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# Age-related time-locked synchronization likelihood changes accompanying ERP components observed in an emotional GO-NOGO task

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## Abstract

< ![if gte mso 9]> < ![endif]-> < ![if gte mso 9]> Normal 0 21 false false false HU X-NONE X-NONE < ![endif]-> < ![if gte mso 9]> < ![endif]-> < ![if gte mso 10]> /\* Style Definitions \*/ table.MsoNormalTable {mso-style-name:"Normál táblázat"; mso-tstyle-rowband-size:0; mso-tstyle-colband-size:0; mso-style-noshow:yes; mso-style-priority:99; mso-style-parent:""; mso-padding-alt:0cm 5.4pt 0cm 5.4pt; mso-para-margin-top:0cm; mso-para-margin-right:0cm; mso-para-margin-bottom:10.0pt; mso-para-margin-left:0cm; line-height:115%; mso-pagination:widow-orphan; font-size:11.0pt; font-family:"Calibri", "sans-serif"; mso-ascii-font-family:Calibri; mso-ascii-theme-font:minor-latin; mso-hansi-font-family:Calibri; mso-hansi-theme-font:minor-latin; mso-bidi-font-family:"Times New Roman"; mso-bidi-theme-font:minor-bidi; mso-fareast-language:EN-US;} < ![endif]->

**Introduction:** The efficacy of inhibitory processes are presumed to decline with aging. Little is known, however, how emotional valence interferes with this process. The hypothesis of the present study was that inhibitory mechanisms as reflected by the amplitude of the N2 ERP component recorded in an emotional GO-NOGO task would be more robust in the young and would be accompanied by peculiar synchronization features.

**Methods:** Words having different emotional valence (negative, positive, neutral) were presented to a group of young (n=15, mean age: 21.2 yrs) and old (n=14, mean age: 65.7 yrs) participants. They were instructed either to make a motor response or withhold it following the presentation of the words, depending on their valence. Synchronization likelihood (SL) was determined for EEG-epochs corresponding to the N2 component of the ERPs elicited by the words. The analyses were carried out in the delta and theta frequency bands and with respect to Fz, Cz and Pz sites.

**Results:** Negative NOGO stimuli elicited the highest amplitude N2 component in the young. In general, SL was higher in the young but its changes were region-specific and valence-dependent. Age-specific changes were specially conspicuous for the stimuli with positive valence.

**Conclusions:** According to the ERP-findings inhibitory mechanisms were more effective in the young particularly for negative stimuli supporting the concept of "aversive bias". However, the characteristics of nonlinear-linear synchronization pertaining to the N2 component appeared to be quite complex representing a sensitive measure of various features of emotional information processing.

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