

# Stress makes exhausted women over-sensitive to sounds

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Women suffering from stress-related exhaustion exhibit hypersensitivity to sounds when exposed to stress. In some cases, a sound level corresponding to a normal conversation can be perceived as painful. This according to a study from Karolinska Institutet and Stockholm University's Stress Research Institute which tested sensitivity to sounds immediately after a few minutes' artificially induced stress.

The study, which is published in the online scientific journal [PLOS ONE](#), involved exposing 348 people (208 women and 140 men) between the ages of 23 and 71 with low, medium or high levels of '[emotional exhaustion](#)' to five minutes of experimentally induced physical (hand in ice), mental (performance on a [stress test](#)) and social (being observed) stress.

The results show that women with a high level of emotional exhaustion exhibit higher sound sensitivity after an experimentally induced stress exposure than those who were not exhausted. Some even experienced sound levels as low as 60 decibels, the level of normal conversation, as uncomfortably loud. People with a low level of exhaustion, on the other hand, became less sensitive to sound immediately after being exposed to five minutes' stress, a [phenomenon](#) that the researchers describe as 'shutting their [ears](#)' - a normal [stress reaction](#). The same trends could be observed in men, but the differences were not statistically significant. The researchers also point out that, interestingly, there was no difference in sensitivity to sounds between the groups prior to the stress exposure.

"When you are hypersensitive to sound, some normal sounds, such as the rattle of cutlery or the sound of a [car engine](#), can feel ear-piercing," says Dan Hasson, Associate Professor at Karolinska Institutet's Department of Physiology and Pharmacology and affiliated to Stockholm University's Stress Research Institute. "Given how common it is for people to work in environments with different kinds of disturbing sounds, this hypersensitivity can be really disabling for certain individuals."

An earlier study by the same research group shows that some 32 percent of working Swedes report some form of auditory problem (impaired hearing, tinnitus or both). It has already been established that stress is linked to hearing problems, although the mechanisms are not fully understood; the present study, however, is the first to demonstrate empirically a direct association between experimentally induced stress in humans and hypersensitivity to sounds.

"Serious forms of sound hypersensitivity can force people to isolate themselves and avoid potentially distressing situations and environments," says Dan Hasson. "Our study indicates that exhaustion level and stress are additional factors that might have to be taken into account when diagnosing and treating hearing problems."

**More information:** Hasson D, Theorell T, Bergquist J, Canlon B. Acute Stress Induces Hyperacusis in Women with High Levels of Emotional Exhaustion. *PLOS ONE*, online open access 2 January 2013, [doi:10.1371/journal.pone.0052945](https://doi.org/10.1371/journal.pone.0052945)

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