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# Study finds why screeching sound irks



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German and Austrian scientists have found the reason why the sound of scraping fingernails on a blackboard is so annoying to most of the people.

A new study suggests that the annoying feeling is caused partly by the shape of the human ear that amplifies certain aspects of the sound of fingernails or chalk scraping on a chalkboard and the power of suggestion.

The researchers, led by Michael Oehler of the Macromedia University for Media and Communication in Cologne and Christoph Reuter from the University of Vienna first selected scratching fingernails on a chalkboard and squealing chalk on a slate as the most annoying sound to people.

The sounds were played to a group of volunteers, half of whom knowing the real origin while others believed they came from modern music pieces.

Researchers found that participants who believed the sounds were music based rated them as less annoying than those who knew the source of the sounds. Findings found that a psychological component must be involved in people's feeling about the sounds they heard.

But the other important finding was that even those who thought they were listening to an experimental piece of music still had a measurable physiological "disgust" response such as increased heart rate, sweating and blood pressure.

The reactions suggested scientists that there may also be a biological component involved in making the sounds unpleasant for people.

Their further investigations revealed that the pitch frequency of the two annoying sounds were between 2,000 and 4,000 hertz, which is the range of the human speech amplified within our ears.

The sounds with a pitch within the range hits the "sweet spot" at which the human ear is considered to be the most sensitive because of the anatomy of the ear canal, researchers concluded in their presentation at the Acoustical Society of America in San Diego, US.

"We supposed that frequencies in the low-to-mid range [of human hearing] would play a major role," Oehler said in a statement. "But we did not know the exact range. Furthermore, the influence of pitch information was greater than we thought."

The new findings contradict a previous study that suggested scraping fingernails on a chalkboard was annoying for the human because it resembled a primate's warning call.

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Scientists hope their finding may help finding new ways to mask annoying noises emitted from instruments like vacuum cleaners or airplanes.

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