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Hemispheric Laterality and Peripheral Auditory Asymmetry studied by Transiently Evoked Otoacoustic Emissions

Annie Moulin[a] and Jean-Bertrand Nottet[b]
[a]Neurosciences Sensorielles Comportement Cognition UMR5020 CNRS, Université de Lyon, 50, avenue Tony Garnier, 69366 Lyon Cedex 07, France
[b]Hôpital du service de santé des Armées Desgenettes, Boulevard Pinel, 69000 Lyon, France

A peripheral left-right assymetry has been shown at the cochlear level: Transiently evoked otoacoustic emissions (TEOAEs) amplitudes are greater in the right ear than in the left ear of right-handed subjects, whereas no difference is obtained in left-handed subjects (Khalfa et al., 1998). This study sought to investigate a possible link between peripheral auditory assymetry and hemispheric laterality assessed by a dichotic listening task. Peripheral auditory laterality was investigated by comparing TEOAEs from both ears of each subject in 289 normally hearing subjects, with 94 left-handed subjects (52 women), and 194 right-handed subjects (129 women). Results show significantly greater OAE amplitude in right ear than in left ears for both right-handers (12.93 dB, SD=4.46 versus 11.89, SD=4.6) and left-handers (11.62 SD=3.8 versus 10.44, SD=3.8, whereas average hearing loss across frequencies didn't show any significant difference. However, in the left-handers, only the subgroups of subjects presenting a right-ear advantage at the dichotic tasks, presented a significantly greater TEOAE amplitude in the right ear versus the left ear. Those results suggest a definite link between peripheral auditory assymetry and hemispheric laterality.