



Aging and Working Memory

November, 11st 2021

16:00 – 18:00 Italy time (ET 10-12 am)

16:00 – 16:10 Prof. **Erika Borella** (University of Padua)
Welcome and opening remarks

16:10 – 17:00 Prof. **Klaus Oberauer** (University of Zurich)
The Aging of Working Memory

17:00 – 17:50 Prof. **Todd Braver** (Washington University in St. Louis)
Healthy aging and the cost of cognitive effort

17:50 – 18:00 Prof. **Matthias Kliegel** (University of Geneva)
Closing remarks

ZOOM LINK:

<https://unipd.zoom.us/j/86496665485>

SHORT ABSTRACTS

Oberauer's talk

After a brief introduction into working memory and the decline of working-memory capacity in old age, I will ask: What declines as we get older? I will discuss two hypotheses. One – going back to Hasher and Zack's inhibition hypothesis – is that older adults have more difficulties keeping irrelevant information out of working memory, either by filtering irrelevant inputs, or by removing no-longer relevant contents from working memory. The other hypothesis is that older adults are impaired in maintaining temporary bindings between elementary representations in working memory. I will introduce a new measurement model framework, the M3 framework (Oberauer & Lewandowsky, 2019), for measuring these mechanisms. An age-comparative study applying the M3 framework to a complex-span and a working-memory updating task shows that older adults are impaired in maintaining content-context bindings, but not in filtering or removing irrelevant information.

Braver's talk

Basic research in the cognitive neuroscience of aging has suggested that older adults show declines in the ability to control thoughts and actions based on internal goals, and that this may stem from age-related changes in the functioning of the prefrontal cortex and mid-brain dopamine system. Yet older adults also seem to experience clear shifts in motivational prioritization, although currently the relationship between motivation, cognitive function, and decision-making is poorly understood. I'll present a novel perspective on this issue, focusing on interactions between motivation and cognitive control through the conceptual lens of neuroeconomic decision-making. Specifically, I'll discuss a recent theoretical framework, value-based cognitive control (VBCC), which postulates that motivational value serves to counteract the subjective and computational costs of engaging in cognitive control. A key implication of the VBCC framework is that age-related motivational reprioritization may shift cost-benefit computations, leading towards increased subjective costs associated with engagement in cognitively effortful activities. I'll present work in younger and older adults employing an innovative neuroeconomic decision-making paradigm known as the COG-ED (Cognitive Effort Discounting), which provides the means to quantitatively estimate the subjective cost of cognitive effort.

Organizers:

Erika Borella, Patrizia Bisiacchi, Giorgia Cona - University of Padova
Matthias Kliegel – University of Geneva

