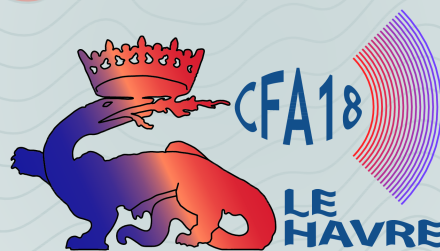


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**Global and local temporal processing in audition, and the influence of musical expertise**

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How the visual system processes a scene at the different levels of spatial information - global (overall picture) vs. local (details) - is critical for understanding its organization and how it operates in natural conditions. Several decades of research in vision have provided converging evidence for a so-called “ global prevalence” phenomenon: global-level processing happens before and strongly controls local-level processing. Despite its equally important role in auditory scene analysis, and more specifically in music perception, it still remains poorly understood how the auditory system deals with the different time-scales - i.e with local (short) and global (longer) temporal windows - of an auditory stream. In the present study, we designed different types of stimuli with independently manipulated global/local melodic structure similarities to investigate, in a carefully controlled psychophysical task, how local and global auditory processes operate and interact over time, and how these effects vary with musical expertise. Naïve (N=15) and expert (N=15) musical listeners were asked to compare whether two successively presented melodies (made of sequences composed of three groups of three successive tones), were similar or different, either at their global level (the structure of the groups) or at their local level (the structure within the groups). Our results show a “ global interference ” only for monotone melodic patterns (rising or falling in pitch) and when the modifications occurred at the end of the stimuli (last group), not at the beginning (first group). In addition, we found clear differences between naïve and expert musical listeners. These results allow us to further discuss how local/global temporal processing is organized in the auditory system and how this is reshaped by musical expertise.