The spatially cued Go/NoGo in children. Brain activity analysis of the major inhibitory components.

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Abstract: This study aimed to investigate cognitive inhibitory control using a spatially cued Go/NoGo task in combination with EEG. We measured reaction times and ERP components such as the LRP and the NoGo-N2 and NoGo-P3 following Nogo trials and valid and invalid cues. Adults were significantly faster than children for all trial types suggesting a general improvement in cognitive abilities between childhood and adulthood. The LRPs were bigger in children suggesting stronger response preparation. Interestingly, a Nogo-P3 like effect was observed following invalid vs valid trials, whereas an opposite Nogo-N2 like effect was observed as Nogo-N2 amplitudes were larger following valid vs invalid trials. This indicates that different mechanisms are used to solve conflict in Go/Nogo trials and in Valid/Invalid trials. This is the first study to analyse the LRP following validly and invalidly cued stimuli in children and to examine Nogo-N2 and Nogo-P3 like effects following invalid and valid cues.