Musical experience offsets some aging effects

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(Medical Xpress) -- A growing body of research finds musical training gives students learning advantages in the classroom. Now a Northwestern University study finds musical training can benefit Grandma, too, by offsetting some of the deleterious effects of aging.

"Lifelong musical training appears to confer advantages in at least two important functions known to decline with age -- memory and the ability to hear speech in noise," says Nina Kraus, director of the Auditory Neuroscience Laboratory and co-author of the study in the May 11 issue of the online science journal PLoS One.

Co-written by Northwestern researchers Alexandra Parbery-Clark, Dana Strait, Samira Anderson, Emily Hittner and Kraus, "Musical Experience and the Aging Auditory System" finds that -- when compared to their non-musician counterparts -- musicians 45- to 65-years-old excel in auditory memory and the ability to hear speech in noisy environments.

"Difficulty hearing speech in noise is among the most common complaints of older adults, but age-related hearing loss only partially accounts for this impediment that can lead to social isolation and depression," says Kraus. "It's well known that adults with virtually the same hearing profile can differ dramatically in their ability to hear speech in noise."

To find out why, the researchers in Kraus' Auditory Neuroscience Laboratory in Northwestern's School of Communication tested 18 musicians and 19 non-musicians aged 45 to 65 for speech in noise,

auditory working memory, visual working memory and auditory temporal processing.

The musicians – who began playing an instrument at age 9 or earlier and consistently played an instrument throughout their lives – bested the non-musician group in all but visual working memory, where both groups showed nearly identical ability.

The experience of extracting meaningful sounds from a complex soundscape -- and of remembering sound sequences – enhances the development of auditory skills, says Kraus, Hugh Knowles Chair in Communication Sciences.

"The neural enhancements we see in musically-trained individuals are not just an amplifying or 'volume knob' effect," says Kraus, who also is professor of neurobiology and physiology in the Weinberg College of Arts and Sciences. "Playing music engages their ability to extract relevant patterns, including the sound of their own instrument, harmonies and rhythms."

Music training "fine-tunes" the nervous system, according to Kraus, a longtime advocate of music in the K-12 curriculum. "Sound is the stock in trade of the musician in much the same way that a painter of portraits is keenly attuned to the visual attributes of the paint that will convey his or her subject," Kraus says.

"If the materials that you work with are sound, then it is reasonable to suppose that all of your faculties involved with taking it in, holding it in memory and relating physically to it should be sharpened," Kraus adds. "Music experience bolsters the elements that combat age-related communication problems."