Composing and arranging music partly genetically determined

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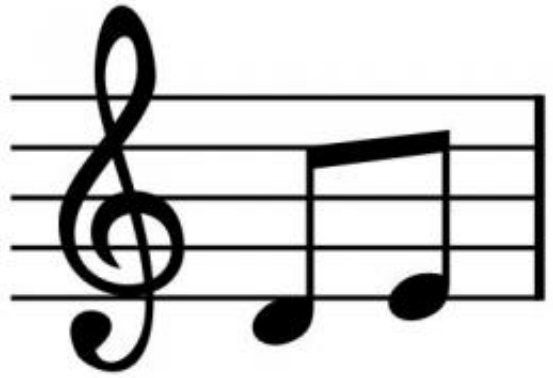

Credit: Wikipedia.

The questionnaire study of musically educated individuals showed that music-related creative activities are more common in young generations in Finland. It may reBlect the change in availability of music or music education in the society.

The genetic study analyzed genomic variants that associate with self-reported composing, arranging or other creativity. Data consisting mostly of families included almost 300 musically-educated participants of whom half did arrange and/or compose music. The study did not grade the characteristics and may reveal information on one's urge to be musically creative. Composing was linked to chromosome 4 region that has previously been linked to musical abilities. The region includes

several brain-related genes including the SNCA gene that has been shown to activate after listening or performing music. The genes associating with composing play role in cerebellar LTD pathway that relate to memory and learning. The cerebellum has previously been sown to activate in improvising and working memory for rhythm. Another LTD-related gene GSG1L was linked to arranging. The study linked chromosome 18 region to musically active individuals who were not active in composing nor arranging. This region includes several brain-related genes like cadherins.

The research introduces a new biological point of view to study creativity and brain functions related to creative activities. The genetic background of musical creativity is supposedly joint effect from numerous genes and their genetic pathways.

The study '"Creative activities in music - a genome-wide linkage analysis" was published in *PLOS ONE* February 24th 2016. The responsible researcher is MSc Jaana Oikkonen from the University of Helsinki. The study belongs to the project where biological background of music is studied using genomic approaches. The expert in music is MuD Tuire Kuusi from the Helsinki University of Arts and the principal investigator is associate professor Irma Järvelä, University of Helsinki. Funding: The Academy of Finland.

More information: Jaana Oikkonen et al. Creative Activities in Music – A Genome-Wide Linkage Analysis, *PLOS ONE* (2016). DOI: 10.1371/journal.pone.0148679

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