

**SEROTONIN, EMOTIONS AND THE SOCIAL BRAIN***Anders Gade (organizer)*

Multiple lines of evidence from animal and human research relate the neurotransmitter serotonin to aspects of emotions, personality and social behaviour, and this neurotransmitter system is targeted in drug treatment of mood and anxiety disorders. A major research program in Copenhagen (Cimbi) focuses on the neural bases - serotonin in particular - of personality dimensions that predispose individuals to affective and substance use disorders. This symposium will present highlights from both this research program and from a large SSRI treatment study, and preliminary analyses of social cognitive measures from both will be included as well.

The Cimbi studies have used many of the same measures across various clinical groups and their matched controls, including structural MRI-imaging, PET-studies of the serotonin transporter and a receptor (e.g., the 5-HT<sub>2a</sub> or 5-HT<sub>4</sub> receptor), neuropsychological tests, personality inventories, and social cognitive measures. The control groups have been combined for analyses of serotonin in the normal brain and its relation to personality, cognition and social cognition.

The SSRI trial concerned healthy first-degree relatives of patients with depression. It was conducted as a triple-blinded controlled trial with a total of 80 participants randomised to either escitalopram or placebo for four weeks. The main outcome was the cortisol response in a combined dexamethasone corticotropine releasing hormone test.

Neuropsychological and social cognitive tests as well as personality measures were also applied before and after treatment. This study is unique in being both the largest study to date of normal subjects treated for an extended period with SSRI and in concerning normal subjects at risk of developing depressive disorders.

The social cognitive measures include emotional face recognition, moral reasoning, understanding of social situations, and a test of emotional intelligence (MSCEIT, which is also the topic of a separate symposium). We study serotonergic contributions to such processes both in correlations and in fMRI-measurements of the effects of drug challenges on emotional face recognition and decision making.

Iowa Gambling Task is a measure of decision making under ambiguity. This test first became known because it proved to be sensitive to ventromedial prefrontal lesions and formed part of the basis of the "somatic marker" hypothesis of decision making. It has since been shown that it is sensitive to impulsivity in many other clinical conditions with symptoms indicative of poor decision making in personal and social situations. Such decisions may be made, it has been argued, in a balance between an impulsive reward-based dopaminergic system and a reflective serotonergic system. We will address this question in the final presentation of the symposium.

Authors:

Gade, Anders; Senior lecturer, Copenhagen: Introduction to "serotonin and the social brain".

Knudsen, Gitte Moos; Copenhagen: Neuroimaging studies of serotonergic transmitter system in the normal human brain and in neuropsychiatric disorders.

Knorr, Ulla; Copenhagen: SSRI-treatment of normal subjects at risk of depressive disorder: Clinical experiences and effects on HPA-reactivity, cognition and personality measures.

Zornhagen, Gry; Copenhagen: Social cognition in adults – measures and preliminary serotonergic correlations  
Hartwig Siebner, Copenhagen: Mapping the contribution of 5-HT<sub>2A</sub> neurotransmission to risk avoidance and emotional processing.

Øfsti, Linn; Norway & Copenhagen: Decision making and the Iowa gambling Task – are there effects of serotonergic downregulation (MDMA-abuse) or SSRI-treatment.

S - 4

## NEUROPSYCHOLOGICAL ASPECTS OF PAIN

### Laura Petrini (organizer)

The human pain experience is a multidimensional experience manifesting sensory-discriminative, cognitive-evaluative, and affective-motivational components, resulting in the pain system being one of the most complex of the human perception systems. This symposium addresses the topic of how these components are integrated by the pain system. The speakers will discuss experimental studies conducted at the Center for Sensory-Motor Interaction, Aalborg University. These studies are mainly based on three phenomena: (a) graphesthesia; (b) mirror and (c) thermal grill illusions. The findings can be of a help in developing new effective treatments plans for pain patients.

Authors:

Mørch, Carsten Dahl; PhD, Aalborg: The phenomenon of graphesthesia in the nociceptive system.

Christoffersen, Giselle; cand.psych. Aalborg: Psychological factors involved in the mirror box illusion.

Petrini; Laura; PhD, Aalborg: The role of sensory and perceptual integration in the thermal grill illusion.