

# Are musicians at an advantage when processing speech in two-talker masker?

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Musical training might grant normal-hearing listeners an advantage on auditory tasks, not only when these relate to music, but also for speech comprehension, in particular in noise or in the presence of background talkers (Başkent & Gaudrain 2016; Swaminathan et al. 2015). The current study explores whether understanding speech in a cocktail party situation, specifically with two-talker masker, differs between musicians and non-musicians. Various previous studies addressing a 'musician effect' for speech perception in noise provide inconclusive results (for a review see: Coffey et al. 2017), which can be partly ascribed to differences in stimuli selection (phonemes vs sentences) between studies with behavioral versus on-line measures. The present study combined a behavioral task with an on-line measure of speech perception to investigate the extent to which the automatic, effortless speech processing in both groups is affected by noise. In a sentence-recall task (offline task) participants were asked to repeat Dutch sentences masked with varying target/masker ratios. In a further visual-world paradigm, employing similar sets of stimuli both in quiet and masked speech (Salverda & Tanenhaus 2017), listeners' gazes were recorded while listening to sentences and performing a visual search for the image corresponding to a target word within the sentence (e.g. hamster) among images of a phonological competitor (i.e. ham) and two unrelated images. The online measure indicates how quickly participants integrate the acoustic information to access the target word in their mental lexicon (gaze tracking), and the extent of the mental effort involved in processing (pupil dilation). Results indicate that there is an overall positive effect of musical training in the behavioral task. The online measures also show differences between musicians and non-musicians, in particular musicians are faster regarding the timing of resolution of lexical competition in masked condition. In combination with the results from pupillometry, this could indicate that musicians are better able to allocate attention to the relevant acoustic information.

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