

**CFADAGA2004/248**

**Pre-attentive change detection as indexed by the mismatch negativity event-related potential component**

E. Schröger<sup>a</sup> and S. Berti<sup>b</sup>

<sup>a</sup>Institut für Allgemeine Psychologie der Universität Leipzig, Universität Leipzig, Seeburgstr. 14, D-04103 Leipzig, Germany

<sup>b</sup>Psychologisches Institut der Johannes Gutenberg-Universität Mainz, Staudingerweg 9, 55099 Mainz, Germany

[schroger@uni-leipzig.de](mailto:schroger@uni-leipzig.de)

The mismatch negativity (MMN) is a component of the event-related brain potential elicited by an irregular sound occurring in a series of sounds setting up a regularity. It peaks between 100 and 250 ms after onset of the irregularity. EEG, MEG, and fMRI data indicate that it is mainly generated in temporal and partly in frontal cortex. It is explained by a memory comparison mechanism in which the sensory representation of a current sound is mismatched to a neural model of the regularity established by the preceding stimulation. In other words, from the elicitation of MMN it can be inferred that a regularity has been established in the brain and that a deviancy from this regularity has been detected. Importantly, MMN is even elicited when the sounds are not attended. This pre-attentive scanning of the auditory environment for deviations from some regularity enables the involuntary switching of attention towards potentially meaningful events. Interestingly, MMN is not only elicited by "simple" deviations where an isochronous sequence of identical sounds is interrupted but also by the violation of abstract rules, and it even has some extrapolatory power. Thus the pre-attentive change-detection system underlying MMN reveals a considerable degree of adaptivity and may be regarded as an intelligent system operating at sensory level.

*The complete document was not available at the publication time. It has been replaced by the submitted abstract.*