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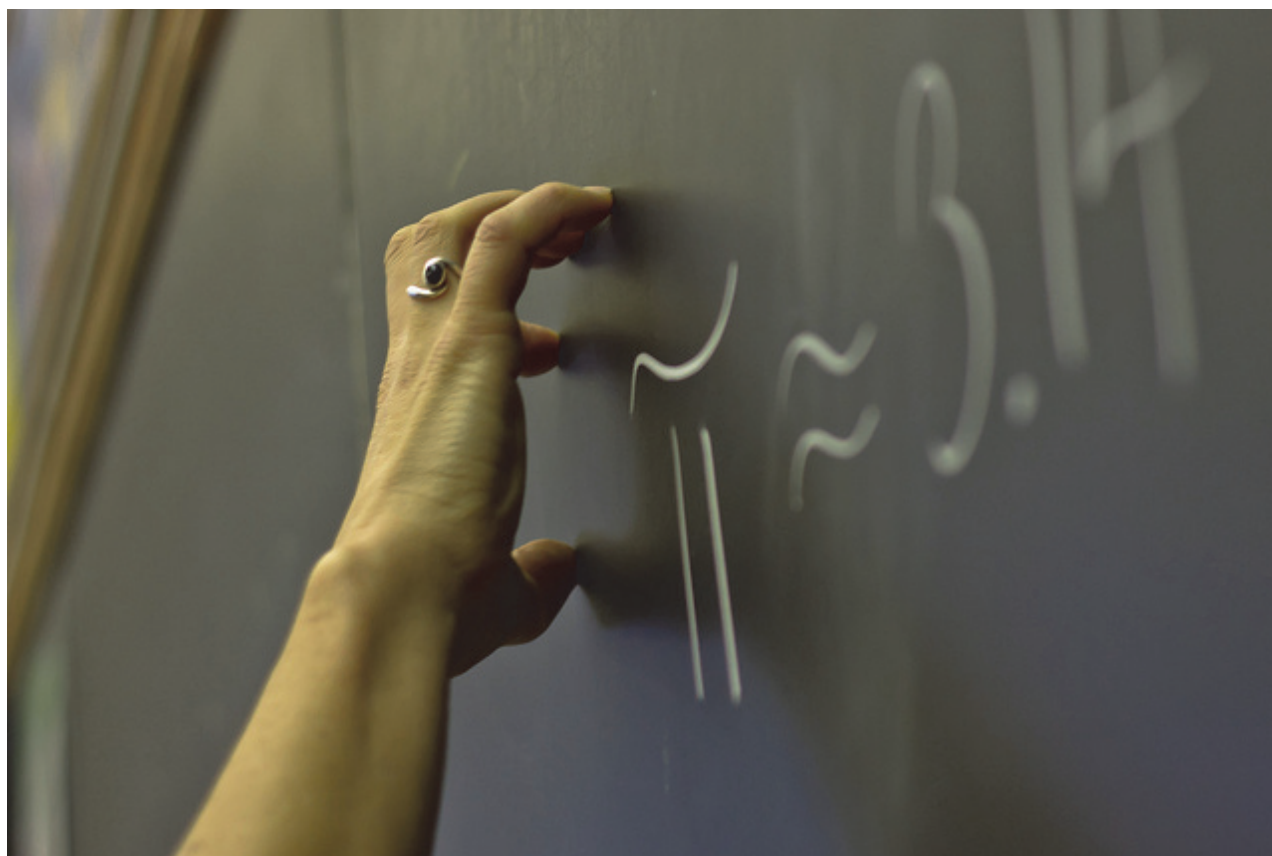


ever wondered?

Scienceline explains your world

Why do we hate the sound of nails on a chalkboard?

The anatomy of an awful sound



Does even looking at this picture make you shiver? Why? [Image Credit: [Dolmansaxlil](#)]

By [Rose Eveleth](#) | Posted October 31, 2011

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If you don't want to actually listen to the sound, think about nails on a chalkboard for a minute. Did you get the shivers? But why? Why do we hate that sound that much?

[Nails on a chalkboard](#) by [RoseEveleth](#)

The short answer is that nobody knows. But here are some theories.

One physicist won an [Ig Nobel prize](#) for his research on the question. What they did was take some recordings of a three-pronged garden tool scraping over a chalkboard, and then mess with them to see what part of that sound we hate so much. By removing the high, middle and low frequencies one at a time from the sound, and playing them back, they tried to find what part of the sound makes everyone cringe.

Surprisingly, removing the high frequencies didn't really help. It was removing the middle frequencies that made the sound bearable. Those are the same frequencies found in a primate warning call — which led the researchers to conclude that our aversion to the sound comes from recognizing it as a warning call.

Later research, however, has refuted that idea. One study [played sounds to tamarin monkeys](#): One was a high pitch scraping sound like nails on a chalkboard, and the other was white noise of the same volume. The monkeys reacted the same way to both. Humans, on the other hand, strongly prefer the white noise. Which either means that tamarin monkeys don't react to monkey alarm calls, or our response to that awful sound comes from somewhere else.

Another theory has to do with hearing loss. High frequency sounds can damage the structures of our ears, causing short and long-term loss of hearing. The response might then be an evolutionary response that shields us from harm. But if taking out the high frequencies doesn't help, then that doesn't make sense either.

So, maybe this aversion is learned? It's been shown that if subjects know they're about to hear nails on a chalkboard they react [far stronger](#) than if they're just played the sound without any priming. Or perhaps it has something to do with how it feels to run your nails down a chalkboard, and the response is based on that memory. Long story short: No one really knows.

And, interestingly, even though nails-on-a-chalkboard is often cited as one of the worst sounds around, in [one study](#) researchers found that several other sounds are even worse. Like the sound of someone vomiting, babies crying, a Tasmanian devil call, and a soap opera argument (I have no idea) all ranked worse than the classic shiver-inducing nails.

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