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# Cannabinoid and opioid modulation of impulsive behavior and drug addiction

Joost Wiskerke

Occasionally, it happens to all of us: you speak out of turn during a meeting or you make a comment and immediately realize that you shouldn't have said it. Or you buy an expensive pair of shoes even though you actually cannot afford them. Two examples of daily-life impulsive behavior, and more specifically of impulsive action (acting without foresight) and impulsive choice (acting with disregard of long-term consequences), respectively. When somebody is hyper-impulsive, this personality trait can negatively affect that person's life. Failure to suppress impulsive behavior (failing impulse-control) is a well-known endophenotype in people suffering from Attention-Deficit/Hyperactivity Disorder (ADHD) or drug addiction, but also for instance in people with a bipolar disorder (during the manic phases). Hyper-impulsivity results from abnormal brain functioning. However, the exact malfunctions in the 'impulsive brain' to date remain largely unknown, thereby hampering effective treatment of this maladaptive behavior. An important aim of this Ph.D. thesis was to gain more insight in the neurobiology of impulsivity. In addition, this thesis examines some aspects of the neurobiology of drug addiction, a psychiatric disorder that, as mentioned before, is in most patients characterized by impulse control-related problems, particularly during the abstinence phase when drug addicts have been drug-free for some time and try to prevent relapse. By using rat behavioral models combined with various pharmacological approaches, we have studied the neurobiology of impulsivity and relapse to drug seeking, in search of putative 'targets' for novel medication against hyper-impulsivity and/or drug addiction. Thereby, we focused specifically on the cannabinoid and opioid neurotransmitter systems.

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