, but they also affected their behaviour," he said.

When dogs were around the happy smell they were far more likely to sniff inquisitively at the stranger, presumably reasoning that if their owner seemed happy with the setup then so should they be. When around the fearful smell they stuck to their owner and displayed more stressed behaviour.

It is highly unusual for an animal to be as sensitive to another species' emotional cues as dogs are. One question is whether they acquired the skill in domestication or always had it, and Professor D'Aniello said he wanted to extend the research to wolves to try to find an answer. He was also interested in why the fear provoked a wary response, rather than, for instance, causing the dog to attack.

"We only tested labrador and golden retrievers, which rank very high in sociability and low in aggressiveness," he said. "It is possible that other breeds could react differently upon fearful signals."