

Labeling Process during odor discrimination task, “Listening Koh-boku”, in Human prefrontal cortex with near-infrared spectroscopy

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Real world contains enormous environmental information. We receive very diverse information through each sensory organ or receptors and send to central nervous system, recognizing external environment. The human brain seems to be sorting complex information implicitly into simple but structured abstract form. Prefrontal cortex is known to be a place where abstract information is manipulated. We recorded brain activity by NIRS in PFC from Koh-Do experts and beginners during Koh-Boku (premium incense) discrimination task. Experts were well trained sorting subtle and complex koh-boku fragrance into koh-boku names. We found clear difference between two groups. Experts showed highly organized response pattern in PFC but beginners didn't. We found that PFC can organize and implement attentive abstract discrimination process, acquired on demand by interacting with automatic covert processes, which fits to subject's exact dynamic thinking traces.