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Fingernails across blackboard annoy you?

The shape of the human ear may be responsible for amplifying the most obnoxious elements of the noises, a new study has suggested. The human ear is known to be particularly sensitive to pitches in the mid- to low-level range of frequencies, between 2000 hertz and 4000 hertz, which is the peak of human hearing.

Researchers from the University of Vienna in Austria removed information from actual audio clips of people scraping their nails or bits of chalk against a chalkboard and then played these modified clips to willing participants.

Half the study subjects were told what the sounds were while the other half thought that they were listening to selections from contemporary music.

They then the participants to rate each sound's unpleasantness, and also gauged the subjects' stress responses to the noises by measuring their blood pressure, heart rate, and skin conductivity.

The researchers found that when they removed all the pitch information in this range from the audio recordings, the study participants rated the noises as more pleasant than other versions of the sounds.

"We supposed that frequencies in the low-mid range of human hearing would play a major role," Michael Oehler, professor of media and music management at the University of Cologne in Germany, said.

"But we did not know the exact range. Furthermore, the influence of pitch information was greater than we thought," he added.