

University Hospital of Psychiatry Zurich

Jules Angst Symposium & Zurich Psychiatry Meeting 2026

Thursday, 29 October 2026, 10:00 – 19:00

University Hospital of Psychiatry Zurich (PUK), Lecture Hall Z1 03



Jules Angst Symposium & Zurich Psychiatry Meeting 2026

Dear colleagues,

We are pleased to welcome you to the **Jules Angst Symposium & Zurich Psychiatry Meeting 2026** - A symposium honouring one of the pioneers of modern psychiatry while exploring the latest advances in psychiatric research. It will be held from 10:00 to 19:00 on 29 October 2026 in the lecture hall (Z1 03) of the University Hospital of Psychiatry Zurich (PUK). The aim of this meeting is to pay tribute to the remarkable scientific legacy of **Prof. Dr. Dr. h.c. Jules Angst** and to explore current developments and future directions in psychiatric research through presentations by leading researchers and promising early-career scientists.

The **Jules Angst Symposium & Zurich Psychiatry Meeting** will be held on **29 October 2026**, from **10:00 to 18:00**, in **Lecture Hall Z1 03 at the Psychiatric University Hospital Zurich (PUK)**.

Participation in the full programme is accredited with 5 CME credits each from the Swiss Society of Psychiatry and Psychotherapy (SGPP), the Swiss Society of Child and Adolescent Psychiatry and Psychotherapy (SGKJPP), and the WBK.

Sincerely,

The Organization Committee

Dr. Anton Gietl,
PD Dr. Christian Ineichen,
Prof. Dr. Birgit Kleim,
Prof. Dr. Boris B. Quednow,
Prof. Dr. Mirella Manfredi,
Prof. Dr. Nathalie Giroud,
Prof. Dr. Sascha Frühholz,
Prof. Dr. Susanne Walitza



Location and Travel Directions

University Hospital of Psychiatry Zurich (PUK), Lecture Hall Z1 03, Lenggstrasse 31, 8032 Zurich

Program

Jules Angst Symposium

- 10:00-10:10 Welcome Address Prof. Dr. Dr. hc. S. Walitza und Prof. Dr. P. Homan
- 10:00-11:00 **Keynote by Prof. Wulf Rössler:** «Jules Angst - ein Weltpsychiater»
- 11:00-11:45 **In Honour of Jules Angst**
- Honour Faculty Address
 Prof. Dr. Beatrice Beck Schimmer (Director, University Medicine Zurich)
- Tributes
 Prof. Dr. med. Dr. phil. Hans-Christoph Steinhausen
 Prof. Dr. med. Prof. h.c. Dr. h.c. mult. Andreas Marneros

Zurich Psychiatry Meeting

- 12:45-13:00 **Welcome address** by organizers **Prof. Mirella Manfredi** (SNSF professor in child and adolescence psychiatry) and **Prof. Nathalie Giroud** (associate professor in child and adolescence psychiatry and adult psychiatry)
- 13:00-14:00 **Selected oral presentations by junior researchers, session I**
- Bianca Serio** (Max Planck Institute for Human Cognitive and Brain Sciences Leipzig and Institute of Neuroscience & Medicine, Brain & Behavior, Research Centre Jülich): *Individual differences reveal distinct age and pubertal contributions to the refinement of the functional cortical hierarchy during adolescence*
- Lukas Eggenberger** (Department of Adult Psychiatry and Psychotherapy and Jacobs Center for Productive Youth Development University of Zurich): *Adolescent ADHD symptom trajectories, stimulant medication history, and young adult cocaine use risk*
- Anna Jacobsen** (Department of Adult Psychiatry and Psychotherapy): *Population-based validation of blood neurofilament light chain across psychiatric disorders*
- Pavo Orepić** (Linguistic Research Infrastructure University of Zurich): *Altered Self-Voice Monitoring in Auditory-Verbal Hallucinations and Nonclinical Hallucination Proneness*
-
- 14:00-14:15 **Short break**
-
- 14:15-15:00 **Keynote lecture**
- Prof. Carmine Pariante** (Institute of Psychiatry, Psychology and Neuroscience at King's College London) *Inflammation in depression: a new frontier for personalised psychiatry*



15:00-16:30 **Poster presentations (Z0 03) and coffee break**

16:30-17:30 **Selected oral presentations by junior researchers, session II**

Miriam Rabl (Department of Adult Psychiatry and Psychotherapy and Department of Psychology University of Zurich): *Multi-Omics highlights pathophysiological alterations underlying Neuropsychiatric Symptoms in Alzheimer's Disease*

Darren Kelly (Department of Child and Adolescent Psychiatry and Psychotherapy): *ADHD patient-derived cerebral organoids show relative cortical thinning and a reduced astroglial proportioning for answers in the cerebellum with neuroimaging and brain stimulation*

Selected blitz-talks by junior researchers

Mylla Marsiglia (Max Planck Institute for Human Cognitive and Brain Sciences Leipzig and Institute of Neuroscience & Medicine, Brain & Behavior, Research Centre Jülich): *Distinct spatial associations of adversity with hippocampal macro- and microstructure in early adolescence*

Golan Karvat (Department of Child and Adolescence Psychiatry and MRC Cognition and Brain Sciences Unit University of Cambridge): *Universal rhythmic architecture uncovers two modes of neural dynamics*

Christine Dworschak (Department of Adult Psychiatry and Psychotherapy and Department of Psychology, University of Zurich): *Associations between Emotion Differentiation and Anxiety Symptoms in the Context of Psychotherapy*

Dominique Recher (Department of Adult Psychiatry and Psychotherapy and Department of Psychology, University of Zurich): *Enhancing CBT-Exposure and memory-reconsolidation through AI-Generated Child Avatars and Virtual Reality Self-Dialogues: Clinical Translation of VR-enhanced Imagery Rescripting (ImR)*

Carmen Providoli (Department of Child and Adolescent Psychiatry and Psychotherapy and Children's Hospital Zurich): *Multisensory learning and individual differences in language skills*

17:30-17:45 **Introduction "Crime Lab"**
by Prof. Sascha Frühholz (Department of Psychology University of Oslo)

17:45-18:00 **Announcement „Jules Angst Award“ and poster prizes**

18:00-19:00 **Apéro riche (Z0 04)**



Abstracts

Selected presentations

Nr: 1

Individual differences reveal distinct age and pubertal contributions to the refinement of the functional cortical hierarchy during adolescence

Serio, Bianca (Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; Max Planck School of Cognition, Leipzig, Germany; Institute of Neuroscience and Medicine, Brain & Behavior (INM-7), Research Centre Jülich, Jülich, Germany; Institute of Systems Neuroscience, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany);

Dinkelbach, Lars (Department of Pediatrics II, University Hospital Essen, University of Duisburg-Essen, Essen, Germany; Institute of Sex- and Gender-sensitive Medicine, University Hospital Essen, University of Duisburg-Essen, Essen, Germany);

Marsiglia, Mylla (Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; Institute of Neuroscience and Medicine, Brain & Behavior (INM-7), Research Centre Jülich, Jülich, Germany; Faculty of Life Sciences, Leipzig University, Leipzig, Germany; International Max Planck Research School on Cognitive Neuroimaging, Leipzig, Germany);

Waite, Laura (Institute of Neuroscience and Medicine, Brain & Behavior (INM-7), Research Centre Jülich, Jülich, Germany)

Hoffstaedter, Felix (Institute of Neuroscience and Medicine, Brain & Behavior (INM-7), Research Centre Jülich, Jülich, Germany);

Margulies, Daniel S. (Centre National de la Recherche Scientifique (CNRS), UAR 1329, Oxford, UK; Oxford Centre for Integrative Neuroimaging (OxCIN), FMRIB, Nuffield Department of Clinical Neurosciences, University of Oxford, Oxford, United Kingdom);

Eickhoff, Simon B. (Max Planck School of Cognition, Leipzig, Germany; Institute of Neuroscience and Medicine, Brain & Behavior (INM-7), Research Centre Jülich, Jülich, Germany; Institute of Systems Neuroscience, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany);

Valk, Sofie L. (Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany; Max Planck School of Cognition, Leipzig, Germany; Institute of Neuroscience and Medicine, Brain & Behavior (INM-7), Research Centre Jülich, Jülich, Germany; Institute of Systems Neuroscience, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany)

The development of the functional cortical hierarchy, spanning sensorimotor to association systems, is exclusively studied as a function of age. During adolescence, this overlooks puberty as a major neurodevelopmental driver and source of variability. We studied sensorimotor-association axis refinement longitudinally (6323 observations across 4919 subjects), leveraging individual differences to disentangle chronological age from pubertal effects. We derived low dimensional features of sensorimotor-association axis development from resting-state functional connectomes, revealing substantial inter-individual heterogeneity in maturational trajectories that challenge group-level developmental trends and milestones. Then, we demonstrate distinct and additive effects of age and pubertal stage on sensorimotor-association axis refinement through the polarization of the cortical hierarchy. We further show that coordinated system-level shifts in network topology reflect an ongoing specialization of functional connectivity profiles across all





major functional networks. Our findings reveal that adolescent hierarchical functional cortical maturation is an individualized, multifactorial phenomenon shaped by independent chronological age and pubertal processes.

Nr: 2

Adolescent ADHD symptom trajectories, stimulant medication history, and young adult cocaine use risk

Eggenberger, Lukas (University of Zurich, University Hospital of Psychiatry Zurich, Department of Adult Psychiatry and Psychotherapy; University of Zurich, Jacobs Center for Productive Youth Development; University of Zurich, Digital Society Initiative)

Janousch, Clarissa (University of Zurich, University Hospital of Psychiatry Zurich, Department of Adult Psychiatry and Psychotherapy; University of Zurich, Jacobs Center for Productive Youth Development; Karolinska Institute, Department of Global Public Health)

Grob, Urs (University of Zurich, Institute of Education)

Loher, Michelle (University of Zurich, Jacobs Center for Productive Youth Development)
Johnson-Ferguson, Lydia (Suchtfachstelle Zurich)

Baumgartner, Markus R. (University of Zurich, Institute of Forensic Medicine, Center for Forensic Hair Analytics)

Binz, Tina M. (University of Zurich, Institute of Forensic Medicine, Center for Forensic Hair Analytics)

Ribeaud, Denis (University of Zurich, Jacobs Center for Productive Youth Development)

Eisner, Manuel (University of Zurich, Jacobs Center for Productive Youth Development; University of Cambridge, Institute of Criminology)

Murray, Aja L. (University of Edinburgh, Department of Psychology)

Kittel-Schneider, Sarah (Friedrich-Alexander-University Erlangen-Nuremberg, University Hospital Erlangen, Department of Psychiatry and Psychotherapy)

Walitza, Susanne (University of Zurich, University Hospital of Psychiatry, Department of Child and Adolescent Psychiatry and Psychotherapy; University of Zurich and Swiss Federal Institute of Technology, Neuroscience Center Zurich; University of Zurich, Zurich Center for Integrative Human Physiology)
Shanahan, Lilly (University of Zurich, Jacobs Center for Productive Youth Development; University of Zurich, Department of Psychology)

Quednow, Boris B. (University of Zurich, University Hospital of Psychiatry Zurich, Department of Adult Psychiatry and Psychotherapy; University of Zurich, Jacobs Center for Productive Youth Development; University of Zurich and Swiss Federal Institute of Technology, Neuroscience Center Zurich)

Objective: Attention-deficit/hyperactivity disorder (ADHD) is a well-established risk factor for the development of substance use disorders. However, the extent to which ADHD treatment with prescription stimulants is associated with the subsequent risk of illegal stimulant use remains unclear. Recent large-scale surveys suggest that the timing and duration of stimulant treatment may be crucial; however, none have verified illegal substance use with toxicological methods such as hair analysis.

Method: In a longitudinal community-based cohort from Zurich, 887 participants (48.3% female) provided 3-cm hair samples at age 24, from which three-month cumulative cocaine use was quantified via hair toxicological analyses. Self-reported ADHD symptoms were assessed from ages 13 to 24, and ADHD stimulant medication history during the same period was categorized by duration (never, one wave only, >one wave) and onset (never, ≤age 13, >age 13). Adolescent ADHD symptom trajectories were estimated using latent change score modeling, and associations of these trajectories with medication history and young adult cocaine use were estimated using Bayesian lognormal hurdle models.

Results: Increasing ADHD symptoms across adolescence were associated with a higher probability of cocaine use in young adulthood ($\beta=0.20$, 95% CrI: 0.01-0.39). Short-term stimulant medication use (one assessment wave only) during adolescence was associated with a higher





probability of testing positive for cocaine at age 24 ($\beta=0.80$, 95% CrI: 0.11-1.47), whereas repeated use (>one wave) showed no such association. Similarly, medication onset after age 13 was associated with a higher probability of testing positive ($\beta=0.87$, 95% CrI: 0.26, 1.48), whereas onset at or before age 13 was not.

Conclusion: Elevated risk of cocaine use in ADHD was limited to youth with increasing symptoms, late treatment onset, and short-term pharmacotherapy. Timely, sustained ADHD management may mitigate the risk of cocaine use in young adulthood. Introduction

Nr: 3

Population-based validation of blood neurofilament light chain across psychiatric disorders

Jacobsen, Anna (University Hospital of Psychiatry Zurich, Department of Adult Psychiatry and Psychotherapy)

Quednow, Boris B. (University Hospital of Psychiatry Zurich, Department of Adult Psychiatry and Psychotherapy)

Bavato, Francesco (University Hospital of Psychiatry Zurich, Department of Adult Psychiatry and Psychotherapy)

Precision psychiatry requires scalable, mechanistically informative biomarkers to support clinical decision making. Neurofilament light chain (NfL), a neuronal cytoskeletal protein, has recently emerged as an accessible blood marker of neuroaxonal injury with clinical utility in neurology, but its relevance in psychiatric populations remains insufficiently characterized at scale. We aimed to determine whether blood NfL is altered in psychiatric disorders at a population level, an essential step towards understanding its clinical utility in psychiatry. Here we tested whether psychiatric diagnoses are associated with altered plasma NfL in 47,495 UK Biobank participants using normative modelling. We quantified normative deviations of NfL levels among participants with lifetime diagnoses of schizophrenia spectrum ($n=309$), bipolar ($n=283$), and recurrent depressive disorders ($n=326$), depressive episodes ($n=5,994$), anxiety disorders ($n=4,728$), stress-related disorders ($n=1,496$), and other psychiatric disorders ($n=815$), as well as neurological disorders ($n=11,918$) for clinical comparison. Analyses were adjusted for cardiometabolic disease burden, substance use, and diagnostic overlap. NfL levels were higher than expected in bipolar ($d=0.20$) and recurrent depressive ($d=0.23$) disorders, as well as depressive episodes ($d=0.06$), and lower in anxiety disorders ($d=-0.07$). These small alterations do not support NfL as a diagnostic marker, similar to neurological applications where it is primarily used to monitor disease activity. However, we establish population-level evidence that plasma NfL is sensitive particularly to chronic affective disorders, aligning with previous studies and with neuroimaging evidence of reduced structural integrity in these disorders. NfL may therefore help identify biologically defined subgroups and evaluate neuroprotective interventions in affective disorders. Our findings support the development of longitudinal studies with more detailed clinical characterization to further evaluate the clinical utility of NfL for precision psychiatry.



Nr: 4

Altered Self-Voice Monitoring in Auditory-Verbal Hallucinations and Nonclinical Hallucination Proneness

Jelić, Luka (University of Zagreb, Faculty of Electrical Engineering and Computing)
Serdiuk, Albina (University of Zurich, Department of Computational Linguistics)
Ivanišević, Ana (University of Zagreb, Faculty of Humanities and Social Sciences)
Paulić, Jelena (University of Zagreb, Faculty of Humanities and Social Sciences)
Vukojević, Jakša (University Psychiatric Hospital Vrapče, Zagreb, Croatia)
Savić, Aleksandar (University Psychiatric Hospital Vrapče, Zagreb, Croatia)
Moran, Steven (University of Zurich, Linguistic Research Infrastructure)
Dellwo, Volker (University of Zurich, Department of Computational Linguistics)
Cifrek, Mario (University of Zagreb, Faculty of Electrical Engineering and Computing)
Orepić, Pavo (University of Zurich, Linguistic Research Infrastructure)

Introduction: Auditory-verbal hallucinations (AVH), the experience of hearing voices without an external speaker, are a core symptom of schizophrenia. A prominent account proposes that AVH involve disrupted processing of self-generated speech, leading to its misattribution to external agents. Similar misattribution patterns have also been observed in hallucination-prone individuals without psychosis, suggesting a continuum from subclinical to clinical manifestations. However, the nature and scope of these self-monitoring disturbances across clinical and nonclinical hallucinations remain poorly understood.

Methods: Across four studies, we characterized hallucination-related differences in self-voice monitoring (Study 1) by testing their specificity (Study 2), phenomenological correlates (Study 3), and extension from passive to active self-voice processing (Study 4). Study 1 included 41 schizophrenia patients (23 AVH+, 18 AVH-) and 40 healthy controls performing Self-Other Voice Discrimination (SOVD). Study 2 replaced self-voice with a familiar voice in 26 healthy participants. Study 3 related SOVD to inner-speech phenomenology and depersonalization in 48 healthy participants. Study 4 related automatic compensation to pitch-perturbed self-voice feedback to hallucination proneness in 31 healthy participants.

Results: SOVD was selectively impaired in AVH+ patients, with symptom severity and hallucination proneness associated with poorer self-voice, but not other-voice, recognition (Study 1). Corresponding associations were absent for familiar-unfamiliar discrimination (Study 2), confirming self-specificity. Hallucination proneness and depersonalization were associated with a liberal self-attribution criterion, whereas experiencing other people in inner speech was associated with poorer self-other discriminability (d' ; Study 3). Hallucination proneness also predicted exaggerated compensation to altered auditory feedback (Study 4).

Discussion: Together, these findings link AVH vulnerability to alterations spanning passive self-voice attribution and active vocal monitoring. They support a dimensional self-monitoring account of hallucinations while showing that hallucination-related traits map onto partly dissociable perceptual and decisional mechanisms.



Nr: 5

Multi-Omics highlights pathophysiological alterations underlying Neuropsychiatric Symptoms in Alzheimer's Disease

Rabl, Miriam (University of Zurich, Department of Psychology; Psychiatric University Hospital Zurich, Department of Adult Psychiatry and Psychotherapy)

Trejo Banos, Daniel (Swiss Data Science Center, EPFL and ETH Zürich)

Sebastian Salzmänn, (Swiss Data Science Center, EPFL and ETH Zürich)

Krymova, Ekaterina (Swiss Data Science Center, EPFL and ETH Zürich)

Popp, Julius (University of Zurich, Department of Psychology; Psychiatric University Hospital Zurich, Department of Adult Psychiatry and Psychotherapy)

Background: Neuropsychiatric symptoms (NPS) are common in cognitive decline and Alzheimer's disease (AD), yet the underlying pathology is poorly understood. We investigate cerebrospinal fluid (CSF) proteome and metabolome alterations to identify CNS pathophysiological alterations related to NPS in the context of AD.

Methods: We performed a cross-sectional study using data from the Alzheimer's Disease Neuroimaging Initiative cohort. All participants with available aptamer based SOMAscan untargeted proteomics (7006 analytes) and metabolomics (382 analytes) data along with clinical features and biomarkers of AD pathology were considered. We applied L1-penalized logistic regression with stability selection and nested cross-validation to identify CSF analytes associated with the overall presence of NPS, depression, anxiety, and apathy. Analytes were selected using two thresholds: a stringent threshold for robust findings and a lower threshold for exploratory analyses. Pathway enrichment were performed on the exploratory biomarker set to characterize their biological relevance and relationship to AD pathology.

Results: We included 665 participants (n=155 cognitively unimpaired, n=364 with mild cognitive impairment, 146 with AD dementia, mean age 73.5 ± 7.7 , 42.4% female, 61.1% amyloid positive). While NPTX2 was associated with the presence of overall NPS, distinct proteins and metabolites were associated with depression, apathy, and anxiety. We found depression is dominated by RNA processing/nuclear export (HNRNPA1), while apathy is characterised by lipid hydrolysis inhibition (ANXA5).

Conclusions: Using a molecular multi-omic approach, our findings suggest that depression, apathy, and anxiety have distinct underlying biological mechanisms, while chemokine activity seems to be involved in depression and apathy.



Nr: 6

ADHD patient-derived cerebral organoids show relative cortical thinning and a reduced astroglial proportion for answers in the cerebellum with neuroimaging and brain stimulation

Grünblatt, Edna (University of Zurich, Psychiatric University Hospital Zurich, Department of Child and Adolescent Psychiatry and Psychotherapy; University of Zurich and ETH Zurich, Neuroscience Center Zurich; University of Zurich, Zurich Center for Integrative Human Physiology)

Yde Ohki, Cristine Marie (University of Zurich, Psychiatric University Hospital Zurich, Department of Child and Adolescent Psychiatry and Psychotherapy)

Prokhorova, Tatyana (University of Southern Denmark, Department of Psychiatry, Department of Clinical Research)

Burton, Mark (University of Southern Denmark, Clinical Genome Center, Department of Clinical Research; Odense University Hospital, Department of Clinical Genetics)

Akimov, Vyacheslav (University of Southern Denmark, Department of Biochemistry and Molecular Biology)

Kelly, Darren (University of Zurich, Psychiatric University Hospital Zurich, Department of Child and Adolescent Psychiatry and Psychotherapy)

Hohmann, Sonja Simone (University of Southern Denmark, Department of Psychiatry, Department of Clinical Research)

Blagoev, Blagoy (University of Southern Denmark, Department of Biochemistry and Molecular Biology)

Dembic, Maja (University of Southern Denmark, Clinical Genome Center, Department of Clinical Research; Odense University Hospital, Department of Clinical Genetics)

Schneider-Kamp, Peter (University of Southern Denmark, Department of Mathematics and Computer Science)

Smigielski, Lukasz (University of Zurich, Psychiatric University Hospital Zurich, Department of Child and Adolescent Psychiatry and Psychotherapy)

Walitza, Susanne (University of Zurich, Psychiatric University Hospital Zurich, Department of Child and Adolescent Psychiatry and Psychotherapy; University of Zurich and ETH Zurich, Neuroscience Center Zurich; University of Zurich, Zurich Center for Integrative Human Physiology)

Thomassen, Mads (University of Southern Denmark, Clinical Genome Center, Department of Clinical Research; Odense University Hospital, Department of Clinical Genetics)

Michel, Tanja Maria (University of Southern Denmark, Department of Psychiatry, Department of Clinical Research)

Children with ADHD reach peak cortical thickness several years later than their peers. Whether that delay reflects cell-intrinsic differences or the developmental environment is difficult to disentangle in vivo.

We generated cerebral organoids from four male donors with ADHD and four male controls and studied them by growth-trajectory modelling, single-cell RNA sequencing, proteomics and quantitative imaging. We quantified cortical architecture by light-sheet microscopy of cleared whole organoids and by immunofluorescence of cryosectioned ones.

Organoids from ADHD donors grew faster and were larger than controls, yet the cortical plate occupied proportionally less of the tissue, being smaller relative to the underlying ventricular zone ($p = 0.009$). Immunostained organoids contained approximately twice as many nuclei ($p = 0.013$)





but roughly half the proportion of astroglial (ITGA6⁺/GFAP⁺) nuclei ($p = 0.023$). Single-cell transcriptomes from the same lines showed astroglial composition shifted in the same direction.

Both differences are compositional rather than a matter of overall size, and both are evident while the cortical plate is still forming. Since these organoids developed entirely *in vitro*, the results suggest that part of the cortical phenotype associated with ADHD is cell-intrinsic.

Blitz-talks

Nr: 1

Distinct spatial associations of adversity with hippocampal macro- and microstructure in early adolescence

Marsiglia, Mylla (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7); Max Planck Institute for Human Cognitive and Brain Sciences; International Max Planck Research School on Cognitive Neuroimaging; Leipzig University, Faculty of Life Sciences)

Erigüç, Doruk Yigit (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7); Max Planck Institute for Human Cognitive and Brain Sciences; International Max Planck Research School on Cognitive Neuroimaging; Leipzig University, Faculty of Life Sciences)

Serio, Bianca (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7); Max Planck Institute for Human Cognitive and Brain Sciences; Max Planck School of Cognition; Heinrich Heine University Düsseldorf, Institute of Systems Neuroscience)

Hettwer, Meike D (University of Pennsylvania, Penn Lifespan Informatics and Neuroimaging Center; University of Pennsylvania, Perelman School of Medicine, Department of Psychiatry)

DeKraker, Jordan (McGill University, Montreal Neurological Institute and Hospital)

Waite, Laura (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7))

Hoffstaedter, Felix (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7); Heinrich Heine University Düsseldorf, Institute of Systems Neuroscience)

Bernhardt, Boris C (McGill University, Montreal Neurological Institute and Hospital)

Eickhoff, Simon B (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7); Max Planck School of Cognition; Heinrich Heine University Düsseldorf, Institute of Systems Neuroscience)

Valk, Sofie L (Forschungszentrum Jülich, Institute of Neuroscience and Medicine, Brain & Behavior (INM-7); Max Planck Institute for Human Cognitive and Brain Sciences; International Max Planck Research School on Cognitive Neuroimaging; Max Planck School of Cognition; Heinrich Heine University Düsseldorf, Institute of Systems Neuroscience)

Youth adversity has been associated with alterations in hippocampal structure; however, it remains unclear whether different forms of adversity relate distinctly to its organization across the anterior-posterior and proximal-distal axes. Here, we investigated associations between adversity types and hippocampal structural properties in 5,263 early adolescents from the ABCD Study. Hippocampal macrostructure was characterized using volume, thickness, and gyrification, and T1w/T2w ratio as an *in vivo* proxy for microstructure. Family adversity was quantified by family environment and parenting, while socioeconomic adversity was measured with income-to-needs ratio and neighborhood disadvantage. Multivariate and univariate models were used to investigate



associations with adversity types and cumulative adversity, respectively. Hippocampal features were obtained using HippUnfold, which accounts for folding variability, and analyzed globally and across both anatomical axes. Socioeconomic measures showed widespread associations with hippocampal macrostructure globally and across both axes, whereas T1w/T2w ratio associations were limited to neighborhood disadvantage along the anterior-posterior axis. Cumulative adversity was consistently associated with CA1 and subiculum alterations across volume, thickness, and gyrification, and with subicular T1w/T2w ratio. These findings suggest that adversity types exhibit distinct spatial associations across complementary hippocampal macro- and microstructural features, highlighting regional variation in the susceptibility of the developing hippocampus to environmental adversity.

Nr: 2

Universal rhythmic architecture uncovers two modes of neural dynamics

Karvat, Golan (University of Cambridge, MRC Cognition and Brain Sciences Unit; Psychiatric University Hospital Zurich, Department of Child and Adolescent Psychiatry and Psychotherapy);

Crespo-García, Maité (University of Cambridge, MRC Cognition and Brain Sciences Unit);

Vishne, Gal (The Hebrew University of Jerusalem, Edmond and Lily Safra Center for brain sciences);

Anderson, Michael C. (University of Cambridge, MRC Cognition and Brain Sciences Unit);

Landau, Ayelet N. (The Hebrew University of Jerusalem, Departments of Psychology and Cognitive and Brain Sciences; University College London (UCL), Department of Experimental Psychology)

Understanding the organizing principles of brain activity can advance neurotechnology and medical diagnosis. Traditionally, neural activity is viewed as consisting oscillations in distinct frequency bands. However, emerging evidence suggests these oscillations often manifest as transient bursts rather than sustained rhythms. We examine the hypothesis that rhythmicity (sustained vs bursty) adds a further dimension to brain organization. Using a novel rhythmicity measure, we segment neurophysiological spectra from 859 participants across datasets, species, recording techniques, ages 18–88, sexes, brain regions, and cognitive states in health and disease. Our results reveal a universal rhythmicity-resolved spectral architecture with two categories: high-rhythmicity bands exhibiting sustained oscillations and novel low-rhythmicity bands dominated by brief bursts. This architecture reflects two modes of operation: sustained bands suitable for maintaining ongoing activity, and transient bands which can signal responses to change. The rhythmicity-resolved architecture provides a unifying framework that bridges human and non-human findings, enables individualized spectral definitions, and offers a principled basis for understanding brain activity in health and disease.

Nr: 3

Associations between Emotion Differentiation and Anxiety Symptoms in the Context of Psychotherapy

Dworschak, Christine (University of Zurich, Department of Psychology; Psychiatric University Hospital Zurich, Department of Adult Psychiatry and Psychotherapy)





Meine, Laura E. (University of Zurich, Department of Psychology; Psychiatric University Hospital Zurich, Department of Adult Psychiatry and Psychotherapy)

Kleim, Birgit (University of Zurich, Department of Psychology; Psychiatric University Hospital Zurich, Department of Adult Psychiatry and Psychotherapy)

Research has increasingly linked difficulties in negative emotion differentiation (ED) to psychopathology, including anxiety symptoms. However, studies on its role in therapy remain limited. The present study investigated (1) pretreatment associations between negative ED and avoidance, (2) changes in negative ED across therapy, and (3) the predictive value of changes in negative ED for treatment outcome. As part of a randomized controlled trial (RCT), individuals with different anxiety disorders were randomly assigned to a treatment (Unified Protocol; $n=71$) and waitlist group ($n=24$). At baseline, mid-, and posttreatment participants completed questionnaires and a 14-day ecological momentary assessment with emotion ratings, which allowed for the derivation of an index of ED. Both the trial (<https://clinicaltrials.gov/ct2/show/NCT03945617>) and the analyses for this sub-project (<https://osf.io/bu875>) were pre-registered. At baseline, negative ED was found to buffer the negative impact of negative affect on avoidance behavior at a momentary level (interaction: $B=-0.01$, $p<.05$). Additionally, within the treatment group, negative ED significantly improved over the course of therapy ($B_{\text{pre-mid}}=0.10$, $p<.01$; $B_{\text{pre-post}}=0.13$, $p<.001$). Among treated participants, changes in negative ED and negative affect interacted to predict posttreatment avoidance (interaction: $B=0.05$, $p<.05$), such that at greater (vs. smaller) improvements in ED, decreases in negative affect were associated with lower (vs. higher) avoidance at posttreatment. However, no between-group effects were found in the full sample. Results point to negative ED shaping the relationship between negative affect and avoidance, both at a momentary level and in predicting treatment outcome.

Nr: 4

Enhancing CBT-Exposure and memory-reconsolidation through AI-Generated Child Avatars and Virtual Reality Self-Dialogues: Clinical Translation of VR-enhanced Imagery Rescripting (ImR)

Recher, Dominique (Department of Psychology, University of Zurich, Zurich, Switzerland and Department of Adult Psychiatry and Psychotherapy, University Hospital of Psychiatry Zurich, University of Zurich, Zurich, Switzerland)

Lesur, Roel, Marte (Department of Psychology, University of Zurich, Zurich, Switzerland and DEI Interactive Systems Group, Department of Computer Science and Engineering, Universidad Carlos III de Madrid, Leganés, Spain)

Lenggenhager, Bigna (Department of Psychology, University of Zurich, Zurich, Switzerland and Association for Independent Research, Zurich, Switzerland)

Kleim, Birgit (Department of Psychology, University of Zurich, Zurich, Switzerland and Department of Adult Psychiatry and Psychotherapy, University Hospital of Psychiatry Zurich, University of Zurich, Zurich, Switzerland)

Exposure-based treatments are the gold standard for PTSD, yet many patients struggle with limited imagery abilities or avoidance when engaging with traumatic memories. Emerging research





suggests that embodied and multisensory engagement may enhance emotional processing and updating. We developed a VR that can be applied within a standardized imagery rescripting (ImR) framework aiming to enhance emotional engagement, self-compassion, and adaptive memory updating. This approach enables an immersive self-dialogue between participants and their child self, and perspective switching between these viewpoints. We evaluated this approach across three projects: (I) an experimental study comparing VR-ImR to traditional imagery-based ImR in individuals ($n = 20$ per group) with socially aversive memories; (II) a co-design process with $n = 6$ clinicians assessing feasibility and implementation barriers; and (III) a series of single-case multiple-baseline studies in patients with complex PTSD undergoing treatment at the University of Zurich. Data collection for projects I and II has been completed, and results will be presented. Preliminary data from project III will also be reported. Preliminary findings indicate feasibility of the VR-enhanced ImR setup. We discuss embodied mechanisms of memory updating and implications for improving treatment response in trauma-focused therapy.

Nr: 5

Multisensory learning and individual differences in language skills

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Effective communication depends on integrating sensory information. As children develop, multisensory integration and learning (MSL) support coherent representations and language skills, but the neural mechanisms linking these processes remain unclear.

84 children (age = 6.5 ± 0.5 y) completed an fMRI task assessing multisensory associative learning across speech-related audio-visual (AVs), non-speech audio-visual (AVns), and tactile-visual (TV) conditions. Standardized tests yielded two language composites: literacy precursors and receptive language. Whole-brain regressions and condition-specific analyses examined associations between neural activity and language skills.

Lower literacy precursors were linked to stronger deactivation during AVns learning in the left superior frontal gyrus. Literacy precursors also showed positive associations with AVs-related and negative with AVns-related activation in the right thalamus. Lower receptive language was associated with stronger TV-related activation in the left occipital fusiform gyrus.

Our findings suggest that language skills shape neural responses during MSL in a context-dependent way. Different sensory and linguistic contexts may place distinct demands on perceptual, attentional, and working-memory systems, helping explain why children vary in their ability to benefit from multisensory information.

Poster

Nr: 1

Neuropsychiatric symptoms, amyloid pathology, and sex-specific associations in older people

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Introduction: This cross-sectional study investigates associations between neuropsychiatric symptoms (NPS) and amyloid pathology across the Alzheimer's disease (AD) continuum.

Methods: We used harmonized data from 23 cohorts from the Amyloid Biomarker Study. Individuals with normal cognition (NC), mild cognitive impairment (MCI), or mild AD dementia with available data on amyloid pathology and the Neuropsychiatric-Inventory (NPI) were included. Generalized estimating equations were used to assess associations of NPS presence (presence



of any symptom of the NPI), NPI severity score and presence of the 12 individual symptoms with amyloid pathology, and while considering sex and APOE $\epsilon 4$ status.

Results: We included 5070 participants (NC: n=1982; MCI: n=2352; dementia: n=736) with mean age 70.5 ± 9.0 years, 48.6% (n=2466) were female, 50.5% (n=2561) had amyloid pathology, and 56.3% (n=2853) experienced any NPS. Higher NPS severity was associated with lower amyloid likelihood in individuals with dementia (OR=0.96, 95% CI 0.93,0.99, p=.017), predominantly among females. Psychosis was linked to higher amyloid likelihood in MCI whereas disinhibition and appetite disturbances were associated with lower amyloid likelihood in dementia. Distinct sex-and stage-specific patterns emerged for the individual NPS. The APOE genotype modestly modified the association between NPS and amyloid pathology in MCI, but not in NC or dementia.

Discussion: This large multi-cohort study shows that the associations of NPS with amyloid pathology are strongly dependent on clinical disease stage and sex. These results have implication for the understanding of the pathogenesis of NPS in older adults and for the development of more personalized diagnostic and therapeutic approaches. Whether the model identified is truly useful for prediction, and therefore clinically useful, would require rigorous testing on a large, independent sample.

Nr: 2

Blinding integrity in psychedelic research: Evidence from a comparative randomized controlled trial of psilocybin, MDMA, and methylphenidate in healthy volunteers

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Ensuring effective blinding remains a key methodological challenge in research with psychedelics. We examined blinding integrity in a double-blind, randomized controlled trial involving 120 healthy participants who received psilocybin, MDMA, or methylphenidate (active placebo). Blinding was evaluated using a multi-level approach comprising forced-choice substance guesses, certainty in substance guesses, factors informing these decisions, and subjective substance effects. Blinding integrity differed across substances, with the highest degree of functional unblinding observed for psilocybin, followed by MDMA and methylphenidate. Methylphenidate was more effective in maintaining blinding for MDMA than for psilocybin. Accounting for participants' certainty in their substance guesses resulted in a more differentiated assessment and lower estimates of functional unblinding. Decision factors and subjective substance experiences were associated with phenomenological substance effects. Previous substance experience was not associated with the accuracy of forced-choice substance guesses. These results demonstrate the importance of systematic, multi-level evaluation of blinding integrity and provide empirical guidance for the assessment and reporting of blinding integrity in psychedelic research.

Nr: 3

Interpersonal Synchrony in Speech Communication: From Identifying Functional Facial Micro-Markers to Characterizing Their Dynamics During Turn-taking

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Interpersonal synchrony supports speech communication through the temporal coordination of interlocutors. However, facial movements that contribute to this dynamic coordination across different communicative contexts remains to be explored. Embedded within a larger EEG hyperscanning project, this research focuses on the micro motor movements of interlocutors, including facial micro-movements, eye gaze, and head movements as behavioral markers of interpersonal synchrony, with particular focus on the functional organization and examination on the temporal dynamics of facial action units (AUs). Based on 16 dyads comprising 32 Swiss German-speaking participants, this research first examines a proposed functional categorization of facial micro-markers encompassing affiliative engagement, speech articulation, increased processing effort and interactional coordination in speech communication. It further explores whether combinations of facial and motor synchrony, backchannel frequency and floor transfer offset can serve as communicative indicators that distinguish different types of communication. This approach connects behavioral alignment with the temporal organization of conversational turn-taking.

By integrating comparisons across communicative tasks with analyses of turn-taking dynamics, this research aims to clarify how facial micro-movements adapt to different communicative demands to facilitate social interactions. It also opens a window to establish a foundation for future investigations linking behavioral, physiological and neural synchrony in speech communication.





Nr: 4

Bidirectional nucleus accumbens-midbrain circuits and their involvement in adaptive reward processing in mice

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The bidirectional circuit linking medium spiny neurons (MSNs) in the nucleus accumbens (NAc) and dopamine (DA) neurons in the ventral tegmental area (VTA) is a central regulator of reward processing. NAc DA release is associated with both reward motivation and consummation. The NAc consists predominantly of inhibitory GABAergic MSNs, which can be classified by DA receptor expression, projection targets, and subregional location. NAc lateral shell D1-MSNs projecting to the VTA (NAc lat shell-VTA D1-MSN pathway) are proposed to disinhibit VTA DA neurons by inhibiting VTA GABAergic interneurons, thereby increasing DA activity in the NAc and promoting reward behaviour. Combining intersectional and anterograde transsynaptic AAV vector strategies in male C57BL/6 mice, we show that a substantial proportion of midbrain-projecting NAc D1-MSNs primarily target the VTA-adjacent medial substantia nigra pars reticulata (medSNr), implicating it as a potential relay station and expanding the canonical architecture of the NAc-VTA circuit. Pathway-specific chemogenetic stimulation of the NAc lat shell-VTA D1-MSN pathway increased locomotor activity and induced conditioned place aversion. Dual-signal, dual-fibre photometry during operant reward behaviour further revealed that stimulation of this pathway reduced DA signalling during reward-predictive and reward-retrieval phases, which was associated with increased operant reward engagement but decreased reward consummation. These findings indicate that isolated activation of the NAc lat shell-VTA D1-MSN pathway dissociates the operant and consummatory components of reward behaviour. Ongoing experiments using chemogenetic silencing will determine whether these effects reflect nonspecific disruption of circuit function or whether the NAc lateral shell-VTA D1-MSN pathway can be bidirectionally modulated, supporting a specific role in reward processing. Together, these findings provide new insights into the circuit mechanisms underlying VTA-NAc signalling in adaptive reward behaviour with important implications for emotional and addictive disorders.

Nr: 5

Assessing the Dynamics of Immune and Blood-Brain Barrier Changes During Treatment of Depression

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Major depressive disorder (MDD) is a multifactorial illness associated with substantial burden. Chronic stress across the lifespan, particularly traumatic experiences during childhood, is a major risk factor for MDD. However, the pathways linking early stress exposure to later vulnerability remain incompletely understood. Cross-sectional studies suggest a role of the immune system and the blood-brain barrier (BBB), a dynamic interface protecting the brain from circulating harm, in MDD. However, it is unclear how immune parameters and BBB permeability relate to each other, to stress exposure and to depressive symptom changes over time. We address these gaps by integrating longitudinal clinical assessments with a novel non-contrast MRI approach to quantify BBB permeability alongside comprehensive immune phenotyping in a consecutive cohort of 80 patients with MDD. Patients are assessed at the beginning of treatment (baseline) and at follow-up after 6 weeks. While data collection is ongoing, preliminary data ($n = 20$) point towards higher BBB permeability in more severely depressed patients and towards improvement of BBB permeability with reduced depressive symptom severity at follow-up ($n = 13$). Across patients and healthy controls (total $n = 63$), preliminary data suggests that greater childhood trauma exposure is associated with higher BBB permeability at baseline. Preliminary data do not support associations between immune parameters and BBB permeability, depressive symptoms severity, or changes in either measure. Upon completion of data collection, these findings may help establish BBB permeability as a candidate marker linking stress exposure to symptom expression and treatment-related changes of MDD. In the long-term, this may enable more precise diagnostic stratification and advance efforts in the development of personalized, mechanism-based targeted treatment strategies.

Nr: 6

Neurodevelopmental trajectories of audiovisual symbolic number processing throughout primary school

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"Learning to understand written and spoken numbers is an important part of children's cognitive development, but we still know relatively little about how the brain processes numbers as children grow. In this study, we assessed 95 children with different levels of math and reading skills across five assessment points: In kindergarten, middle and end of first grade, second grade, and in fifth grade. We examined how children's brains responded to written Arabic digits (e.g. 3), spoken number words (e.g., "three"), and combinations of the two. We also investigated how these brain responses were related to children's arithmetic and reading fluency.

We found that brain regions involved in basic visual and auditory processing already responded consistently to written and spoken numbers in kindergarten, suggesting that these brain systems are already well established at this age. Additionally, activity in a network of frontal and parietal brain regions involved in numerical processing and cognitive control developed differently depending on children's math and reading skills. These differences were most pronounced at the end of first grade.

Together, our findings suggest that children's brains can already recognize and process visual and auditory characteristics of numbers in kindergarten, while the broader brain systems that connect these representations with numerical meaning, language, and cognitive control continue to develop throughout primary school. Math and reading skills appear to contribute to this development in different ways, highlighting that learning about numbers depends not only on number-specific abilities but also on broader language and cognitive skills."

Nr: 7

Reconsolidation interference to modulate intrusive memories across posttraumatic stress disorder and cocaine use disorder: Main behavioural findings from a cross-diagnostic randomized, placebo-controlled trial

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Background: Intrusive memories are a hallmark feature of posttraumatic stress disorder (PTSD) and may also contribute to craving and relapse in cocaine use disorder (CUD). This raises the question of whether trauma- and cocaine-related memories show similar susceptibility to interventions targeting memory reconsolidation. We tested whether minocycline administered during guided memory reactivation reduces subsequent intrusive-memory expression across PTSD and CUD.

Methods: In this double-blind, placebo-controlled trial, 35 participants with PTSD and 39 with CUD were randomized to minocycline (200 mg) or placebo during two guided imagery-based reactivation sessions of a personally salient trauma- or cocaine-related memory. Intrusion frequency and phenomenology were assessed retrospectively from screening to short- and longer-term follow-up and repeatedly in daily life using ecological momentary assessment (EMA). Retrospective outcomes were analyzed using linear mixed-effects models, EMA frequency and phenomenology using intervention-aligned piecewise mixed-effects models.

Results: Guided imagery elicited clear subjective memory engagement, with significant increases in distress in PTSD and craving in CUD during reactivation. Intrusion burden changed between baseline and follow-ups: retrospective frequency and several intensity dimensions decreased, with broader and more sustained reductions in PTSD and more selective short-term changes in CUD. EMA intrusion frequency likewise showed a significantly steeper decline during the post- vs. pre-intervention phase, whereas EMA phenomenology showed no comparable systematic post-intervention shift. Across outcomes, no consistent medication*time interaction effects indicated an added benefit of minocycline over placebo. Extensive sensitivity, moderator, and mechanistic analyses did not reveal a coherent hidden treatment effect.

Conclusions: Under the present protocol, minocycline did not confer additional benefit over imagery-based memory reactivation alone. Intrusion burden nevertheless changed over time, highlighting the need to distinguish subjective memory engagement from successful destabilization and reconsolidation interference, and to clarify which memory processes are most amenable to therapeutic modification across PTSD and CUD.

Nr: 8

Assessing Nutritional Behavior in Psychiatry: Validity and Reliability of the German REAP-S v.2 and its Associations with Diet Quality and Psychosocial Factors in Psychiatric Patients Compared to Healthy Adults

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Background: Nutrition-related problems are common among psychiatric patients. Given their impact on quality of life and mental health, they are becoming increasingly important in psychiatric and psychosomatic care. However, German-speaking clinicians lack brief, valid tools to detect nutritional risks.

Objective: This study aimed to validate the German version of the REAP-S v.2 dietary screener and examine its utility for assessing diet quality in psychiatric patients.

Methods: The German REAP-S v.2 dietary screener was translated and evaluated in a cross-sectional study, using internal consistency, test-retest reliability, construct validity, criterion validity, and exploratory factor analysis in n=259 psychiatric outpatients and n=155 healthy controls.

Results:

The German REAP-S v.2 demonstrated acceptable internal consistency (Cronbach's $\alpha = 0.73$) and strong test-retest reliability ($r(33) = .82, p < .001$). The originally described subscales could not be replicated satisfactorily. Significant correlations were found between the REAP-S v.2 and a validated diet quality score ($p(255) = .63, p < .01$), emphasizing criterion validity. Construct validity was confirmed via correlations between REAP-S v.2 and related constructs (e.g., self-efficacy, $p(255) = .44, p < .01$). The REAP-S v.2 sum scores were significantly lower (unhealthier diet style) in patients compared to healthy controls.

Nr: 9

Mental Disorders in Childhood or Adolescence and Subsequent Comprehensive School Achievement

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Background

Childhood mental disorders are associated with poorer school achievement, with potential negative long-term socio-economic consequences, but few large-scale studies have examined this association, particularly the role of age at onset. Using a nationwide Finnish cohort, we examined the associations between mental disorders and school achievement, focusing on gender and age at onset.

Methods

This nationwide cohort study used data from Finnish national registers. The study population consisted of all individuals born between January 1, 1990, and December 31, 2003, who completed their comprehensive education in Finland during the years 2005 to 2019 ($n = 837,546$). The exposure was diagnosis of any mental disorder or specific mental disorders between the age of 1 year and graduation. School achievement was measured by a summative grade of school performance (GPA) during the last three years of all subjects.

Results

Of the total study population (411,054 females, 426,492 males), 137,427 (16.41%) were diagnosed with a mental disorder before completing comprehensive school. Students with a mental disorder





had lower school achievement compared with their peers without a diagnosis, -0.41 [95% CI, -0.41 to -0.40]. The association was stronger for female, -0.45 [95% CI, -0.46 to -0.45], than for male students, -0.37 [95% CI, -0.38 to -0.37]. Later-onset mental disorders were associated with poorer school achievement, which was observed for most specific mental disorders.

Conclusions

Childhood mental disorders are linked to lower school achievement, particularly among females and those diagnosed at a later age, underscoring the need for targeted psychological support for females and adolescents.

Nr: 10

Role of the blood-brain barrier in stress resilience: Investigating new pathways towards pharmacological augmentation of stress resilience

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Stress resilience varies between individuals, yet the biological mechanisms underlying this variability remain incompletely understood. Preclinical studies point to a role of blood-brain barrier (BBB) integrity in stress resilience and suggest that the mechanistic target of rapamycin (mTOR) pathway may be involved in BBB function. We investigate whether interindividual differences in BBB integrity are associated with stress resilience and whether BBB integrity can be pharmacologically modified. We hypothesize that greater BBB integrity is associated with greater stress resilience and that metformin-induced improvements in BBB integrity enhance resilience. In this prospective, randomized, double-blind, placebo-controlled multicenter study, university students aged 18–25 years at increased risk for stress-related mental health problems, defined by a General Health Questionnaire score ≥ 20 and a history of at least three adverse life events, are followed for 36 weeks. Participants are randomized 1:1 to receive metformin, an indirect inhibitor of the mTOR pathway, or placebo for 12 weeks, followed by a 24-week follow-up. BBB integrity is assessed at baseline and post-intervention using arterial spin labelling MRI. Whole-brain water exchange rate (k_w) serves as a measure of BBB permeability, with lower permeability indicating greater BBB integrity. Stressor exposure, including daily hassles and life events, and symptoms of anxiety and depression are assessed every four weeks using the Mainz Inventory of Microstressors and Life Events Questionnaire. Resilience is operationalized as reduced mental health reactivity





relative to individual stressor exposure. Associations between whole-brain BBB integrity and short-term stress resilience will be examined, together with metformin effects on BBB integrity and the potential mediating role of BBB changes in short- and long-term resilience. This study will examine the relationship between BBB integrity and stress resilience and test whether BBB integrity can be modified by metformin and identify BBB integrity as a modifiable resilience factor for preventive strategies for stress-related mental health problems.

Nr: 11

Neuroimmune mechanisms of cognitive impairments in cocaine use disorder

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The blood-brain barrier (BBB) plays a central role in regulating communication between the circulating blood and the brain. Its disruption has been increasingly linked to psychiatric disorders. Cocaine use disorder (CUD) is a complex condition characterized by compulsive cocaine use despite severe consequences and is associated with numerous health issues. Several studies have demonstrated that the chronic use of cocaine can lead to the decline of cognitive function with underlying pathomechanisms largely unknown. Studies further suggest that individuals with CUD exhibit systemic low-grade inflammation. Such immune alterations could affect BBB integrity, potentially allowing peripheral factors to influence brain function. In this study, we investigate the relationship between peripheral inflammation, BBB permeability, and cognitive function in CUD. We are recruiting 80 individuals with CUD and 80 matched healthy controls (HC). Peripheral blood samples are analyzed for inflammatory mediators to assess systemic inflammation. BBB permeability is measured using Water Extraction with Phase Contrast Arterial Spin Tagging (WEPCAST), a non-contrast MRI method that quantifies the global permeability-surface area product (PS). Cognitive performance is assessed with a comprehensive test battery targeting memory, attention, and executive function. Preliminary analyses show that individuals with CUD exhibit significantly higher PS and worse cognitive performance compared to HC. Moreover, the amount of cocaine use correlates positively with PS, indicating that greater substance exposure is associated with increased BBB permeability. Our results indicate that BBB disruption is associated with cognitive impairments observed in CUD, highlighting the importance of neuroimmune interactions in substance-related pathology.



Nr: 12

From “Aha!” to “Haha!”: Humour Processing and Insight Problem-Solving in Autism

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Humour processing requires the integration of disparate information and shares common cognitive mechanisms with insight problem-solving, a process of suddenly discovering and reconstructing appropriate connections between the parts within a situation through an “Aha!” experience. Previous research suggests that autistic individuals may differ from neurotypical individuals in integrative information processing, which could influence humour comprehension and appreciation. Nineteen autistic adults without intellectual disability and 48 neurotypical adults completed an online task involving 90 ambiguous visual stimuli paired with either a Humorous Interpretative (HI), Non-Humorous Interpretative (NHI), or Physical (PHY) description. Participants rated the funniness and meaningfulness of each stimulus. Mixed-design ANOVAs and linear mixed-effects models were conducted to examine group differences and the relationship between meaningfulness and amusement. HI stimuli were rated as significantly more amusing than NHI and PHY stimuli. No significant group differences emerged in amusement ratings. However, autistic participants reported significantly lower meaningfulness ratings across conditions than neurotypical participants. A positive association between meaningfulness and amusement was observed only in the HI condition. Linear mixed-effects analyses further showed that greater comprehension predicted greater amusement for humorous stimuli, with no differences between groups. Autistic and neurotypical adults reported similar levels of amusement despite differences in perceived meaningfulness. These findings suggest that humour appreciation may be preserved in autism even when the construction of coherent interpretations differs. Rather than reflecting reduced enjoyment of humour, differences in humour processing in autism may primarily involve the cognitive mechanisms underlying meaning-making and information integration.

Nr: 13

When Thinking Takes a Funny Turn: Cognitive Flexibility and Humor Processing in Autistic Adults

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Previous research suggests that autistic individuals may understand and appreciate certain forms of humor differently from neurotypical individuals, although the cognitive processes underlying





these differences remain unclear. Autistic individuals have also been reported to produce more unusual and original responses in verbal and non-verbal creativity tasks, suggesting a sensitivity to original and unexpected material. Incongruity, surprise, and novelty are common to both humor processing and divergent thinking, raising the possibility that sensitivity to details and original ideas may contribute to the understanding and appreciation of certain forms of humor in autism. The present study investigates this relationship using an adapted visual Alternate Uses Task (AUT), comparing usual, unusual non-humorous, and unusual humorous associations, while also examining cognitive flexibility as a related process that may contribute to shifting between alternative interpretations.

The study examines whether autistic and neurotypical adults differ in their comprehension and appreciation of unusual visual associations, particularly humorous ones, and whether individual differences in cognitive flexibility are related to these processes. The online study included 80 adults, comprising 40 autistic and 40 neurotypical participants. Participants viewed everyday objects followed by images depicting their use in three conditions: usual (U), unusual non-humorous (UNH), and unusual humorous (UH), and evaluated their comprehension and appreciation of each stimulus. Cognitive flexibility was assessed using the German Cognitive Flexibility Scale and the 64-card Berg Card Sorting Test, providing complementary self-report and performance-based measures. Data collection has been completed, and analyses are currently ongoing. Results will be available and presented at the symposium. By examining cognitive flexibility in relation to the processing of unusual associations, this study may help clarify whether humor processing in autistic individuals is related to broader cognitive processes involved in divergent thinking, particularly sensitivity to details and original or unexpected ideas, and their contribution to the appreciation of incongruity-based humor.

Nr: 14

Basal amygdala-nucleus accumbens glutamate neuron populations: differentiating cholecystokinin-related anatomy and function in mice

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The basal nucleus of amygdala (BA) comprises primarily glutamatergic principal neurons, and one of their major projection regions is the nucleus accumbens (NAc), comprising GABAergic medium spiny neurons expressing glutamate receptors and dopamine receptors. These BA-NAc neurons are engaged by either reward or aversion, and in mice it has been proposed that the reward





neurons do not and the aversion neurons do express the stress-responsive neuropeptide/-transmitter cholecystokinin (CCK- reward neurons, CCK+ aversion neurons). In CCK-Cre mice, viral vectors were applied that enabled the separate targeting of these two neuronal populations. Anatomically, we demonstrate that 65% of BA-NAc neurons were CCK- and 35% were CCK+, and that the axons of these two populations used different white matter pathways to project to the NAc. Functionally, behavioral conditioning was combined with fiber photometry to enable the recording of stimulus- and behavior-related calcium activity of CCK- or CCK+ BA-NAc neuron populations during reward-directed behavior. Such disentangling of neuronal populations responsible for diverse emotional behaviors in mice will contribute to more precise understanding and therapeutic targeting of the pathophysiology of human affective disorders.

Nr: 15

Changes in neural activation and in functional connectivity during affective memory recall after six months of psychotherapy: An fMRI study of individuals with depression.

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Background: While psychotherapy is established as an overall effective treatment of depression, a significant part of patients does not achieve adequate response. Understanding the neurobiological mechanisms underlying psychotherapeutic change may inform intervention optimization. This study examined changes in neural processing of personally relevant affective memory in individuals with depression following psychodynamic psychotherapy.

Methods: Twenty-five individuals with depression and 28 healthy controls underwent functional magnetic resonance imaging (fMRI) scanning at baseline and after six months. Depressed participants received weekly psychodynamic psychotherapy. During fMRI, participants recalled idiosyncratically meaningful affective memories cued by pictorial cues. Region-of-interest analyses examined therapy-related changes in neural activation across areas involved in emotion and memory processing, and social cognition. Seed-to-voxel analyses assessed changes in functional connectivity between those areas.

Results: Following six months of psychodynamic psychotherapy, depressed individuals showed significantly increased activation in the right temporoparietal junction (TPJ) when recalling personally relevant affective memories compared to controls. Functional connectivity analyses revealed decreased coupling between bilateral amygdala and bilateral TPJ in the depressed group post-treatment.

Conclusions: Psychodynamic psychotherapy may increase neural processing in regions supporting





mentalizing and the evaluation of personally relevant relational memories. Decreased amygdala-TPJ connectivity suggests reduced automatic affective response during affective memory processing. Findings need to be interpreted in light of the absence of a clinical control group and require replication.

Nr: 16

Unraveling individual patterns of passive and active suicidal ideation: A person-specific network modeling exploration

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Introduction. Prediction and prevention of suicidal ideation (SI) remain challenging, largely because traditional approaches have focused less on individual variability in its moment-to-moment fluctuations. To address this gap, we examined how group-level network models capture average dynamic associations over time, while person-specific networks reveal individual deviations in both contemporaneous and time-lagged relationships, clarifying how changes in cognitive or emotional states precede within-person changes and subsequent fluctuations in SI, particularly in relation to perceived burdensomeness, thwarted belongingness, and hopelessness. **Methods.** Twenty-four psychiatric inpatients (75% female, mean age = 33.6, SD = 10.7) completed ecological momentary assessments (five prompts/day) for 28 days post-discharge, reporting passive and active SI, perceived burdensomeness, thwarted belongingness, and hopelessness. Data were analyzed using Group Iterative Multiple Model Estimation (GIMME) to derive group- and individual-level networks. **Results.** Group-level GIMME networks showed contemporaneous and lagged connections between passive and active SI. Individual-level GIMME networks showed that for 30.4% of individuals, hopelessness mediated the link between interpersonal risk factors, passive, and active SI. **Conclusion.** By identifying both shared and person-specific temporal pathways, these findings highlight substantial individual heterogeneity in the dynamics of SI and associated risk factors. Person-specific longitudinal modeling may help characterize such heterogeneity, although its predictive and clinical utility requires further evaluation.



Nr: 17

Capturing Stress in Context: Ecological Momentary Assessment and Topic Modelling of Medical Interns' Daily Stress Experiences

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Dynamic models of adaptive coping and emotion regulation emphasise the flexible use of strategies based on the interaction of personal and situational factors. However, most studies rely on broad categorisations, e.g., high vs. low stressor intensity, and more nuanced investigations are lacking. Here, we leverage ecological momentary assessments (EMA) and natural language processing to examine links between stressor type, regulatory strategy, and affect, testing whether different stressor types (1) elicit differing levels of perceived stress, (2) prompt the use of distinct regulatory strategies, and (3) moderate the effectiveness of these strategies for affective outcomes. 105 Swiss medical students (72% female, age: 21-35, $M = 23.9$, $SD = 1.9$) undergoing their first clinical internships completed 14 days of EMA at the start of the internship year (T0), three (T1), and six (T2) months later, describing the most stressful situation and rating their affect and regulatory strategy use every day. Stressor types were derived from stressor descriptions through unsupervised BERTopic modelling combined with human verification and labelling, and associations are analysed using linear mixed-effects models. Results indicate 17 distinct stressor types, including work-related, commuting, relationship, and physical health stressors. Interpersonal stressors were associated with the highest levels of perceived stress, sleep-related stressors with the lowest. Stronger use of avoidant coping strategies was consistently associated with higher stress intensity, regardless of stressor type. In contrast, approach coping showed a more situation-dependent pattern, being particularly beneficial for dealing with interpersonal stressors. By using a more fine-grained stressor categorisation, this study highlights how context-specific stressors shape day-to-day coping and emotional outcomes. Findings can inform targeted interventions to support medical students during transition from theory to practice, aiming to reduce stress-related symptoms.



Nr: 18

Speech Correlates of Neuropsychiatric Symptoms: Preliminary Findings from the Omics-AD Study

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Introduction

Neuropsychiatric symptoms (NPS) are frequent in neurodegenerative diseases and may manifest in speech and language. Here, we explored associations between automated speech-based markers and NPS severity.

Methods

A total of 74 participants with normal cognition (n=56) or mild cognitive impairment (n=18) were recruited from the longitudinal Omics-AD study and underwent medical and neuropsychological in-clinic assessments. NPS were assessed using the Neuropsychiatric Inventory Questionnaire (NPI-Q) and Mild Behavioral Impairment Checklist (MBI-C). Participants also completed automated phone-based free-speech tasks eliciting positive and negative narratives. From these narrative recordings, 67 acoustic and 43 linguistic features were automatically extracted. Partial correlations with NPI-Q total severity and symptom scores (depression, anxiety, apathy) and MBI-C total and domain scores were adjusted for age, sex, and global cognition.

Results

Among participants (mean age 71.3 years, 54.1% female), 33.3% showed at least one NPS on the NPI-Q and 35.2% on the MBI-C. In positive narratives, a higher proportion of sentences expressing negative, high-arousal emotions (e.g., anger) was associated with higher scores in the MBI-C domain abnormal perception/thought content ($r=0.55$, FDR-adjusted $p<.001$). No significant associations were observed for other MBI-C or NPI-Q scores.

Discussion

Our preliminary findings suggest that speech markers may capture specific NPS, supporting the potential of automated speech analysis as a scalable and remote tool for assessing behavioral changes.



Nr: 19

Sex-Related Differences in Outcomes Following Psilocybin or Escitalopram: A Bayesian Secondary Analysis

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Background: Major depressive disorder differs by sex in prevalence, symptoms, and treatment response, yet sex-related treatment outcomes are rarely examined. **Aims:** To assess sex differences in six-week clinical outcomes following psilocybin or escitalopram and whether these differences varied by treatment.

Method: This post hoc analysis of a six-week, double-blind randomized trial included 59 adults with moderate-to-severe depression (20 female). Participants received psilocybin (n=30; 11 female) or escitalopram (n=29; 9 female), with psychological support. Bayesian baseline-adjusted models assessed depression, anhedonia, anxiety, thought suppression, and well-being at week six, including sex, treatment, and their interaction. Two-sided Bayes factors (BF_{any}) compared non-zero contrasts with a point null. Models used zero-centered weakly informative priors and prior-sensitivity analyses. Sexual dysfunction, assessed only at week six, was analyzed ordinally.

Results: No continuous outcome provided evidence for an overall sex difference across treatments. Observed week-six State-Trait Anxiety Inventory scores were lower for females (M=40.64, SD=12.88) than males (M=50.95, SD=10.99) receiving psilocybin, but similar for females (M=57.00, SD=14.28) and males (M=56.50, SD=10.00) receiving escitalopram. Baseline-adjusted female–male differences were –8.77 points under psilocybin (95% CrI –15.73 to –1.73; BF_{any}=11.18) and –0.15 under escitalopram (95% CrI –7.34 to 7.13; BF_{any}=0.57). The sex-by-treatment interaction was inconclusive (–8.62; 95% CrI –18.36 to 1.30; BF_{any}=2.55). No sex differences were supported for depression. No sexual dysfunction was reported by 10/11 females and 13/19 males receiving psilocybin, versus 8/9 females and 5/20 males receiving escitalopram. Among males, psilocybin was associated with lower odds of greater sexual dysfunction than escitalopram (OR=0.20, 95% CI 0.06 to 0.71); under escitalopram, females had lower odds than males (OR=0.05, 95% CI 0.005 to 0.45).

Conclusion: This exploratory analysis identified a sex-related anxiety pattern within the psilocybin group without clear evidence of sex-specific treatment effects. Prospectively powered, sex-balanced trials incorporating hormonal and reproductive variables are needed.



Nr: 20

Perceived stress and suicidal ideation: the mediating role of social connectedness and self-esteem in adolescents experiencing a psychosocial crisis

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Introduction: Suicidal ideation is associated with increased suicide risk and is prevalent among adolescents, making the identification of modifiable risk and protective factors an important research priority. Perceived stress has been linked to suicidal ideation, yet the mechanisms underlying this association remain insufficiently understood. One possibility is that higher perceived stress is associated with reduced psychological resources, such as social connectedness and self-esteem, which in turn may be linked to suicidal ideation. The present study examined the parallel mediating roles of two representative resources, social connectedness and self-esteem, in this association.

Methods: A clinical sample of 233 Swiss youths ($M = 15.5$ years, $SD = 1.34$; 79% female), aged 12–18 years, recruited from the LIFE Crisis Intervention Center (Zurich), completed a psychometric questionnaire battery prior to admission. Structural equation modeling (SEM) was employed to examine the association between perceived stress and suicidal ideation and to test the parallel indirect effects of social connectedness and self-esteem.

Results: Perceived stress was significantly associated with suicidal ideation ($p < .001$). After social connectedness and self-esteem were included in the model ($CFI = .972$; $RMSEA = .073$; $SRMR = .071$), the residual direct association between perceived stress and suicidal ideation was no longer statistically significant ($p = .852$). Both social connectedness ($p = .007$) and self-esteem ($p < .001$) showed significant indirect effects. **Discussion:** The findings support a stress–resource interpretation, in which the association between perceived stress and suicidal ideation may operate through psychological resources. Social connectedness and self-esteem may represent two complementary components of a dual-resource framework linking subjective stress load with suicidal ideation. Both resources constitute putative targets for prevention and clinical interventions addressing suicidal ideation. Future longitudinal research should further clarify the temporal direction of these pathways.



Nr: 21

Does Psilocybin Make Body Ownership More Flexible? A Placebo-Controlled Study Using Virtual Reality and Systemic Physiology Augmented fNIRS

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Disturbances of the bodily self, from depersonalisation to the distorted body perception seen in chronic pain, are common across psychiatric and pain conditions, yet the mechanisms that keep body representations stable remain poorly understood. Body ownership, the sense that a body part belongs to oneself, arises from the brain combining vision, proprioception and touch with prior expectations about the body. Predictive-processing accounts propose that psychedelics relax these high-level priors, which could make the bodily self more malleable. Immersive virtual reality (VR) lets us test this directly by setting what participants see against what they feel. In a randomised, double-blind, placebo-controlled crossover study at the Psychiatric University Hospital Zurich, 25 healthy adults receive 20 mg oral psilocybin and placebo in two sessions at least one week apart. Across the acute drug phase, participants reach towards targets with a hand-tracked virtual hand whose seen position is systematically rotated away from their real hand. The primary outcome is the psilocybin–placebo difference in how strongly reach endpoints follow this visual offset, an index of how the brain weighs seen against felt body position. Complementary measures include body-ownership ratings, hand-position judgements, a grasp-adaptation task, experimental heat pain and placebo analgesia, and questionnaires on altered states. Multimodal neuroimaging pairs functional near-infrared spectroscopy targeting premotor and parietal cortex with systemic physiological monitoring, so that task-related cortical responses can be distinguished from psilocybin's cardiovascular and respiratory effects. To our knowledge, this will be the first controlled study to test whether psilocybin makes body ownership more flexible. The findings will clarify how psychedelics alter self-experience and may inform combined psychedelic–VR interventions for conditions marked by disturbed body perception.



Nr: 22

Does Psilocybin Make Body Ownership More Flexible? A Placebo-Controlled Study Using Virtual Reality and Systemic Physiology Augmented fNIRS

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Disturbances of the bodily self, from depersonalisation to the distorted body perception seen in chronic pain, are common across psychiatric and pain conditions, yet the mechanisms that keep body representations stable remain poorly understood. Body ownership, the sense that a body part belongs to oneself, arises from the brain combining vision, proprioception and touch with prior expectations about the body. Predictive-processing accounts propose that psychedelics relax these high-level priors, which could make the bodily self more malleable. Immersive virtual reality (VR) lets us test this directly by setting what participants see against what they feel. In a randomised, double-blind, placebo-controlled crossover study at the Psychiatric University Hospital Zurich, 25 healthy adults receive 20 mg oral psilocybin and placebo in two sessions at least one week apart. Across the acute drug phase, participants reach towards targets with a hand-tracked virtual hand whose seen position is systematically rotated away from their real hand. The primary outcome is the psilocybin–placebo difference in how strongly reach endpoints follow this visual offset, an index of how the brain weighs seen against felt body position. Complementary measures include body-ownership ratings, hand-position judgements, a grasp-adaptation task, experimental heat pain and placebo analgesia, and questionnaires on altered states. Multimodal neuroimaging pairs functional near-infrared spectroscopy targeting premotor and parietal cortex with systemic physiological monitoring, so that task-related cortical responses can be distinguished from psilocybin's cardiovascular and respiratory effects. To our knowledge, this will be the first controlled study to test whether psilocybin makes body ownership more flexible. The findings will clarify how psychedelics alter self-experience and may inform combined psychedelic–VR interventions for conditions marked by disturbed body perception.

Nr: 23

Nutritional Risks in Psychiatric Home Care: Malnutrition, Eating Disorders, and Metabolic Health

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Nutritional problems, including malnutrition, eating disorders, and obesity risk, are common among people with psychiatric disorders, yet their prevalence and psychiatric correlates in outpatient care remain insufficiently characterized. This interdisciplinary study examined nutritional risks and their associations with psychiatric symptoms in patients receiving psychiatric home care. We retrospectively analyzed anonymized routine assessment data from 1,636 adults receiving psychiatric home care in the Canton of Zurich between August 2019 and October 2025. Risks of malnutrition, eating disorders, and obesity were defined using established criteria. Mental health indicators were derived from the interRAI CMH Switzerland instrument, including depressive, sleep, negative, anxiety, psychotic, obsessive-compulsive, manic, and somatic symptoms. The validated interRAI Depression Rating Scale (DRS) was also calculated. Associations and symptom co-occurrence were examined using UpSet plots, logistic regression, and longitudinal analyses. Overall, 47.4% of patients had at least one nutritional risk: 24.5% were at risk of malnutrition, 9.0% at risk of an eating disorder, and 22.3% were at risk of obesity. Malnutrition and obesity risk frequently occurred independently but also co-occurred with depressive symptoms. Malnutrition risk was associated with female sex, self-harm risk, impaired self-care, addiction-related problems, eating disorder risk, and higher DRS scores. Obesity risk was associated with self-harm risk, addiction-related problems, eating disorder risk, and somatic symptoms. All three nutritional risks remained largely stable over six months of regular treatment. Nutritional risks were highly prevalent among patients receiving psychiatric home care, affecting nearly half of the study population. Their associations with psychiatric symptoms and persistence over time highlight the importance of integrating routine nutritional assessment and support into outpatient psychiatric care. Incorporating standardized nutritional risk screening tools into the interRAI CMH Switzerland instrument should be considered to facilitate systematic identification and monitoring of nutritional risks and potentially reduce associated morbidity and mortality.

Nr: 24

Regulated cannabis sales with harm reduction measures at three points of sale are associated with improved lower-risk use awareness and behaviour

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Aims: With our longitudinal study Züri Can, we want to examine whether strictly regulated access to legal THC-cannabis through 10 pharmacies, 10 Social Clubs, and the Drug Information Center can help improve participants' awareness and behaviour regarding various aspects of lower-risk cannabis use, such as using cannabis without tobacco. Points of sale types may differ in how well they promote lower-risk use practices among participants.

Methods: Participants complete online surveys at six-month intervals. To measure lower-risk cannabis use awareness and behaviour, we used two scales containing 12 items each to produce a total sum score (0–48). We used Generalised Estimating Equations with exchangeable working correlations to analyse the two scales, adding years since getting legal access (log-transformed), type of point of sale, and their interaction as predictors.

Results: By 30 June 2026, 3313 participants completed a baseline survey and up to five follow-ups. After three years, lower-risk awareness had improved by approximately 1.64 points and lower-risk behaviour by approximately 1.99 points. At Cannabis Social Clubs, the initial level of lower-risk awareness and its improvement over time were slightly lower, though this difference was negligible.

Conclusion: Regulated access to cannabis may provide a suitable framework for increasing awareness and promoting lower-risk use practices. Across all point of sale types, participants' awareness and behaviour regarding lower-risk cannabis use improved slightly over time. More substantial changes in long-established use habits likely require more time and targeted interventions.

Nr: 25

Associations Between Linguistic Features of Self-Efficacy Memory Narratives and Changes in Suicide-Related Outcomes

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Introduction: Self-efficacy, the belief in one's ability to cope, may protect against suicidal thoughts and behaviors. Recalling autobiographical experiences of self-efficacy can strengthen self-efficacy and improve other psychological outcomes. However, responses to autobiographical self-efficacy training vary substantially across individuals. In this study, we examined whether linguistic features of self-efficacy memory narratives are associated with changes in self-efficacy and suicide-related outcomes, namely perceived burdensomeness and thwarted belongingness, and may help explain these interindividual differences.

Methods: We analysed audio recordings and transcripts from two studies with healthy participants. From Study 1, MULTICAST, we included a self-efficacy memory training group and a neutral memory training control group; from Study 2, OPTIMAX, we included the self-efficacy memory training group only. Extracted features included thematic content, emotional tone, narrative style, and paralinguistic features. We examined differences between self-efficacy and neutral memory narratives and whether linguistic features predicted post-training self-efficacy and post-experiment suicide-related outcomes using linear regressions. Additionally, we used repeated elastic net regression for exploratory feature reduction.

Results: Self-efficacy and neutral memory narratives differed in several narrative and content features. However, individual features did not predict post-training self-efficacy or post-experiment suicide-related outcomes ($p \geq .193$). Exploratory elastic net regressions consistently retained the topic feature Pride in the self-efficacy model and Family in the perceived burdensomeness model across repeated model fits (83.5% and 65.0% of repetitions, respectively).

Conclusion: Although self-efficacy and neutral memory narratives showed distinct linguistic patterns, linguistic features did not predict changes in psychological outcomes. The small sample sizes, combined with the large number of features and associations examined, may have limited our statistical power to detect small effects. Exploratory analyses nevertheless identified Pride and Family as potentially relevant features that warrant further investigation. Future studies with larger samples and complementary qualitative analyses may help clarify which narrative characteristics are associated with responses to self-efficacy training.

Nr: 26

Factors Associated with Feeding Tube Use Among Nursing Home Residents With Complete Eating Dependency

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Purpose: To quantify the prevalence of feeding tube (FT) use among newly admitted nursing home (NH) residents and identify clinical factors associated with FT use among residents with complete eating dependency.

Methods: We analyzed cross-sectional Resident Assessment Instrument (RAI) data from N = 133,401 newly admitted NH residents (2010–2019) in Switzerland. Associations between demographic and clinical characteristics and FT use among eating-dependent residents were examined using multivariable logistic regression and average marginal effects. Cognitive function was assessed using the Cognitive Performance Scale (CPS).

Results: FT use at admission was uncommon overall (1.1%). Among residents with complete eating dependency, 35.7% had a FT. Swallowing problems (SP), stroke, hemiplegia, admission from hospital, and pneumonia were associated with a higher probability of FT use, whereas Alzheimer's disease, other dementia, older age, and greater cognitive impairment were associated with a lower probability. Within the eating-dependent cohort, the adjusted probability of FT use declined from 53.7% among residents with intact cognition (CPS 0) to 27.0% among those with very severe cognitive impairment (CPS 6).

Conclusion: Among NH residents with complete eating dependency, FT use was more frequent in SP and neurological disability, whereas dementia and worse cognitive impairment were associated with lower FT use. By focusing on residents who had already lost independent eating capacity, these findings help clarify the role of cognitive status in FT use among residents with comparable severe functional eating impairment. Longitudinal studies of incident FT placement are needed to clarify causal pathways.

Nr: 27

The Bipolar Prodrome Symptom Scale – Abbreviated Screen: validation in a mixed sample of adolescents with psychiatric disorders

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Given the often substantial delay in the diagnosis and treatment of bipolar disorder, and especially in youth, brief screening instruments for (hypo)manic symptoms may facilitate early identification. The Bipolar Prodrome Symptom Scale-Abbreviated Screen (BPSS-AS) assesses subsyndromal (hypo)manic symptoms over the past year in youth and adults, whereas the Hypomania Checklist-33 (HCL-33) assesses lifetime (hypo)manic symptoms and is primarily used in adults. This study examined (1) the psychometric properties of the BPSS-AS in a heterogeneous, treatment-seeking child and adolescent psychiatric sample, (2) whether BPSS-AS symptom severity differed according to endorsement of HCL-33 past-year "highs," and (3) the convergent validity of the BPSS-AS and HCL-33.

Children and adolescents completed the BPSS-AS and HCL-33 at baseline. The BPSS-AS severity scale was evaluated using exploratory factor analysis. Participants were stratified according to endorsement of HCL-33 past-year highs, and BPSS-AS severity scores were compared. Convergent validity was assessed among participants endorsing past-year highs.

Participants ($n=216$; female=61.6%; age= 15 ± 1.5 (range=12-18) years) either had no psychiatric diagnosis (24.5%) or met criteria for depressive disorders (22.7%), attention-deficit/hyperactivity disorder (13.4%), anxiety disorders (9.3%), or adjustment disorders (5.6%). The BPSS-AS showed a two-factor structure ($KMO=0.85$), accounting for 50.9% of the variance: "cheerful-energetic" (5 items; $\alpha=.77$) and "irritable-risk-taking" (6 items; $\alpha=.78$). Participants endorsing vs. not endorsing past-year highs ($n=170$) reported greater BPSS-AS symptom severity (24.4 ± 12.6 vs. 17.9 ± 12.1 ; $p=.004$; $AUC=0.65$). In the past-year highs subgroup, BPSS-AS severity correlated with HCL-33 total scores ($r=.57$, $p<.001$).

Building on an initial validation study, the two-factor structure of the BPSS-AS was replicated in a heterogeneous clinical sample of children and adolescents. Although participants who denied past-year highs on the HCL-33 still reported subsyndromal (hypo)manic symptoms on the BPSS-AS, their symptom severity was substantially lower. Longitudinal studies are needed to establish predictive validity of the BPSS-AS for subsequent development of bipolar disorder.

Nr: 28

Multilingual Experience and Cognitive Flexibility: Behavioral and Neural Correlates of Task Switching

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Cognitive flexibility, the ability to adapt thoughts and behavior to changing demands, is a core component of executive functioning. Multilingualism may influence cognitive flexibility, as managing multiple languages engages attentional control and switching processes, although evidence for multilingual advantages remains mixed. This study examined behavioral and neural correlates of cognitive flexibility and their association with multilingual language experience in children and adults.

Cognitive flexibility was assessed during fMRI using an audiovisual rule-switching task. Participants categorized a cued auditory or visual stimulus as “food” or “toy” while ignoring an incongruent stimulus in the competing modality. Trials were classified as switch or nonswitch based on whether the cued modality changed from the preceding trial. Participants included 74 adults and 31 children. They also completed the Language Experience and Proficiency Questionnaire (LEAP-Q), which was used to quantify multilingual experience as continuous measure using Rao’s quadratic entropy (QE). Behavioral analyses examined reaction time (RT) and accuracy; whole-brain fMRI analyses compared switch and nonswitch conditions.

Both groups showed robust behavioral switch costs, with slower and less accurate responses on switch than nonswitch trials (all $p < .001$). QE was not associated with RT or accuracy switch costs in either group. Higher QE predicted faster overall responding in children ($p = .013$), but not adults ($p = .372$), and was unrelated to accuracy. In adults, switching recruited frontoparietal cognitive-control regions, but activation was unrelated to QE. In children, QE was unrelated to switch-related activation; however, higher QE predicted greater nonswitch activation in a left inferior parietal/supramarginal cluster ($k = 101$; $p_{CDT} < .001$; $p_{FWEc} < .05$).

These findings suggest that multilingual experience may relate to attentional selection or task-set maintenance rather than cognitive switching itself, particularly during development. Extending this work to younger, more linguistically diverse children may clarify when such associations emerge and their relevance for language development and cognitive-control difficulties.

Nr: 29

Astrocytic Contributions to ADHD Pathophysiology: Investigating Dysfunction And Its Impact on Neurodevelopment

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Attention-deficit/hyperactivity disorder (ADHD) is the most common neurodevelopmental disorder. Although neuronal mechanisms have been extensively studied, the contribution of astrocytes to ADHD pathophysiology remains poorly understood. Given their involvement in synaptic regulation, energy metabolism, and neuroinflammation, astrocytes may contribute to disease pathophysiology. Due to the lack of patient-derived human models, astrocyte-specific mechanisms in ADHD remain largely unexplored. To address this gap, we generated homogeneous iPSC-derived astrocytes from methylphenidate-responsive ADHD children/adolescents (n=9) and matched controls (n=9). Astrocytes were generated from PSA-NCAM-enriched neural progenitor cells and validated by immunocytochemistry, qPCR, and flow cytometry (>95% S100β+). Assays confirmed that the astrocytes were fully functional, showing robust proliferation, efficient glutamate uptake, preserved metabolic coupling, intact calcium signaling, cytokine responsiveness, astrocyte reactivity, and mitochondrial stress responses. ADHD-derived astrocytes showed increased proliferation and glutamate uptake, while glucose uptake and lactate release indicated preserved metabolic coupling. In exploratory analyses, higher ADHD polygenic risk scores (PRS) were associated with fewer calcium-active cells, faster calcium rise times, and longer inter-spike intervals. In addition, higher PRS was linked to reduced induction of the neurotoxic reactive astrocyte marker C3 after inflammatory stimulation. Stimulation induced robust mitochondrial changes, including reduced mitochondrial content and altered oxidative stress markers (superoxide and H₂O₂), with distinct adaptive responses in ADHD astrocytes. This study establishes a human iPSC-derived astrocyte model for ADHD and provides a platform to investigate astrocyte-specific mechanisms underlying ADHD pathophysiology, offering a framework for exploring glial contributions to disease development and progression.

Nr: 30

Investigating Neurophysiological Synchrony during Natural Conversation: A hyperscanning EEG study

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Speech is a highly complex process requiring multisensory integration, neural tracking, and synchronization of external and internal signals under continuous top-down cognitive control. While extensive research has examined speech at linguistic and phonetic levels, the alignment of underlying neural and physiological mechanisms—particularly during natural conversation—remains poorly understood.

To address this gap, we developed an EEG hyperscanning platform that enables simultaneous measurement of two participants, allowing assessment of synchrony at both intraindividual (e.g., cardiac–neural–speech alignment) and interindividual (e.g., cortical synchrony between interlocutors) levels during speech tasks. Following successful implementation—achieving near-zero offset between live feedback and simultaneous recordings—we conducted an experiment to investigate the relationship among speech, cardiac activity, and brain oscillatory dynamics in individuals engaged in dyadic conversation.

We recorded EEG, ECG, high-quality video, audio, and eye-tracking data from 20 dyads (N = 40) of young healthy participants during three task types: (1) two joint counting tasks designed to enhance interindividual synchrony, either through alternating turn-taking or simultaneous speaking; (2) a natural conversation; and (3) a speech-in-noise task. We hypothesized that each task would differentially influence neural and behavioral synchrony according to the degree of interactional alignment, following the gradient: simultaneous speaking > turn-taking > natural conversation > speech in noise.

Analyses focused on behavioral (facial expression, speech activity) and neurophysiological (neural, cardiac) synchrony at both intra- and interindividual levels. We compared interactive performance and cardioencephalic coherence between speakers across the different speech tasks. Results across modalities supported our hypothesis, demonstrating that cardioencephalic coherence—both brain-to-brain and heart-to-heart coupling—varied in accordance with the degree of behavioral synchrony. Additionally, our exploratory analyses suggest a novel robust marker for predicting synchrony during natural conversation and real time interaction, —an objective that has long represented a key milestone in natural conversation research.

Nr: 31

Promoting Healthier Lifestyle and Self-Efficacy Through Behavioral Therapy in Psychiatric Patients: Preliminary Results from the HEALTH Study

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Background and Objectives: Although individuals with severe mental illness (SMI) generally possess knowledge and motivation for healthy eating, their dietary habits are often unhealthy. This study aims to investigate the effects of a newly developed behavioral group therapy (HEALTH intervention) combined with nutritional counseling (Treatment as Usual, TAU) compared to TAU alone.

Methods: This monocenter, open-label, randomized, head-to-head study with two arms (TAU plus HEALTH intervention versus TAU alone) includes 100 patients (n=50 per arm) aged 18-65 years with an SMI (ICD-10 F2 or F3 diagnosis), a BMI > 25, and a desire to lose weight. Over an 8-week study period, participants receive either a specific weekly group intervention in addition to TAU, or TAU only. Measurements are taken at baseline (Week 0, T0), post-intervention (Week 9, T1), and at a 6-month follow-up (T2). Outcomes are changes in body mass index (BMI) and waist-to-hip ratio (WHR), inflammatory markers, gut microbiome composition, dietary behavior, physical activity, and psychological assessment.

Preliminary Results: To date, n=55 participants have been enrolled. N=27 were able to complete the study. A preliminary analysis of the data collected so far shows that the HEALTH intervention exhibit a greater reduction in BMI values (T0 vs. T1 vs. T2). Dietary quality, nutrition-related self-efficacy, physical activity levels, and laboratory values (e.g., LDL and CRP) also show a more positive trend in the intervention group.

Discussion: By focusing on small, incremental lifestyle changes, the group therapy program might be a useful way to achieve weight loss in psychiatric patients. In addition to purely biological changes, increased self-efficacy is a relevant outcome that could impact mental well-being. It should be examined how this treatment can be made available to as large a group of patients as possible and what other areas of application might be appropriate.

Nr: 32

Enhancing letter-speech sound learning and reading network activation with transcranial electrical stimulation

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Developmental dyslexia is a highly prevalent reading disorder that can cause severe impairments to one's everyday life (Turker et al., 2023). One of the first steps during reading acquisition, namely learning and automating letter-speech sound associations, is impaired in children with dyslexia (Blau et al., 2010; Karipidis et al., 2018). This process has been linked to the posterior superior temporal gyrus (Gao et al., 2024; Richlan, 2019). Current interventions for dyslexia are primarily behavioral and show modest success, while effective interventions targeting the neural basis of



dyslexia are still missing. Transcranial electrical stimulation has shown potential as a method to extend current reading interventions, but its underlying neural mechanisms remain largely unexplored (Turker & Hartwigsen, 2022). The present project thus investigates transcranial random noise stimulation (tRNS) to enhance letter-speech sound learning while assessing its neural correlates using functional magnetic resonance imaging.

The study adopts a randomized, single-blind, controlled design, comparing high-frequency tRNS (up to 1.5 mA; n = 30) with sham stimulation (n = 30). Healthy adults with a variety of reading skills receive tRNS to the left posterior superior temporal gyrus while performing an artificial orthography learning task in the MR scanner.

At the time of abstract submission, 21 healthy adults have completed the study (sham: n = 11, 8 female, mean age = 25.1 years; stimulation: n = 10, 8 female, mean age = 23.1 years). These preliminary results in learning performance suggest that all participants improve in accuracy and reaction time. As data collection is ongoing, the effect of stimulation on learning performance remains to be determined, and no clear group differences are evident so far.

This study will enhance our understanding of the neural effects underlying transcranial electrical stimulation-based reading interventions and inform the development of more targeted approaches to support reading acquisition and dyslexia treatment.

Nr: 33

Self-Efficacy Training, tDCS, and Exercise for Elevated Stress: A Multimodal Pilot Study

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Introduction: Persistent stress increases vulnerability to mental health problems. Smartphone-based self-efficacy training may enhance mental health and can reduce stress. Neuroplasticity-enhancing interventions as home-based physical exercise and transcranial direct current stimulation (tDCS) may enhance learning and thereby self-efficacy training effectiveness. The goal of this study is to investigate the feasibility, acceptability, and preliminary effects of this home-based training combination.

Method: The ongoing pilot randomized controlled experiment aims to recruit 50 young adults with elevated stress, randomized to one of five conditions: Self-efficacy training alone or combined with active or sham physical exercise or tDCS. Participants complete one in-person session followed by six days of home-based training. Feasibility is assessed based on recruitment time, intervention adherence, and assessment retention. Acceptability is assessed using a questionnaire at baseline and post-training. Preliminary effects including stress and self-efficacy are assessed at baseline, post-intervention, and 2-week follow-up using questionnaires, and continuously for 21 days using ecological momentary assessment (EMA; 3x/day).

Results: Data of 29 participants is available. Preliminary feasibility indicators were favorable with





one drop-out, group-level training adherence between 79%-92%, and EMA retention rates between 80-92%. Preliminary exploration of the EMA data (1315 completed EMA surveys) indicated decreased stress ($\beta = -0.092$, $SE = 0.023$, $t = -4.08$), and increased self-efficacy ($\beta = 0.037$, $SE = 0.015$, $t = 2.51$) across all conditions. Final feasibility outcomes and exploratory between-group comparisons will be presented.

Conclusion: The initial findings support the feasibility of combining the self-efficacy training with home-based exercise and tDCS. Together, the preliminary findings highlight self-efficacy as a promising target for supporting resilience in individuals experiencing elevated stress.

Nr: 34

Investigating the Efficacy of a Virtual Reality Exposure Therapy Intervention Targeting Emotion Regulation Difficulties in Adolescent Inpatients

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Emotion regulation (ER) difficulties represent a transdiagnostic feature across neurodevelopmental and psychiatric disorders in adolescence and are frequently accompanied by sensory over-responsivity and social anxiety. Exposure-based approaches reduce maladaptive threat responses and avoidance, yet their targeted use for ER deficits in inpatient adolescents has not been systematically evaluated. Virtual Reality Exposure Therapy (VRET) enables controlled, immersive exposure to individually relevant sensory-social triggers. This study investigates the efficacy of VRET for improving ER in adolescent inpatients.

In a prospective, controlled clinical study, N=90 adolescents (11–18 years) are allocated in a 2:1 ratio to VRET + treatment as usual (TAU) or TAU alone. The intervention comprises individually tailored, supervised VR exposure sessions using real-filmed immersive sensory-social environments adapted to each patient's symptom profile to train regulation and stress-coping strategies, delivered 3–4 times per week over 5–8 weeks. Primary endpoints are changes in ER skills and sensory-social responsivity from baseline (T1) to post-intervention (T2). Secondary



questionnaire outcomes assess anxiety-related symptoms, internalising and externalising difficulties, social functioning, dissociative experiences, and behavioural-emotional adjustment. Behavioural outcomes include threat appraisal and safety updating (fear conditioning), rule inference and updating (generalization), and information processing under sensory load (speech-in-noise). Exploratory measures assess physiological stress indices and linguistic markers of emotional processing and regulation.

Data collection is ongoing. Preliminary analyses focus on feasibility, adherence, group differences in symptom change (T1–T2), and associations between baseline mechanistic measures and treatment response.

This study evaluates the added value of VRET within routine inpatient care using a multimodal framework. By integrating clinical, behavioural, physiological, and linguistic indicators, it aims to identify mechanisms of change and potential predictors of treatment response. Findings may support mechanism-oriented, personalized interventions and the implementation of structured VR-based treatments in child and adolescent psychiatric settings.

Nr: 35

Beyond Hypoperfusion: Methodological Determinants of Cerebral Perfusion Findings After Mild Traumatic Brain Injury Across the Lifespan – A Systematic Review.

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Background: Mild traumatic brain injury (mTBI) is a major global health concern and may cause persistent neurological, cognitive, emotional, and somatic symptoms despite normally appearing neuroimaging.¹ While many patients recover quickly, others remain symptomatic for months or years.² Alterations in cerebral blood flow (CBF) may contribute to this variability.^{3,4} Arterial spin



labeling (ASL) MRI enables non-invasive CBF measurement, yet previous studies report heterogeneous findings ranging from hypo- and hyperperfusion to mixed or null patterns.⁵

Methods: This systematic review examined the extent to which reported mTBI perfusion phenotypes are shaped by ASL acquisition, quantification, and analysis in compliance with PRISMA guidelines. PubMed, Cochrane, and Scopus were searched for human mTBI studies using predefined eligible and recognized clinical definitions. The primary outcome was ASL-derived CBF and its change over time. Risk of bias was assessed using ROBINS-E.⁶

Results: 39 out of 410 identified studies were included, comprising 1,577 mTBI patients and 1,557 controls. Perfusion abnormalities were reported in 66.7 % of studies, predominantly hypoperfusion, while 30.8 % reported concurrent regional increases and decreases. No consistent age- or injury-stage-dependent phenotype emerged. Instead, substantial methodological heterogeneity was evident. Voxel-wise analyses were significantly more likely to identify mixed hypo- and hyperperfusion patterns than ROI-based approaches, indicating that spatial phenotypes are partly analysis-dependent. Methodological reporting was also incomplete: background suppression, partial-volume correction, and calibration were reported in only a minority of studies and none quantified arterial transit time.

Conclusion: This heterogeneity in CBF after mTBI likely reflects both biological variability and methodological sensitivity. Analytical resolution significantly influenced the perfusion phenotype reported, while disregarded transit-time characterization and inconsistent quantification constrain comparisons across age and injury stage. A standardized consensus framework for ASL acquisition, CBF quantification, and reporting in mTBI is urgently needed to distinguish biological heterogeneity from methodological variability and enable reproducible perfusion biomarkers across the lifespan.

Nr: 36

Assessing Math Fluency from Adolescence to Adulthood: Preliminary Findings from a Validation Study

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Mathematical fluency, the ability to solve arithmetic problems accurately and efficiently, is a strong predictor of academic achievement and a core deficit in developmental dyscalculia (DD). No suitable





assessment instrument currently exists spanning adolescence through adulthood while remaining sensitive across the full ability range, including individuals with dyscalculia. To address this gap, we extended the Heidelberger Rechentest (HRT) with 10 newly developed items per arithmetic operation (addition, subtraction, multiplication, and division). Findings are reported for 222 participants (117 females; M age = 26.09, SD = 11.40, range 16–65 years). Performance was evaluated across three variables per operation: accuracy, total errors, and total skipped. Repeated measures analyses revealed that addition and subtraction yielded significantly higher accuracy, fewer errors, and fewer skipped items compared to multiplication and division, suggesting that addition and subtraction may be more amenable to calculation strategies, while multiplication and division rely more heavily on arithmetic fact retrieval, which appears more prone to errors and omissions. Pearson correlations between age and accuracy were essentially zero across all four operations ($r = .002-.06$, $p = .44-.98$), consistent with our prediction of no linear association between age and math fluency. Taken together, performance ranged widely across operations (24%–98% accuracy), demonstrating the test's capacity to differentiate across a broad ability range. These findings support the suitability of the extended HRT as a math fluency assessment spanning youth and adulthood. Furthermore, momentary wellbeing, educational factors, and math-biographical background and their relation to math fluency will be presented.

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Erährungsbezogene Herausforderungen bei Patient:innen mit schweren psychischen Erkrankungen

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Hintergrund: Menschen mit schweren psychischen Erkrankungen wie Depression oder Schizophrenie weisen ein erhöhtes Risiko für metabolische Erkrankungen und Adipositas auf. Gleichzeitig können sowohl Übergewicht als auch Mangelernährung auftreten. Im psychiatrischen Setting fehlen jedoch niedrigschwellige und leicht zugängliche Angebote zur Unterstützung einer gesundheitsförderlichen Ernährung. Ziel dieser Studie war es, Schwierigkeiten bei der Umsetzung einer gesunden Ernährung zu untersuchen und den Unterstützungsbedarf von Menschen mit schweren psychischen Erkrankungen zu erfassen.

Methodik: Die Studie folgte einem qualitativen, partizipativen Studiendesign. Zwischen September und Dezember 2023 wurden an der Psychiatriischen Universitätsklinik Zürich sechs Fokusgruppen mit insgesamt 38 Patient durchgeführt. Die Teilnehmenden waren zwischen 23 und 61 Jahre alt (Mittelwert 45 Jahre); 50 % waren Frauen und 50 % Männer. Die Diskussionen dauerten jeweils etwa 90 Minuten und wurden anhand eines Leitfadens durchgeführt. Die Auswertung erfolgte



mittels qualitativer Inhaltsanalyse nach Graneheim und Lundman mit deduktiv-induktiver Kategorienbildung unter Verwendung von MAXQDA.

Ergebnisse: Die Schwierigkeiten bei der Umsetzung einer gesunden Ernährung erwiesen sich als vielfältig und umfassten Herausforderungen beim Einkaufen und bei der Mahlzeitenplanung, bei der Zubereitung von Mahlzeiten sowie eine fehlende Tagesstruktur und Motivation. Zudem spielten emotionales Essen, psychosoziale Belastungen, geringe Energie und Konzentration, Veränderungen des Appetits sowie Nebenwirkungen der Medikation eine Rolle. Die Patienten wünschten sich insbesondere praktische, alltagsnahe Unterstützung, um vorhandenes Ernährungswissen in konkretes Handeln zu übertragen. Als hilfreich wurden beispielsweise gemeinsames Kochen sowie Unterstützung beim Einkaufen und bei der Mahlzeitenplanung genannt. Gewünscht wurden zudem proaktive, individuell angepasste und verbindliche Angebote mit regelmässigem Follow-up und finanzieller Zugänglichkeit.

Schlussfolgerung: Die Umsetzung einer gesunden Ernährung bei Menschen mit schweren psychischen Erkrankungen ist nicht allein durch fehlendes Ernährungswissen erschwert. Vielmehr wirken praktische, psychische, soziale und medizinische Faktoren zusammen. Zukünftige Unterstützungsangebote sollten daher weniger auf reine Wissensvermittlung und stärker auf konkrete, individuelle und längerfristige Begleitung im Alltag ausgerichtet sein.

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Predictive Bayesian Modelling of Cocaine Consumption with Structural MRI and Clinical Data

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Background: Cocaine remains a significant global health issue. The main goal of this study was incorporating clinical, cognitive and neuroanatomical data of 67 subjects from a previous study by Hirsiger et al. (2019), into a Bayesian model capable of predicting future out of-sample cocaine consumption. The model in question has subsequently been applied to alcohol, cannabis and nicotine consumption to test its generalizability.

Methods: Multiple Bayesian hurdle lognormal models (combining the “probability of abstinence” component and the “continuous consumption in grams” component) have been fitted and compared against one another using the Leave-one-out cross validation (LOO-CV) and Bayesian stacking methods. To further assess the within-sample performance of the candidate model, confusion matrices and several other metrics have been calculated.

Results: Model including baseline cocaine consumption and spatial working memory in the continuous component, and ADHD symptom severity, visuospatial memory, sustained attention, verbal IQ and total grey matter volume of anterior cingulate cortex (ACC) in the hurdle/abstinence component, has shown superior out-of-sample predictive performance over baseline ($\Delta\text{ELPD} = 8.50$, $\text{SE} = 5.50$) and the best within-sample performance metrics among all the models. Similar model has been identified for cannabis, with baseline consumption, spatial working memory, ADHD and verbal IQ being the most prominent variables. When applied to alcohol and nicotine consumption, these models did not perform better than baseline models.

Discussion: These findings suggest that combining baseline consumption data with





cognitive, clinical and neuroanatomical variables can increase the model's predictive performance, resulting in more accurate predictions of future cocaine (and possibly cannabis) consumption patterns. However, the existence of a “one-size-fits-all” model, viable across different substances, remains debatable. Further testing on a larger, independent sample is required to determine the model's reliability, generalizability and potential clinical usefulness.