

Our daily life continuously requires us to make decisions between competing options and to change our actions when they become inappropriate or unnecessary. Fortunately, we can anticipate potential challenges to better prepare for them. Imagine sitting in your car at an intersection and noticing that the traffic light has just become amber. Based on the associations between this information and event timing, you can predict that the traffic light will turn green soon and so you can speed up more quickly when it happens. You move your foot to the accelerator when, suddenly, a pedestrian runs into the street. Now, in hundreds of milliseconds (!) you need to update your action plan and stop the movement towards the accelerator.

Even though you might think that knowing when an event is likely to occur will always lead to performance benefits, it is not actually correct. In fact, our recent results have shown that it is more difficult to stop an already initiated action when you know in advance when you would need to react. At the same time, knowing when an event will happen does not make choosing the correct response among competing ones more difficult. In other words, temporal predictability can induce an impulsive behaviour only in terms of the *time* of the response (“should I make a response?”) but not in terms of the *type* of the response (“which response should I make?”).

The goal of the current project is to investigate **how temporal predictability affects these different types of impulsivity in children**. Why is it important? First, our environment is full of temporally structured events and we make use of this information to accomplish many everyday tasks. But how did we manage to develop this ability at first place? We will use the insights from the current project to better understand the developmental trajectory of timing and response control. Second, impulsivity is one of the major components in many disorders, including ADHD which is also more prevalent in children. This study is a first step towards elucidating the underpinnings of differential effects of temporal predictability on distinct mechanisms of impulsivity. Therefore, the ultimate goal of the outlined project is to provide an in-depth understanding of the developmental mechanisms of temporally induced impulsivity, which is critical for guiding clinical, educational and social programs to meet the needs of young members of our society.