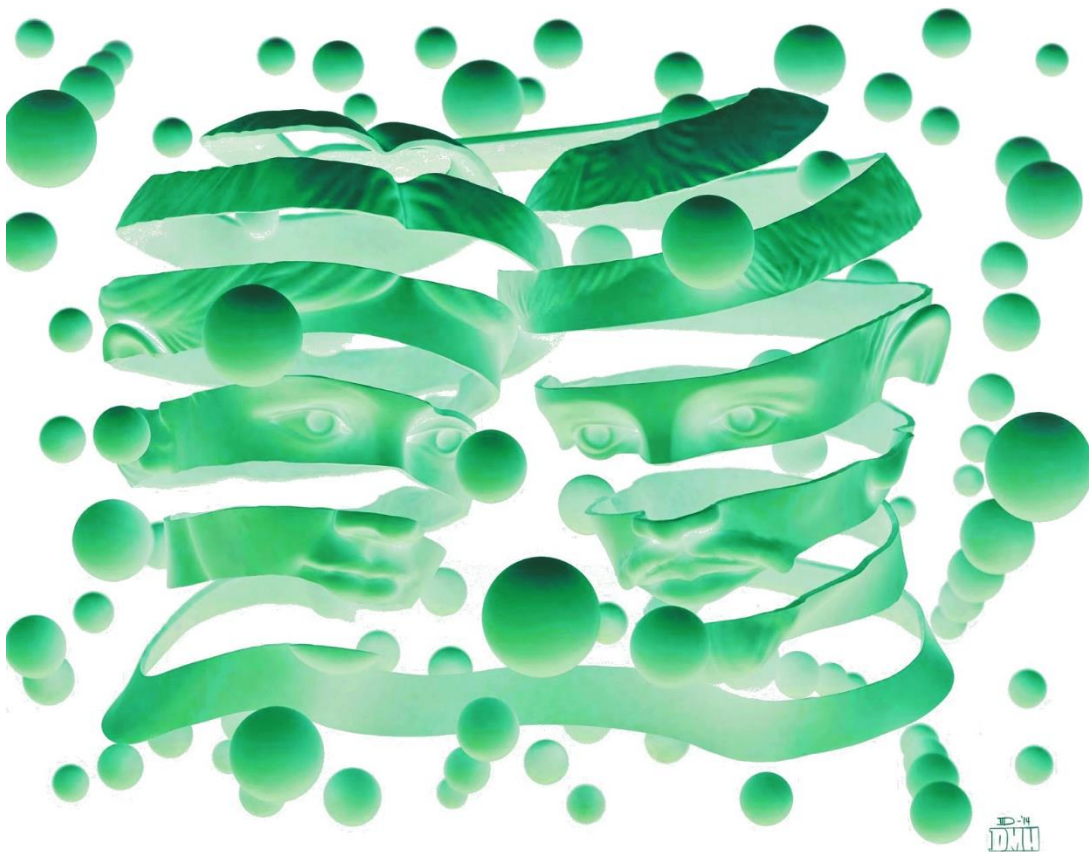


**From Self-Knowledge to Knowing Others:
Insights from psychological and neuroscientific tools**

Brussels, Thursday 7th of November 2019

Full program



Belgian
Association for
Psychological
Sciences

 **UCLouvain**

fnrs
LA LIBERTÉ DE CHERCHER

PSYCEDUC
ÉCOLE DOCTORALE THÉMATIQUE
SCIENTES PSYCHOLOGIQUES ET SCIENCES DE L'ÉDUCATION



One-day Workshop, 8 talks, 1 poster session
**“From Self-knowledge to Knowing Others:
Insights from psychological and neuroscientific tools”**

Introduction to Self-Other Knowledge

by H. Bukowski (UCLouvain, Be)

Subjective experiences in conflict tasks

by W. Gevers (ULB, Be)

Memory and the Self: from the past to the future

by A. d’Argembeau (ULiège, Be)

Seeing it in new ways: recent perspectives on perspective taking

by D. Samson (UCLouvain, Be)

Empathy – from shared affect to distinct self-other representations

by C. Lamm (Uni. of Vienna, Aus)

**‘Spontaneous’ mentalizing: the functional and neural basis, and how it
relates to autism spectrum disorder**

by M. Brass & R. Wiersema (UGent, Be)

Self-representation in dissociative mind

by C.-D. Chiu (CUHK, China)

**When affect sharing and self-other distinction fail: understanding
empathy from a developmental and clinical perspective**

by G. Silani (Uni. of Vienna, Aus)

Brussels, Friday 16th of November 2018
Register for free on www.self-knowing-others.org

Best poster award – chaire by students



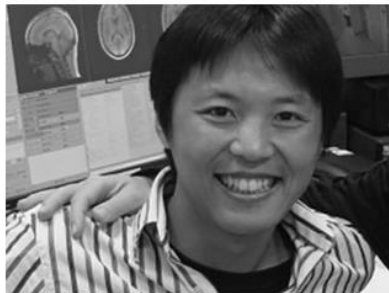
Belgian
Association for
Psychological
Sciences



Final program of the workshop “From Self-knowledge to knowing others”

8:30- 9:00	Registration & coffee
9:00-9:30	Welcome word & <i>Introduction to Self-Other knowledge</i> by Henryk Bukowski (post-doc, UCLouvain)
9:30-10:10	<i>Subjective experiences in conflict tasks</i> by Wim Gevers (Professor, Université Libre de Bruxelles).
	<u>Abstract:</u> We know ourselves because we monitor and evaluate our cognitive processes. What neural processes contribute to these evaluations? We will argue that such metacognitive evaluations are blind to processes occurring before motor commitment. That is, the brain needs a read-out of motor commitment to be conscious of its own cognitive processes.
10:10-10:50	<i>Memory and the self: from the past to the future</i> by Arnaud d’Argembeau (Permanent FNRS researcher, Université de Liège).
	<u>Abstract:</u> One’s sense of self and identity depends in part on mental representations of personal attributes and past experiences that are stored in long-term memory. Furthermore, recent research has highlighted the importance of personal goals and future-oriented thinking in self-knowledge. In this talk, I will discuss the representational systems and neurocognitive processes that support these different forms self-representations.
10:50-11:10	Coffee break
11:10-11:50	<i>Seeing it in new ways: recent perspectives on perspective taking</i> by Dana Samson (Professor, Université catholique de Louvain)
	<u>Abstract:</u> How and when we understand others’ mental states has been the core of my research interests for the past 15 years. In this talk I will focus on how visual perspective taking and managing conflicting Self-Other perspectives are currently understood at the functional and neural levels.
11:50-12:30	<i>Empathy - from shared affect to distinct self-other representations</i> by Claus Lamm (Professor, University of Vienna) & Henryk Bukowski
	<u>Abstract:</u> Empathy is a complex social skill that requires the interplay of several key components. In my talk, held together with Henryk Bukowski, I will highlight two of them: affect sharing and self-other distinction. Based on a multi-method and multi-level approach, the neural underpinnings of these components and their interplay will be discussed
12:30-13:30	Lunch
13:30-14:30	Posters session
14:30-15:45	<i>‘Spontaneous’ mentalizing: the functional and neural basis, and how it relates to autism spectrum disorder</i> by Marcel Brass & Roeljan Wiersema (Professors, Ghent University)
	<u>Abstract:</u> In this presentation, we will summarize our research on the functional and neural basis of spontaneous mentalizing (SM). In particular, we will address the circumstances under which SM occurs, the role of the temporo-parietal junction in SM and whether people with autism spectrum disorder show SM.
15:45-16:25	<i>Self-representation in dissociative mind</i> by Chui-De Chiu (Professor, Chinese University of Hong Kong)
	<u>Abstract:</u> This talk focuses on self-representation in dissociative individuals. We differentiate various layers of self-representation, from self-association with evaluative attributes to self-attribution regarding the ownership and organization of self-relevant information. Atypical self-representation impedes the coherency of dissociators’ self-knowledge, obstructing the reprocessing of unbidden past and biasing the interpretation of social information.
16:25-16:45	Coffee break
16:45-17:25	<i>When affect sharing and self-other distinction fail: understanding empathy from a developmental and clinical perspective</i> by Giorgia Silani (Senior Post doc, Univ. of Vienna)
	<u>Abstract:</u> I will give an overview of the state of the art on brain research on empathy, by focusing on two main questions: 1) What are the behavioral and neural mechanisms underlying normal empathic responses? 2) How developmental and clinical factors (autism, alexithymia) affect our ability to empathize with other people?

17:25-18:00	General discussion with all speakers
18:00-18:15	Best poster award & Conclusion
18:15-19:30	Closure drink



How to get to the workshop



It's 200 meters from Metro station "ALMA" (see map above)

By train: from Brussels central station: Walk to the Metro (250 m), take "**Line 1**" towards "**Stockel**", stop at "**Alma**" (12th stop, 15 min)

By train: from Brussels south/midi station : Walk to the Metro (150 m), take "**Line 6**" towards "**Elisabeth**", stop at "**Arts-Loi**" (6th stop, 7 min), then take "**Line 1**" towards "**Stockel**", stop at "**Alma**" (10th stop, 13 min).

By plane landing to Brussels Airport (Zaventem): Depending on first bus available:

Plan (A): take the bus "**659 Zaventem - Roodebeek**" (from "De Lijn" company), stop at "**Sint-Stevens-Woluwe Hippokrates**" (13th stop, 14 min), then walk for 10 min (see map below) or (to avoid walking) take the bus "**79 Krainem**" (from "Stib" company) for 2 stops, stop at "**Auditoires-UCL**".

Plan (B): take the bus "**359 Zaventem - Roodebeek**" (from "De Lijn" company), stop at "**Sint-Lambrechts-Woluwe Thiry**" (14th stop, 18 min), then walk for 16 min (see map below) or (to avoid walking) take the bus "**79 Krainem**" (from "Stib" company) for 3 stops, stop at "**Auditoires-UCL**".

By plane landing to Brussels South Charleroi Airport: (actually located near Charleroi), take the shuttle to Brussels south/midi train station, then see above.

Poster abstracts

The social situation affects how we process feedback about our actions

Artur Czeszumski¹, Benedikt V. Ehinger¹, Basil Wahn^{1,2} and Peter König^{1,3}

1 Institute of Cognitive Science, Universität Osnabrück, Osnabrück, Germany

2 University of British Columbia, Department of Psychology, Vancouver, BC, Canada

3 Institut für Neurophysiologie und Pathophysiologie, Universitätsklinikum Hamburg-Eppendorf, Hamburg, Germany

Humans achieve their goals in joint action tasks either by cooperation or competition. In the present study, we investigated the neural processes underpinning error and monetary rewards processing in such cooperative and competitive situations. We used electroencephalography (EEG) and analyzed event-related potentials (ERPs) triggered by feedback in both social situations. 26 dyads performed a joint four-alternative forced choice (4AFC) visual task either cooperatively or competitively. At the end of each trial, participants received performance feedback about their individual and joint errors and accompanying monetary rewards. Furthermore, the outcome, i.e. resulting positive, negative or neutral rewards, was dependent on the payoff matrix, defining the social situation either as cooperative or competitive. We used linear mixed effects models to analyze the feedback-related-negativity (FRN) and used the Thresholdfree cluster enhancement (TFCE) method to explore activations of all electrodes and times. We found main effects of the outcome and social situation at mid-line frontal electrodes. The FRN was more negative for losses than wins in both social situations. However, the FRN amplitudes differed between social situations. Moreover, we compared monetary with neutral outcomes in both social situations. Our exploratory TFCE analysis revealed that processing of feedback differs between cooperative and competitive situations at right temporo-parietal electrodes where the cooperative situation elicited more positive amplitudes. Further, the differences induced by the social situations were stronger in participants with higher scores on a perspective taking test. In sum, our results replicate previous studies about the FRN and extend them by comparing neurophysiological responses to positive and negative outcomes in a task that simultaneously engages two participants in competitive and cooperative situations.

Cognitive load modulates racial bias in empathy: an event-related potential study

Bajouk Omar (Uliège), Hansenne Michel (Uliège), Ahami Ahmed (Université Ibn Tofaïl)

Racial bias has been classically studied in social psychology as an implicit process that favours ingroup members relative to outgroup ones. Researchers in empathy have shown that participants easily share the emotional states of ingroup stimuli, reflecting a racial bias in empathy (RBE). Some Event-Related Potentials (ERPs) studies suggest that RBE is mainly the result of the affective component of empathy processes in the early stage and that the cognitive component remains unbiased. No ERP studies to date have examined the impact of CL on RBE. Therefore, in this study, Caucasian students ($N = 27$, mean age = 22.37 ± 2.39) observed painful or neutral emotions displayed by ingroup or outgroup members under high or low Cognitive Load (CL). The ERP results showed that RBE was observed in N100, as Caucasian pain elicited a positivity shift in the frontal cortex. This bias was reduced to zero under a high CL, demonstrating that CL modulates RBE in the early stage. Moreover, RBE was not found in P300 or late positive potential (LPP), suggesting that the cognitive component was unaffected even when cognitive resources were occupied. Surprisingly, this bias was related to fantasy IRI scale. Together, these results show that RBE was observed in the affective but not in the cognitive component of empathy and was modulated by CL, even in the early stage process.

Shared sensory experience modulate understanding others' mind

Beatrix Labadi, University of Pecs, Hungary

Previous studies showed that enfacement illusion as a subjective experience evoked by synchronous interpersonal multisensory stimulation (IMS) elicits changes in the mental representation of self-other boundary. In our studies we demonstrate whether shared sensory experiences between two people could alter the way peripersonal space was represented, and whether this alteration could be influenced the ability to take another person's viewpoint in perspective taking task. In this study children (8-9 years old) and adults were involved to measure the shared sensory experience effect in a perspective taking task performance varying first person perspective and third person perspective, and location of the target. The results show that only the the synchronous interpersonal multisensory stimulation facilitate the perspective taking performance and only in those condition when third-person perspective was used. Similar pattern of findings was found for children and adults. Findings suggest that the multisensory integration of the peripersonal space can be dynamically modulated by the social interactions with partners and contribute to the mechanism of social cognition such as understanding others' actions, and predicted better understanding others' perspective. The shared multisensory experiences between self and other, even in childhood, can change the perceived similarity of others relative to one's self which resulted a better taking perspectives of others.

Study protocol of the impact of non-pharmacological techniques (self-hypnosis/self-care) on the well-being, cognitive complaints and return-to-work in cancer patients

Bicego, A.1,2, Rousseaux, F.1,2, Grégoire, C.1,4, Nyssen, A-S.1,2, Faymonville, M-E.1,3, Vanhauzenhuysse, A.1,3

1 Sensation and Perception Research Group, GIGA Consciousness, Université de Liège, GIGA CHU - B34 Quartier Hôpital Avenue de l'Hopital, 11, 4000 Liège, Belgique

2 Laboratoire d'Ergonomie Cognitive et d'Intervention au Travail, Université de Liège, Quartier Agora - Place des Orateurs, 2 (B32), 4000 Liège, Belgique

3 Département d'Algologie, Hôpital Universitaire de Liège, Domaine Universitaire du Sart Tilman, B35, 4000 Liège, Belgique

4 Département de Santé Publique, Université de Liège, B34 Quartier Hôpital Avenue de l'Hopital, 11, 4000 Liège, Belgique

Cancer diagnosis generates a number of physical (pain, nausea and fatigue) and psychological implications for the patient. At the psychological level, there are high levels of emotional distress (anxiety and depression) and cognitive impairments such as memory, attentional and information processing deficits, that can undermine the quality of life. This decade has shown great progress in cancer treatment allowing cancer patients, many of whom are of working age, to survive. Unfortunately, cancer diagnosis and treatment induce various symptoms necessitating the patient to interrupt or quit his occupational status. Alternative techniques, such as hypnosis, have been used in the past few years to treat these psychological and physical symptoms, be it at the moment of diagnosis, during and/or after the cancer treatments. A large amount of studies has shown a positive effect of hypnosis in cancer patients notably upon anxiety, emotional distress and fatigue, three factors that can negatively affect cognitive functions.

Aim : to investigate the effect of a non-pharmacological treatment that combines self-hypnosis and self-care on well-being, cognitive complaints and return-to-work within a population of cancer patients.

Hypothesis : By reducing emotional distress and fatigue, self-hypnosis/self-care will reduce the cognitive difficulties of cancer patients, foster return-to-work, and eventually improve the patients' global quality of life.

Method : Participants will first undergo a neuropsychological assessment after which they will proceed to a pre-test (neuropsychological tests, questionnaires and fMRI). They will then participate in an 8-week learning programme of self-hypnosis/self-care (1 session per week) conducted by a hypnosis therapist. After the learning phase, participants will proceed to a first post-test (identical to the pre-test). After one month, they will meet again with the experimenter to proceed to a last post-test to investigate the treatment's beneficial effects over time.

Self-other confusion in borderline personality disorder: A video morphing task

Celine De Meulemeester, Benedicte Lowyck & Patrick Luyten (University of Leuven, Belgium)

In borderline personality disorder (BPD), the tendency to confuse mental states of self and others contributes to instability in relationships and in sense of self. Self-other confusion is theorized to develop in the context of insecure attachment and/or childhood trauma, and to relate to problems in mentalizing and epistemic trust (Luyten & Fonagy, 2015). Neuroimaging research supports the view that individuals with BPD may have difficulty making self-other distinctions (Dziobek et al., 2011; Ripoll et al., 2013). However, experimental studies of self-other confusion in BPD are rare. The current study investigates self-other confusion in the domain of self-face recognition in an analogue BPD ($n = 21$) vs. control ($n = 18$) sample using a video morphing paradigm. In this task, a picture of the participant's face gradually morphs into the picture of an unknown model (and vice versa), and the participant is asked to press a button when he/she feels that the identity of the morph changes. We hypothesized that the analogue BPD group would judge a larger percentage of the morph to look like themselves because of their tendency to confuse self and others. Indeed, the results indicated that, compared to controls, the analogue BPD group judged a significantly larger percentage of the morph to look like themselves in the self-to-other, but not in the other-to-self morphing direction. This means that when the video started from their own face and gradually changed towards an unknown face, the analogue BPD group kept seeing themselves longer in the morph. This tendency was significantly related to measures that tap into key features associated with BPD. The results tentatively show that individuals with BPD features have a less specific self-face representation and confuse their own face more easily with another face. More research in clinical BPD samples is needed.

Two different systems for thinking about other people's thoughts in the developing brain

Charlotte Grosse Wiesmann, Angela D. Friederici, Nikolaus Steinbeis, & Tania Singer**

**) These authors contributed equally.*

Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig

While decades of research assumed that Theory of Mind (ToM) emerges around the age of 4 years, when children start passing traditional explicit ToM tasks, novel paradigms referred to as implicit ToM tasks have shown that infants younger than 2 years of age already have correct expectations on how others will act based on their beliefs. These findings have triggered highly controversial debates on the nature and development of ToM: How do infants solve the implicit ToM tasks? And do these tasks measure the same ToM abilities than the traditional explicit ToM tasks that are only passed several years later?

Here, we related gray matter (GM) maturation assessed with magnetic resonance imaging in 38 children aged 3- and 4-years with their ToM performance in implicit and explicit ToM tasks. While explicit ToM reasoning was associated with GM maturation in regions classically involved in ToM reasoning in adults (i.e., the precuneus and temporoparietal junction), the implicit ToM task was related with the maturation of a distinct region in the supramarginal gyrus, that is involved in visual perspective taking in adults. Taken together, these results suggest that passing explicit ToM tasks around the age of 4 years is related to mature adult-like mental state reasoning, whereas implicit ToM tasks rely on a different and earlier-developing process that might also support visual perspective taking. We speculate on whether visual perspective taking as well as the implicit ToM tasks require infants to distinguish their own from the other's perspective to the same degree than later-developing explicit ToM tasks do.

Can I understand you if I do not understand myself? The role of alexithymia in affect recognition and vicarious emotional experience

Chunyan Mai, Chui-De Chiu (The Chinese University of Hong Kong)

Self-representation has been considered the foundation to understand other people. Alexithymia, a disturbance in the awareness of one's own emotional experience, has been considered an obstacle to understand the emotional experience of other people (i.e., empathic function). Several studies showed that alexithymic individuals have difficulty in verbalizing their own emotional experiences, along with empathic deficits (Aron, Benson, & Park, 2015; Jonason, & Krause, 2013). It is notable to mention that Bird and Viding (2014) characterised alexithymia by an impaired affective representation system that alexithymic individuals will not be able to form a consciously accessible representation of their own affective state as to not able to associate own internal states with perceptual cues to those states in others.

However, most past studies investigated the link using self-report instruments to assess empathic function, which assumes "accurate self-reflection on emotional experience at social context in alexithymic people". Thus, there is doubt the accuracy of intact reflective self-knowledge of deficient reflection of emotion. Furthermore, alexithymia involves disparate underpinnings, including a reduction in emotion reactivity as well as a difficulty in verbalizing emotions. The impeding effect of alexithymia on understanding others' emotional experience may not result from a lack of symbolic representation of emotion if emotion reactivity is not controlled over.

The aim of the current study is to tackle the two problems in the literature by using both behavioral and self-report measurement to improve empathic accuracy and empathic feeling elicited from an affect-charged situation. In addition, a measure of the two dimensions of alexithymia called the Bermond-Vorst Alexithymia Questionnaire were used to assess both affective and cognitive factor of alexithymia.

The Time Course of Processing Conflicting Self- versus Other- Perspective

Da Zhang (Peking University, University of St Andrews), Yanjie Su (Peking University)

Perspective taking enables individuals to appreciate perspectives from oneself and another, which may often be disparate and be interfering with each other either in an egocentric or an allocentric way. This bi-directional interference suggested two perspectives can be both represented at least in a certain time window. The underlying temporal dynamics is still unclear. Present study aimed to (1) identify this time window, and (2) explore the temporal mechanism of co-representing two disparate perspectives. We adapted the dot-perspective task (Samson et al., 2010) to test the subjects' performance on level 1 visual perspective taking. In our study, subjects were required to respond to a digit and to judge whether it equalled to the number of discs that either the avatar (in the Other-perspective task) or the subject (in the Self-perspective task) could see. Critically, we manipulated the Stimulus-onset asynchrony (SOA) between the avatar-discs scenery and the digit, ranging from 400-1300ms in 33.3ms steps, to assess the intensity of perspective representations over. The results illustrated a long-lasting egocentric effect but a later allocentric effect, suggesting the self-perspective was dominant all the time while the other-perspective was likely to be processed after (or even based on) the self-perspective. Moreover, we discovered a theta band oscillation (around 5 Hz) when using Fourier Transform to analyse the frequency domain of the detrended SOA curve in the conditions that the self- versus other-perspectives conflicted. This suggested the representation intensity of the conflicting perspectives waxed and waned alternately in a periodical way to coordinate. We conclude that individuals process self-perspective first and calculate other perspective on this basis afterwards, whereas the representation of disparate perspectives then co-exist and compete by means of theta-band oscillation.

Automatic imitation of multiple agents: A computational model

Emiel Cracco (Ghent University)

Richard P. Cooper (Birkbeck, University of London)

There is accumulating evidence that the actions of others are represented in the motor system, leading to automatic imitation. However, whereas early work focused mainly on the effect of observing a single agent, recent studies indicate that the actions of multiple agents can be represented simultaneously. Yet, theorizing has lagged behind. In the current poster, we extend the dual-route model of automatic imitation to include multiple agents, and demonstrate, in five simulation studies, that the extended model is able to capture four critical multi-agent effects. Importantly, however, it was necessary to augment the model with a strategic control mechanism regulating response inhibition based on the number of observed actions. Furthermore, additional simulation indicated that this mechanism could be driven by response conflict. Together, our results demonstrate how theories of automatic imitation can be extended from single- to multi-agent settings. As such, they constitute an important step towards a mechanistic understanding of social interaction beyond the dyad.

The role of the Cerebellum in understanding Social Action Sequences

Frank Van Overwalle, Sarah De Coninck, Mario Manto & Peter Mariën

Vrije Universiteit Brussel, Belgium / Université Libre de Bruxelles

Recent neuroimaging research has revealed that the posterior cerebellum plays a critical role in social reasoning, and in particular in understanding beliefs. One hypothesis is that the cerebellum is responsible for the understanding of sequences of motions and actions, and the automatization of these action sequences. Automatization of actions in their correct order is a prerequisite for understanding others and their beliefs. In order to investigate this hypothesis, we tested for the first time patients with generalized cerebellar degenerative lesions on a number of tests of social and affective understanding, and compared their performance with matched control volunteers. One of the tests involved generating the correct order of social actions depicted in cartoons (Langdon & Coltheart, 1999). In line with our hypothesis, only this test showed clear deficits in cerebellar patients, in particular when dealing with cartoons depicting false beliefs.

**DOES OUR FACIAL PROPRIOCEPTION INFLUENCE
RECOGNITION OF OTHERS' EXPRESSIONS?**

Giulia Mangiaracina, Dr Marta Ponari

When people observe others emotional facial expressions (EFE), they react spontaneously and rapidly, contracting the muscles used to produce the observed expression ("mimicry"). Previous studies showed that mimicry facilitates facial expression recognition making it faster and more accurate (Oberman, Winkielman, & Ramachandran, 2007). The simulation theory posits that observed emotions activate internal representations of both neural and bodily states and thus not only central but also peripheral mechanisms are considered involved in the emotion recognition (Freedberg & Gallese, 2007). Studies showed that the disruption of mimicry reduces people's sensitivity to EFE and deficits in the EFE production reflect deficit in recognizing EFE. Moreover, somatosensory and motor systems that support the same facial expression mostly overlap (Wood, Rychlowska, Korb, & Niedenthal, 2016). In light of this, mimicry seems to provide essential proprioceptive information during the EFE recognition task. Crucially, the extent by which people mimic, as well as the ability to monitor the ability of one's own face muscles ("facial proprioception"), is highly variable between individuals; this might explain why people differ in their ability to recognise facial expressions.

The study is a within-subjects design study that investigates whether facial expression recognition abilities (accuracy and RTs) correlate with individuals' facial mimicry intensity and proprioception ability. Facial proprioception is measured using the AMEDA method (Frayne, Coulson, Adams, Croxson, & Waddington, 2016) and subjects' facial EMG is recorded during an EFE recognition task, to measure facial mimicry. Consistently with previous literature our study showed a display of facial mimicry during an emotional expressions' recognition task. Although the emotional face expressions' recognition ability expressed by reaction times varies depending on the emotion perceived, the recognition ability does not seem to be related to the mimicry intensity or proprioceptive ability.

Social touch observation in adults with autism: an fMRI study

Haemy Lee Masson¹, Stien Van De Plas¹, Michelle Hendriks¹, Steffie Amelynck², Hans Op de Beeck¹ and Bart Boets²

¹Department of Brain and Cognition, KU Leuven, 3000 Leuven, Belgium

²Department of Neuroscience, Center for Developmental Psychiatry, KU Leuven, 3000 Leuven, Belgium

Humans can easily grasp the affective meaning of social touch scenes. This social cognitive ability is supported by several neural systems, including the theory of mind (ToM) and somatosensory resonance. In the current study, we investigate which of these two systems underlies changes in observed socio-affective touch processing in adults with ASD, as compared to well-matched neurotypical (NT) adults. Using advanced fMRI-based MVPA methods, we examined the neural representations of affective touch in predefined regions that are relevant to social cognition and somatosensory processing, e.g., the temporoparietal junction (TPJ) and somatosensory areas, respectively. Behavioral results suggest that individuals with ASD and NT adults similarly perceive the valence and arousal of social touch scenes. At the neural level, the affective meaning of touch is equally well represented in TPJ in both groups. In contrast, unlike the NT group, the ASD group does not show affective representations in the somatosensory cortex. In addition, this absence of affective representations in the somatosensory cortex was associated with individual differences in the degree of social touch avoidance and the number of autistic traits. In sum, our findings imply that individuals with ASD are able to cognitively reason about the affective meaning of socio-affective touch, but they do not show the spontaneous embodied somatosensory resonance while observing social touch scenes.

A step back is a step forward: Shifting back to self-perspective matters for empathy

*Hau Ching Ng & Chui-De Chiu; Laboratory of Experimental Psychopathology and Psychotherapy,
Department of Psychology, The Chinese University of Hong Kong*

Perspective taking is commonly considered as the royal avenue to the understanding of other people's emotional feelings. Yet, in their seminal work on the role of perspective taking in empathy, Batson and colleagues (1997) demonstrated that although taking another person's perspective to imagine his situation increases our concern for that person's emotional feelings, these emotions might not be vicariously experienced as our own until we place ourselves in that situation. This essential move of returning to the self after stepping into another person's shoes, i.e., resuming self-perspective, has usually been overlooked in the understanding of empathy. Recently in our laboratory we revisited this issue and verified this essential move in entering into other's emotions. We hypothesized that a control process distinct from taking other-perspective may underlie this resumption of self-perspective, and hence completing this further move after taking other-perspective is necessary for empathy. With a new paradigm that dissociates the two directions of perspective shifting, we secured preliminary support for this crucial role of shifting back to self-perspective, from the correlation between rapidly resuming self-perspective and higher degree of vicarious emotions when seeing people in affect-charged situations (Chiu & Yeh, 2018). In the two follow-up studies presented here, we aim to examine the replicability of this finding. In the first study, we tested whether the association between shifting back to self-perspective and vicarious emotions would unfold again in a sample of community residents, with several third variables including intellectual function controlled for. In the second study, we tested whether this perspective shifting flexibility contributed not only to elevated concerns for others' emotional feelings but also heightened emotional feeling as one's own, as shown in Batson et al. (1997). The results offer consistent support for the crucial role of rapidly shifting back to self-perspective in vicariously feeling other people's emotions.

**Social Pain and Emotional Egocentricity in high-functioning Autism-Spectrum-Disorder:
Behavioral and Neurophysiological Differences**

H. Hartmann (1), H. H. Hitz (2), P. Stepnicka (2), L. Lengersdorff (1), G. Silani (2)

(1) Social, Cognitive and Affective Neuroscience Unit, Social, Cognitive and Affective Neuroscience (SCAN) Unit, Department of Basic Psychological Research and Research Methods, Faculty of Psychology, University of Vienna, Vienna, Austria

(2) Department of Applied Psychology: Health, Development, Enhancement and Intervention, Faculty of Psychology, University of Vienna, Vienna, Austria

Empathy is a crucial social skill relevant for everyday social interactions, and therefore has been widely studied in both neurotypical as well as clinical populations. Given that humans primarily use their own emotions and perceptions in guiding their thoughts about conspecifics, self-projection mechanisms can lead to empathic judgments that are egocentrically biased towards one's own perspective – a so called emotional egocentricity bias (EEB) may occur. Therefore, self-other distinction (SOD) plays an essential role during empathic interactions, mainly to avoid confusion between the self and emotions of others. Multiple studies have shown impairments in empathic responses in individuals with autism spectrum disorders (ASD). To date, only few studies have tried to investigate if reduced empathic responses can be due to an impairment of SOD. Using the virtual ball-tossing game Cyberball, we aimed to induce congruent as well as incongruent feelings of social inclusion/exclusion between the participant and a confederate, in order to test the occurrence of the EEB. The paradigm was first validated in a pilot study with 52 healthy subjects. In our main study, we then investigated 17 participants with high-functioning ASD as well as 17 matched neurotypical (NT) controls by means of a behavioral task as well as functional magnetic resonance imaging. Replicating the results from the pilot study, the results of the main study indicated a significant EEB during incongruent emotional empathic judgments. However, no significant group differences regarding the EEB could be found, suggesting similar ability for SOD in both the NT and ASD participants in this sample. In spite of a similar behavioral EEB in the NT and ASD populations, brain differences in the right temporo-parietal junction and right dorso-lateral prefrontal cortex, two key areas involved in Theory of Mind and SOD, were detected in situations of incongruent emotions between the self and other. The results suggest neurophysiological differences between neurotypical and autistic individuals, possibly underpinning differences in the neural processes involved in SOD during empathic judgments.

Am I cold? Investigating In-Group Stereotype-Learning

Julia Eberlen¹, Annique Smeding², & Jean-Charles Quinton³

1 Université libre de Bruxelles, 2 Université Savoie Mont Blanc, 3 Université Grenoble Alpes

Humans are constantly in relation with other humans, frequently using heuristics

efficiently navigate an increasingly complex social environment. One type of heuristic used are stereotypes, usually applied to other social groups, but also to one's own group, and thereby to the self. Stereotypes can, but don't have to be negative, and can be learned from the social environment based on statistical contingencies between social group concepts and a stereotype-compatible characterization. However, in the case of a negative stereotype, this is potentially in conflict with the general tendency to see the self in a positive light, the so-called self-positivity bias.

Here, we use a modified minimal-group paradigm to induce participants to feel linked to an avatar, and thus member of one of two social groups present in the experiment. Then, we expose participants to stereotype information which is positive for the out-group, but negative for the self-relevant in-group.

Based on data collected in a small pilot study, we simulated the experimental design both for feasibility overall and to estimate the number of items and participants necessary in particular. Then, we conducted a lab-based study with human participants (N=80).

Participants showed allegiance to their self-relevant group and a self-positivity bias before learning that it is associated with a negative description. After having acquired this information, participants switched their group alliance to the positively described social group. In addition, they judged their experimentally intended in-group as more negatively than the (intended) out-group. This result supports that preserving a positive self-image has

significant influence on task-performance in an experimental setting. This stresses the importance of context in experimental, but also observational data acquired in a more ecological setting, where conclusions drawn from the data need to be interpreted in relation to the situation of data collection.

Neural correlates of costly helping behavior in the general population and Mirror Touch Synesthesia.

Gallo S., Keysers C. & Gazzola V.

Some brain regions are active both when experiencing and witnessing somebody else in pain. These activations are often interpreted as neural correlates of empathy and are thought to motivate helping. The variability of prosocial behavior in the population is high, especially when the costs of helping increases. In Mirror Touch Synesthesia (MTS) seeing someone else being touched triggers tactile sensations on the correspondent part of the synesthete's body. It has been proposed, that these sensations result from increased activity in areas involved in vicariously experiencing other's sensations, and that this leads to increased empathy. Here, we explore if and how this influences prosociality. So far, twenty-five control and seven MTS participants performed a costly helping task in fMRI. Participants watched a confederate experiencing pain stimulations at the hand in the form of electroshocks or slaps by a belt and they could reduce the intensity by donating money. Preliminary results show that across all participants, the magnitude of activations in brain regions associated with the pain network (including the insula, ACC, SII and amygdala) correlates with the trial-by-trial donation of the participants. Moreover, participants with higher overall donation demonstrate increased activation of insula and SII. Behaviorally, we find that individuals with MTS act more prosocially than control participants, donating significantly more money in order to reduce the pain intensity of both types of pain stimulations. Pending acquisition of further MTS participants, these results confirm that brain regions known to be implicated in pain observation are more active when individuals act more prosocially. Based on further data acquisition, we will explore what brain activation patterns mediate the observed difference in behavior between MTS and control participants.

How do dogs perceive human emotions?

A canine neuroimaging study

Magdalena Boch^{1,2}, Sabrina Karl³, Isabella C. Wagner¹, Ludwig Huber³, Claus Lamm¹

¹Social, Cognitive and Affective Neuroscience (SCAN) Unit, Department of Basic Psychological Research and Research Methods, Faculty of Psychology, University of Vienna, Vienna, Austria

²Department of Cognitive Biology, University of Vienna, Vienna, Austria

³Messerli Research Institute, Veterinary University Vienna, Medical University of Vienna and University of Vienna, 1210 Vienna, Austria

The ability to identify emotions of another individual is a crucial component to establish and maintain social relationships. The close relationship between humans and dogs (*canis familiaris*) has been established thousands of years ago. The ability of dogs to identify human emotions has been investigated extensively using mostly behavioral experimental setups. Here, we study the neuronal substrates of emotion processing in dogs. Furthermore, this may shed light on how evolution shaped canine, but also human, emotion processing and understanding

Dogs (N = 6) viewed human morphs (3s) transforming from a neutral to an emotional facial expression (within-subject design; valence: happy vs. angry) while undergoing functional neuroimaging (fMRI). Data collection consisted of two five-minute runs while the dogs remained fully awake and unrestrained. In an additional out-of-scanner task, dogs were exposed to pairs of the same stimuli set (happy vs. angry) and performed a preference test to further explore their response towards the opposed emotions.

We expect activation changes in emotion and visual processing areas, such as the amygdala and the inferior temporal cortex. More specifically, we predict increased activation for angry compared to happy facial expressions, as the former may be associated with negative consequences. We expect activation in reward-related areas such as the caudate nucleus to be associated with the positive feedback of a human smile. We anticipate that behavioral data will mirror these findings, with dogs choosing happy over negative emotion expressions. Data analysis is still in progress and will be reported at the workshop.

The study will contribute to the growing body of evidence that dogs are able to recognize human emotions and will provide insights on the evolution of emotion processing in humans.

Mindfulness and empathy: Differential effects of explicit and implicit Buddhist teachings

Marie Bayot, Nicolas Vermeulen, Anne Kever, Moïra Mikolajczak (Psychological Sciences Research Institute, Université catholique de Louvain)

Several authors argue that interpersonal changes such as benevolence, compassion, and empathy should naturally emerge from a diligent practice of mindfulness. While empirical data from secularized and standardized mindfulness interventions do not fully support this assumption, a group of authors suggest that making underlying Buddhist teachings explicit within mindfulness-based interventions (MBIs) might be a key factor in the modification of such culturally rooted aspects of interpersonal functioning. In order to investigate this suggestion, we compared a mindfulness program that explicitly integrates elements of Buddhist ethics (i.e., the four immeasurables) and wisdom (i.e., interdependency, non-self, common humanity) (ethics-oriented mindfulness training (EMT)), to a standard mindfulness training (SMT) program and a control group (i.e., waiting list), with a randomized controlled design in a community sample. Empathy components (i.e., affective responding, mentalization, emotion regulation, and behavioral responding), as well as variables that are typically associated with MBIs (i.e., mindfulness, self-compassion, and well-being) were assessed using multi-dimensional measures (i.e., self-reported, behavioral, physiological). Results showed no overall effects on empathy of our interventions in comparison with our control group. With regard to other variables, we found specific effects for each of our interventions. Whereas SMT led to a stable increase in mindfulness (Cohen's $d = .7$), EMT led instead to increases in self-compassion (Cohen's $d = .8$) and subjective well-being (Cohen's $d = .54$). Although challenging theoretical expectations, we posit that our lack of empathy effects might be explained by several factors such as program structure, individual differences, and culture.

The Impact of Prior Knowledge on an Anticipated Social Action Paradigm

Markus R. Tünte, Faculty of Psychology, University of Vienna, Austria

Oliver Genschow, Social Cognition Center Cologne, University of Cologne, Germany

Marcel Brass, Department of Experimental Psychology, Ghent University, Belgium

Recent research has demonstrated that observing an action leading to an event in another person (e.g., nose wrinkling as precursor of nose scratching) can trigger the expected event in the observer (scratching one's nose), even when the event itself is not observed in the other person. This phenomenon has been termed anticipated social action. However, it is unclear which top-down variables are potentially moderating it. In the present study performance in an anticipated social action task was correlated with measures of free will, theory of mind, social intelligence, and movement observation. No significant correlations between anticipated social action and the moderators were found, although correlation with performance on the theory of mind paradigm almost reached significance. However, due to a previously run study that utilized the same student-participant base and a paradigm similar to the anticipated social action task, about half of the participant were not naïve to it. In the anticipated social action paradigm participants reaction is unknowingly to them videotaped for later coding and thus, prior knowledge of being filmed might impact behavior. An exploratory post hoc analysis accounting for previous knowledge of the anticipated social action task revealed that for naïve participants the hypothesized anticipated social action effect was found. However, for the prior knowledge group, the anticipated social action effect was not found. Further, knowing participants, compared to naïve participants, indicated a higher belief in free will. This finding highlights the importance of adequate research design, as participants awareness of the anticipated social action paradigm might have implications for its results. Further, belief in free will potentially impacts anticipated social action. Future research should focus on clarifying the relationship between theory of mind and anticipated social action by utilizing alternative experimental paradigms.

Seeing the hope: Vivid imagination of the future self predicts hopefulness

Pak-Kwan Lo & Chui-De Chiu, The Chinese University of Hong Kong

A defining feature of hopefulness is not the high likelihood of meeting the pursued goal per se, but the sustained motivation despite the fact that the object of pursuit is actually absent at the immediate present and that the subject of pursuit may actually have experienced failure experiences on the midway. Indeed, instead of feeling frustrated and giving up their pursuit, people are capable to stay hopeful and continue their pursuit, even though the reality is responding with negative feedback. It is postulated that the vivid rather than vague mental representation of the hoped-for self is crucial for this process. Through constructing the hoped-for self concretely, people can more easily identify the already possessed qualities and available actions at the present, giving rise to a sense of agency to the environment, which was found to be a significant predictor of hopefulness. Increasing the vividness of the future hoped-for self should, therefore, facilitate hopeful behaviors. The hypothesis is discussed by integrating evidence from the past literature.

Can three-year-old children predict an agent's action based on his false belief regarding the efficiency of a tool?

Paula Fischer, Ágnes M. Kovács, Ernő Téglás, Central European University, Budapest

Several studies from the past decade proved evidence that children before the age of four can predict other's actions based on their beliefs regarding simple scenarios, for instance, the location of an object. These studies have been challenged by alternative proposals indicating that children's early understanding of others' beliefs may be limited to situations that can be explained by simple three-way associations. Furthermore, as our everyday life is organized around more complex situations, and it's not limited to location of entities. Therefore, in our study we aim to test whether children can integrate more complex, relational contents when reasoning about others' false beliefs. Specifically, we ask whether children at this age can represent beliefs regarding the efficiency of a certain tool. During the experiment, children were first familiarized with three tools with different efficiency (inefficient, semi-efficient and efficient) which were operated by a character whose goal was to obtain object that were out of reach by hand. After the demonstration phase, and before the character obtained his last objects, he placed the semi-efficient tool in a box, and the efficient tool in another box, and left for a walk. In the character's absence, the experimenter played a trick on the character and replaced the efficient tool with the inefficient one. Upon the character's return, children were asked to predict to which box the character will first go in order to obtain the remaining objects. Preliminary data suggest that children successfully predict the character's action based on his false belief, and were more likely to indicate that the character will try the box where he falsely believed his efficient stick was. Future data will help us to determine whether children are able to track beliefs regarding various contents with higher complexity.

The influence of attachment styles on psychophysiological correlates of empathy

Sébastien Henschel PhD1, Karyn Doba PhD1, 2, Laurent Pezard Prof 3, Jean-Louis Nandrino Prof 1, 2

1. *Univ. Lille, CNRS, UMR 9193 –SCALAb, Sciences Cognitives et Sciences Affectives, F-59000 Lille, France*
2. *Fondation Santé des Etudiants de France, Clinique médico-psychologique, F-59653 Villeneuve d’Ascq, France*
3. *Aix-Marseille Université, CNRS UMR 7260, LNIA, Marseille, France,*

Background: Empathy constitutes an important part of socio-emotional competencies for establishing and maintaining good relationships (Batson, 1991). Numerous researchers have highlighted that early attachment relationships play a crucial role in the development of empathy (Panfile & Laible, 2012). Besides, attachment relationships influence not only cognitive and behavioral aspects of social interactions, but also their physiological processes involved in the regulation of stress-related demands such as social interactions (Porges, Doussard-Roosevelt, & Maiti, 1994). Although many researches have studied the physiological underpinnings of attachment relationships, little is known about physiological correlates of empathy according to attachment styles. Aim: The aim of our study was to investigate whether attachment styles significantly impacted physiological reactivity (i.e. electrodermal response) during a cognitive empathy task (i.e. perspective taking) performed during the presentation of distress pictures. Method: A sample of 92 college students completed self-reported questionnaires assessing attachment and empathic abilities. Three groups were created according to the attachment scores: secure, anxious and avoidant. For the cognitive empathy task, images depicting negative social interactions such as distress, discomfort, or separation were presented with the instruction to imagine oneself to be in the person’s situation (“‘imagine self’”). Physiological activation during the stimuli presentation was assessed using electrodermal response (i.e. skin conductance responses). Results: Secure and anxious participants displayed higher skin conductance responses than avoidant participants during the cognitive empathy task. In anxious participants, there was a positive correlation between personal distress scores and skin conductance responses, whereas this correlation was negative in avoidant participants. Discussion: Present findings show that individuals with different attachment styles reveal distinct patterns of physiological reactivity toward emotional stimuli of others in distress. These findings further highlight the influence of attachment processes on empathic abilities at both subjective and physiological levels.

I am angry, we are depressed: Perspective-taking in self-judgment

*Hiu Ching Siu, Hau Ching Ng, & Chui-De Chiu; Laboratory of Experiment Psychopathology and
Psychotherapy, Department of Psychology,*

The Chinese University of Hong Kong, Hong Kong S. A. R.

While social psychologists are interested in knowing how we represent the mental state of other people that is different from ours, clinical psychologists are wondering how we contain a self-aspect that is not accepted at the moment. During self-judgment, the self splits into two aspects, with an executing aspect making a judgment and the other aspect imposed with the judgment (Greenberg, 1980, 1983). With these two conflicting perspectives available, we select the one that may either maximize immediate gratification or minimize intolerable distress. Hereby, we posit that there should be disparity in the emotional reactions during self-judgment, according to the perspective that is taken, either the critical judging self-aspect or the inadequate self-aspect being judged. Indeed, this framework has been supported by emerging findings about emotional reactions in response to self-failures. There appears to be a distinction between reactions that are pertinent to anger (e.g., self-attacking, self-disgust, and self-contempt) and the others pertaining to sadness (e.g., depression). Intriguingly, a third type of emotions that relate to positive reactions including compassion, sympathy, and tenderness has been recognized. We suggest that this emerging factorial model of emotional reactions in response to self-failures may reflect shifting in perspectives during self-judgment (Chiu & Yeh, 2018). The way we represent an incompatible emotional experience of other people may be utilized to contain an unattended distress subject to the self-aspect being judged, while we are doing self-judgment.

I see it my way, not you people's:

Visuospatial perspective taking with multiple others

Zeynep Aslan¹, Terry Eskenazi¹, Gaele Meert², Natalie Sebanz³ & Dana Samson² (1 Department of Psychology, Koç University, Turkey; 2 Psychological Sciences Research Institute, Université Catholique de Louvain, Belgium; 3 Department of Cognitive Science, Central European University, Hungary)

Previous research on visuospatial perspective taking yielded results suggesting that computing another individual's perspective could be a spontaneous process (Samson et al., 2010). It has been found that, when the perspectives of the participants and the target agent are inconsistent, individuals experience an interference acting in both directions (egocentric intrusion, altercentric intrusion). Secondly, egocentric intrusion is found bigger than the altercentric intrusion, which has two origins. At the early stages of processing (calculating the 'other' perspective) the other perspective seems to be advantaged (seen on consistent trials). However, at later stages of processing (selection or perspective in response to question) self perspective is advantaged (as seen on inconsistent trials). Here we ask if we put more weight on the other perspective when faced with multiple people, and therefore become better at judging the other perspective? If so, that would result in an increased altercentric intrusion. At what stage of processing would the difference between taking a single other perspective and multiple other perspectives be observed? If it occurs at the early stages (during calculation) we should see an increase in other the advantage observed on consistent trials, and/or a decrease in late the self advantage observed on inconsistent trials. If it occurs later (during selection) then we would see an effect only with the self advantage. In two experiments we found an increase in the egocentric intrusion with multiple others, compared to single others. Further, both early and late stages of processing are affected by the number of perspectives. Our results suggest that when faced with multiple individuals we become more self-centered than when we face single individuals. This seems driven by top-down motivational factors. Future work should investigate how this finding can be modulated which will shed light on the underlying motivational mechanisms.

The role of the endogenous opioid system in emotion identification

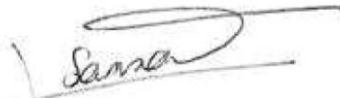
Yili Zhao ^a, Markus Rütgen ^a, Claus Lamm ^{a,}*

^a Social, Cognitive and Affective Neuroscience Unit, Department of Basic Psychological Research and Research Methods, Faculty of Psychology, University of Vienna, Vienna 1010, Austria

Emotion identification refers to the ability to be aware of and recognize others' emotions. Recently, a new measurement framework of empathy was proposed in which the role of emotion identification when experiencing empathy was emphasized. In a psychopharmacological study in our lab, an effect of the opioid receptor antagonist Naltrexone on subjective empathy ratings for vicarious pain was found. Based on these findings, we tested a presumed relationship between emotion identification of painful facial expressions and the endogenous opioid system. In this study, 44 healthy subjects participated in two functional magnetic resonance imaging (fMRI) sessions, separated by one week. In a counterbalanced order, participants received one of two different alleged signal enhancer pills per session, which either contained Naltrexone or an inert substance (placebo). One hour after medication intake, participants entered the scanner to perform an emotion identification task, in which they were required to make judgements about the emotional content of morphed facial expressions (morphed from pain to disgust from 20%-80% in 10% steps). Behavioral results indicate participants could clearly distinguish between morphed expressions across conditions in both sessions, but there was no effect of Naltrexone. Imaging results suggest that naltrexone generally increased participants' brain activation in fusiform gyrus, possibly representing face processing, but there were no specific effects on identifying painful, ambiguous or disgusted expressions. More fine-grained multivariate analyses will be conducted.

We wish you a pleasant and instructive workshop!

The organizers

A handwritten signature in black ink, appearing to read "Dana Samson", written over a horizontal line.

Prof. Dana Samson

A handwritten signature in black ink, appearing to read "Henryk Bukowski", written over a horizontal line.

Dr. Henryk Bukowski