

EVENT-RELATED BRAIN RESPONSES TO SOUNDS OF MUSICAL INSTRUMENTS AND HUMAN VOICES

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Background

In previous reports we described a centro-frontal scalp-recorded event-related potential (ERP) particularly sensitive to human voices (VSR). This potential peaked at about 320 ms from stimulus onset and was significantly larger in response to tones sung by human singers than to identical tones produced by a variety of musical instruments (Levy, Granot & Bentin, 2001; in press). Whereas similar in scalp distribution and latency to the Novelty P3 and P3a components, the VSR is elicited under different antecedent conditions and modulated by attention. Therefore we suggested that it may index a voice-specific process such as speaker identification, or may indicate a more general orienting response to significant (as opposed to novel or rare) auditory events.

Aims

In the current study we examined whether a potential similar to the VSR would be elicited in musicians by their own instruments.

Method

We recorded ERPs while professional musicians (wind, brass and string players) and non-musicians heard series of instrumental and vocal sounds (including the musicians' own instruments), while monitoring for piano tones.

Results

As in previous studies, vocal sounds elicited a distinct VSR in all subjects. However, no distinct components were elicited in the musicians in response to their own instrument. In addition, the P300 response to target piano tones was earlier and larger in musicians than in musically naive participants.

Conclusions

A possible interpretation of the results obtained in this study is that the VSR is, indeed, associated with a voice-specific process. Alternatively, the sounds of musical instruments may not be as categorically salient as the human voice, even for musicians specializing in their production.