



**University of
Zurich** ^{UZH}

Department of Economics – Neuroeconomics Seminar

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Heterogeneity in strategy use during observational and experiential learning: computational mechanisms and relevance to psychopathology

To navigate our complex social world, it is crucial for people to deploy multiple learning strategies, such as learning from direct experience as well as from social cues. In observational learning (OL), individuals learn from observing the behavior of others, employing least two distinct strategies: imitation – repeating other agents' previous actions – and emulation – inferring their goals and intentions. In experiential learning (EL), individuals learn from directly experiencing the outcomes of their actions. Despite the prevalence of OL and EL in humans and other social animals, several fundamental questions remain unaddressed: How is control over behavior assigned to one strategy over the other depending on the environment? How do individuals vary in their strategy use? And, does this heterogeneity carry relevance to better understand psychopathology? In this talk, I will present data from two large-scale online experiments: an OL task in which learning can only occur through imitation or emulation, and an OL-EL task in which participants can learn both from observation and from experience. Computational modelling revealed wide individual differences in how people solve these tasks, suggesting five possible groups: those who dynamically arbitrate between strategies depending on the uncertainty of each strategy's predictions, those who use a fixed mixture between the two available strategies, those who rely preferentially on a single strategy (e.g. imitation-only or emulation-only during OL), and non-learners who perform an irrelevant strategy. Finally, recent analyses provide evidence that these groups may differ on various symptom dimensions relevant to psychopathology. For example, non-learners and imitation-only groups in the OL task exhibit lower social responsiveness (autism traits), suggesting an association between autism trait severity and reduced tendency to engage a social-inference driven emulation system.