University of Zurich[UZH]

Department of Economics – Neuroeconomics Seminar

May 5, 2022 - 17:00 - 18:00

Elise Lesage
Ghent University

Contextual overtraining accelerates habit formation in new stimuli

Habits have received significant attention in recent decades, in part because of their relevance for disorders of compulsivity such as addiction. Context plays an important role in the formation and expression of habits but is overlooked in the classical view on habit formation. An important obstacle to empirically studying contextual effects has been the scarcity of reliable habit formation protocols. Here, we use extensive training on a reward decision-making task using over several days to induce habits. Results show that extensive overtraining (~1280 trials), lead to more habitual errors following devaluation than training to a high criterion (~50 trials). Strikingly, in a third group, we show habit formation for new, minimally trained stimuli following overtraining in the task context (contextual overtraining). These participants showed habitual errors at a rate similar to the overtrained group, higher than the criterion-trained group. The overtrained task context may provide a cue for shifting to a habitual mode, even in the absence of overtraining on the stimuli themselves. In addition, we found that the rate of habitual errors is predicted by the degree to which participants used a model-based rather than a model-free strategy in an independent decision-making task. We further show that following overtraining, devaluation-insensitive habits predict performance on a two-stage task, a widely used indirect measure of habitual versus goal-directed processing. Finally, we find that a working memory load slows responses in conditions that require the suppression of trained responses. Our findings shed new light on the role of context in habit formation, showing that extensive training in a stable task context not only causes devaluation-insensitivity of the overtrained stimuli, but accelerates new habit formation in that context.