

Can pink noise enhance sleep and memory? Early research drives a color noise buzz

May 20 2024, by Carla K. Johnson



Dr. Roneil Malkani shows an example of pink noise being used to enhance slow brainwaves during deep sleep at the Center for Circadian & Sleep Medicine at Northwestern Medicine in Chicago on May 16, 2024. Pink noise has a frequency profile “very similar to the distribution of brain wave frequencies we see in slow-wave sleep because these are large, slow waves,” said Malkani, assistant professor of neurology at Northwestern University Feinberg School of Medicine. Credit: AP Photo/Laura Bargfeld

You may have heard of white noise used to mask background sounds. Now, it has colorful competition.

There's a growing buzz around pink noise, brown noise, green noise—a rainbow of soothing sounds—and their theoretical effects on sleep, concentration and the relaxation response.

The science is new with only a few small studies behind it, but that hasn't stopped thousands of people from listening to hours of these noises on YouTube and on meditation apps that provide a palette of color noises with paid subscriptions.

WHAT IS PINK NOISE?

To understand pink noise, start with white, the most familiar of the color noises.

White noise is similar to static on a radio or TV. Sound engineers define it as having equal volume across all the frequencies audible to the human ear. It gets its name from white light, which contains all the visible color wavelengths.

But the high frequencies of white noise can sound harsh. Pink noise turns down the volume on those higher frequencies, so it sounds lower in pitch and more like the natural sound of rain or the ocean.

Brown noise sounds even lower in pitch, giving it a pleasing, soothing rumble.

Pink and brown, like white, have standard definitions to audio experts. Other color noises are more recent creations with very flexible definitions.



Dr. Roneil Malkani points to a recording of pink noise being played at brief intervals to enhance slow brain waves during deep sleep at the Center for Circadian & Sleep Medicine at Northwestern Medicine in Chicago on May 16, 2024. Pink noise has a frequency profile “very similar to the distribution of brain wave frequencies we see in slow-wave sleep because these are large, slow waves,” said Malkani, assistant professor of neurology at Northwestern University Feinberg School of Medicine. Credit: AP Photo/Laura Bargfeld

WHAT'S THE SCIENCE BEHIND COLOR NOISES?

White noise and pink noise may provide small benefits for people with attention-deficit/hyperactivity disorder, according to a [recent review of limited ADHD studies](#). In theory, it wakes up the brain, said ADHD

researcher and co-author Joel Nigg of Oregon Health & Science University in Portland.

"The noise provides stimulation to the brain without providing information, and so it doesn't distract," Nigg said.

White noise has been used to treat ringing or buzzing in the ear, called [tinnitus](#).

Scientists at Northwestern University are studying how short pulses of pink noise can enhance the slow brain waves of deep sleep. In small studies, these pink-noise pulses have shown promise in improving memory and the relaxation response.

Pink noise has a frequency profile "very similar to the distribution of brain wave frequencies we see in slow-wave sleep because these are large, slow waves," said Dr. Roneil Malkani, associate professor of neurology at Northwestern University Feinberg School of Medicine.

If Northwestern's research pans out, it could lead to a medical device to improve sleep or memory through personalized pulses of pink noise. But many scientific questions remain unanswered, Malkani said. "There's still a lot of work we have to do."



Dr. Roneil Malkani demonstrates the set up for a sleep study at the Center for Circadian & Sleep Medicine at Northwestern Medicine in Chicago on May 16, 2024. Pink noise has a frequency profile “very similar to the distribution of brain wave frequencies we see in slow-wave sleep because these are large, slow waves,” said Malkani, assistant professor of neurology at Northwestern University Feinberg School of Medicine. Credit: AP Photo/Laura Bargfeld

IS THERE ANY HARM IN TRYING COLOR NOISES?

If color noises feel calming and help you drown out distractions, it makes sense to use them. Keep them at a quiet level, of course, to prevent hearing loss and take "plenty of breaks for the ears to rest," Nigg said.

© 2024 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed without permission.

Citation: Can pink noise enhance sleep and memory? Early research drives a color noise buzz (2024, May 20) retrieved 23 June 2024 from <https://medicalxpress.com/news/2024-05-pink-noise-memory-early.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.