
D THE HIDEIOUS SOUND OF CHALK ON A BLACKBOARD

Posted on [November 6, 2011](#) by [Mike Gerra](#)

We promise. There is no screeching embedded audio of someone slowly dragging a piece of chalk, or worse, fingernails, across a blackboard! Though, even the thought of this sound causes many to shudder. Why? A plausible explanation over at [Wired UK](#).

From [Wired](#):

Much time has been spent, over the past century, on working out exactly what it is about the sound of fingernails on a blackboard that's so unpleasant. A new study pins the blame on psychology and the design of our ear canals.



Previous research on the subject suggested that the sound is acoustically similar to the warning call of a primate, but that theory was debunked after monkeys responded to amplitude-matched white noise and other high-pitched sounds, whereas humans did not. Another study, in 1986, manipulated a recording of blackboard scraping and found that the medium-pitched frequencies are the source of the adverse reaction, rather than the the higher pitches (as previously thought). The work won author Randolph Blake an Ig Nobel Prize in 2006.

The latest study, conducted by musicologists Michael Oehler of the Macromedia University for Media and Communication in Cologne, Germany, and Christoph Reuter of the University of Vienna, looked at other sounds that generate a similar reaction — including chalk on slate, styrofoam squeaks, a plate being scraped by a fork, and the ol' fingernails on blackboard.

Some participants were told the genuine source of the sound, and others were told that the sounds were part of a contemporary music composition. Researchers asked the participants to rank which were the worst, and also monitored physical indicators of distress — heart rate, blood pressure and the electrical conductivity of skin.

They found that disturbing sounds do cause a measurable physical reaction, with skin conductivity changing significantly, and that the frequencies involved with unpleasant sounds also lie firmly within the range of human speech — between 2,000 and 4,000 Hz. Removing those frequencies from the sound made them much easier to listen to. But, interestingly, removing the noisy, scraping part of the sound made little difference.

A powerful psychological component was identified. If the listeners knew that the sound was fingernails on the chalkboard, they rated it as more unpleasant than if they were told it was from a musical composition. Even when they thought it was from music, however, their skin conductivity still changed consistently, suggesting that the physical part of the response remained.

Read the full article [here](#).

Images courtesy of [Wired](#) / [Flickr](#).



This entry was posted in [BigBang](#) and tagged [chalk](#), [ear](#), [sound](#). Bookmark the [permalink](#).

