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Perceived Occupational Noise Exposure and Depression in Young Finnish Adults

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Abstract: We investigated the association between perceived occupational noise exposure and depressive symptoms in young Finnish adults and whether noise sensitivity moderates this association. This study was based on an ongoing longitudinal twin study. We included those who had been working daily (n = 521) or weekly (n = 245) during the past 12 months (mean age 22.4, SD 0.753% female). We asked about occupational noise exposure at age 22 and assessed depressive symptoms using the General Behavior Inventory (GBI) at age 17 and 22. Noise sensitivity and covariates were used in linear regression models. Perceived daily occupational noise exposure was associated, as a statistically independent main effect with depressive symptoms at age 22 (beta 1.19; 95% CI 0.09, 2.29) among all, and separately for females (beta 2.22; 95% CI 0.34, 4.09) but not males (beta 0.22; 95% CI -1.08, 1.52). Noise sensitivity was independently associated with depressive symptoms among all (beta 1.35; 95% CI 0.54, 2.17), and separately for males (beta 1.96; 95% CI 0.68, 3.24) but not females (beta 1.05; 95% CI -0.04, 2.13). Noise sensitivity was independent of perceived occupational noise exposure. Pre-existing depressive symptoms at age 17 were predictive of perceived occupational noise exposure, suggesting complex interactions of noise and depression.

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1. Introduction

According to the World Health Organization (WHO), depression occurs among 1.1% of adolescents aged 10–14 years, and 2.8% of 15–19-year-olds [1]. It is estimated that, in adulthood, twice as many females as males are depressed [2].

59. Sandrock, S.; Schütte, M.; Griefahn, B. Impairing effects of noise in high and low noise sensitive persons working on different mental tasks. *Int. Arch. Occup. Environ. Health* **2009**, *82*, 779–785. [[CrossRef](#)]
60. Lim, J.; Kweon, K.; Kim, H.-W.; Woo Cho, S.; Park, J.; Sun Sim, C. Negative Impact of Noise and Noise Sensitivity on Mental Health in Childhood. *Noise Health* **2018**, *20*, 199–211. [[CrossRef](#)]
61. Belojevic, G.; Jakovljevic, B. Factors influencing subjective noise sensitivity in an urban population. *Noise Health* **2001**, *4*, 17–24. Available online: <https://www.noiseandhealth.org/text.asp?2001/4/13/17/31805> (accessed on 13 January 2023).
62. Kliuchko, M.; Heinonen-Guzejev, M.; Vuust, P.; Tervaniemi, M.; Brattico, E. A window into the brain mechanisms associated with noise sensitivity. *Sci. Rep.* **2016**, *6*, 39236. [[CrossRef](#)]
63. Kliuchko, M.; Puoliväli, T.; Heinonen-Guzejev, M.; Tervaniemi, M.; Toiviainen, P.; Sams, M.; Brattico, E. Neuroanatomical substrate of noise sensitivity. *Neuroimage* **2018**, *167*, 309–315. [[CrossRef](#)]
64. Pearsons, K.S.; Bennett, R.L.; Fidell, S. *Speech Levels in Various Noise Environments*; EPA Report No. 600/1-77-025; Environmental Protection Agency: Washington, DC, USA, 1977.

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