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Interaction between stimulus and compression type in precedence situations with hearing aids

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Multiband compression in hearing aids has the potential to interfere with binaural perception by altering binaural cues. We compared binaural precedence in patients fitted with compression hearing aids or linear hearing aids and tested one month later with a variety of stimuli. In an open field environment simulated in an anechoic chamber, subjects localized the direction of a leading sound accompanied by a lagging copy played from a different direction. Precedence, defined by a strong influence of the first sound, was found in 6/7 of the subjects when the stimulus was a sentence, but in only 4/7 when it was a high-pass or a wideband burst of noise. The fact that increasing the noise-bandwidth to include low frequencies did not produce precedence in the two patients who had shown it with a sentence may indicate a need for them to accumulate information through the successive pseudo onsets in the speech-envelope. The choice of amplification, compressive or linear, did not significantly affect precedence for any sound, except for one subject who showed weak influence of compression with the high-pass noise. We conclude that although compression might alter interaural level cues, for most, especially with long sounds, localization dominance appears unimpaired.