University of Zurich UZH

Department of Economics – Neuroeconomics Seminar

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Nicolas Schuck
Max Planck Institute for Human Development

Multiple task-dependent values, and task states, are simultaneously represented in vmPFC during choice

Value representations in ventromedial prefrontal-cortex (vmPFC) are known to guide decisions. But how preferable available options are depends on one's current task. Flexible behavior, which involves switching between different tasks, therefore requires knowing how valuable the same options will be in different task-contexts. We tested whether multiple task-dependent values influence behavior, and asked if they are integrated into a single value representation or are co-represented in parallel within vmPFC signals. Thirty five participants alternated between tasks in which stimulus color or motion predicted rewards. Our results provide behavioral and neural evidence for co-activation of both contextually-relevant and -irrelevant values, and suggest a link between multivariate neural representations and the influence of the irrelevant task and its associated value on behavior. Importantly, current task context could be decoded from the same region, and better decodability of task context was associated with stronger (relevant-)value representations. Evidence for choice conflicts was found only in the motor cortex, where the competing values are likely resolved into action.