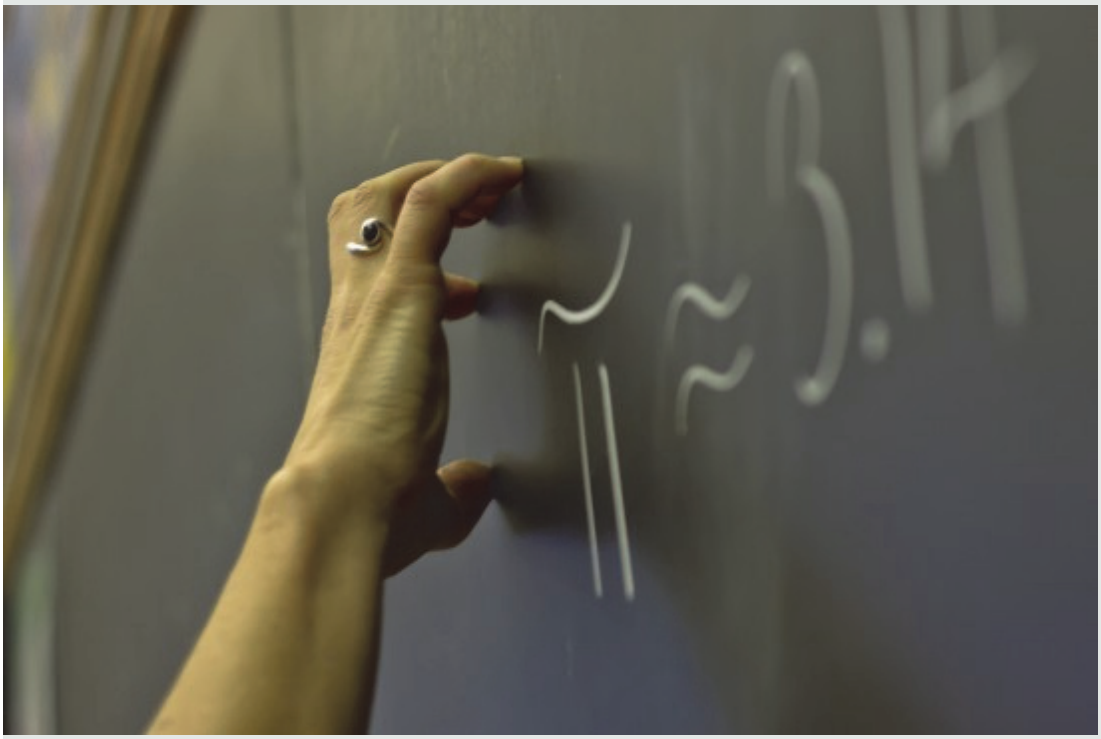
Why are nails on a chalkboard so painful?



Have you ever wondered why nails on a chalkboard, squeaky Styrofoam, forks scraping dinner plates, and chalk against slate are almost painful? Well, Michael Oehler of the Macromedia University for Media and Communication and Christoph Reuter of the University of Vienna did, and they figured it out.

Oehler and Reuter discovered that a strong psychological component was involved in the "pain" experienced by the respondents. When some of the people were told that the sounds they were listening to was part of a musical composition, the sounds were much more bearable than if they knew the true source of the noise.

There was also a dramatic physiological measurement. They saw that there was skin conductivity when very unpleasant sounds were played, proving physical reaction to the sound. (Whatever skin conductivity means.) The frequency range of these sounds were between 2,000 and 4,000 Hz, surprisingly found to be the range of human speech.When these frequencies were blotted out, the participants were very comfortable listening to the sound.

So do people's skin crawl when they hear sound with the frequency of their own voice?

It has to do with the structure of the human ear. Our ears amplify the frequencies between 2,000 and 4,000 Hz so that we are able to understand each other better. But this means that it also amplifies certain loud sounds so much, that it becomes almost painful to the ear.

(via **Wired**,image via **Sharon Drummond**)

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