

WORKSHOP

The Basic Mechanisms of Cognitive Control: From Source Conflict to Control Failure

04, 05, & 08 June 2026 | 9:30 - 10:30

Room 5, Palazzo Piomarta, Corso Bettini 84 - Rovereto (TN)

Cognitive control refers to our ability to focus on task-relevant information while ignoring irrelevant distractors. When participants are asked to complete a simple task (such as color naming in the classic color-word Stroop task), an alternative, automatic process can be incredibly difficult to suppress, directly interfering with performance.

In this workshop, we will explore the core mechanisms underlying cognitive control. We will dissect the primary conflicts that arise during these tasks (spoiler: there is more than just one!) and examine how easily control can slip—even when the distracting, task-irrelevant process is highly complex, yet so automated that it remains impossible to ignore.

Session 1 | 04 June, 9:30 - 10:30

Stroop Conflicts: Deconstructing the Core Mechanisms

This session will unpack the fundamental conflicts embedded within the classic color-word Stroop task. Rather than treating the "Stroop effect" as a single entity, we will isolate it into two primary components: task conflict and information conflict. Going a step deeper, we will divide information conflict into two distinct sub-conflicts: semantic conflict and response conflict.

We will discuss both behavioral indicators and physiological markers—with a specific focus on pupillometry—to track these conflicts. Finally, we will explore their precise temporal dynamics and broader theoretical implications for cognitive models.

Session 2 | 05 June, 9:30 - 10:30

Numerical Cognition: What Numbers Reveal About Control Limits

While the color-word Stroop task remains the gold standard for testing cognitive control, paradigms involving numerical cognition (such as size-congruity or numerical counting tasks) often reveal even more dramatic breakdowns in control.

In this session, we will review several numerical, Stroop-like paradigms. We will discuss the unique configurations of conflict they generate and examine what these specialized tasks can teach us about the boundaries of our capacity for selective attention.

Session 3 | 08 June, 9:30 - 10:30

Cognitive Load vs. Automaticity: When Irrelevant Tasks Get Tough

Typically, we fail to ignore an irrelevant task because it is deeply ingrained and automatic—since we perform it so frequently in daily life, we simply cannot switch it off. However, an automatic process (defined here as one that cannot be ignored) is not necessarily a simple or easy process.

In this final session, we will investigate how the difficulty level of the task-irrelevant dimension impacts cognitive control. We will explore what happens when the distracting task is highly demanding and, intuitively, should be easy to dismiss. (Spoiler: It isn't. Even when an irrelevant process consumes massive mental resources, it still manages to breach our defenses and disrupt control).

ABOUT THE SPEAKER

Dr. Ronen Hershman is a postdoctoral researcher at the Institute of Psychology, University of Innsbruck. His research lies at the intersection of cognitive psychology and neuroscience, focusing on the intricate relationships between cognitive workload, cognitive control, and psychophysiological markers. Specifically, he investigates how pupillary dynamics (pupil dilation) and eye-movement behaviors reflect underlying cognitive regulation under varying task conditions. A key objective of his work is establishing robust, innovative methodologies to effectively study cognitive profiles in preverbal populations (e.g., infants) and non-verbal clinical cohorts (e.g., neurological patients).