



PSYCHOLOGY

Why do you cringe at the sound of nails on a chalkboard?

BY ROBERT T. GONZALEZ

NOV 10, 2011 1:11 PM

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Just the thought of nails raking across a chalkboard is enough to send shivers down many people's spines — but the reasoning behind this reaction has remained a mystery for decades. Scientists have attributed it to everything from **the visual stimuli associated with the sound to an inborn reaction that helps preserve one's hearing** — there's even been an **Ig Nobel Prize awarded for nail-on-chalkboard research**.

Now, two European researchers think they've uncovered some new clues to the fingernail-chalkboard mystery. The first is physiological; the second, psychological.

Scientists have known for a number of years that many of the sounds that are most unpleasant to the human ear occur between two and four kilohertz, the range spanned roughly by the highest octave on a piano.

Incidentally, when researchers Michael Oehler and Christoph Reuter varied the sound of various unpleasant noises played for volunteers (noises including forks scraping against plates, fingernails raking across a chalkboard, and the squeaking of rubbing styrofoam), they found that the most "painful" frequencies (as measured by indicators of stress like heart rate and blood pressure) also occurred in this range.

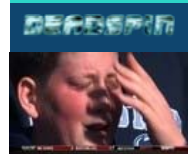
This discovery, in and of itself, isn't completely new. NYU neuroscientist Josh McDermott **drew a similar conclusion** back in 2009, also pointing out that most noise-induced hearing loss occurs between 2kHz and 4kHz, and that it's "conceivable that the aversive reaction partly reflects the ear's vulnerability."

What Oehler and Reuter point out is that many of the acoustic features of human speech also fall within this frequency band, and suggest that the shape of our ear canals may have in fact

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specifically, referring to this amplification as

For the second (and I think more interesting) time, the German researchers had previously recorded that surprisingly few chalkboard volunteers. This time, however, they informed listening to a piece of contemporary music, and researchers make your own brainwave-controlled cat ears. Listeners who were told they would be subjected to the noise were less pleasant than those who sang "Gimme More" pretty much gives up the ghost consistently, regardless of what they were told.

If of Oehler and Robert's experiment, the determined to be the two most unpleasant (and chalk squeaking against slate) for their half of their listeners that they would be the other half that they would be listening to the chalkboard sounds were more likely to be told they would be listening to music. Even that participants' stress indicators changed how they rated the sound.

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find the sound of nails on a chalkboard so

The researchers speculate that the amplification has been important for human survival to a baby's cry for help, or heed the hypothesis is one that has been explored before.

of frequencies in the 2kHz–4kHz range early in our evolutionary history — allowing us warning call of another individual. This in monkeys, and the one species that was 1 to these sounds as humans.

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explore whether or not their findings could 'to day living (think whining vacuum

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gn of everyday life," Oehler said.

Oehler and Reuter reported their findings last week at *The Acoustical Society of America* in San Diego, California. And now, Bear McCreary plays *Battlestar Galactica*.

week at *The Acoustical Society of America*

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FrankN.Stein
"The first is physiological; the second, psychological. In other words - the same scientists come up with two completely different, excluding explanations for one phenomenon. Good job.."

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a_blackpan... @FrankN.Stein Or you kr both factor in?

bobdallama @FrankN.Stein I read it like "two European researchers...the first is physiological; the second, psychological."

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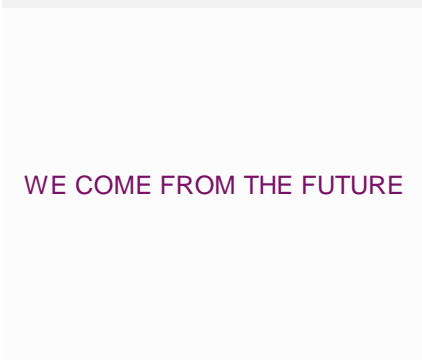
as in...one researcher is physiological and the second.....well, you get the idea



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...t so they don't look or feel dumb, but their

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