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### Abstract

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### Keywords

children, go, equiprobable, nogo, auditory, erp, components, adults, vs

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## **Equiprobable Go/NoGo auditory ERP components: Adults vs. children**

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**Aims:** We are interested in exploring sequential-processing in the uncued equiprobable auditory Go/NoGo task, and recently proposed an ERP-based sequential-processing schema derived from an adult sample. Our aim here is to investigate sequential processing in children, comparing the PCA-derived ERP components for adults vs. children in this paradigm. **Method:** Continuous EEG at 19 scalp sites was recorded from 18 adults and 18 children in an uncued equiprobable auditory Go/NoGo Task. Following our earlier investigation, Go and NoGo ERP components were extracted using unrestricted Varimax-rotated Principle Components Analyses; these were conducted separately for the adult and child samples. We used the coefficient of congruence to assess the equivalence between the corresponding ERP components identified for each group. **Results:** A broadly-similar series of components was identifiable in both age groups: P1, N1-3, N1-1, PN, P2, N2, P3, Slow Wave, and a diffuse Late Positivity. The N1 subcomponents and late components were similar in adults and children, but the intervening P2 and N2 were substantially different in relation to Go/NoGo. **Conclusions:** The results in adults confirmed our previous findings and supported our hypothetical processing sequence in this paradigm. Despite the broad similarity between the identified components in the adult and child samples, important differences in the detailed stimulus-response relationships between the PCA components of each group were apparent. Aspects of stimulus categorisation differ between children and adults, but early sensory processing and late imperative processing appear to be more similar. Further research on the developmental aspects involved in this paradigm should be fruitful.

**Keywords:** adults, Children, event-related potentials (ERPs), Principle Component Analysis (PCA), auditory Go/NoGo task

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