

SOCIAL COGNITION WORKSHOP From Self-Knowledge to Knowing Others

BOOK OF ABSTRACTS & PROGRAM

27-28 NOVEMBER 2024

Address: Avenue Emmanuel Mounier, 51 – 1200 Bruxelles

Location: Université catholique de Louvain (UCLouvain) – "Auditoires centraux" building – auditorium Maisin

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Edition Themes

Welcome to the 2024 Social Cognition Workshop: "From Self-Knowledge to Knowing Others"!

This year's workshop will focus on two central themes:

- Towards Better Interventions: Designing targeted, specific, individualized, and engaging interventions that are both long-term and effective poses significant challenges. These challenges complicate the assessment of social cognition, both pre- and post-intervention, and highlight the lack of shared practices in this field. We invite you to share your insights, methods, and outcomes related to enhancing or modulating social cognitive processes, as well as strategies to improve interventions.
- 2. **Understanding and Tracking Changes:** Social performance can fluctuate over time. Identifying whether changes are lasting, transient, context-specific, or generalized requires careful analysis of what is changing and the underlying causes. This theme seeks to promote collaborations between researchers, clinicians, and practitioners, aiming to unlock the plasticity of social cognition through a deeper understanding of its dynamics.

Together, we hope to bridge the gap between understanding social cognition's plasticity and translating that knowledge into practical interventions.

We're excited to begin this journey with you and look forward to the stimulating discussions and exchanges over the next two days.

Let the workshop begin!

The 2024 Social Cognition Workshop Organizing Committee

Learn more by visiting: https://www.self-knowing-others.org

Location

To view directions and venue details on webpage please visit: <u>https://www.self-knowing-others.org/location/</u> For your convenience, please tap the following Google Maps link: : <u>Avenue E. Mounier 51</u>

Address: Avenue Emmanuel Mounier, 51 - 1200 Bruxelles Location: Université catholique de Louvain (UCLouvain) - "Auditoires centraux" building auditorium Maisin

Getting to the Venue

The venue is located 200 meters from the 'ALMA' Metro station (refer to the map on the right)

Getting to the venue by train

• From Brussels central station:

- o Walk to the Metro (250 m)
- Take "Line 1" towards "Stockel"
- Stop at "Alma" (12th stop, 15 min)
- From Brussels South/Midi station:
 - Walk to the Metro (150 m)
 - Take "Line 6" towards "Elisabeth"
 - Stop at "Arts-Loi" (6th stop, 7 min)
 - Take "Line 1" towards "Stockel"
 - Stop at "Alma" (10th stop, 13 min)

Getting to the venue by plane landing at the Brussels Airport (Zaventem)

- Plan (A):
 - Take the bus "R59 Zaventem Luchthaven perron A direction Woluwe Roodebeek" (from "De Lijn" company)
 - o Stop at "Sint-Lambrechts Woluwe Roodebeek perron 6" (21st stop, 25 min)
 - Take the metro line 1 at" Roodebeek station direction Stockel"
 - Stop at "Alma" (2 stations, 3 min)
 - 0
- Plan (B):
 - Take the bus "R59 Zaventem Luchthaven perron A direction Woluwe Roodebeek" (from "De Lijn" company)
 - Stop at "Sint-Lambrechts-Woluwe Thiry" (14th stop, 18 min)
 - Walk for 16 min (map link: : <u>Avenue E. Mounier 51</u>) or (to avoid walking) take the bus "79 Krainem" (from "Stib" company) for three stops
 - Stop at "Auditoires-UCL"

Getting to the venue by **plane landing at the Brussels South Charleroi Airport (actually located near Charleroi)**

o Take the shuttle to Brussels South/Midi Train Station "Flixbus", then see above



Program Day 1 - November 27th

TIME	EVENT	TOPIC	DURATION	
9:30-10:00	Registratior	n & coffee	30 min	
10:00-10:30	Organizers:	30 min		
10:30-11:15	Talk	Social cognition in alcohol use disorder: why it matters, what we know, where to go Dr. Arthur Pabst	45 min	
11:15-12:00	Talk	Second-person neuroscience: Focusing on change and dynamics of social interactions Pr. Leonhard Schilbach	45 min	
12:00-13:00	Lunch brea	Lunch break		
13:00-14:10	Blitz	 5 short talks: Neurocomputational signatures of altered adaptive mentalization in autism. Niklas Buergi Neural mechanisms underlying memory deficits in premanifest C9orf72-repeat expansions. Jiaze Sun Seeking convergence: Neural biomarkers and mentalization treatment for children with autism and their families. Previous results from a narrative review. Ilenia Gori How do we change each other? The neuroplasticity of social interaction. Daina Crafa Risk factors for internalizing symptoms: The influence of empathy, theory of mind, and negative thinking processes. Annika Konrad 	1h10	
14:15-15:00	Talk	Autistic adults experience greater malleability of the self after simulating other people than neurotypical adults Pr. Heather Ferguson	45 min	
15:00-15:30	Coffee & tea break		30 min	

15:30-16:15	Talk	Social cognition deficits in neurodegeneration Pr. Jan Van den Stock	45 min
16:15-17:00	Talk	Chronic loneliness as a risk factor for stress-related disorders: cognitive biases and neural mechanisms Pr. Dirk Scheele	45 min
17:00-18:30	Discussion	World café (discussions on selected issues) by A. Bigot, E. Pronizius & H. Bukowski . Drinks and light snacks.	1h30

Program Day 2 - November 28th

TIME	EVENT	TOPIC	DURATION
9:00-9:30	Coffee & Tea		30 min
9:30-10:15	Talk	Self-other distinction in individuals with borderline personality disorder: a behavioral, large-scale collaboration Dr. Ekaterina Pronizius	45 min
10:15-11:00	Talk	Borderline personality disorder: From neuroscience to effective treatments Pr. Pavla Linhartová	45 min
11:00-13:00	Poster Session and Lunch break		2h
13:00-14:10	Talk	 5 short talks: Relating oneself to others in time and space: A relational frame theory account of perspective-taking and theory of mind in autism. Maura Nevejans The socio-cognitive predictors of prosocial behaviour and social understanding in early adolescence and young adulthood. Mahsa Barzy Social cognitive dysfunction in clinical conditions: A systematic review of reviews and meta-analyses. Marcel Eicher Do You See What I See (DYSWIS)? Understanding individual differences in spontaneous visuo-spatial perspective-taking. Serena Maria Stagnitto Theory of mind plasticity in middle childhood: the role of school context. Serena Lecce 	1h10
14:15-15:00	Talk	Daily-life social functioning in neurodevelopmental disorders: insights from EMA studies Pr. Maude Schneider	45 min
15:00-15:30	Coffee break		30 min
15:30-16:15	Talk	From interaction-focused group psychotherapy to robot- assisted intervention: New therapies for social difficulties in individuals with autism. Pr. Isabel Dziobek	45 min

16:15-17:00	Discussion	Discussion with all speakers	45 min
17:00-17:30	Talk	Organizers: Conclusions and best poster awards by Pr. Henryk Bukowski	30 min
18:15	Social	Optional dinner and drinks in Brussels (not covered)	

Key-Note Speakers Day 1

November 27th

ARTHUR PABST

Université Catholique de Louvain, Belgium

Social cognition in alcohol use disorder: why it matters, what we know, where to go

Interpersonal problems are ubiquitous in alcohol use disorder (AUD) and contribute markedly to its maintenance and negative consequences. Yet, neurocognitive research and models of AUD have largely overlooked these aspects. In this talk, I will first argue that social cognition research holds promise for addressing this issue and providing much-needed insights into the individual-level processes that are involved in interpersonal problems in AUD. I will then briefly review the available literature on social cognition in AUD and highlight some of its limitations. Finally, I will mention recent efforts aimed at overcoming these limitations and outline important future directions to further maximize the impact of social cognition research on the conceptualization and treatment of AUD.

LEONHARD SCHILBACH LVR-Klinikum Düsseldorf, Germany

11:15-12:00

Second-person neuroscience: focusing on change and dynamics of social interactions

Social neuroscience studies the neurobiology of how people make sense of people. Due to conceptual and methodological limitations, the field has only more recently begun to study social interaction rather than social observation, which has become known as the development of a 'second-person neuroscience' or an 'interactive turn' in social neuroscience. These developments have helped to elucidate the behavioral and neural mechanisms of social interactions. Taking social interaction seriously may also be particularly important for the advancement of the scientific study of psychiatric conditions, which are ubiquitously characterized by social impairments and can be thought of as 'disorders of social interaction'.

Our study offers a comprehensive exploration of the cerebellum's role in social mentalizing through the integration of tDCS and neuroimaging techniques. Additionally, our investigation contributes novel insights by elucidating the nuanced effects of cerebellar tDCS on different sequence types and the mentalizing network. These findings contribute to the understanding of the intricate interplay between the cerebellum and social cognition, opening doors for future research and potential therapeutic applications.

10:30 -11:15

Autistic adults experience greater malleability of the self after simulating other people than neurotypical adults

Simulating the knowledge state of other people can change self-knowledge, causing one to incorporate information about the simulated person into the self (termed, simulation induced malleability). In this talk, I will discuss a series of studies that have examined the nature of this simulation induced malleability in autistic adults, who are known to have atypical self-referential cognition. First, I will present evidence from a large neurotypical adult sample, testing whether the size of the simulation induced malleability effect is associated with individual differences in autistic traits. Second, I will present case-control experiments that directly compare the simulation induced malleability effect adults. The findings suggest that the self is more malleable in autistic than neurotypical adults; this effect will be discussed in relation to self-awareness in autism.

JAN VAN DEN STOCK

Katholieke Universiteit, Leuven, Belgium

Social cognition deficits in neurodegeneration

Social cognition, the ability to understand and interact effectively with others, is critically impaired in various neurodegenerative disorders. This talk will explore the landscape of social cognition deficits in neurodegeneration, with a particular focus on frontotemporal dementia (FTD) and the phenomenon of self-misidentification.

Key areas of discussion will include:

- Social Cognition Deficits in FTD: Detailing the specific impairments seen in FTD, such as loss of empathy, and difficulties in interpreting social cues. Neuroanatomical Insights: Highlighting the brain regions associated with social cognition and their vulnerability in neurodegenerative diseases. We will examine how degeneration in the frontal and temporal lobes disrupts social cognitive processes.
- Self-Misidentification Syndromes: a case study will be discussed concerning self-misidentification syndromes in a particular case of neurodegeneration.
- This talk aims to deepen our understanding of the interplay between brain, behavior, and social functioning in these disorders.

15:30-16:15

DIRK SCHEELE

Ruhr-University Bochum, Germany

Chronic loneliness as a risk factor for stress-related disorders: cognitive biases and neural mechanisms

Social isolation and loneliness are established risk factors for mental and physical health. However, little is known how social isolation and loneliness may affect neurocognitive processes to confer vulnerability for stress-related disorders. Affective touch is an integral part of social relationships and impairments in the processing of social touch may contribute to social dysfunctions not only in healthy individuals but also in patients with mood or personality disorders. In my talk, I will present recent findings about neural and hormonal mechanisms underlying negative cognitive biases that may impair social interactions in chronic loneliness. Furthermore, I will provide evidence for altered social touch processing in patients with borderline personality disorder who often struggle with feelings of emptiness and loneliness. Finally, first results of a neurobiologically informed intervention against loneliness will be discussed.

16:15 -17:00

Key-Note Speakers Day 2

November 28th

EKATERINA PRONIZIUS

Université Catholique de Louvain, Belgium University of Vienna, Austria

Self-other distinction in individuals with borderline personality disorder: a behavioral, large-scale collaboration

Individuals with Borderline Personality Disorder (BPD) struggle in social situations due to difficulties in switching between self and other-related mental representations. For example, they have a limited capacity to inhibit imitative tendencies, separate personal feelings from those shared with others, and accurately see the world from another person's perspective. Building on previous research, we hypothesize that BPD patients exhibit impairments in switching between self and other-related mental representations (SOD) in motor and cognitive domains. Furthermore, we predict that the severity of BPD symptoms influences the extent of SOD impairments and examine interactions between BPD severity, personal traits, and states affecting SOD task performance.

In this talk, preliminary data from a large cross-cultural study involving 100 BPD patients and 100 healthy controls from Germany, the Czech Republic, Belgium, and the USA will be presented. Participants completed two SOD tasks (Automatic Imitation Inhibition and Visual Perspective-Taking) and a Stroop task for executive control. Additional factors assessed include attachment, trauma, empathy, interpersonal issues, dissociation, emotion regulation, and momentary stress, pain, and emotions. Early results show no differences between groups, prompting further investigation into the mechanisms influencing SOD impairments in BPD.

PAVLA LINHARTOVÁ

10:15-11:00

Masaryk University, Czech Republic

Borderline personality disorder: from neuroscience to effective treatments

Borderline personality disorder (BPD) represents a profound challenge in mental health, profoundly impacting patients' quality of life and posing significant therapeutic hurdles. Characterized by intense emotionality, impaired emotion regulation, instability in self-image and relationships, and impulsive behaviors such as self-harm and suicidality, BPD also encompasses transient dissociative and psychotic experiences. In recent years, the clinical burden of BPD has escalated, underscoring the urgent need for innovative treatment approaches due to prolonged waits for effective psychotherapies, which remain the cornerstone of treatment. Our research provides a comprehensive examination of impulsivity and emotion dysregulation in BPD, with a focus on developing and implementing novel therapeutic strategies informed by our understanding of the neural mechanisms underlying BPD symptomatology. This presentation aims to elucidate BPD as an emotion dysregulation disorder and provide an up-to-date synthesis of the neural correlates

9:30-10:15

13

implicated in its manifestation. Furthermore, this lecture details three neuroscience-informed treatment modalities: Dialectical Behavior Therapy (DBT), prefrontal repetitive transcranial magnetic stimulation (rTMS), and real-time functional resonance imaging (fMRI) neurofeedback. Specifically, we will present findings from our research, demonstrating how these interventions translate neuroscience insights into tangible improvements in clinical care for individuals with BPD. In summary, this presentation highlights the critical intersection between neuroscience research and clinical practice, emphasizing the potential of innovative treatment modalities to enhance outcomes.

MAUDE SCHNEIDER

University of Geneva, Switzerland

Daily-life social functioning in neurodevelopmental disorders: insights from EMA studies

Adolescents and young adults with neurodevelopmental disorders – e.g. youths with Autism Spectrum Disorder (ASD) or diagnosed with a genetic condition associated with a neuropsychiatric phenotype – often encounter significant difficulties in the field of social functioning. However, information about social functioning is often collected through parental reports, creating a gap in the literature regarding the subjective experience of social interactions by young people themselves. In that regard, Ecological Momentary Assessment (EMA) – a structured diary technique that allows to collect information several times per day in the flow of daily-life – is particularly well-suited to investigate these subjective experiences. In this presentation, we will cover a set of studies focusing on the subjective experience of social interactions and loneliness in youths with neurodevelopmental disorders.

ISABEL DZIOBEK Humboldt-Universität zu Berlin, Germany

From interaction-focused group psychotherapy to robot-assisted intervention: new therapies for social difficulties in individuals with autism

Research of past years has shown that socio-emotional functions are of utmost importance for mental health. In this talk I will show works which were conducted in and with individuals with autism. I will put a special focus on social cognition and emotion processing, its neuronal basis and trainability. Given that autism involves core, and sometimes selective, impairments in social cognition, it represents a valuable model for understanding of socio-emotional processing also in typical development. The works that will be shown encompass studies in social robotics, social and affective neuroscience, cognitive behavioral therapy as well as patient and public involvement.

14:15-15:00

15:30-16:15

Talks Day 1 November 27th, 13:00 - 14:10

Presenter: NIKLAS BUERGI

Study Authors: Niklas Buergi (1,2), Arkady Konovalov (1,3), Caroline Biegel (1), Tania Villar de Araujo (4), Gökhan Aydogan (1), Christian C. Ruff (1)

Affiliations of Authors: (1) University of Zurich, Switzerland; (2) Max Planck Institute for Biological Cybernetics, Germany; (3) University of Birmingham, United Kingdom; (4) Psychiatric University Clinic Zurich, Switzerland

*This submission will be presented both as a blitz talk and as poster number 31

Neurocomputational signatures of altered adaptive mentalization in autism*

A key characteristic of autism is a limited ability to understand others' mental states. However, what specific neuro-cognitive mechanisms underlie these difficulties in mentalization remains poorly understood. Here, we identify a link between autistic traits and neurocomputational processes that dynamically adapt behavior to changing strategic thoughts of others.

Adult participants (47 autistic and 47 neurotypical matched for age, sex, and education) played repeated Rock-Paper-Scissors games against artificial opponents of varying mentalization depth (of the type "I think that you think that..."). The opponents were carefully calibrated in previous work to mimic human gameplay and were based on a new computational model that was also used to capture participants' strategizing (Buergi et al. 2024). This model assumes that agents try to infer the strategy of others by mentally simulating what different opponents would play, and comparing these predictions to observed behavior. The resulting belief updates allow adapting to the reasoning process of the opponent and were robustly linked to a multivariate neural action pattern (Buergi et al. 2024). Here, we leverage this pattern as a normative benchmark for comparison between autistic and neurotypical participants.

As preregistered, we found that autistic traits are linked to reduced performance in the game (standardized $\beta = -0.26$, p = .005). Model-based analyses suggest that this resulted from a decreased sensitivity to the way others reason ($\beta = -0.25$, p = .020), leading to reduced belief updates. Analysis of concurrently acquired fMRI data did not reveal altered activation in any single area, but confirmed a reduced expression of the previously-identified neural pattern with higher autistic traits ($\beta = 0.35$, p = .003). Both reduced sensitivity and altered neural activation patterns mediated the effect of autistic traits on task performance, corroborating their role in explaining the observed differences.

In sum, we provide a mechanistic account of mentalizing difficulties in autistic people following a preregistered analysis protocol. Our results characterize a specific neurocomputational process

that underlies mentalization ability, is implemented by distributed activity across the brain, and is changed in autism. Our findings inform theories about the neurocomputational basis of mentalization and may aid in the assessment of corresponding behavioral problems.

Presenter: JIAZE SUN

Study Authors: Jiaze Sun (1), Joke De Vocht (2,3), Daphne Stam (1), Kristof Vansteelandt (1), Mathieu Vandenbulcke (1,4), Philip van Damme (2,3), Jan Van den Stock (1,4)

Affiliations of Authors: (1) Neuropsychiatry, Department of Neuroscience, Leuven Brain Institute; (2) Department of Neurology, Neuromuscular Reference Centre, University Hospitals Leuven; (3) Laboratory of Neurobiology, Center for Brain and Disease Research, VIB; (4) Geriatric Psychiatry, University Psychiatric Centre KU Leuven.

*This submission will be presented both as a blitz talk and as poster number 32

Neural mechanisms underlying memory deficits in premanifest C9orf72-repeat expansions*

The premanifest stage in carriers of hexanucleotide repeat expansions in the C9orf72 gene (C9RE) has been associated with memory impairment. Yet, the nature of this impairment, whether it is general across domains or disproportionately affects specific stimulus categories such as socio-emotional events, and its underlying functional neuroanatomy remain poorly understood. This task fMRI-study included 21 premanifest C9RE (preC9RE) carriers, and 24 controls. Participants encoded stimuli of (emotional and neutral) faces and houses, followed by a recognition task. Using univariate and multi-voxel pattern analyses at whole-brain and region of interest (ROI) levels, we investigated the neural change during encoding and retrieval processes, as well as encoding-retrieval neural pattern similarity.

The preC9RE group demonstrated poorer performance in memorizing faces compared to controls (U = 104, p = 0.002), while their ability to memorize houses remained intact (U = 177, p = 0.167). We observed different neural patterns between groups in the anterior insula during face encoding and retrieval (acc > 0.73, p \leq 0.05). Surprisingly, increased neural selectivity in the salience network (U=323, p=0.039) was observed in preC9RE group during face retrieval. Individuals with preC9RE exhibited reduced encoding-retrieval neural similarity in the salience network specifically related to face stimuli (U = 120, p = 0.014).

The findings highlight functional changes in social memory at the premanifest stage of C9RE. The local impact of C9RE was primarily situated in the salience network and suggests functional compensation at the retrieval stage for neurodegeneration including impaired reinstatement of encoding patterns during recognition. The findings further underscore the high potential of multidimensional neural response patterns as a sensitive biomarker for neurodegenerative functional changes, and the salience network as biomarker for C9RE disease staging.

Presenter: ILENIA GORI

Study Authors: Ilenia Gori (1), DG. Sukhodolsky (2), N.T. Malberg (3), C.T. Perez (4), K. Ibrahim (5)

Affiliations of Authors: (1) RamonLull University Blanquerna College. Couple and Family Research Group. Imagina (Mentalization Application Center) Barcelona, Spain. (2) Child Study Center, Yale University School of Medicine, New Haven, CT, USA (3) Imagina (Mentalization Application Center) Barcelona, Spain. Child Study Center, Yale University School of Medicine, New Haven, CT, USA (4) RamonLull University Blanquerna College. Couple and Family Research Group. Barcelona, Spain. (5) Child Study Center, Yale University School of Medicine, New Haven, CT, USA; Department of Psychology, Yale University, New Haven, CT, USA; Wu Tsai Institute, Yale University, New Haven, CT, USA

*This submission will be presented both as a blitz talk and as poster number 37

Seeking convergence: neural biomarkers and mentalization treatment for children with autism and their families: previous results from a narrative review

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder characterized by impairments in domains of social interaction and communication and restricted repetitive behaviors. Core deficits in social cognitive processes, such as theory of mind or mentalizing, are often addressed as a focal area of cognitive-behavioral and other clinical interventions for autistic youths. Mentalized-Based Treatment for Children with Autism and their Families (MBT-CA) is a novel developmental treatment modality that works globally with an integrated approach and facilitates social dyadic learning by working in a new dimensional paradigm approach—that is, a circular and relational model on the newly conceptualized "Neuro Dimensional Mentalized Domains and the Dyadic Network Model".

The aim is to seek convergence between neural biomarkers and MBT-CA in autistic children aged 5-9 years (verbal communication and IQ above 85) and their parents. A focus on social cognition, particularly Theory of Mind (ToM), will help us achieve our goal of improving future research for treatment purposes and advance our understanding of dyadic social learning as a neurobiological process.

A systematic literature search was conducted using Scopus, Pubmed, and Web of Science databases for fMRI studies published between 2010 and 2024 with subjects aged 4-12 years. The following search terms were used: "mentalizing", "social cognition" and "dyadic social learning". Previous results include 16 studies that describe functional connectivity in social cognitive circuitry during ToM task conditions. There is no census in the directionality of hypo- vs hyper-connectivity, which indicates potential neural heterogeneity in autism associated with ToM. There is a gap in these younger autistic children and more work is needed to understand synchrony and parent-child interaction with hyperscanning in ASD children related to ToM. It is hypothesized that MBT-CA engages 'social brain' circuitry important for social cognitive processing such as mentalizing. The circular process of social learning (i.e., bottom-up to top-down) progressively provides a continuum of self-embodied consciousness. To truly understand

treatment-related changes on a neural level in autistic youths during dyadic social learning, more work is needed to understand neural function, during task-based fMRI and resting-state fMRI, linked to MBT-CA treatment components in autistic children as well the synchrony or extrinsic processes linked to relational (parents) and social environments (e.g., the connection between ToM affective and Cognitive). Our research advances our understanding of the complex nature and interplay of brain-behavior associations within complex dyadic processes thought to scaffold mentalization. New insights into the developmental neuroscience of social cognition in autism (i.e., by integrating different but conceptually related imaging modalities such as fMRI and functional Near-Infrared Spectroscopy, fNIRS) will be important to further our understanding of the complex neural profile in children with autism to improve treatment outcomes.

Presenter: DAINA CRAFA

Study Authors: Daina Crafa (1), Asger Lakkenborg (2), Xu Cui (3)

Affiliations of Authors: (1) VU Amsterdam; (2) Aarhus University; (3) Stanford University

How do we change each other? The neuroplasticity of social interaction

Self-schema refers to the cognitive framework that generalizes our identity based on past experiences, and they include stable and active self-concepts. Stable self-concepts refers to persistent beliefs about our identity. Active self-concepts are context-dependent beliefs that are employed during social interactions, which change in dynamic but constrained ways. Active selfconcepts are co-constructed during conversations, and over a long enough time of repeated social interaction with the same person or context, our 'stable' selves may also gradually change. Building upon this previously existing research on self-concepts, I developed and validated a questionnaire (Social Values Schema Scale; SVS Scale) that reproducibly (N>370, 4 cultures, p<0.001) differentiates between stable and active self-concepts during social interactions. My past research has used the SVS Scale to test short-term changes in active self-concepts and corresponding functional neural processes in both healthy adults and patients with social difficulties. This research found that a 2-minute conversation with a friendly stranger alters active (but not stable) self-concepts. A current study builds upon these past experiments to examine long-term changes in self-concepts and corresponding neural plasticity. By taking a carefullyvalidated naturalistic neuroscience approach using fNIRS and the SVS Scale, the long-term effects of social interaction were recorded between two study participants (strangers, N=40) who met four times to have 5-minute unstructured conversations. The findings from this study will be presented and the implications for social learning across cultures and in patient groups will be discussed.

Presenter: ANNIKA KONRAD

Study Authors: Annika C. Konrad (1,2), Katharina Förster (1), Jason Stretton (2), Tim Dalgleish (2), Anne Böckler-Raettig (3), Fynn-Mathis Trautwein (4), Tania Singer (5), Philipp Kanske (1)

Affiliations of Authors: (1) Clinical Psychology and Behavioral Neuroscience, Technische Universität Dresden, Dresden, Germany; (2) MRC Cognition and Brain Sciences Unit, University of Cambridge, Cambridge, UK; (3) Department of Psychology, Julius-Maximilians-Universität Würzburg, Würzburg, Germany; (4) Department of Psychosomatic Medicine and Psychotherapy, Faculty of Medicine, Medical Center—University of Freiburg, Freiburg im Breisgau, Germany; (5) Social Neuroscience Lab, Max Planck Society, Berlin, Germany

Risk factors for internalizing symptoms: the influence of empathy, theory of mind, and negative thinking processes

Internalizing symptoms such as elevated stress and sustained negative affect can be important warning signs for developing mental disorders. A recent theoretical framework suggests a complex interplay of empathy, theory of mind (ToM), and negative thinking processes as a crucial risk combination for internalizing symptoms. To disentangle these relationships, this study utilizes neural, behavioral, and self-report data to examine how the interplay between empathy, ToM, and negative thinking processes relates to stress and negative affect. We reanalyzed the baseline data of N = 302 healthy participants (57% female, Mage = 40.52, SDage = 9.30) who participated in a large-scale mental training study, the ReSource project. Empathy and ToM were assessed using a validated fMRI paradigm featuring naturalistic video stimuli and via self-report. Additional self-report scales were employed to measure internalizing symptoms (perceived stress, negative affect) and negative thinking processes (rumination and self-blame). Our results revealed linear associations of self-reported ToM and empathic distress with stress and negative affect. Also, both lower and higher, compared to average, activation in the anterior insula during empathic processing and in the middle temporal gyrus during ToM performance was significantly associated with internalizing symptoms. These associations were dependent on rumination and self-blame. Our findings indicate specific risk constellations for internalizing symptoms. Especially people with lower self-reported ToM and higher empathic distress may be at risk for more internalizing symptoms. Quadratic associations of empathy- and ToM-related brain activation with internalizing symptoms depended on negative thinking processes, suggesting differential effects of cognitive and affective functioning on internalizing symptoms. Using a multi-method approach, these findings advance current research by shedding light on which complex risk combinations of cognitive and affective functioning are relevant for internalizing symptoms.

Talks Day 2 November 28th, 13:00 - 14:10

Presenter: MAURA NEVEJANS

Study Authors: Maura Nevejans, Jamie Cummins, Jan De Houwer, Emiel Cracco, Jan R. Wiersema

Affiliations of Authors: (1) Ghent University, Belgium; (2) University of Bern, Switzerland

*This submission will be presented both as a blitz talk and as poster number 33

Relating oneself to others in time and space: a relational frame theory account of perspective-taking and theory of mind in autism*

The cognitive ability to attribute mental states to oneself and others, typically referred to as Theory of Mind (ToM), is often proposed as a key factor underlying the social difficulties experienced by individuals with autism. Although a substantial body of research has focused on ToM in autism, the causes of ToM difficulties remain unclear. Relational Frame Theory (RFT) is a behavioral-analytic theory of language and cognition that offers an explanation for ToM and perspective-taking. Specifically, RFT suggests that so-called 'deictic reasoning'—a specific type of relational reasoning—is the core property of perspective-taking and ToM. Deictic reasoning involves the ability to relate oneself in space (here vs. there) and time (now vs. then) relative to others (you vs. I). In line with this idea, it has been suggested that ToM difficulties in autism are due to difficulties with deictic reasoning, which may have important implications for support and interventions if proven true. However, there is a lack of well-powered studies examining whether deictic reasoning is related to autism. To address this, we conducted an online study with a general population sample (N = 134), in which we investigated the relationship between autistic traits, assessed via the Autism Spectrum Quotient (AQ) and the Comprehensive Autistic Trait Inventory (CATI), and performance on a task commonly used by RFT researchers to assess relational reasoning skills. Contrary to our expectations, the correlation between deictic reasoning and autistic traits was not statistically significant, with a correlation coefficient of .05 for the AQ and zero for the CATI. Additionally, none of the task's other subscales, which measured other types of relational reasoning, showed consistent statistically significant correlations with autistic traits. These findings challenge the claims made by RFT regarding the link between autism and relational reasoning, highlighting the need for further research into potential differences in (deictic) relational reasoning associated with autism and autistic traits.

Presenter: MAHSA BARZY

Study Authors: Mahsa Barzy (1), Jessica Moore (1), Lindsey Cameron (1), Heather Ferguson

Affiliations of Authors: University of Kent

The socio-cognitive predictors of prosocial behaviour and social understanding in early adolescence and young adulthood

Social and cognitive skills undergo dynamic transformations throughout human development, with prosociality increasing in early childhood, declining during adolescence, and rising again in young adulthood. Previous studies have shown that the development of prosociality is closely linked to the development of social understanding. Using a comprehensive battery of tasks, the current study aimed to identify the relationship between prosociality, social understanding, and socio-cognitive abilities, such as perspective taking, inhibitory control (IC), and working memory (WM) in both cognitive and social domains, across two age groups: adolescents (aged 11-15) and young adults (aged 18+). Furthermore, we explored how prosociality and social understanding are influenced by peer relations, such as the size and diversity of participants' social networks, in the two age groups. We used multigroup analysis to examine whether the relationships between these variables differed between adolescents and adults. The model included social and cognitive WM, social and cognitive IC, perspective taking, and social network measures as predictors, with measures of prosociality and social understanding as the outcome variables. Constraining all paths in the model resulted in a significantly worse fit compared to the unconstrained model, so each path was tested for age group interactions. Across the entire sample, prosociality was predicted by individual differences in cognitive WM, social IC, and perspective taking, while features of participants' social networks predicted individual differences in both prosociality and social understanding. In terms of age group differences features of social networks positively predicted prosocial motivation only in the adolescent group, whereas perspective-taking positively predicted performance in the intergroup helping task (measuring the willingness to help an outgroup member) only in the adult group. Across the tasks, young adults generally demonstrated stronger social cognitive capabilities compared to adolescents (i.e., across most measures of perspective taking and prosociality), with adolescents displaying more egocentric tendencies.

Presenter: MARCEL EICHER

Study Authors: (1) Marcel Eicher (1,2), Rebecca Johannessen (1,2), Hennric Jokeit (1,2,3)

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*This submission will be presented both as a blitz talk and as poster number 34

Social cognitive dysfunction in clinical conditions: a systematic review of reviews and metaanalyses*

Social cognition is a crucial neurocognitive function with important clinical implications. Impairments in social cognition-particularly in theory of mind and emotion recognition-are common across many clinical conditions but are often overlooked in clinical practice. While previous research has examined social cognitive dysfunction in various conditions, no study has yet provided a comprehensive analysis and overview of these impairments both within and across different conditions. Our study aims to conduct a systematic and scoping review of existing reviews and meta-analyses to thoroughly examine social cognitive impairment in clinical conditions. We employ a mixed-method approach, including a systematic review of metaanalyses that compare clinical populations to healthy controls, and a narrative review of reviews addressing impaired social cognition within and across clinical conditions. So far, our systematic search of literature databases EBSCO (APA PsycInfo) and Embase (Embase and Medline) yielded 10687 records (9711 after deduplication). Screening of titles and abstracts identified 114 metaanalyses and 643 reviews on social cognitive dysfunction in clinical conditions for potential inclusion. Meta-analytic results reveal significant and varied deficits in social cognition across 26 neurological, 31 psychiatric (including developmental), and other (2) conditions. Some of the most frequently studied conditions are schizophrenia / psychosis spectrum disorders, autism spectrum disorder, and epilepsy. Key themes from non-meta-analytic reviews emphasize the development of condition-specific, theory-driven approaches and underscore the importance of detailing the impact of condition-specific factors on qualitative and quantitative aspects of social cognition. Many authors call for the development of more diverse and ecologically valid assessment methods. Given the critical role of social skills in personal and economic success, as well as overall quality of life, the omission of social cognition from clinical neuropsychological assessments can no longer be justified. A deeper understanding of social cognition within and across clinical conditions will support the development of interventions aimed at improving, managing, and compensating for social impairments in affected individuals.

Presenter: SERENA MARIA STAGNITTO

Study Authors: Serena Maria Stagnitto (1), Floris T. van Vugt (2), Gabriele Chierchia (1), Serena Lecce (1)

Affiliations of Authors: (1) University of Pavia, Italy; (2) University of Montreal, Canada

*This submission will be presented both as a blitz talk and as poster number 35

Do you see what I see (DYSWIS)? Understanding individual differences in spontaneous visuo-spatial perspective-taking*

Traditionally, visuo-spatial perspective-taking (vPT) has been investigated as an ability to take the perspective of others when explicitly instructed to do so. However, more recent findings suggest that, even in the absence of explicit instruction, people sometimes take the visual perspective of others when observing a visual scene, that is, they engage in spontaneous vPT. To explain why, research has so far focused on features of the visual scene. Here, we focus on the observer. By testing a novel task, the Do You See What I See (DYSWIS) task, across 4 studies (N = 603; age range: 18-36 years), we find that, even in the absence of correct or incorrect perspectives, some people are systematically more likely than others to engage in spontaneous vPT, across conditions and when tested 2 weeks apart. These individual differences correlate with the ability to take the perspective of others when explicitly instructed to do so, and with more dispositional measures, such as self-reported empathy, in 3 out of 4 studies, while they are not associated with mental rotation or non-verbal reasoning abilities. Finally, we find that these socio-cognitive correlates do not depend on features of the visual scene, even if some of these, such as the presence of humans or their implied movement, substantially contribute to spontaneous vPT. Taken together, this work demonstrates that people systematically differ in their spontaneous tendency to take the visual perspective of others, highlighting the importance of investigating vPT not only as an ability, but also as a disposition or motivation. Further, most of our findings demonstrate a high level of internal replicability, as we corroborated them across multiple studies.

Visuo-spatial perspective-taking plays a key role in many social interactions, and it is routinely used in the study of both typical and atypical social cognition, in developmental psychology and cognitive neuroscience. By emphasizing spontaneous perspective taking, our study goes beyond the specific niche, bridging between the fields of social psychology, cognition, perception, and motivation research. It also offers a new reliable task to measure individual differences in spontaneous perspective taking that will expedite its use.

Presenter: SERENA LECCE

Study Authors: Serena Lecce

Affiliations of Authors: University of Pavia

Theory of mind plasticity in middle childhood: the role of school context

While there is considerable evidence that children's early ability to understand others' mental states, called "theory of mind," (ToM) is shaped by family contextual experiences, it remains unclear whether children's social interactions at school influence ToM beyond early childhood. This issue was examined in two independent studies.

The first study investigates the role of teachers' propensity for mental-state language and selfreported conversational instruction strategies on children's ToM. Multilevel analyses on 430 Italian children from 27 primary-school classrooms and their teachers showed that there were striking between-classroom differences in children's ToM and teachers' propensity for mentalstate language; and that teachers' conversational-instruction strategies were uniquely associated with pupils' ToM even when child related (i.e., age, verbal ability, number of siblings and SES) and teacher-related variables (i.e., ToM, verbal ability and years of experience) were controlled. The second study focuses on the role that peers' ToM has on children's development of their own ToM. The main aim was to understand whether the mean level ("quantity") and/or the diversity ("variety") of peers' ToM influence children's own ToM development. Four hundred fifty-four 8– 12-year-old children completed assessments of ToM and peer and friendship nominations at baseline and (for ToM only) 1 year later. The variety (but not the quantity) of peers' ToM predicted the development of children's ToM over and above control variables (i.e., age, verbal ability. SES). Altogether these findings extend socio-cultural accounts of ToM by showing a developmental continuity of environmental effects on children's ToM.

Posters Day 2

November 28th, 11:00 - 13:00

Poster 1

Authors: Leslie Tricoche (1), Antonin Rovai (2), Emilie Caspar (3)

Affiliations of Authors: (1) Moral & Social Brain Lab, Department of Experimental Psychology, Ghent University, Belgium; (2) Translational Neuroanatomy and Neuroimaging Lab, Université Libre de Bruxelles, Belgium; (3) Moral & Social Brain Lab, Department of Experimental Psychology, Ghent University, Belgium

When the brain says "No!": an MRI study on the neural correlates of resistance to immoral orders in civilians and military

People's ability to resist immoral orders is a fundamental aspect of individual autonomy and of democratic societies. Milgram's studies mostly described psychological and contextual components which make an individual to obey or disobey immoral orders, but the neurocognitive processes that prevent an individual from being coerced into causing pain to others have almost not been investigated. By using a new protocol developed by E.Caspar, in a fMRI study we explored the neural signature of disobedience to immoral orders in 57 civilians and 54 military. At each trial, participants received the instruction by the experiment to send a shock or not to the victim's hand (a confederate). Participants should decide to obey or not by pressing a key among two keypresses. Through a camera, participants saw the victim's hand. If a shock was sent, participant saw a muscle twitch on the victim's hand. Based on previous studies (Caspar et al., 2020, 2021), we particularly focused on three socio-cognitive (response conflict, sense of agency – SoA, and theory of mind – ToM) and two socio-affective (empathy and guilt) processes. In civilians, our results indicated that most individuals were able to refuse to send a shock, as more than 70% of them disobeyed in at least 10% of the trials where experimenter ordered to send a shock to a victim. Only participants disengaging angular gyrus and median prefrontal areas to mitigate response conflict between self and other and enhance their SoA, were able to focus on their moral judgment, ultimately disobeying experimenter's instructions to send a shock to a victim. Additionally, we found that an involvement of social brain regions (encompassing ToM, empathy, and guilt areas), especially in response to shock events, favored subsequent disobedience. This study sheds light on the mechanisms that enable individuals to resist immorality. Analyses for military data are in progress.

Authors: Nikki Taelemans (1), Céline Hinnekens (2), Liesbet Berlamont (3), Laura Sels (4), William Ickes (5), and Lesley Verhofstadt (6)

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Understanding empathic accuracy: insights from a systematic review

A systematic review was conducted to investigate potential correlates of empathic accuracy (EA). EA is defined as the extent to which a person accurately infers a target person's spontaneous feelings or thoughts as they occur moment-to-moment in a particular situation. Database searches were performed using Web of Science, PubMed, Cochrane, and PsycINFO. Eligible studies met the following criteria: (a) measurement of EA in an adult population, (b) use of either the dyadic interaction paradigm or the standard stimulus paradigm, (c) clear identification and measurement of variables linked to EA, and (d) explicit measurement of the association(s) between identified variables and EA. After screening 707 articles, 135 articles met the predetermined inclusion criteria and were extracted for review. Our summary of the potential correlates of EA is divided into three sections: individual, interpersonal, and situational characteristics. Converging evidence was found for specific individual characteristics (i.e., altruism, emotional clarity, attributional bias, psychotic symptoms in perceivers, and depressive symptoms in targets), interpersonal characteristics (i.e., acquaintanceship, prosocial behavior, and aggressive behavior), and situational characteristics (i.e., informational sources, motivation, use of stereotypes, and training). However, conclusions are limited by methodological variability and the absence of a meta-analysis. Lastly, there was also diverging evidence for other characteristics (e.g., gender), and several promising findings that need replication.

Poster 3

Authors: Mélissa Vandenbol (1), Marie Geurten (1,2), Christine Bastin (1)

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Memory detectives: how children make judgments on others' memories and use them to navigate the social world.

Recent studies have examined the role of episodic memory for bonding with others. While previous research found that adults use interpersonal monitoring – i.e. the ability to judge the reliability of another person's memories – to decide whether the information reported by others is

trustworthy enough to be used later and to determine whether they are willing to interact with this person, this link has yet to be established in children. Here, the existence and the developmental path of these interpersonal monitoring processes in children, the variables that influence their development, and their contribution to children's social learning will be examined. To this end, children between 4 and 8 years old will be recruited and asked to rate the reliability of different narratives varying in terms of episodic richness. Children's willingness to interact with the narrator will be assessed through explicit social judgments, moral decision scenarios, and behavioral responses to a peer in distress while the impact of children's memory, metacognitive, and mindreading skills on the development of children's interpersonal monitoring processes will be investigated. Finally, we will document the effect of the development of interpersonal monitoring processes on vicarious learning - i.e. learning from the experience of others. We hypothesize that (1) judgments about others' memories are based on specific memory cues such as episodic richness and, thus, could mediate the relation between people's memory richness and the social support they receive; (2) interpersonal monitoring skills improve with age due to the maturation of memory, metacognition, and mindreading; and (3) the results of the interpersonal monitoring operations increase the likelihood that the information conveyed by another person's memories will be used later by children to solve similar problems. Overall, this research will provide new insights on the development of social memory and metacognition in children.

Poster 4

Authors: Emilie Auger (1), Jean-Louis Nandrino (2), Jeanne Duclos-Lavagne (3), Karyn Doba (4)

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Modelling the relationship between mentalizing, interpersonal relationship and subclinical eating disorders in pre-adolescents

Introduction: Eating disorders (ED) are often associated with socioemotional impairments, which can contribute to the development and persistence of the ED symptoms. The facets of socioemotional functioning that seem to be compromised include mentalizing which refers to the ability to perceive and understand oneself and others' mental state. Research suggests that people with ED have difficulty in mentalizing themselves and others and may experience interpersonal impairment. However, little is known about the early onset of socioemotional impairments in ED prior to the acute stage of the illness. The objective of this study is to model the relationship between mentalizing, quality of family environment, social anxiety, and the severity of ED symptoms in early adolescence in non clinical population.

Method: One hundred and thirty nine girls aged from 11 to 13 were recruited from the general population to complete a self-report questionnaire assessing ED symptoms, mentalizing, social anxiety, and quality of family environment.

Results: We conducted analysis using partial least squares path modelling to determine the predictive relationship between these processes. Results show that the quality of the family environment directly predicts the severity of eating symptoms. Furthermore, results show that social anxiety mediates both the link between mentalizing impairment and severity of eating disorder and the link between the quality of family environment and eating symptoms.

Discussion: These findings provide a better understanding of the early mechanisms related to socioemotional processes that lead to the onset of ED. The results allow for the identification of teenagers at-risk before the onset of ED. This supports the development of psychotherapeutic interventions that target adolescents' socioemotional skills to prevent the onset of ED.

Poster 5

Authors: Poline Simon (1), Nathalie Nader-Grosbois (2)

Affiliations of Authors: Université Catholique de Louvain

Comparison of empathy in typically developing children and children with intellectual disability

Objectives: Two studies were conducted to better understand how children with intellectual disabilities (ID) empathize with the feelings of others during social interactions. The first study tested hypotheses of developmental delay or difference regarding empathy in 79 children with ID by comparing them with typically developing (TD) children, matched for developmental age or chronological age. The second study examined specific aspects of empathy in 23 children with Down syndrome (DS), compared with 23 nonspecific ID children, matched for developmental age, and TD children, matched for developmental age or chronological age.

Method: An empathy task was administered to the children while their parents completed the French versions of the Empathy Questionnaire and the Griffith Empathy Measure.

Results: The first study showed that ID children showed delayed empathy development but were perceived by their parents as deficient in cognitive empathy. The second study showed that DS children were perceived as being more attentive to the feelings of others than TD children and non-specific ID children, matched for developmental age, and as having affective empathy that was similar to that of TD children matched for chronological age.

Conclusion: These studies have drawn attention to delays or differences in different dimensions of empathy in children with ID and DS, which need to be taken into account in interventions.

Poster 6

Authors: Anna Giometti (1, 2), Matteo P. Lisi (1, 3), Martina Fusaro (1, 4), Ilaria Minio Paluello (5), Salvatore Maria Aglioti (1)

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Investigating social touch and peripersonal space in autistic adults via self-report, behavioral and physiological measures in an immersive virtual reality environment

A moving threatening stimulus generates increased alertness as it invades a person's peripersonal space, that is, as it comes close enough to be driven away. Autistic adults report avoiding being touched by other people more so than neurotypical adults. Our study aims to investigate whether autistic adults who avoid social touch in their everyday life respond to social touch similarly to a threat. To do so, we collaborated with autistic consultants who avoid social touch and developed an immersive virtual reality experimental paradigm allowing us to compare participants' behavioral and physiological responses to social touch, non-social harmful touch, and non-social non-harmful touch. In particular, we will measure and compare participants' behavioral visuotactile interference, skin conductance, and heart rate variability linked to the different experimental conditions, as well as investigate the role of participants' levels of social anxiety, masking behavior, and non-social tactile sensitivity. We expect autistic participants with high social touch avoidance to respond similarly to virtual social touch and virtual tactile threat, and to treat approaching social touch as a more threatening event compared to autistic participants who do not report avoiding social touch in their everyday life. Further, we expect participants' levels of social anxiety to be linked to their response to social touch and their use of masking to explain the presence of possible mismatches between participants' explicit and physiological responses to social touch. Our study will contribute to understanding social touch in autism and its implications for well-being and social interactions.

Authors: Ilaria Minio-Paluello (2), Beatrice Baldi (1,2), Giuseppina Porciello (1), Salvatore Maria Aglioti (1)

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Face memory: marked sex differences only in autistic adults

Autism is a highly heterogeneous neurodevelopmental condition regarding 1-2% of the population, diagnosed at least three times more frequently in men than in women. This etiological and clinical heterogeneity poses significant challenges in identifying the biological underpinnings of autism and its co-occurring conditions, and in developing targeted interventions for mental and physical health difficulties faced by autistic individuals. An endophenotype-based stratification approach may offer a way to address autism's high heterogeneity. This study examines the ability to recognize another person's identity from their face, a highly

heritable skill recently proposed as an endophenotype in autism. This ability is often impaired in a substantial subgroup of autistic individuals and has been linked to the oxytocin system. We tested face identity recognition and perception skills in 84 autistic adults without intellectual disability and combined our data with additional datasets from other research groups, resulting in a larger, sex-balanced sample of 193 autistic adults.

Our results provide the first evidence that clinical difficulties in face identity recognition (i.e., prosopagnosia) regard at least 28% of autistic adults (compared to 2-3% of the general population). Notably, we identified a marked sex difference among this population: autistic men were more than twice as likely to be prosopagnosic compared to autistic women.

Further analysis revealed that the number of autistic traits, face perception abilities, and holistic face processing did not help predict sex differences in face identity recognition deficits among autistic individuals. These findings highlight the potential of using face identity recognition as an endophenotype to better understand the heterogeneity and sex differences in autism. While further research is necessary to elucidate the genetic and neurobiological implications of these results, our study represents an important step toward disentangling the complexities of autism and tailoring more effective interventions.

Authors: Zwanet Young, Mariët van Buuren, TuongVan Vu, Lydia Krabbendam

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The neurocognitive dynamics between perspective-taking, self-evaluation, and social comparison in young adults

Self-evaluation and social comparison play pivotal roles in shaping self-concept, which influences mental- and social well-being. During young adulthood, a phase marked by identity exploration and social interactions, the role of social comparison becomes particularly prominent in shaping self-evaluations. While the neural correlates of self-evaluation have been extensively studied, it remains unclear whether similar brain regions are engaged during social comparison. Furthermore, previous research indicated that perspective-taking increases the overlap between the processes of evaluating the self or others, which suggests a credible connection between perspective-taking and the mechanisms underlying self-evaluation. However, the relationship between perspective-taking and neural activity during self-evaluation has not yet been examined. The first aim of this study was to assess the involvement of core regions implicated in self- and other-referential processing, the dmPFC, bilateral TPJ, and vMPFC in self-evaluation and social comparison. Second, we aimed to explore the relationship between perspective-taking propensity and neural activation in the dmPFC and bilateral TPJ during self-evaluation. Involving 33 participants aged 19-29, we assessed perspective-taking propensity using the Interpersonal Reactivity Index and conducted an fMRI trait judgment task consisting of a self-evaluation- and social comparison condition. We examined neural activity during self-evaluation and social comparison, and found significantly higher activation in the dmPFC and bilateral TPJ during social comparison as compared to self-evaluation. These results was expected, as previous research has established the role of the dmPFC and bilateral TPJ in other-referential processing. Contrary to our predictions, we found higher neural activity in the vmPFC during social comparison than selfevaluation, despite this area's typical association with self-referential processing. Furthermore, our results indicated that perspective-taking propensity predicted neural activity in the left TPJ during self-evaluation, but not in the right TPJ and dmPFC. Given the role of the left TPJ in socialcognitive processing and other-referential processing, this may suggest that with higher perspective-taking propensity, more social-cognitive or other-referential processes are elicited during self-evaluation. Taken together, our findings suggest that perspective-taking and the neurocognitive mechanisms of self-evaluation and social comparison are connected in youngadults, but further research with a larger sample size is needed to improve our understanding of these processes.

Authors: Maartje M. A. Overhaus(1), Mariët van Buuren(1), Nicky Lute (1), Paul A. M. van Lange (2), Lydia Krabbendam (1)

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Mindful minds: how group identity shapes brain and behavior in social decision-making

Social mindfulness involves small gestures where individuals consider other's needs and desires when making decisions. This form of low-cost cooperation preserves others' autonomy in making choices in interdependent situations and subtly conveys respect and interpersonal regard. However, contextual factors can influence the extent to which these mindful choices are made. This functional magnetic resonance imaging (fMRI) study employed the social mindfulness (SoMi) paradigm to investigate the behavioral and neurobiological underpinnings of social mindfulness and how these are affected by group identity. Throughout this social decision-making paradigm, participants selected one object from a set of four. In each experimental trial, three of these objects were identical, while one was distinct. Participants were informed that their choices affected an imaginary other, who subsequently selected an object from remaining options. fMRI data were collected from 48 healthy adults, preselected on their attitude toward refugees (either pro-refugee or anti- refugee). Each participant completed the SoMi paradigm three times. The first time, participants interacted with a neutral imaginary other with no information provided about their identity. In subsequent trials, participants received information indicating whether the imaginary other either shared (i.e., in-group) or opposed (i.e., out-group) their views on refugees. Results show that participants exhibit more mindful behavior toward in-group members than outgroup members or the neutral imaginary other. While the fMRI data have not yet been analyzed, several findings are anticipated. First, performing the SoMi paradigm is expected to heighten activation in brain regions associated with social decision-making (e.g., DMN, mPFC, PCC, IPL, TPJ) and mentalizing processes (e.g., ventral ACC and TPJ), regardless of the group identity of the other. Second, making socially mindful decisions for both the out-group and in-group members is expected to activate valence-related brain regions (e.g., ventral striatum, caudate, insula). Lastly, and most importantly, we expect that making socially mindful decisions for outgroup members to activate areas related to cognitive control (e.g., frontoparietal network) more than decisions for in-group members or neutral imaginary others. In sum, this study aimed to elucidate the neural and behavioral mechanisms underlying social mindfulness, demonstrating how group identity influences small cooperative behavior.

Authors: Ward Deferm (1,4), Binu Singh (1), Georgios Rousis (2), Maarten De Vos(2), Bea Van den Berg (3), Koen Ponnet (4), Bart Boets

Affiliations of Authors: (1) Center for Developmental psychiatry, KU leuven ; (2) Center for Dynamical Systems, Signal Processing and Data Analytics, KU Leuven; (3) Health Psychology, KU Leuven, (4) MICT UGent

Objectively quantifying (change in) micro self- and co-regulation dynamics in a cohort of dysregulated children and families enrolled in an intensive intervention program

Early interactions between infants and their caregivers play a crucial role in shaping the developing brain and establishing social bonds. Biobehavioral synchrony, encompassing behavioral, hormonal, autonomic nervous system (ANS), and neural synchrony, is proposed as a fundamental mechanism in parent-infant co-regulation. However, a micro mechanistic understanding of these processes, particularly the impact of parental stress on synchrony, is lacking.

Here, we will objectively quantify self- and co-regulation dynamics in a cohort of infants with regulation problems and their parents, implementing state-of-the-art dual measurements. The study will follow participants through a clinically successful intensive family-based intervention program, with a focus on reducing parental stress. This study aims to investigate the directional associations between parental stress, biobehavioral synchrony, and parental and infant self-regulation, addressing gaps in current research.

Dual measurements, including stress physiology measures (heart rate and skin conductance) and behavioral assessments (eye gaze, facial mimicry, vocalizations), will be employed during dyadic interactions. Measurements will extend beyond the laboratory, incorporating day-long ANS and vocalization recordings in home settings, along with diary measures. Multiple time-points will be assessed to investigate postulated directional associations among parental stress, self-regulation, and co-regulation.

This study aims to advance our understanding of biobehavioral synchrony in parent-infant relationships, particularly in dysregulated populations. The innovative methodology, encompassing diverse measurements in both laboratory and naturalistic settings, provides a unique opportunity to uncover nuanced patterns of synchrony and explore the impact of parental stress reduction on these dynamics. The findings may have implications for interventions targeting parent-child relationships, emphasizing the importance of considering both mothers and fathers in assessments of biobehavioral synchrony. We will present the general study design as well as some initial dyadic data.

Authors: Giulia Arenare (1), Floris van Vugt (2), Elena Cavallini (1), Serena Lecce (1)

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Deep conversations between young strangers: the role of empathy

Although today offers numerous opportunities to connect with strangers, people are often reluctant to engage in meaningful conversations with unfamiliar individuals. This might be due to the underestimation of how caring and interested distant strangers are in one's own intimate revelations and of the benefits that such conversations have on wellbeing.

This study explores how young adults utilize their social cognitive skills during deep conversations, with a focus on empathic behaviors (EB) and mental state talk (MST). The research has two main objectives: 1) to investigate the relationship between empathy and theory of mind abilities (measured prior to the conversation) and the EB and MST exhibited during the interaction; 2) to examine the impact of the level of the partner's EB and MST during the conversation on the subject's overall experience of the interaction.

120 young adult participants (mean age = 23.73 years) met through online video in unacquainted pairs and were asked to discuss about 2 intimate topic for a total of 10 minutes. Prior to the conversation, participants completed a Theory of Mind (ToM) task and an empathy assessment. Following the conversation, they answered a series of questions about their experience. The content of the conversation was transcribed and coded by two researchers.

Results showed a positive correlation between self-reported empathy scores and the use of MST during conversations, no significant association was found between ToM task and MST. Receiving empathic behaviors was linked to higher levels of happiness and fewer negative emotions after the conversation.

This study offers valuable insights for future research into empathy and mental state language in conversations between strangers—a context that can greatly enhance personal well-being. Future studies could further examine the broader implications of these elements in everyday social interactions.

Authors: Rebecca Johannessen (1,2), Marcel Eicher (1,2), Anne Hansen (1), Michelle Regli (1), Lesley Ramseier (1), Tamara J. Hibbert (1), Marah Ruepp (1,4), Hannah Sievers (1,2), Hennric Jokeit (1,2,3)

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Advancing social cognition screening with COSIMO: preliminary validation data in epilepsy, multiple sclerosis and autism spectrum disorder

Despite its significant impact on everyday functioning and quality of life, social cognition is often overlooked in clinical practice. A reason might be a scarcity of ecologically valid, easily accessible screening tools. To address this, we developed COSIMO (Cognition of Social Interactions in Movies): a browser-based screening tool for complex emotion recognition with high ecological validity. It consists of muted short videos of social interactions between ethnically diverse actors with a balanced age and gender distribution. There are two parallel versions (A and B) to allow for follow-up assessments. Next to our rolling online recruitment for our growing normative sample, we are validating COSIMO in clinical populations. Our preliminary dataset consists of COSIMO test scores in healthy controls, in populations with epilepsy, multiple sclerosis, and autism spectrum disorder. COSIMO shows minimal dependency on other cognitive functions as measured with the Montreal Cognitive Assessment (MOCA). Correlational analyses with the Movie for the Assessment of Social Cognition (MASC), the Reading the Mind in the Eyes test (RMET) and the Faux-Pas test confirm satisfactory construct validity, with especially high convergent validity with MASC. COSIMO shows particularly high sensitivity in detecting social cognition deficits in patients with temporal lobe epilepsy (TLE). Results of our remote onlineassessment in multiple sclerosis and autism spectrum disorder suggest satisfactory sensitivity for version B, but not version A. This discrepancy in sensitivity between the two versions will be further analyzed and addressed in the next steps of development. Satisfactory norm data is available for the German and English versions of COSIMO. Several international research institutes are involved in the translation and validation of COSIMO into further languages. COSIMO shows promising potential for the efficient identification of social cognitive deficits in neurological, developmental, and psychiatric disorders.

Authors: Ruth Op de Beeck (1,2), Laura Tibermont (1,2), Stephanie Van der Donck (1,2), Jean Steyaert (2,3), Kaat Alaerts (2,4) en Bart Boets (1,2)

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Exploring dual stress measures and determinants of atypical physiological synchrony in children with autism: effects of oxytocin and mirror exercises

Effective social interactions can be metaphorically compared to dancing, where synchronization between partners is essential – each sensing the other's rhythm and moving in harmony. This metaphor encapsulates the essence of the biobehavioral synchrony model, which posits that physiological and behavioral processes are shared between individuals, achieving social attunement. Individuals with autism, however, often find social interactions challenging, and their social attunement may differ from typically developing individuals. Preliminary research suggests that social attunement can be enhanced through mirror exercises, which show promise in fostering feelings of affiliation. Similarly, oxytocin, commonly known as the "cuddle hormone," plays a key role in promoting social bonding. Despite the centrality of social interaction difficulties in autism, research on biobehavioral synchronization during real-world social interactions remains limited. Given this gap in research and the challenges individuals with autism face, there is a need to explore innovative approaches to enhance social attunement.

The OXYSYNC project aims to address this gap by comparing the social attunement of children with autism, aged 8 to 12, with that of their typically developing peers during structured real-life interaction paradigms with an experimenter. These paradigms include (free-)viewing tasks, natural conversations, and games. We will collect multimodal biobehavioral measurements, such as heart rate, skin conductance, eye movements, EEG responses, and saliva samples to assess endogenous oxytocin levels. Given that individuals with autism frequently report heightened stress during social interactions, my specific focus within this study is on dual stress physiological measures, particularly heart rate and skin conductance. Additionally, we will investigate the effects of a single-dose intranasal oxytocin administration, combined with sensorimotor synchronization training, on social synchrony in children with autism. Our ultimate goal is to uncover the underlying determinants of (atypical) social attunement and explore interventions that may help children with autism connect more effectively with others and feel more comfortable in social settings. At the conference, we will present the study design and, if available, preliminary findings from this ongoing research.

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Harm aversion of medical professionals performing invasive procedures

People are typically averse to performing harmful actions, but medical professionals such as surgeons regularly perform harmful actions such as cutting open a body to treat patients. This conundrum parallels sacrificial dilemmas where causing harm saves lives; accepting sacrifice is said to violate deontological ethics against harm but uphold utilitarian ethics to maximize outcomes. Past work suggests healthcare providers select utilitarian over deontological judgments. In the current work, we employed process dissociation (PD) to clarify the degree to which this pattern reflects reduced aversion to harm (deontological responding) and increased outcome maximization (utilitarian responding) among 131 physicians depending on whether they regularly performing invasive procedures (n=89) or not (n=42), and whether their expertise is surgical (n=42) vs. non-surgical (n=89). Physicians performing invasive procedures and specializing in surgery scored lower on deontological but not utilitarian parameters, suggesting reduced aversion to harm but not increased concern for outcomes. Consistent with this view, surgeons scored lower on a measure of personal distress and higher on resilience, suggesting a tendency to control emotions. Physicians higher in action and outcome aversion tended to maximize outcomes. Together, these findings suggest that the psychology of harmful action in medical settings parallels the psychology of sacrificial moral dilemmas.

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The cognitive basis of prosocial behaviour and perspective taking in young adulthood

Perspective-taking, the ability to understand others' viewpoints and mental states, is crucial for social interaction and prosocial behavior. Previous research suggests that this ability is supported by cognitive mechanisms such as working memory (WM) and inhibitory control. Previous studies have shown that training in social WM (i.e. maintaining and manipulating information about others' traits and states) can improve perspective-taking accuracy, while inhibition training (i.e. suppressing imitative behaviors) aids in distinguishing between self and other perspectives. However, few studies have directly compared WM and inhibition training effects or examined far-

transfer effects on prosocial behaviors. This study investigates whether short-term training in social and cognitive working memory (WM) and inhibitory control can enhance perspective-taking and prosociality in young adults, while considering the role of individual differences such as social anxiety levels and social network. We recruited 121 participants (mean age = 20 yrs old) from the University of Kent, randomly assigning them to one of four training conditions: social WM, cognitive WM, social inhibitory control, or cognitive inhibitory control. During the pre and posttraining lab sessions, participants completed a battery of social-cognitive tasks, including measures of perspective-taking and prosociality (e.g Director's Task and Intergroup Helping, respectively). During the seven days between lab sessions, participants completed 7 online training sessions in their respective conditions, adapted to increase/decrease difficulty based on the participant's performance. Mixed-effects models, used to analyse the training's effects on task performance, revealed that inhibitory control training, particularly in the cognitive domain, improved participants' ability to suppress interference in the inhibitory control task, however these training effects did not extend to improvements in perspective-taking or prosociality. Effects of working memory training did not reach significance for near or far transfer tasks. These findings suggest that short-term inhibitory control training can improve closely related cognitive processes, but the efficacy of cognitive training on broader social behaviors like prosociality may be limited.

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Affective empathy and CT-touch (AffECT): does C-fiber activity modulate pain empathy?

A special class of mechanoreceptors (C-fibers) in the hairy skin of mammals responds particularly well to lightly and slowly moving stimuli, highly similar to human caress. C-fiber stimulation through affective touch modulates processing of pain, emotional and social stimuli in humans. Linking C-fiber activity to self-other distinction, we want to investigate whether C-fiber activity also modulates third-person experience of pain and pain empathy. For this purpose, we designed an experimental paradigm combining an empathy for pain task with C-fiber stimulation, which we are currently piloting.

In our pilot study, we use cosmetic brushes moved by a robotic device to mechanically apply affective touch to the left hand of participants while they watch short videos of different persons experiencing electrotactile pain stimulation on their left hand. Continuously being stroked at the back of their left hand (containing C-fibers) in a C-fiber activating manner, participants are asked to rate how painful the electrotactile stimulus was experienced by the person in the video. As a control condition, the stroking is also applied to the palm of the participants' left hand (C-fiber free) during the empathy for pain task.

We hypothesize that participants are less accurate in rating the other person's pain experience in the CT-touch (back of the hand) compared to the non CT-touch condition (palm). Further, we

assume that personality traits relate to the individual affective responsivity to CT-touch and its possible impact on pain empathy which is reflected by the task performance requiring self-other regulation. In a second study, we want to examine neural activity and autonomic reactions during empathy for pain task completion with compared to without C-fiber activation.

Our study goal is to gain insight on how exteroceptive (third person's pain) and interoceptive (CT-touch) affective stimuli of different valence are processed and self-other distinction is maintained.

Poster 17

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The EmpaToM-Y-Eng: validation of a functional magnetic resonance imaging measure of empathy and theory of mind in adolescents

Introduction/Aim: Empathy and theory of mind (ToM) are vital for social functioning. Impairments in these processes have been found in mental health and neurodevelopmental disorders. Magnetic resonance imaging (MRI) studies have demonstrated dissociation of brain networks in adults that underpin empathy versus ToM. Adolescence is a period vital for the development of these social-affective and -cognitive abilities, due to significant development of the underlying brain networks, and social relationships take on increased importance as adolescents become more independent from their family unit. As such, it is important to understand empathy and ToM, and their underlying brain bases, within this developmental period.

The EmpaToM-Y (Breil et al. 2021) is a German-language functional (f)MRI task designed to independently manipulate and measure the dissociable processes of empathy and ToM. It has high ecologically validity due to its use of realistic complex video content and has been modified for use in adolescents. However, it is currently not available for use with English-speaking adolescent participants. Our study aims to translate and validate this task for use in English-speaking adolescent populations.

Methods: Stimuli scripts were translated into English and video stimuli was refilmed with young amateur actors in Australia. Initial behavioural validation will occur to assess the new stimuli quality. Subsequently, in a sample of 60 English-speaking adolescents, aged 14-18, we aim to demonstrate that the 'EmpaToM-Y-Eng' captures individual variability and dissociation between empathy and ToM (through behavioural, fMRI, self-report questionnaires and psychophysiological data), and has strong psychometric properties equivalent to the existing German EmpaToM-Y. We will also investigate associations with mental health symptoms, and day-to-day social experiences using ecological momentary assessment.

Significance: This research will result in an English version of an fMRI task for neuroscientists to investigate social processes during adolescence. We hope this will facilitate future investigations about how these processes are impacted in clinical populations or used to evaluate treatments aimed to improve social processes.

Poster 18

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Dual gaze behavior and its neural correlates in autism during real-life social interaction

To navigate the complexities of everyday social interactions, humans rely on social gaze as a nonverbal communication system. Eye contact in particular is an important ostensive cue in social interactions, and plays a pivotal role in communicative learning. Engaging in eye contact has also been shown to activate regions of the social brain network. Clinically, it has long been established that individuals with autism exhibit reduced or atypical eye contact. Given the importance of eye contact in communicative learning, atypical eye contact may be related to atypical neural processing of social information, which may in turn contribute to the social difficulties experienced by these individuals. In the past, many studies have investigated human social gaze behavior at a single subject level via screen-based paradigms. However, this artificial approach may fail to reflect how social gaze dynamically unfolds during real-life interaction. The current project is part of a larger study that aims to quantify neurophysiological and behavioral synchrony measures in 8-to-12-year-old children, with or without a diagnosis of autism, while they socially interact with an adult stranger. These dual measures include gaze behavior, EEG responses, heart rate, and skin conductance. Additionally, the study will investigate whether the synchrony measures can be modulated through a single-dose of intranasal oxytocin administration, combined with a mirror game where the child and adult imitate each other's body movements. In the current project, I will assess naturalistic dual gaze behavior and its neural correlates, at intra- and inter-brain level, in child-stranger dyads. Specifically, I will compare these dynamics between dyads including autistic children (n = 100) and dyads including neurotypical children (n = 40). Using a real-life, two-person approach, this study seeks to provide deeper insights into the intricate mechanisms underlying social communication difficulties in children with autism. Preliminary findings will be presented at the conference.

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Pragmatics and theory of mind as predictors of social relationships and wellbeing: an ecological momentary assessment study (PragmaToM) in aging

Social interactions require to understand other people's emotions, thoughts, and intentions to successfully predict and interpret their behavior. For this purpose, Theory of Mind skills (ToM) and the ability to use language in a communication context (pragmatics) are crucial in social relationships and their failures can lead to miscommunication and misunderstandings. Decline in ToM skills, with difficulties in inferring thoughts, feelings, and intentions of others, and in both expressive and receptive pragmatic abilities, that lead to off-topic speech, alteration of conversational purposes, shifting from the transmission of precise information to a peculiar stress upon autobiographical narratives or personal situations, have been observed in the aging population.

Despite the importance of these abilities in everyday life, their investigation in aging is limited to the assessment in lab setting. To overcome this hurdle, Ecological Momentary Assessment (EMA) methodology has recently started to be employed.

Aim of the present study was to assess age-related differences on the predictive role of Pragmatics and ToM abilities on everyday social functioning and wellbeing via EMA.

One hundred and sixty-two participants (82 young, aged 20-35, and 80 senior, aged +65) were recruited. Participants answered a series of open and closed questions through an ad-hoc EMA protocol for seven days, five times a day.

When participants reported to have had at least one conversation from the last notification, both abilities, separately and together, significantly predicted the overall wellbeing in terms of happiness, life satisfaction, sense of loneliness, and satisfaction with social relationships, with a modulating effect of age.

This is the first study that applies the EMA methodology to the study of ToM and pragmatic abilities in everyday settings. Results are in line and extend previous research by unraveling the effect of both everyday ToM and pragmatic abilities on wellbeing in real-life setting in younger and older adults.

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Do personal constructs predict ToM? An aging study

Relationships play a role of fundamental importance for the psychophysical well-being of the person, especially in the elderly. During social interactions various skills come into play, including Theory of Mind (ToM) which allows one to interpret one's own and others' mental states (thoughts, emotions, desires). This ability is particularly useful in predicting the behaviors of others and appears to be linked, at least in part, to executive functioning. However, in anticipating actions we also make use of previous experiences and therefore mental patterns. No study to date has analyzed the association between these and ToM. The aim of the present study is to analyze the relationship between mental schemas, using the personal constructs approach, and Tom in young and elderly people. A lower complexity of constructions could in fact help to explain the difficulties of the elderly in mentalization processes. The sample composed by 60 healthy adults divided into of two age groups, of both sexes, one group of young people (20-30 years old) and a group of elderly people (over 65 years). The participants were asked to complete a battery of Tom tests and an adaptation of the personal constructs grid by Kelly. The results show significant differences in personal constructs, the elderly in fact report a lower complexity of themselves, and a decline in Tom with advancing age. Preliminary analyzes also reveal interesting associations between personal constructs and mentalization skills. Further analysis will allow us to verify whether changes in the patterns mental abilities are responsible for the lower mentalizing abilities observed in the sample of elderly people.

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Understanding stress physiology and resilience in preschoolers born prematurely through dyadic interactions

Each year, 15 million infants are born prematurely worldwide, with the prevalence of premature births ranging from 5% to 18%. Advances in neonatal intensive care have reduced mortality rates among preterm infants, but have also increased the prevalence of morbidity. This morbidity often manifests as socio-emotional challenges and neurological and psychiatric conditions, which can

impact the quality of life of these infants and affect the caregiver-child relationship. Additionally, evidence suggests that the preterm population may experience a dysregulated autonomic nervous stress system. This dysregulation may be linked to biological and environmental factors, such as early life stress in the neonatal intensive care unit (NICU), as well as structural and functional brain alterations. Adequate physiological regulation is believed to be crucial for future cognitive and emotional self-regulation and socio-emotional abilities.

This study investigated physiological regulatory capacities in 65 prematurely born preschool children (5.5 years), compared to 30 matched full-term healthy controls. Autonomic functioning was assessed by measuring heart rate during rest and various interaction paradigms. The study aimed to explore correlations between (1) physiological regulation at 5 years, (2) early prematurity parameters such as birth weight and kangaroo care, and (3) subsequent socio-emotional functioning at 5 years. Results showed similar values for mean heart rate, RMSSD, and HF-HRV between preterm and full-term children, suggesting normalization in autonomic functioning during childhood. The amount of skin-breaking procedures was negatively correlated with mean heart rate and positively correlated with RMSSD and HF-HRV, indicating accelerated ANS development following early-life stress and pain. A positive correlation was found between wean heart rate and kangaroo care. Additionally, there was a positive association between vagal tone in preterm infants and autism spectrum scores.

In conclusion, this study contributes to a deeper understanding of the physiological regulation and socio-emotional functioning in prematurely born children. Further research may elucidate the intricate relationships between early-life biological and environmental factors, autonomic functioning, and socio-emotional development in preterm infants to enhance their well-being.

Poster 22

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Development and validation of a database of diverse validated face emotion morphs

Facial Emotion Recognition (FER) tasks are commonly used measures of social cognition, but face stimuli lack face diversity, stimulus validation, and open access. Williams et al. (2023) published accuracy ratings for a face set with male and female actors of four ethnicities showing five emotions at graded intensity. Unfortunately, the face set was limited by floor and ceiling effects for accuracy and was not open access.

Using the RADIATE face set, we replicate and extend these results by generating a novel database of face stimuli that vary by gender, race, emotion, and emotion intensity. These stimuli are accessible for free online use, and the large number of stimuli allows tasks to be scalable for varied research aims.

We recruited human raters on Prolific to assign each stimulus to one of five emotions (Anger, Disgust, Fear, Happiness, Sadness), and completed surveys (demographics, Borderline Symptom List (BSL23) and Post-traumatic Stress Disorder Checklist (PCL5). First, we tested percent rater accuracy for 80 face stimuli (50 % female, 25% each for Black, Asian, Hispanic, White). Raters (n=482) each rated 16 face stimuli. Face stimulus quality was quite variable with accuracy ranges by emotion: happy 88-100%, sad 52-94%, angry 24- 97%, fear 65-90%, disgust 34-97%. To examine the quality of faces morphed for intensity (20-100% of full emotion), we used visual inspection to identify face sets with good range (low to high accuracy across intensity levels) and stepwise increase in accuracy with each intensity level. For face morph sets limited by ceiling and/or floor effects, we rescaled the morph range and re-tested in a new cohort of 590 raters (57% female, 40% male, 3% not listed or other; 67% white, 10% Black, 7% Asian, 3% Hispanic) who each rated 79 re-scaled faces. BSL23 score mean was 0.65 (range 0-3.5, SD = 0.704). For the 52.5% with history of a traumatic event, PCL-5 score mean was 23.7 (range 0-76, SD = 17.8). This approach yielded a final database of morphed face sets (15 anger, 9 disgust, 8 fear, 10 happiness, and 13 sadness), each with faces at five levels of intensity.

Using these validated face sets, we confirmed that face intensity predicts accuracy (logistic regression, p < 0.001). Even in these validated morph sets, the face sets differed in accuracy by emotion (neutral > happy > fear > disgust > anger > sadness; logistic regression, p < 0.01) Next, we examined the effect of demographic concordance on accuracy. There was no significant interaction for either gender or race (p > 0.05). We did find a significant impact of PCL5 score on accuracy, only for 20% fear stimuli (z = 1.984, p = 0.04731). There was no significant effect of BSL23 score on accuracy.

Using a confusion matrix, we found a qualitative increase in faces misread as disgust in people with high PCL5 scores (>33), but no clear differences between high and low BSL23 scores (cutoff at 1.3).

These results confirm that actor-generated face emotion stimuli need validation, and that rescaling of raw stimuli can generate high-quality morphed face sets. This work contributes to an important critique on commonly used face emotion recognition task methods, offers a new validated face set to the psychology research community, and serves as a roadmap for other teams to develop similar tasks.

Poster 23

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Systematic review and meta-analysis of early visual processing, social cognition, and functional outcomes in schizophrenia

Background. Schizophrenia is marked by a range of cognitive and perceptual abnormalities, including in early visual processing and social cognition. Understanding the extent of these

deficits and their impact on functional outcomes, such as quality of life, is crucial for improving the management and treatment of schizophrenia. This systematic review and meta-analysis aimed to explore the relationships among these variables and assess the mediating role of social cognition in the association between early visual processing and functional outcomes in individuals with schizophrenia.

Methods. A comprehensive search of databases was conducted to identify studies reporting correlations between early visual processing, social cognition, and functional outcomes in individuals with schizophrenia. Meta-analytic techniques were employed to synthesise effect sizes and assess the mediating effects of social cognition.

Results. A total of 364 studies were initially identified, with eight articles meeting all inclusion criteria. Three random-effects meta-analyses revealed significant associations between early visual processing and functional outcomes (r = .15), early visual processing and social cognition (r = .25), and social cognition and functional outcomes (r = .28). Social cognition accounted for more unique variance in functional outcomes than early visual processing (7.84% vs. 2.25%), though a significant proportion of variance remained unexplained. Mediation analysis confirmed that social cognition significantly mediates the relationship between early visual processing and functional outcomes remained significant, suggesting that pathways other than social cognition contribute to functional outcomes.

Conclusions. The findings indicate that interventions targeting both early visual processing and social cognition concurrently may improve functional outcomes more effectively than focusing on either domain alone. Future research should aim to elucidate the potential causal mechanisms underlying these deficits and explore novel treatment approaches to address them effectively.

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The contribution of morphological and phonological intervention in kindergarten

The current study examines the effect of a morphological and phonological intervention program among 189 kindergarten children of approximately 6 years old, for a period of approximately four continuous months. The children are from a city in the center of the country with a similar socioeconomic status, and of course after receiving of approval from the Ministry of Education and the parents. The children went through screening tests prior to the program, that test basic reading skills and according to the results, the children were classified as typical, poor readers and those suspected of being dyslexic.

Afterwards, the children were tested before the program and after it, and also did a follow up test

in grade one, in order to check the progress of the children in the program and to compare it to children who did not participate in an intervention program. And in addition to this, to compare the different types of children - which type made more progress. Of course, each group of children were divided into an intervention group and a control group. And in grade one, the pupils did a reading test. In analyzing variation intra and between subjects, we see that in morphology, the intervention program did affect the pupils and they achieved higher scores than those who did not participate in the program and the effect is regardless of which group the pupil belongs to. In contrast, in phonology, the pupils who participated in the program progressed more than those who did not participate in the program or was suspected of being dyslexic, he progressed more than a typical reader. And in the reading test, the children who participate in a program. When a comparison was made between the three groups that went through the program—typical, poor readers, and those suspected of being dyslexic—it seems that the typical children achieved higher scores on the reading test.

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Validating the Dutch movie for the assessment of social cognition in adults with and without autism

Introduction

Differences in Theory of Mind (ToM), the ability to represent one's own and others' mental states, are thought to explain social interaction difficulties in various conditions, such as autism. The 'Movie for the Assessment of Social Cognition' (MASC) is a widely used, ecologically valid ToM measure, which we introduce in a Dutch version (MASC-NL). This validation study investigates if the MASC-NL is a reliable tool for assessing social cognition in Dutch-speaking adults, and if performance distinguishes adults with autism from neurotypical adults.

Method

Through Qualtrics, 158 neurotypical adults and 39 adults with autism from Belgium and the Netherlands carried out the MASC-NL, consisting of 45 ToM-related questions and 21 control questions. They also filled out two questionnaires (AQ and CATI) measuring autism-related characteristics.

Results

The total number of correctly answered ToM-questions in the neurotypical group was comparable to that of earlier validation studies in different languages. Furthermore, scores on both autism questionnaires correlated negatively with number of ToM-questions answered correctly (although p = .056 for the CATI). Moreover, the autism group gave significantly less correct ToM-related (but not control) answers than adults without autism, although the effect size was smaller than in

previous studies. Across groups, Cronbach's alpha for ToM-related questions was .696.

Conclusion

Results suggest the MASC-NL, which is more ecologically valid than most existing measures, is a reliable tool for assessing social cognition in the Dutch population. However, item-level analysis is needed, and performance differences between adults with and without autism were relatively small, possibly due to the characteristics of the autism sample.

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Biases in communicators' memory in the service of shared reality creation with an audience: the role of the communicator's own initial judgment

In the "saying-is-believing" (SIB) effect (Higgins & Rholes, 1978; Echterhoff et al., 2005), episodic memory retrieval of a communicator is biased in the service of shared reality creation with his/her audience. Specifically, the own memory for behaviors of a target person is evaluatively biased (or "tuned") into the direction of a communication partner (audience) who allegedly likes or dislikes the target person. The extent of this memory bias (audience attitude effect on recall = SIB effect) depends on the degree of the communicator's perceived shared reality with the audience, and is rooted in enhanced cognitive accessibility of audience-congruent (vs. audience-incongruent) target information at retrieval (Wagner et al., 2024). What remains unknown so far from all previous SIB studies is in how far the effect depends on the communicator's own initial judgment (OJ) about the target person. We present data from new studies that address this issue by asking participants in the SIB paradigm first for their own judgment of the target person before they receive information of their audience's attitude toward the target. Results indicate that the SIB effect does not essentially depend on OJ. Overall, recall valence was predominantly determined by OJ, but it was still additionally adjusted, depending on whether the audience's attitude was positive or negative. The extent of this adjustment (SIB effect) was comparable when the communicator's initial judgment was positive, negative, or neutral. We also examined the role of communicators' confidence in their initial own judgment of the target person. In order to increase vs. decrease judgmental confidence, participants were informed, after having read the description of the target person, that most people find it easy vs. hard to definitely judge the target person based on that description. As expected, participants were more susceptible to audience attitude effects in the latter than the former case (regardless of OJ). Interestingly, this difference was not paralleled in subjectively reported confidence, which was generally remarkably high in all manipulation conditions. Our findings extend previous research on shared reality and, more generally, contribute to recent scientific attempts to understand the psychological dynamics of self-other overlap, or "merging minds".

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Age-related differences in theory of mind: a meta-analytic review on task characteristics, including ecological validity and perspective of the respondent

Social interaction declines with age, which may lead to reduced social cognition. Over a decade ago, a meta-analysis highlighted significant age-related declines in Theory of Mind (ToM). However, recent studies on this topic have produced mixed results, with some showing agerelated difficulties, while others report no change or even improvements in older adults. Given the influx of new studies, we conducted an updated meta-analysis to assess whether older adults consistently show ToM difficulties compared to younger adults, while also examining potential moderators such as task domain (affective, cognitive, mixed), modality (verbal, visual-static, visualdynamic, verbal & visual-static, verbal & visual-dynamic), and task type (Eyes, False belief (FB) cartoon, FB story, FB video, Faux pas, perspective, stories, videos and virtual reality). We further investigated ecological validity and the respondent's perspective (1st, 2nd, or 3rd person). Across 69 studies and 113 ToM tasks, we found that older adults struggled with ToM, likely due to the complexity of social cognition rather than specific task characteristics, as no moderating effects were identified. However, two-thirds of the tasks had low ecological validity, and most used a third-person perspective, making it difficult to draw firm conclusions about these moderators. A recent review suggested that factors such as capacity, motivation, and context-often overlooked in lab settings-may exaggerate age-related declines in ToM. This meta-analysis highlights the strong need for second-person and ecologically valid tasks to verify whether capacity, motivation and context can indeed enhance older adults performance.

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Measuring the effects of personality and depersonalization traits on self-other neural responses in the prefrontal cortex

Background: Broom et al., (2021) found correlations between trait identification with a fictional character and self-other neural overlaps in the vmPFC; suggesting the effects of parasocial bonds. Therefore, we selected one popular franchise to zoom in on – the Marvel Cinematic Universe (MCU) and measured self-other activations with a similar methodology to Kampe et al., (2003) where we recorded PFC activation when MCU fans heard their own/character/stranger name during experimental and control conditions. We were also interested in whether trait depersonalization and personality traits, correlated with PFC activity. Participants: 39 UK-based MCU fans (18+) with no acting experience. Equipment: PFC activity was measured with a 22channel Shimadzu LIGHTNIRS functional near-infrared system (fNIRS). Breathing rate and acceleration were measured with a Biosignalsplux physiology system. Procedure: Prior to the recording period, participants completed the HEXACO-60-self personality rating scale (Ashton & Lee, 2009) and the Cambridge Depersonalization Scale (Sierra & Berrios, 2000). During the recording period participants watched film clips from 1 familiar MCU character's film/series, coloured in a mandala colouring book and watched nature landscape videos. Each task was conducted whilst seated, lasted 2 minutes and was repeated 4 times in the same listed order. During each task, participants heard their own name, character name and a stranger name played twice from a speaker. After the recording period participants completed a HEXACO-60-other personality rating scale for their character. Results: Brain activation was higher in the film condition compared to the control conditions, and lower activation was observed when hearing one's own name compared to hearing the character's or a stranger's name during the film and colouring book conditions in the mPFC. Correlations between trait identification and brain activation in response to one's own name revealed a negative correlation with the r_DLPFC. Correlations between trait depersonalization and hearing one's own name revealed positive correlations with the mPFC and r DLPFC. Conclusions: Being a fan of a character can suppress the mPFC's neural response to hearing one's own name even when not watching the character with character and stranger name responses being stronger than own name responses.

Poster 29

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With or against me? Tacit coordination abilities in children, adolescents and young adults

Adolescence is an age of 'social reorientation', during which people across cultures spend an increasing amount of time with their peers as opposed to with their caregivers. These peer interactions are likely to involve unprecedented levels of social uncertainty, raising demands for strategic abilities that can help predict and thus coordinate with others. Here we take a behavioural game-theory approach to ask if the ability to coordinate with peers without communicating, based only on commonly known incentives, could be a hallmark of adolescent social reorientation.

N = 596 participants aged 9 to 48 attempted to maximise earnings ("gold coins") in three matched environments involving binary choices between a low paying but safe option (worth, e.g., 5 gold coins with certainty), and a potentially higher paying but uncertain option (always worth 15 gold coins or 0). In a cooperative environment, if the uncertain option was chosen, the maximum gain was achieved only if an anonymous peer also chose the same uncertain option; in a competitive environment, the gain was achieved only if the other person did not choose the same uncertain option. In a control environment, the maximum gain was obtained based on a random lottery. Across the environments, no feedback on choices was provided, to prevent learning.

Mixed effects models showed that adults were most likely to choose the uncertain option in the cooperative environment, displaying uniquely high tolerance to uncertainty under cooperation. In contrast, adults showed the highest levels of decision variance and the longest decision times under competition. Importantly, each these unique coordination signatures increased markedly with age between late childhood and early adulthood, with different developmental trajectories: while propensity for cooperation was already observed in children, aversion to competition was adolescent emergent, and was partly explained by age related improvements in non-verbal reasoning ability.

These results suggest that adolescence could be a sensitive age for the development of cooperative and competitive coordination abilities. Given the importance of peer interactions for adolescent mental health and well-being, these tacit coordination abilities offer a promising new measure of typical and atypical social development during adolescence.

Poster 30

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Interactions within the social brain: co-activation and connectivity among networks enabling empathy and Theory of Mind

Empathy and Theory of Mind (ToM) have classically been studied as separate social functions. However, recent advances demonstrate the need to investigate the two in interaction: naturalistic settings often blur the distinction between affect and cognition and demand the simultaneous processing of such different stimulus dimensions. This meta-analytic connectivity modeling study investigates how empathy and ToM-related brain networks interact in contexts wherein multiple cognitive and affective demands must be processed simultaneously.

Building on the findings of a recent meta-analysis and hierarchical agglomerative clustering including 203 studies from the empathy and ToM literature across 11 more narrow tasks groups, that were clustered into three overarching clusters of neural activation related to social affect and cognition (cognitive, intermediate, affective cluster), we performed meta-analytic connectivity modeling on a subsample of 140 studies that showed consistent activation at four key regions of interest related to socio-cognitive processing (anterior insula, anterior cingulate cortex, posterior cingulate cortex, temporoparietal junction).

Co-activation networks associated with classical empathy (e.g., insula, supramarginal gyrus, inferior frontal gyrus) and ToM studies (e.g., precuneus, angular gyrus, medial prefrontal cortex) corresponded well with previous descriptions of empathy- and ToM-related neural networks. Interestingly, for studies at the intersection of empathy and ToM (intermediate cluster), neural co-activation patterns included areas typically associated with both empathy and ToM (e.g., anterior insula, precuneus, medial prefrontal cortex, anterior cingulate cortex). These results point to network integration as a means of combining mechanisms across unique behavioral domains. Such integration may enable adaptive behavior in complex, naturalistic social settings that require simultaneous processing of various affective and cognitive information.

Poster 31

Study Authors: Niklas Buergi (1,2), Arkady Konovalov (1,3), Caroline Biegel (1), Tania Villar de Araujo (4), Gökhan Aydogan (1), Christian C. Ruff (1)

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Neurocomputational signatures of altered adaptive mentalization in autism For the abstract of poster 31, please refer to <u>page 14</u> of this document.

Poster 32

Study Authors: Jiaze Sun (1), Joke De Vocht (2,3), Daphne Stam (1), Kristof Vansteelandt (1), Mathieu Vandenbulcke (1,4), Philip van Damme (2,3), Jan Van den Stock (1,4)

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Poster 33

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Relating oneself to others in time and space: a relational frame theory account of perspective-taking and theory of mind in autism

For the abstract of poster 33, please refer to page 19 of this document.

Poster 34

Study Authors: (1) Marcel Eicher (1,2), Rebecca Johannessen (1,2), Hennric Jokeit (1,2,3)

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Social cognitive dysfunction in clinical conditions: a systematic review of reviews and metaanalyses

For the abstract of poster 34, please refer to page 21 of this document.

Poster 35

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Do you see what I see (DYSWIS)? Understanding individual differences in spontaneous visuo-spatial perspective-taking

For the abstract of poster 35, please refer to page 22 of this document.

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Identifying the Core Empathy Components: An Expert Study

Among different theoretical approaches, empathy can be conceptualized as a higher-order multicomponential construct arising from the interaction of various psychological resources. This study employed an expert elicitation approach to identify key empathy facets based on expert consensus. A total of 210 psychology researchers with expertise in empathy, from across the globe, participated in the survey. They evaluated 22 empathy-relevant facets (such as Altruism, Emotion Recognition, Self-Other Distinction, and Perspective Taking), which were preselected through literature review and pilot studies involving highly experienced empathy experts. Participants also provided information on their understanding of empathy, demographics, and professional expertise.

To identify key empathy facets, two indicators were derived from experts' evaluations: importance and centrality. Facet importance was estimated using the Many-Facet Rasch Model, which controlled for potential biases in experts' scoring. Centrality was calculated using Network Analysis, estimated within the empathy resources network. The study also explored differences between clinical psychologists and other psychology specializations in their evaluation of facet importance, as well as whether perceptions of empathy facets evolved with increased expertise, based on years of experience and publication record.

The results also provide insights into experts' views on several debatable issues related to the definition of empathy. These issues include whether empathy is an automatic or controlled process, the congruency between observed and experienced emotion, the recognition of others as the source of emotion, the necessity for the direct presence of another person, its link to prosocial behavior, and, finally, the extent to which empathy functions as a broad, multidimensional construct.

The findings open doors for further research into the multidimensional approach to empathy by indicating which facets should be investigated empirically to confirm the core elements of empathy.

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Seeking convergence: neural biomarkers and mentalization treatment for children with autism and their families: previous results from a narrative review

For the abstract of poster 37, please refer to page 16 of this document.

We thank you for your participation and contributions to the workshop, and we look forward to future collaborations and continued exploration in the field of social cognition!

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