Are There Negative Effects from White Noise Sound Therapy?

Summary by John A. Coverstone, AuD

Sound therapy is one of the most commonly prescribed treatments for tinnitus as well as a common self-prescribed method for dealing with tinnitus. The majority of sound therapy treatments – either professionally prescribed or self-incepted – use white noise to mitigate the relative loudness of tinnitus. A recent article published in *JAMA Otolaryngology – Head & Neck Surgery* calls into question the long-term effects of using white noise for tinnitus therapy.¹

The authors of this study, two of whom are on staff (one is a founder) of Posit Science, a private company offering a brain training system, performed a literature review of white noise research and effects on cognitive function, cognitive decline, and cognitive development. Based on their review, the authors assert that white noise may have negative consequences on central auditory function and brain functioning in general. They recommend that white noise should be avoided as a treatment for tinnitus.¹

What all the studies cited in the article have in common is research involving rats with constant and exclusive noise exposure. This is a significant drawback to the conclusions of the paper because none of the supportive evidence was gathered in human studies. Furthermore, the rat subjects referenced in each supporting article were generally exposed to noise 24/7 (with one exception) and exposed to only noise. This is difficult to compare to the daily experiences of humans, who are typically engaged in social interaction, including listening to conversation, music, and a wide variety of sounds. These structured sounds potentially have significant positive consequences on brain function, as shown by research linking hearing loss and cognitive decline.²

The exception to this might be individuals who are socially isolated, which has been shown to have its own negative effects, including in rodents.

At this point, there is no direct evidence of deleterious cognitive effects from noise therapy used with humans. Noise exposure has been shown to have negative effects on humans in the form of annoyance, sleep disturbance, educational performance, and cardiovascular health. However, no conclusive evidence could be found for any negative cognitive effects when noise exposure is below minimum harmful levels (80–85 dB sound pressure level). Readers are encouraged to maintain current regimens prescribed by their audiologist, psychologist, or physician until discussing further any possible side effects.

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