

Shifting attention to a thought: electroencephalographic dynamics during a modified word generation task.

Diego Cosmelli

Escuela de Psicología, Pontificia Universidad Católica de Chile Centro Interdisciplinario de Neurociencias, Pontificia Universidad Católica de Chile

Cristobal Moenne

Programa de Doctorado en Ciencias de la Ingeniería, Pontificia Universidad Católica de Chile

Hernán Labbé

Escuela de Psicología, Pontificia Universidad Católica de Chile

Karim Jerbi

Brain Dynamics and Cognition Lab, INSERM U821, Lyon, France.

Vladimir López

Escuela de Psicología, Pontificia Universidad Católica de Chile Centro Interdisciplinario de Neurociencias, Pontificia Universidad Católica de Chile

Francisco Aboitiz

Laboratorio de Neurociencia Cognitiva, Departamento de Psiquiatría, Escuela de Medicina, Pontificia Universidad Católica de Chile. Centro Interdisciplinario de Neurociencias, Pontificia Universidad Católica de Chile

Abstract: What happens if you are asked to come up with a word that includes the letters R, B and F in it? Does the answer pop up spontaneously? Or do you somehow actively orient yourself towards your thoughts, searching for a possible match? In other words: does voluntarily thinking about something involve first an attentional shift? Here we approach this question using electroencephalographic recordings in a modified word-generation task. Modulation of early visual event-related potentials to an attentional probe presented before subjects find the target word, indicates that thinking voluntarily about something requires a certain amount of withdrawal of attention from the immediate external context. Fronto-parietal activity during the initial phase of the task suggests that a supra-modal attentional network is involved when one voluntarily orients to a relevant aspect of experience, regardless of whether this is external, in the environment, or internal, in one's mental space.