# Internalization process of performance monitoring during probabilistic learning: behavioral and ERP effects of positive emotion

Jasmina Bakic*† and Gilles Pourtois[1]

[1]Gent University – Belgium

**Abstract**

Dominant models advocate a role of Reinforcement Learning (RL) during performance monitoring (Holroyd & Coles, 2002). In this study, we assessed, using a standard probabilistic learning task (Eppinger et al., 2008), whether RL and the transition from external to internal monitoring (i.e. internalization process) may be influenced by the current affective state of the participant, with a focus on positive mood. Twenty healthy adult participants were asked to find out by trial and error the rule underlying the (arbitrary) association of specific visual stimuli (S) with specific manual responses (R). The S-R associations were easy, intermediate or hard to discover (random order), enabling to compute and contrast these different conditions. Results confirm different learning slopes depending on the ease to decipher the hidden S-R associations (i.e., significant interaction between condition and time). Another sample of 20 participants was asked to perform the exact same probabilistic learning task, but after positive mood had been reliably induced using a classical procedure. We tested the prediction that positive mood may lead to a change in the exploration vs. exploitation trade-off in RL, i.e. exploration is enhanced/prolonged while exploitation is guided equally well by reward and avoidance learning. The results of this second experiment will be presented at the conference.

*Speaker

†Corresponding author: jasmina.bakic@ugent.be