

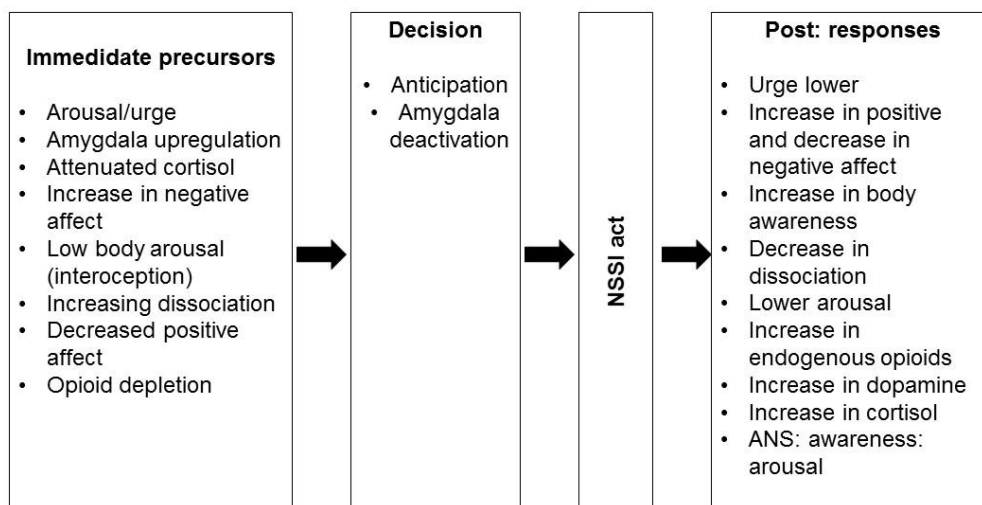
# Creating a neurobiological model of Nonsuicidal Self-Injury

## 13 – 15 March 2017 @Snellius

The primary aim of the workshop was to develop an understanding of the neurobiology of Nonsuicidal Self-Injury (NSSI) by bridging gaps between diverse fields of neurobiological research and bringing together researchers with different expertise. We further aimed at creating hypotheses for future research based on a joint model, laying out a road map for future research.

The workshop included 19 participants with eight participants from Germany (including two organizers and two PhD candidates), nine participants from the US (including one organizer and two PhD candidates), one participant from Belgium and one from the UK. Participants' methodological expertise included: neuroimaging, neurotransmitter research, animal models, psychological models, social network modelling and pain research.

The workshop included both brief introduction into the latest research activity of the participants, as well as break out groups to discuss controversial topics in NSSI research such as addictive properties of NSSI. Especially with regards to pain models and dopaminergic neurotransmission as a maintaining factor in NSSI, models from animal research provided a fresh perspective to common viewpoints which were based mainly on psychological and neuroimaging research. We further discussed methodological questions in specialized out-break groups. By introducing several viewpoints of neurobiological and psychological understanding of NSSI, we were able to describe a joint understanding of processes involved in NSSI, which have been described so far (see graph 1). This is, however, preliminary work, as the field of NSSI research and our understanding of the involved mechanisms is rapidly evolving, thus adding new layers of understanding to this model.



*Graph 1: Developing an understanding of the underlying neurobiological and psychological processes involved in NSSI*

To foster our aim of creating a road map for future research, the group developed the idea of creating a standard assessment battery – both for psychological research and for considering neurobiological paradigms – to come up with comparable study results from different groups in future research activities. The results of these two groups (psychological assessment and neurobiological assessment) will be published in the open access journal "Borderline Personality and Emotion Dysregulation" (editor in chief: Christian Schmahl).

During our discussion, we identified several areas in need of further research, especially concerning neurobiological processes. This included (but were not restricted to):

- Development of pain sensitivity during "normal" development (especially with regards to gender differences)
- The role of seeing blood in NSSI (using fMRI paradigms)
- Neurobiological impact of child-abuse-neglect or trauma history on NSSI
- Dysregulation at intersections of neurotransmitters-brain (e.g. HPA axis, stress response, brain activity) in NSSI

Unfortunately, we missed expertise on genetics, as several researchers with an expertise in genetics from the Netherlands and the US were invited but cancelled their participation. However, in summary, we were able to reach our aims of developing both a joint understanding of the current knowledge of the neurobiology of NSSI and develop directions for future research based on a more standardized assessment of NSSI related variables in different centers. The workshop itself provided an excellent opportunity to create communication between different highly active research groups.

### **Organizers**

Jennifer J. Muehlenkamp, University of Wisconsin Eau-Claire  
Christian Schmahl, Central institute of Mental health, Mannheim  
Paul L. Plener, University of Ulm