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Low-Frequency Noise: Experiences from individuals reporting LFN complaints

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Low-Frequency Noise (LFN)

Low-Frequency Noise (LFN) refers to sound waves around/below the hearing threshold (below 125 Hz).¹

Sources of LFN can be natural (e.g.: sea waves, wind) but are mostly man-made (e.g.: traffic, turbines, pumps).¹

Sources and complaints of LFN are rising. An estimated 2% of the Dutch population experience severe annoyance from LFN.^{1,2,3}

Self-reported complaints of individuals reporting LFN

Physical: Headache, dizziness, palpitation, neck/ back/ aural pain^{2,4,5}

Psychological: Sleeping difficulties, fatigue, annoyance, stress, feelings of depression, frustration^{2,4,5}

Cognition: Difficulties in concentration, cognitively demanding tasks, executive functions^{2,4,5,6}

Well-being & daily functioning: Lower quality of life, job loss, incapacity to work, relationship or family problems, housing issues^{2,4}

LFN research is urgently needed

LFN is still a hardly recognized and investigated environmental stressor.

The source of reported sounds is often not found (e.g.: by inaccurate measurement methods or complaints originating from a possibly non-LFN related cause).²

Previous research often used small and specific groups, unstructured observations or subjective reports, short-term laboratory LFN-exposures, or applied different definitions of LFN. Research objectifying subjective complaints does not allow for conclusions yet.

Individual factors and LFN

Knowledge on individual factors associated with noise reactions in this group is scarce.⁵ Current research indicates:

- 1) Sociodemographic factors: LFN-perceptions are most commonly reported by individuals between 50-70 years and in 2/3 of cases by females.^{2,4,7}
- 2) Personality factors: Introverts seem more sensitive to and more annoyed by LFN and perform worse on cognitive tasks during LFN exposure despite being faster compared to extraverts.^{8,9,10} However, firm conclusions regarding this or other aspects of personality cannot be made so far.

Type of LFN perception

There seems to be substantial heterogeneity regarding the reported type of LFN perceptions. Some general tendencies seem to be:^{2,4,7}

- 1) Location: mainly indoors, especially at home.
- 2) Time: mostly all the time or at night only, rarely at daytime only.
- 3) Type: by hearing (often a humming, sometimes a buzzing, throbbing, or engine-like sound). But also feelings of pressure and vibrations are reported.

The considerable individual differences in LFN perceptions necessitate further investigation and the examination of possible subgroups.

The current research of the University of Groningen

Within a systematic, large-scale research project, a present study investigates

- 1) the demographic and personal characteristics of individuals reporting LFN complaints
- 2) the specific LFN perceptions (including location, time, type, circumstances)
- 3) reported physical, psychological, and social health-related symptoms and restrictions in daily living

in comparison to individuals who are not perceiving LFN.



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