

Neural precursors of decisions that matter – an ERP study of the role of consciousness in deliberate and random choices

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Abstract: Neural precursors of voluntary actions appear before subjects report having decided on their behavior, leading some to dismiss a causal role for consciousness in decision-making. But the voluntary actions studied are typically arbitrary – bearing no purpose, meaning or consequence. We used EEG to directly compare deliberate and arbitrary decisions in a donation-preference task. Two NPOs appeared on the left/right of the screen, and subjects pressed the left/right button with the corresponding hand. In the deliberate condition, subjects' choices led to monetary donations to the NPOs. In the arbitrary condition, both NPOs received donations irrespective of the choice. Early left/right ERP differences appeared 1s before the action only for arbitrary decisions. Following our earlier work, we interpreted these ERPs as reflecting random bias activity disjoint from decision-making processes. Our findings challenge previous studies, suggesting that early predictability of voluntary action does not generalize from arbitrary to more-interesting deliberate decisions.