

Emotional events often involuntarily attract our attention, competing for cognitive resources and access to conscious awareness. Although this feature of our cognitive system is adaptive, in the modern world, which abounds in often irrelevant, cognitive burdensome emotional stimulation (such as eye-catching ads or newsletters), frequent distractions can have negative consequences, interfering with the completion of currently initiated activities, assigned tasks or pursued goals.. The negative impact of distracting events or thoughts can be reduced by regulating emotions, the process of modifying the quality, intensity, and duration of emotional responses. Until recently, most studies focused on the study of conscious, volitional, and thus effortless forms of regulating emotions. Although useful in a variety of contexts, concerns have been raised that volitional forms of emotional regulation, as studied in laboratories, do not match well the real life challenges. Namely, it seems that in our everyday lives we rarely try to influence our own emotional states using cognitively-burdening strategies. In addition, we rarely realize the need to regulate our emotions at all. It is therefore likely that during our development, the goal of emotion regulation becomes habitual. Thanks to this, emotion regulation processes can be initiated automatically and run to completion without any effort being made. Although this way of controlling affective states seems to dominate in our daily functioning, it remains surprisingly poorly understood. Therefore, the main objective of our project will be to explore the cognitive and neuronal mechanisms underlying non-conscious emotion regulation goal pursuit, using three methods of brain neuroimaging, which have different advantages: electroencephalography, magnetoencephalography and functional magnetic resonance imaging. In addition, we will use the transcranial magnetic stimulation to determine the causal relationship between the identified brain structures. Because emotional stimuli naturally attract our attention and are able to disrupt ongoing mental processing, we will examine how non-conscious emotion regulation affects the function of attentional systems in response to emotionally-laden stimulation. We will conduct four experiments, each of which will be aimed at exploring a distinct aspect of information processing. In contrast to the majority of studies on volitional forms of emotion regulation, in our studies the emotional aspect of stimulation will be presented as irrelevant to current tasks / goals. Adopting this approach will allow us to increase the ecological accuracy of our procedures, simulating real situations, e.g. when we are confronted with an emotionally stimulating situation and we need to remain calm (e.g. during a public speech), or when we need to ignore emotional distractors to achieve a designated task or goal (e.g. when we need to focus on work, ignoring distractions). In our research, we will try to answer the following questions: How does non-conscious regulation of emotions weaken the level of emotional reactions? How does it affect visual-spatial attention? Does it change the way how people suffering from anxiety typically react when looking at unpleasant content? Which areas of the brain are responsible for these effects? We hope that our project will contribute to a deeper understanding of how people regulate their emotions in their everyday life. Solving this problem is not only important from a scientific point of view but also can have potential clinical implications. Although emotion dysregulation underlies many affective disorders, yet, comparing the effectiveness of explicit emotion regulation strategies between patients and controls often fails to reveal any significant differences among these groups. By contrast, there is mounting evidence now suggesting that what is putatively disrupted in these patients are the processes related to implicit emotion regulation abilities.