

One of the most interesting features of the human mind is its ability to monitor and regulate its own cognitive activity. Metacognitive processes allow us to estimate what we know or remember and their results might be experienced as a feeling of confidence that we have answered the question correctly, remember something, or are able deal with a given task. Cognitive control allows flexible goal-directed behaviour by selecting contextually relevant information and actions, so that we can e.g., perform several tasks simultaneously. One of the functions of cognitive control is to monitor task performance by detecting difficulties and errors.

The goal of this project is to attempt to answer the question of whether and how response confidence is related to the results of the monitoring. We will use computer tasks and measurements of electrical brain activity to measure the effects of error detection, increased task difficulty, and external feedback on the behavioural, subjective, and neural level. By creating conditions that involve different monitoring processes, we will examine how the indexes of monitoring relate to the reported level of confidence and whether engaging these processes makes our confidence judgments more accurate (i.e., whether we are more confident in our correct answers).

This project is important because it integrates data from various research areas (decision-making, metacognition and cognitive control) that have not been studied and interpreted within a single theoretical framework. The proposed research paradigms and statistical analysis methods will allow us to interpret the results in the context of existing research and theories of confidence; it will also help us understanding its mechanisms. Most importantly, however, we believe that studying the relationship between metacognition and cognitive control is crucial for understanding how higher cognitive functions regulate the dynamics of human cognition.