



**University of
Zurich** ^{UZH}

Department of Economics – Neuroeconomics Seminar

October 25, 2018 - 17:00 - 18:00

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Dopamine and Proximity in Cognitive Control and Economic Choice

Cognitive control keeps us on task, but is subjectively costly and must be motivated just like physical effort. Yet while incentives promote physical effort, they sometimes promote cognitive control and other times undermine it. A potential explanation is that physical actions benefit from “proximity,” i.e., they are immediately suggested by the environment (e.g. levers at hand, stairs underfoot). Cognitive control actions are, by contrast, psychologically distant. Successful control requires overcoming effort costs and differences in action proximity. Interestingly, dopamine (DA) may mediate both dimensions, but with opposing effects on cognitive control. In this talk I will discuss a novel hypothesis that, during action selection, striatal DA emphasizes the benefits of actions over their costs, but it does so preferentially for proximal actions. In turn, I will discuss how proximity can determine whether striatal DA signaling promotes or undermines control and how a proximity bias may be normative for action selection. Finally, I will discuss experiments testing interactions of DA and proximity in a classic cognitive control task and during economic decision-making.