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7th European Conference on Schizophrenia Research – Schizophrenia and other psychotic disorders: Time for precision medicine?

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EDITORIAL

As congress president and on behalf of the Scientific Committee and the organisers, I cordially welcome you to the 7th European Conference on Schizophrenia Research, which this time is guided by the motto **"Schizophrenia and other psychotic disorders: time for precision medicine?"**

In recent years, psychiatric research mainly focuses on approaches apt to target therapies to the individual and to predict the course of illness from an early stage on. Respective concepts have been labelled as personalised or individualised. Nowadays, driven by new diagnostics and therapeutics, the more comprehensive term of precision medicine came out on top. It takes into account individual variation in genetic and neurobiological make-up, environmental particularities, and lifestyle issues for each person in order to be able to predict more accurately which treatment and prevention strategies for a specific disorder will work in which groups of people with similar clinical presentations. Since psychoses in general and schizophrenia in particular present as quite heterogeneous disorders a common "one-fits-all" approach obviously is not able to meet individual needs.

By deciding on a respective motto for the upcoming ECSR questioning whether time for precision medicine has already come with regard to schizophrenia and other psychoses, we aim to evaluate current evidence emerging from technological advances and various disciplines like (pharmaco)genetics, imaging, drug treatment, specific psychotherapies, etc. Accordingly, the scientific programme is supposed to cover the range of findings covering diagnostic issues including new approaches like biomarkers and respective methododologies, as well as phenotypic or psychosocial characteristics and resulting therapeutic strategies.

The ECSR is being established as an ideal platform to present new data and findings of schizophrenia research. Accordingly, the ECSR 2019 is supposed to be the perfect forum for scientific exchange on all facets of our motto including remaining challenges and unsolved questions. Thus, plenary lectures, state-of-the-art lectures, and the debate on "Precision or personalized psychiatry: different terms—same content?" are devoted to present potentials and limitations of the paradigm of precision medicine in psychiatry and especially in psychoses. The critical appraisal of current evidence of precision medicine in psychoses provided also in a variety of symposia will lead to discuss a respective research agenda. The opportunity to meet with international experts might even result in the initiation of consortia to cooperate on relevant topics further promoting precision medicine in schizophrenia diagnostics, therapies and care, finally translating new knowledge into better outcomes.

I cordially invite you to join us and participate in this exciting event.
Sincerely yours,

Wolfgang Gaebel
Congress President and
President European Scientific Association on Schizophrenia and other Psychoses

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ABSTRACTS

7th European Conference on Schizophrenia Research – Schizophrenia and other psychotic disorders: Time for precision medicine?

PL-01 Transdiagnostic genomics for precision medicine in psychiatry

PL-01-001
Transdiagnostic genomics for precision medicine in psychiatry

S. Ripke (Charité—Universitätsmedizin Berlin Charité Campus Mitte, Klinik für Psychiatrie und Psychotherapie), Berlin, Germany

Stephan Ripke, M.D., Ph.D. will present on the enormous success of Genome Wide Association Analysis in Psychiatry over the last decade. He will also discuss how this knowledge is translating into clinical care of patients with psychiatric disease. Genome-wide association study (GWA study, or GWAS) is a look at a genome-wide set of genetic variants in different people to see if any particular variant is associated with a trait. In GWAS, research scientists typically focus on the association between a single-nucleotide polymorphism (SNP) and major human disease. SNPs are the most common type of genetic variation among people. During this talk, Stephan Ripke will present most recent successes for schizophrenia, bipolar disorder, major depressive disorder, autism spectrum disorder, attention deficit hyperactivity disorder, and cross-disease analyses.
Policy of full disclosure: None.

PL-02 Inflammation in psychotic disorders: triggers and targets

PL-02-001
Inflammation in psychotic disorders: triggers and targets

M. Leboyer (Inserm Institute Mondor for biomedical research, Translational Psychiatry University Of Paris Est Créteil, Pole psychiatrie Hospital Albert Chenevier), Creteil, France; R. Tamouza

Psychotic disorders are multifactorial disorders resulting from gene-environment interactions. Multiple hits, such as early infections, stress, trauma interact with immuno-genetic background inducing pro-inflammatory events, disruption of gut and blood-brains barriers and autoimmune processes. Recently, GWAS studies established that Human Leukocyte Antigens (HLA) region conferred Schizophrenia risk and identified the 8.1 "autoimmune" ancestral haplotype (HLA-8.1AH) as protective alleles. The major contribution of this haplotype to schizophrenia risk consists of elevated expression of the complement C4A inducing C4-dependant synaptic pruning [1]. As neuro-synaptic pruning starts early in life, we hypothesized that the protective HLA-8.1 AH may influence the age at onset of schizophrenia. We found that the 8.1 AH haplotype was less frequent in the early onset subgroup but gradually increased in frequency with the age at onset. Thus, the genetically determined decrease in C4 expression may delay Schizophrenia onset and favor inefficient immune responses inducing inflammatory processes. We speculate that patients bearing the 8.1 AH may be characterized by late age at onset, normal cortical thickness and autoimmune disorders. After observing a genetically determined inability to mount efficient immune responses against danger signals in schizophrenia, we explored the consequences of persistent infectious stigma [2] and low grade inflammation [3] and described 1/ "auto-immune psychosis" [4] defined by the presence of serum circulating auto-antibodies directed against brain receptors such as NMDA-R [5], 2/ activated human endogenous retrovirus (HERV-W) [6] and 3/ reduced microbiota diversity/richness [7]. Immune dysfunctions which underpin both neurological and in psychiatric disorders [8] (Pape et al, 2019) clearly open-up the way towards innovative immuno-modulatory treatments for major brain disorders.
References
[1] Sekar A, Allison R. Bialas A, Rivera H, Davis A, Hammond T Kamitaki N, Tooley K, Presumey J, Baum M, Van Doren V, Genovese G, Rose S, Handsaker R, Schizophrenia Working Group of the Psychiatric Genomics Consortium, Mark J. Daly M, Carroll M, Stevens B, McCarroll S (2016) Schizophrenia risk from complex variation of complement component 4. Nature 530:177
[2] Hamdani N, Daban-Huard C, Godin O, Laouamri H, Jamain S, Attiba D, Delavest M, Lepine Jp, Le Corvoisier P, Houenou J, Richard Jr, Yolken Rh, Krishnamoorthy R, Tamouza R, Leboyer M, Dickerson F (2016) Effects of cumulative herpesviridae and toxoplasma gondii infections on cognitive function in healthy, bipolar, and schizophrenia subjects. J Clin Psychiatry. https://doi.org/10.4088/jcp.15m10133.
[3] Martinuzzi E, Barbosa S, Daoudlarian D, Bel Haj Ali W, Gilet C, Fillatre L, Khalfallah O, Troudet R, Jamain S, Fond G, Sommer I, Leucht S, Dazzan P, Mcguire P, Arango C, Diaz-Caneja Cm, Fleischhacker W, Rujescu D, Glenthøj B, Winter I, Kahn Rs, Yolken R, Lewis S, Drake R, Davidovic L, Glaichenhaus N, Leboyer M, Optimise Study Group (2019) Stratification and prediction of remission in first-episode psychosis patients: the OPTiMiSE cohort study. Transl Psychiatry 9(1):20. https://doi.org/10.1038/s41398-018-0366-5.
[4] Ellul P, Groc L, Tamouza R, Leboyer M (2017) The clinical challenge of autoimmune psychosis: learning from anti-NMDA receptor autoantibodies. Front Psychiatry 8:54. https://doi.org/10.3389/fpsyt.2017.00054
[5] Jezequel J, Johansson EM, Dupuis JP, Rogemond V, Gréa H, Kellermayer B, Hamdani N, LeGuen E, Rabu C, Lepleux M, Spatola M, Mathias E, Bouchet D, Ramsey AJ, Yolken RH, Tamouza R, Dalmau J, Honnorat J, Leboyer M, Groc L (2017) Dynamic desorganization of synaptic NMDA receptors triggered by autoantibodies from psychotic patients. Nat Commun 8(1):1791
[6] Perron H, Hamdani N, Faucard R, Lajnef M, Jamain S, Daban-Huard C, Sarrazin S, LeGuen E, Houenou J, Delavest M, Moins-Teisserenc H, Bengoufa D, Yolken R, Madeira A, Garcia-Montojo M, Gehin N, Burgelin I, Ollagnier G, Bernard C, Dumaine A, Henrion A, Gombert A, Le Dudal K, Charron D, Krishnamoorthy R, Tamouza R, Leboyer M (2012) Molecular characteristics of Human Endogenous Retrovirus type-W in schizophrenia and bipolar disorder. Transl Psychiatry 2:e201. https://doi.org/10.1038/tp.2012.125.
[7] Rincel M, Aubert P, Chevalier J, Grohard PA, Basso L, Monchaux de Oliveira C, Helbling JC, Lévy É, Chevalier G, Leboyer

M, Eberl G, Layé S, Capuron L, Vergnolle N, Neunlist M, Boudin H, Lepage P, Darnaudéry M (2019) Multi-hit early life adversity affects gut microbiota, brain and behavior in a sex-dependent manner. Brain Behav Immun.

[8] Pape K, Tamouza R, Zipp F, Leboyer M (2019) Immunoneuropsychiatry—novel perspectives on brain disorders Nat Rev Neurol. https://doi.org/10.1038/s41582-019-0174-4

Policy of full disclosure: None.

PL-03 Classifying psychotic disorders: a critical appraisal of the RDoC-approach

PL-03-001
Classifying psychotic disorders: a critical appraisal of the RDoC-approach

S. E. Morris (National Institute of Mental Health), Bethesda, USA

The US National Institute of Mental Health launched the Research Domain Criteria (RDoC) initiative nearly 10 years ago in an effort to encourage research that explores novel classification of mental disorders and leads to more effective, personalized treatment. This upcoming anniversary of the initiative provides an opportunity to review how the RDoC approach has been used to address the heterogeneity in psychotic disorders and how the principles of RDoC intersect with promising new approaches to personalized therapies. RDoC-informed research focused on psychosis has taken two general approaches: (1) examining psychosis across diagnostic categories to derive data-driven, neurobehaviorally valid sub-groups and (2) focused experiments to determine the mechanisms associated with specific phenotypic features in psychosis. Translation of these findings into improved treatment is hindered by a paucity of novel intervention approaches, but better classification might lead to improved matching of patients to treatment.

Policy of full disclosure: None.

D-01 Precision or personalized psychiatry: different terms—same content?

D-01-001
Precision or personalized psychiatry: different terms—same content?

N. Koutsouleris (Ludwig-Maximilians-University), Munich, Germany

Objective: For decades, the translation of neurobiological research findings into clinical psychiatric care has remained elusive because of the cross-sectional and longitudinal heterogeneity of psychiatric disorders and due to the drawbacks of mass-univariate, group-level and reductionist scientific methods. However, the recent advent of machine learning tools in translational psychiatric research has opened exciting opportunities to overcome this stalemate. These methods facilitate the extraction and validation of complex disease patterns from multi-modal phenotypic, imaging-based and molecular data collected from increasingly larger patient populations, thus potentially allowing us to establish diagnostic, prognostic and therapeutic markers in routine clinical care.

Methods: My talk will review recent developments in psychiatric machine learning and its application to translational psychosis research. I will focus on opportunities and challenges of these novel methods and illustrate those using examples from the multi-site PRONIA project (Personalised Prognostic Tools for Early Psychosis Management; www.pronia.eu). More specifically, I will present and discuss the performance and decision rules generated by the machine learning analysis of clinical, imaging-based, genetic and combined data for the individualized prediction of (1) social and role functioning outcomes, (2) transition to psychosis, and (3) remission vs. non-remission from symptomatic states in patients with clinical high-risk states for psychosis or recent-onset depression.

Conclusion: Recent findings generated by the PRONIA consortium and other projects focusing on psychiatric machine learning suggest that generalizable and clinical useful prediction pathways can be established to support the individualized early recognition of adverse outcomes in early stages of affective and psychotic disorders. External, prospective and clinical validation of these prognostic pathways is needed at international scale to better understand if and how these tools could support the delivery of personalized psychiatric care.

Policy of full disclosure: None.

D-01-002
Precision or personalized psychiatry: different terms—same content?

S. Galderisi (University of Campania Luigi Vanvitelli, Department of Psychiatry), Naples, Italy

Background: Precision medicine is "an emerging approach for treatment and prevention that takes into account each person's variability in genes, environment, and lifestyle" [1]. Sometimes the terms "personalized" or "person-centered" medicine are also used, either as synonyms or in a broader sense. More recently, the terminology was extended to Psychiatry. This is an important step-forward for the discipline, if unrealistic expectations do not lead to disappointment and abandonment of current efforts in the implementation of person-centered mental health care.

Methods: In my talk, I will argue that the term "Personalized" or "Patient-centered" approach is not a synonym of "Precision psychiatry". It has a broader meaning and is relevant to different levels of the health-care provision, such as service organization (accessibility, flexibility, scalability) or implementation of treatment plans (individual needs, history, clinical features, biological characterization, individual preferences, environment and lifestyle). The term "Precision psychiatry" should instead refer to the full exploitation of recent scientific and technological advances to achieve a close match between individual biological characteristics and prevention/treatment strategies.

Conclusions: A clear distinction between the terms "Precision" and "Personalized" psychiatry may be crucial to avoid an inappropriate and untimely attitude to overlook the need for disseminating good existing practices aimed at organizing mental health services and providing care according to person's characteristics, needs, environment and preferences, while waiting for the "real" precision psychiatry. Personalized psychiatry is already feasible, in theory, but in practice severely hampered by the shortage of human and financial resources. Precision psychiatry is a developing science, deserving further large-scale research, translational approaches and refinement that, hopefully, will soon be an integral part of every-day clinical practice and ultimately of "Personalized psychiatry".

References:

[1] Toward Precision Medicine (2011) Building a knowledge network for biomedical research and a new taxonomy of disease. National Academies Press, Washington, DC.

Policy of full disclosure: None.

D-01-003
Precision or personalized psychiatry: different terms—same content?

G. Perna (Department of Biomedical Sciences, Humanitas University), Pieve Emanuele (MI), Italy

Abstract not received in due time.

SA-01 State-of-the-Art Lectures 1—pathophysiology and pharmacological treatment

SA-01-001
Systems neuroscience of psychosis—mapping schizophrenia onto the brain

W. Strik (University Hospital of Psychiatry), Bern, Switzerland

The impressing record of molecular and neurobiological findings related to schizophrenia has substantially increased our knowledge about possible mechanisms underlying the disorder. However, the findings are not specific and have not yet contributed to a more valid and reliable classification or to more homogeneous subtypes. Actually, the gap between research and the clinical reality of schizophrenia—in terms of a biological explanation of the symptoms, or of predictors for course and treatment—rather appears to increase. Systems Neuroscience of psychosis is a translational approach to link the clinical phenomena of the disorder to the highest brain functions. It is expected to contribute to a better understanding of the pathophysiology of schizophrenia. A methodological pitfall in contemporary schizophrenia research may be one cause of many disappointing, merely correlational and non-replicable results, or, on the other hand, of mechanistic research strategies explicitly avoiding the link to the real world of psychotic symptoms. Different research approaches like correlations, mathematical modelling, symptom caching as well as more comprehensive research strategies like RDoC or SyNoPsis will be critically discussed with particular attention to examples of clinically useful results and proof of concept studies. In fact, new pathophysiological hypotheses derived from a brain system-based approach have helped to develop novel treatment strategies based on noninvasive brain stimulation or clinical features. In clinical practice, a neurobiologically informed psychopathology allows addressing the communication deficits of individual patients, shifting attention to the intact resources. Systems neuroscience is a promising approach to understand psychiatric disorders at the highest organization level of the human brain and behavior. However, there is need of epistemologically more consistent research strategies including a revised clinical vocabulary. Schizophrenia research may thus contribute to a comprehensive perspective on human experience and behavior integrating methodologically distinct, but internally consistent insights from humanities and neuroscience.
Policy of full disclosure: No conflict of interest.

SA-01-002
Pharmacological treatment strategies in case of non-response

G. Gründer (Central Institute of Mental Health Department of Molecular Neuroimaging), Mannheim, Germany

10–30% of patients with schizophrenic disorder do not or only marginally respond to antipsychotic drug treatment, and up to another 30% respond incompletely, i.e. in spite of some improvement in psychopathology, delusions and hallucinations persist to a significant degree. Even when positive symptoms completely remit, cognitive or negative symptoms often persist in many cases. As these patients are (often) hospitalized for very long periods of time, treatment resistance in schizophrenic disorders also poses a major health economic challenge. In this interactive presentation, the most important treatment recommendations are discussed. Particular emphasis is placed on presenting the recommendations of the main international treatment guidelines. These will be discussed on the basis of case studies. Monotherapy is evaluated in particular with clozapine, but also with other antipsychotics of the second generation, although the data are often much less clear in the latter case. Also, combination treatments (a combination of two different antipsychotics) are commonly used in treatment resistance, although their effectiveness is usually insufficiently proven. This is even more true for augmentation strategies (combinations of an antipsychotic with a mood stabilizer—lithium or an anticonvulsant—, an antidepressant, or other psychotropic drugs with a variety of mechanisms of action). While these strategies may be helpful in individual patients, their use cannot be generally recommended. Finally, the value of brain stimulation techniques, especially electroconvulsive therapy (ECT), in treatment-resistant schizophrenia will be discussed.
Policy of full disclosure: Gerhard Gründer has served as consultant and advisory board member during the last 3 years for the following companies and institutions: Allergan, Boehringer Ingelheim, Eli Lilly, IQWiG, Janssen-Cilag, Lundbeck, Otsuka, Recordati, Roche, Servier and Takeda. He has received honoraria as a speaker for Janssen-Cilag, Lundbeck, Neuraxpharma, Otsuka and Recordati. He has received funding for clinical trials from Boehringer Ingelheim, Lundbeck and Saladax. He is the founder and partner of Brainfoods GmbH, InMedicon GmbH and Mind and Brain Institute GmbH.

SA-02 State-of-the-Art Lectures 2—psychosocial treatment

SA-02-001
Emerging precision in targets and dosages of psychotherapies for prevention and therapy of psychosis

M. van der Gaag (VU University Department of Clinical Psychology), Amsterdam, The Netherlands

The schizophrenia-spectrum is broad and heterogeneous. This is also true for subjects with a clinical high-risk for developing a first psychotic episode. Antipsychotic pharmacotherapy was the monotherapy for psychotic disorders during several decades, but the state-of-the-art at the moment is that pharmacotherapy is optimally to be accompanied with psychological interventions such as cognitive behavioural therapy, family intervention and other psychosocial interventions. The individual psychotic patient has often multiple comorbidities and here the therapies can be tailored to the psychopathologies and personal needs of the patients. Most often these are posttraumatic stress disorder, depression, and obsessive-compulsive disorders. In the clinical high-risk patients, the risk can be stratified and the interventions adapted in intensity and targets dependent on the risk class. Individual case formulation has a long tradition in first generation behavior therapy and second generation cognitive behavioural therapy. In the last decade several new interventions from the third generation have been developed, but evidence is still sparse. A psychotherapeutic arsenal on techniques develops and precision psychotherapy for subgroups in the psychosis spectrum is evolving.
Policy of full disclosure: None.

SA-02-002
Physical therapy in schizophrenia

B. Stubbs (South London and Maudsley NHS Foundation Trust, Physiotherapy Department), London, UK

Physical activity (PA) and physical therapy may be therapeutic for people with schizophrenia who experience numerous lifestyle-related medical complications and a 10- to 20-year mortality gap. This lecture will provide an overview of the latest evidence for PA and physical therapy to improve the mental health, cognitive symptoms and physical health of people with schizophrenia. A substantial body of evidence exists demonstrating that people with schizophrenia engage in low levels of physical activity and experience multiple barriers to initiating and maintain PA. Structured exercise and physical therapy can result in improvements in multiple domains such as decreased mental health symptoms, improved cognitive performance and better physical health. Interventions delivered by specialist exercise scientists such as physiotherapists result in less dropout and larger effect sizes across important domains such as cardiorespiratory fitness. This lecture will also feature an overview of the latest research considering the potential mechanisms through which PA exerts its benefits and outline practical tips to improve PA in practice.
Policy of full disclosure: None.

SA-03 State-of-the-Art Lectures 3—prediction and diagnosis

SA-03-001
Identifying and diagnosing individuals at risk of psychosis

F. Schultze-Lutter (Heinrich-Heine University, Department of Psychiatry), Düsseldorf, Germany

Clinical high-risk (CHR) of psychosis criteria currently rely on attenuated or transient positive symptoms and on cognitive basic symptoms. They are associated with conversion rates to psychosis many hundred times higher than the incidence of psychosis in the general population. Yet, non-conversions still commonly outnumber conversions, in particular in child and adolescent samples; and CHR-relevant phenomena are not rare in the general population, albeit being mostly too infrequent to meet CHR criteria. Furthermore, early detection and intervention (EDI) services have failed so far to cover a sufficient proportion of the general population and, thus, to reach sufficient numbers of vulnerable persons to make a difference at population level. Against the background of these findings, current developments towards a broader implementation of EDI services and an improved prediction are reviewed. Current developments greatly profit from advances in digital technology and artificial intelligence (AI) that have a great potential to help overcome inequalities in service provision of EDI and improve prediction—not only of psychoses but also of other related poor outcome (for example, functional impairment and psychiatric comorbidity). AI-based prediction algorithms allow sequential risk assessments in high-risk patients resulting in detailed risk profiles that form the basis of modular personalized therapies. Telemedical services help delivering of specialized diagnostic and therapeutic service provision even in remote areas, supported by well-accepted Apps such as RobinZ (www.robinz.uzh.ch). Screeners of good convergent validity enable to reach a sufficient number of vulnerable persons by supporting initial referrals of high-risk patients from primary and secondary care in a cost-efficient way. First comprehensive projects examining the effectiveness of such improved personalized and telemedical EDI services have already been proposed and might enable a breakthrough in service provision already within the 2020s.
Policy of full disclosure: None.

SA-03-002
Is early recognition of affective disorders possible?

E. Meisenzahl (LVR-Klinikum Düsseldorf Klinik und Poliklinik für Psychiatrie und Psychotherapie, Kliniken der Heinrich-Heine-Universität Düsseldorf), Düsseldorf, Germany

In psychiatry, as in medicine, strenuous efforts are made to predict and, subsequently, prevent diseases before their first manifestation and the development of significant disability. In psychosis research, this approach has already been pursued over the past two decades within the framework of indicated prevention in help-seeking samples.

Health care costs for affective psychosis are also overwhelming, predominantly because of the escalating costs of long-term disabling courses and outcomes in affective disorders, especially for depression. A longer duration of untreated depression was demonstrated to be a predictor for lower treatment response rates, higher risk for chronification and higher recurrence rates Therefore there is an urgent need for early detection and treatment of depressive disorders. The prevention and timely initiation of adequate treatment of depressive disorders in order to decrease both their incidence and prevalence is thus a health priority.

Research on early identification of depression is still in its infancy and a definition of a clinical risk state for depression is still missing. For example, one pioneering attempt to developing a risk factor-based algorithm for occurrence or reoccurrence of depression in primary care is the PredictD study. In consideration of the multifactorial etiology of depression, a well-defined sufficiently specific clinical symptom-based early prediction instrument is needed and would offer the chance to develop and widely deliver even more improved personalized indicated preventive interventions based on differential risk profiles that also distinguish unipolar and bipolar depressive episodes. Additionally, biological underpinnings of the clinical risk state of depression would help to develop multimodal models for prediction of conversion into the depression. The talk gives an overview about the scientific effort during the last decades to identify risk factors and risk states for affective disorders, especially depression and bipolar disorders.
Policy of full disclosure: None.

S-01 Innovations in the assessment of negative symptoms: the ways forward

S-01-001
Individuals' subjective experiences of their negative symptoms

I. Butcher (University of Manchester), Manchester, UK; J. Palmier-Claus, G. Haddock, K. Berry

Objective: Individuals who have a diagnosis of schizophrenia can experience both positive and negative symptoms. Positive symptoms are those attributes that occur in addition to normal behaviours, such as voice hearing and delusions. Negative symptoms are those symptoms that are a deficit of an attribute and include, but are not limited to, lack of concentration, loss of motivation, and emotional and social withdrawal. Little qualitative research has been conducted to date on

negative symptoms, yet these symptoms can be disabling and can affect those around the individual as well as wider society. The aim of this study was to understand how individuals subjectively experience the prominent negative symptoms of schizophrenia.
Methods: Twenty individuals from a range of NHS services across the UK were interviewed using a topic guide, which asked individuals about key negative symptoms. The data was analysed by a team, which included clinical psychologists, using thematic analysis.
Results: Common themes that emerged from the transcribed interviews included withdrawal, loss of concentration, and the role of feeling. Individuals also suggested what may have led to the development of these symptoms. These findings are of particular importance to clinicians working with individuals who may experience negative symptoms of schizophrenia, as well as to their family members and carers.
Conclusion: The findings can aid understanding of what it is like to experience these symptoms and therefore help to improve an individual's recovery.
Policy of full disclosure: None.

S-01-002
Others' experience of negative symptoms: reduced smiling as a predictor of interactional outcome

M. Riehle (University of Hamburg); Hamburg, Germany; T. M. Lincoln

Objective: Reduced facial expression is a common expressive negative symptom (ENS) in schizophrenia. In two studies, we tested the hypothesis that people with schizophrenia (SZ) smile less in affiliative face-to-face interactions and that this entails rejection by others.
Methods: In study 1, 28 healthy interaction partners (IP) had two separate 16-min dyadic interactions: One interaction with one of 28 SZ and one with one of 28 healthy controls (HC). We assessed ENS in all participants via clinical interviews, smiling and smiling reciprocity via electromyography throughout the interactions, and willingness for future interactions in IP towards SZ/HC. In study 2, 18 SZ with high ENS, 30 SZ with low ENS, and 39 HC engaged in a 3-min affiliative role-play with study confederates. Smiles were coded from the videotaped role-plays and independent raters assessed their willingness for future interactions with each participant based on these videos.
Results: Study 1: SZ did not score significantly higher on ENS than HC. Subsequently, SZ also did not smile or reciprocate smiles less than HC when interacting with IP. Nevertheless, IP indicated less willingness for future interactions with SZ than with HC ($d = -0.72$) and this willingness was still independently predicted by SZ's/HC's smiling and smiling reciprocity. Study 2: SZ with high ENS showed less smiling in the affiliative role-play and were met with less willingness for future interactions than both HC (smiling: $d = -1.31$; willingness: $d = -1.35$) and SZ with low ENS (smiling: $d = -0.88$; willingness: $d = -0.92$), who did not differ from HC. Reduced smiling of SZ with high ENS mediated the group differences in willingness for future interactions.
Conclusion: Overall, our data suggest that the majority of SZ neither exhibit reduced smiling in affiliative interactions nor face immediate rejection by others. For roughly one third of SZ with high ENS, however, reduced smiling does appear to entail social rejection.
Policy of full disclosure: None.

S-01-003
Can actigraphy yield valuable information on apathy in schizophrenia patients? Associations with clinical measures and neuroimaging

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Objective: Apathy is a core negative symptom of schizophrenia and associated with a loss of motivation, goal-directed cognitions and activity. Apathy is frequently measured using clinician-ratings, that lack objectivity and are insensitive to change. We investigated the value of actigraphy as objective measure of motor behavior for measuring apathy in patients with schizophrenia. Additionally, we examined motor activity related to brain activation during a self-initiative task and dynamic brain-connectivity during rest.
Methods: Three groups were included: (1) healthy controls (HC; n = 36), (2) patients with schizophrenia and low apathy (SZ−; n = 29) and (3) patients with schizophrenia and high apathy (SZ + ; n = 38). The Apathy Evaluation Scale was administered and participants wore an actigraph for two full weekend days. Activity quantity, variability and initiation of motor behavior were calculated and compared between groups. SZ+ also underwent fMRI-scanning during a self-initiative task and rest to calculate brain activation reflecting self-initiation and dynamic functional connectivity.
Results: Groups differed in activity quantity and variability (SZ + < SZ − < HC), but not in activity initiation. Reduced variability, but not quantity and initiation, was significantly associated with apathy severity. In SZ+ motor behavior was associated with brain activation in the cingulate cortex and parietal regions during low level self-initiation (cue-response). During rest, low activity variability was associated with lower variability in dynamic connectivity in the salience reward network.
Conclusion: Actigraphy, particularly variability in activity, can yield valuable information on the presence and severity of apathy in patients with schizophrenia. However, it may not capture higher-order motivational processes. Furthermore, patients with schizophrenia and high levels of apathy showed less variability in physical activity and more rigid functional brain network behavior in brain-networks relevant for self-reflection, mental simulation, and reward processing. As these functions are all pivotal for self-initiated goal-directed behavior, functional rigidity of these networks appears relevant for apathy.
Policy of full disclosure: None.

S-01-004
I just can't look forward to anything; the role of anticipatory pleasure and beliefs for goal-directed activity in patients with psychosis

M. Pillny (Universität Hamburg, Clinical Psychology), Hamburg, Germany; B. Schlier, T. Lincoln

Objective: Research on goal-directed activity indicates that positive beliefs about oneself and the environment induce anticipatory pleasure, which motivates the translation of goal-intentions into goal-directed activity. Accordingly, the reduced activity of patients with negative symptoms could be explained by "demotivating beliefs" and reduced anticipatory pleasure. However, causal interpretations of these findings are limited by the lack of longitudinal and ecologically valid designs. Therefore, we prospectively investigated whether anticipatory pleasure mediates the translation of goal-intentions into goal-directed activity and whether demotivating beliefs moderate the

association between goal-intentions and anticipatory pleasure in the daily life of patients with negative symptoms.
Methods: We used the Experience Sampling Method in a sample of 36 patients with psychosis and 36 healthy controls. Six times per day and over six consecutive days, participants provided self-report on their current goal-intentions, anticipatory pleasure and their social, vocational, recreational and self-care activity. Demotivating beliefs were assessed at baseline. We tested our hypotheses using multilevel moderated mediation analyses.
Results: Compared to controls, patients reported less goal-intentions, less anticipatory pleasure and less activity in the social and the vocational domains (all p's > 0.05), but there were no group differences in the recreational and self-care domains. Each parameter showed significant and comparable intraindividual variability across the two samples (ICC = 0.15–0.45). Anticipatory pleasure mediated the association of goal-intentions and goal-directed activity in all domains (b's = 0.09–0.21, all p's ≤ 0.01) and demotivating beliefs moderated the association between goal-intentions and anticipatory pleasure in the social domain ($b = -0.12$, $p \leq 0.01$).
Conclusion: Our results support the assumption that demotivating beliefs complicate the anticipation of pleasure and thereby interfere with the translation of goal-intentions into goal-directed activity in patients with negative symptoms. We discuss psychological interventions that challenge demotivating beliefs and are likely to improve anticipatory pleasure in these patients.
Policy of full disclosure: None.

S-02 Schizotypy and clinical high risk for psychosis—states, traits and their interplay

S-02-001
The interrelationship between schizotypy, clinical high risk for psychosis and related symptoms: cognitive disturbances matter

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Objective: Schizotypy and clinical high-risk criteria can identify individuals at risk for developing psychosis. Both approaches have rarely been combined, with little known about their associations. Therefore, we examined the factor structure of CHR, related symptoms, schizotypy and their interrelationship.
Methods: In a sample of 277 patients (age 9–39 years; 28% minors of age < 18 years.) from two early detection services, structural equation modelling including confirmatory factor analysis was performed testing a theory-driven model using four Wisconsin Schizotypy Scales (Magical Ideation, Perceptual aberration, Social Anhedonia and Physical Anhedonia scales), 14 predictive basic symptoms of the Schizophrenia Proneness Instrument, Adult (SPI-A) as well as Child & Youth version (SPI-CY), and positive, negative, and disorganized symptoms from the Structured Interview for Psychosis-Risk Syndromes (SIPS).
Results: The data fitted to six hypothesized latent factors consisting of negative schizotypy, positive schizotypy including perceptual BS, negative symptoms, positive symptoms, disorganized symptoms and cognitive disturbances. As postulated, schizotypy was associated with all symptom dimensions through cognitive disturbances. Additionally, positive and negative schizotypy were also directly associated with respective symptom domains.
Conclusion: While the identified factor structure corresponds to dimensional schizotypy and psychosis models, our model extends earlier models by indicating that schizotypy features are associated with all symptom groups directly or indirectly via subjective cognitive disturbances. This calls for more attention to subjective cognitive deficits in combination with heightened schizotypy in early detection and intervention of psychoses—or even of an Attenuated Psychosis Syndrome.
Policy of full disclosure: None.

S-02-002
Psychosis and schizophrenia-spectrum personality disorders require early detection on different symptom dimensions

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Psychotic disorders and related personality disorders (PDs) are considerably linked both historically and phenomenologically. Particularly, regarding schizotypal (personality) disorder (SPD), this is evidenced by its placement in a joint diagnostic category of non-affective psychoses in ICD-10 and DSM-5. Historically, this close link was established by observations of peculiarities resembling subthreshold features of psychosis in the (premorbid) personality of schizophrenia-patients and their relatives. These personality organizations were therefore called "borderline (schizophrenia)" early in the 20th century. In the 1970s, they were renamed to "schizotypal" and separated from axis-I psychotic and other axis-II personality disorders; especially modern borderline PD. The aforementioned overlap, however, has led to the common assumption that the difference between psychotic disorders and SPD in particular was mainly one of severity/trajectory; with SPD representing a latent form of schizophrenia and/or a precursor of psychosis. Thus, psychosis-proneness (or schizotypy) is often assessed using SPD-questionnaires. We revisit these assumptions in light of recent evidence, concluding that SPD (and related PDs) and psychotic disorder are manifestations of discrete clusters of schizotypy-facets, not states of different severity on one dimension. We suggest that differential early detection of incipient psychotic and related personality—guided by assessment of different schizotypy-dimensions—is necessary.
Policy of full disclosure: None.

S-02-003
The duality of schizotypy: of states and traits, chickens and eggs

P. Grant (Fresenius University Psychology School), Frankfurt am Main, Germany

Objective: Like all temperaments—schizotypy as a trait manifests itself through specific responses (states); with trait-values predicting probability of states. The variability of states has, thus, been described as "the trait in action"; i.e., extrapolated to the clinical realm, positive psychotic symptoms are (environmentally-triggered) manifestations of extreme positive schizotypy. This assumption (favoured by many clinicians and personality-theorists) reflects the Schneiderian emphasis on positive symptoms and posits positive schizotypy as the core-dimension of schizophrenia-liability. It is also in line with the model by Howes and Kapur, who suggest that negative/disorganized symptoms emerge through loss of signal-to-noise ratio due to aberrant salience. Alternatively, the understanding of Bleuler and Meehl was that positive states/symptoms arise merely as accessory to the schizophrenia-(liability-)core that is cognitive slippage. This view is in line with findings of "cross-prediction" of (emergence of) positive symptoms by disorganized rather than positive schizotypy in at-risk individuals.

Methods: Over different studies using experimental manipulation (i.e., induction of psychosocial stress and positive-psychological intervention), we examined the variability of psychotic-like experiences (PLEs) and the moderation of said variability through dimensions of schizotypy in healthy adults.
Results: The prediction of PLEs-variability showed a discrete pattern depending on participants' individual schizotypy-expression: In individuals high in disorganized/negative schizotypy, these dimensions predicted changes in PLEs. Influences of positive schizotypy on PLEs-variability, however, were only found in individuals below-average in disorganized/negative schizotypy.
Conclusion: Results suggest that both aforementioned views may hold true. This underscores both the "duality of schizotypy" and the necessity to consider idiosyncratic (taxon-like) clustering of schizotypy-dimensions.
Policy of full disclosure: None.

S-02-004
Schizotypy in Parkinson's disease patients

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Objective: We investigated whether Parkinson's disease (PD) patients exhibit lower schizotypy than healthy controls. Further, we hypothesized that patients' sensitivity to dopamine-related side effects, such as hallucinations and enhanced impulsivity, is associated with higher schizotypy scores.
Methods: We obtained the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) of 56 PD patients (12 women, mean $\pm$ SD age: 61 $\pm$ 11) while patients received their usual dopaminergic medication. We compared the results of the O-LIFE of PD patients to healthy controls using a Wilcoxon signed rank test. Further, we compared schizotypy scores of patients with and without previously experienced dopamine-related side effects, such as hallucinations (with: n = 18, 32.1%; without: n = 38, 67.9%) and enhanced impulsivity (with: n = 12, 21.4%; without: n = 44, 78.6%) by means of a two-sided Wilcoxon rank sum test for equal medians.
Results: Our results indicate that PD patients exhibit lower schizotypy than age-matched healthy controls. This effect was specific to O-LIFE sub-scores of schizotypy, i.e. unusual experiences ($p < 0.001$) and impulsive nonconformity ($p < 0.001$). The two populations did not differ in their scores for cognitive disorganization ($p = 0.46$) and introvertive anhedonia ($p = 0.22$). Patients sensitive to dopamine-induced hallucinations or impulsivity were characterized by higher O-LIFE scores for unusual experiences ($p < 0.001$, $p = 0.038$) and higher impulsive nonconformity ($p = 0.059$, $p = 0.037$). However, there was no difference between the two groups in cognitive disorganization ($p = 0.27$, $p = 0.076$) and introvertive anhedonia ($p = 0.23$, $p = 0.79$).
Conclusion: In summary, PD is associated with lower trait schizotypy compared to healthy age-matched controls indicating an overlap of neural networks associated with schizotypy and PD. Further, PD patients with an enhanced sensitivity to side effects of dopaminergic medication exhibited higher scores in unusual experiences and impulsive nonconformity. These results are highly clinically relevant and provide an opportunity to appraise PD patients' sensitivity to dopamine-related side effects when initiating treatment.
Policy of full disclosure: None.

S-03 Accelerated aging in schizophrenia and major psychoses: using novel imaging markers for precision psychiatry

S-03-001
Novel machine-learning based methods for studying accelerated aging in schizophrenia: BrainAGE

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Abstract not received in due time.

S-03-002
Accelerated brain aging in early-stage schizophrenia: relation to clinical and metabolic parameters

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Objective: Obesity and dyslipidemia may negatively affect brain health and are frequent medical comorbidities of schizophrenia and related disorders. Despite the high burden of metabolic disorders, little is known about their effects on brain structure in psychosis. We investigated, whether obesity or dyslipidemia contributed to brain alterations in first-episode psychosis (FEP).
Methods: 120 participants with FEP, who were undergoing their first psychiatric hospitalization, had < 24 months of untreated psychosis and were 18–35 years old and 114 controls within the same age range participated in the study. We acquired 3T brain structural MRI, fasting lipids and body mass index. We used machine learning trained on an independent sample of 504 controls to estimate the individual brain age of study participants and calculated the BrainAGE score by subtracting the chronological from the estimated brain age.
Results: In a multiple regression model, the diagnosis of FEP ($B = 1.15$, SE $B = 0.31$, $p < 0.001$) and obesity/ overweight ($B = 0.92$, SE $B = 0.35$, $p = 0.008$) were each additively associated with BrainAGE scores [$R2 = 0.22$, $F(3, 230) = 21.92$, $p < 0.001$]. BrainAGE scores were highest in participants with FEP and obesity/ overweight (3.83 years, 95% CI 2.35–5.31) and lowest in normal weight controls (− 0.27 years, 95% CI − 1.22 to 0.69). LDL-c-holesterol, HDL-cholesterol or triglycerides were not associated with BrainAGE scores.
Conclusion: Overweight/obesity may be an independent risk factor for diffuse brain alterations manifesting as advanced brain age already early in the course of psychosis. These findings raise the possibility that targeting metabolic health and intervening already at the level of overweight/obesity could slow brain aging in FEP.
Policy of full disclosure: Dr. Hajek received funding for this study from Canadian Institute of Health Research (grant #341717), Brain and Behavior Research Foundation (Independent Investigator Award # 23412), the Ministry of Health of the Czech Republic (F.S., grant number 16–32791A). The National Institute of Mental Health, Klecany, Czech Republic was supported by project Nr. LO1611 with funding from the MEYS under the NPU I program. Dr. Franke was supported by German Research Foundation grant [DFG; Project FR 3709/1-1 to KF].

S-03-003
Impact of lifestyle parameters and environmental risk on brain aging

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Abstract not received in due time.

S-03-004
Aging in ultra-high-risk subjects, subgroups of schizophrenia, and bipolar disorder: a transdiagnostic comparison

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An increasing number of recent studies suggest that part of the schizophrenia pathophysiology might include processes akin to accelerated aging, from the molecular to cellular to systems level. We will first demonstrate the usefulness of novel machine-learning based algorithms such as BrainAGE to estimate the deviation of individuals studies from a norm trajectory of brain-wide aging. After contrasting BrainAGE in chronic schizophrenia vs. bipolar disorder, we will then show the differential effects in a pilot sample of ultra-high-risk vs. first-episode schizophrenia patients, as well as the heterogeneity within a large sample of chronic schizophrenia patients. Finally, we will present data from the FOR2107 multi-centre-study, which not only confirm increased BrainAGE scores in schizophrenia and schizoaffective disorder, but also show the differential impact of genetic risk (polygenic risk scores) vs. environmental risk (urbanicity, paternal age), and the association with schizotypy.
Policy of full disclosure: None.

S-04 Copying with uncertainty: functional approaches to decipher the underlying mechanisms of aberrant decision-making in schizophrenia

S-04-001
Cost evaluation and jumping to conclusions during decision-making in early psychosis

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Objective: Jumping to conclusions during probabilistic reasoning is a cognitive bias reliably observed in psychosis, putatively linked to delusion formation. One suggestion is that psychosis patients may view sampling information as more costly. However, previous computational modelling suggested that patients with chronic schizophrenia with cognitive impairment jump to conclusion because of noisy decision making. We examined cognitive impairment and cost of information sampling in two studies of decision-making in early psychosis.
Methods: We developed a novel version of the classical beads-task, manipulating the cost of information gathering in four blocks with memory support. For 31 individuals with early symptoms of psychosis, intact general intellectual function, and 31 healthy volunteers, we examined the numbers of 'draws to decision' when information sampling had no, a fixed, or an escalating cost. Computational modelling involved estimating a cost of information sampling parameter and a cognitive noise parameter. We also applied the classical beads task in the EU-GEI sample ($n > 2000$) and examined relationship of performance to general cognitive function.
Results: Patients sampled less information than controls in both studies. Group differences in numbers of draws became less prominent at higher cost trials, where less information was sampled. Computational modelling showed that, in the condition with no objective cost to information sampling, patients attributed higher costs to information sampling than controls (Mann–Whiney $U = 289$, $p = 0.007$), with marginal evidence of differences in noise parameter estimates ($t = 1.86$ $df = 60$, $p = 0.07$). In the classical beads task, significant reductions in information sampling were driven by general cognitive impairment.
Conclusion: Using a psychological manipulation and computational modelling, we show early psychosis patients jump to conclusions because of attributing higher costs to sampling information, not only because of being primarily noisy decision makers. When considering the population of first episode psychosis, in which general intellectual impairment is common, IQ may dominate performance, at least in the classical version of the beads test.
Policy of full disclosure: None.

S-04-002
Circular inference in schizophrenia

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Objective: Schizophrenia is a devastating psychiatric disorder characterized by heterogeneous symptoms, including hallucinations and delusions (positive symptoms). Previous work has shown that the positive dimension of schizophrenia is linked to impairments in predictive mechanisms, in particular the aberrant amplification of sensory information due to circular inference (Jardri and Deneve 2013). Additionally, perceptual phenomena such as bistable perception, a switch between two mutually exclusive interpretations under conditions of high ambiguity, have also been associated with circularity in non-clinical populations (Leptourgos et al. 2019; Leptourgos et al. in prep.). Here, we sought to understand the computational mechanisms of schizophrenia, using bistability as a tool.
Methods: Schizophrenia patients, with prominent positive symptoms, were compared with healthy controls in two tasks featuring bistable visual stimuli (Necker cube, NC). First, participants were continuously exposed to different versions of the NC (ambiguous or with visual cues) and reported their dominant percept every time a sound signal was given. In the second experiment, participants were discontinuously exposed to ambiguous cubes and responded as quickly as possible every time the cube appeared on the screen.
Results: In the continuous-presentation experiment, we found that patients were less affected by visual cues and less stable than controls, while we also observed a (group x cue) interaction. The reduced effect of supporting cues correlated with non-clinical psychotic traits and the severity of positive symptoms. In the discontinuous-presentation experiment, we found that patients exhibited an enhanced destabilization (for short blank intervals) and a reduced stabilization of the weak ("Seen-From-Below") interpretation (for longer intervals). Dynamical circular inference could account for these specific patterns in a model combining enhanced climbing loops with an overestimation of the environmental volatility.
Conclusion: Altogether, our results provide additional evidence for the involvement of circularity in the generation of psychotic experiences, pointing towards an enhancement of bottom-up, rather than top-down processing.
Policy of full disclosure: None.

S-04-003
Prediction error processing and psychotic-like experiences in healthy individuals

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Objective: Bayesian brain hypotheses suggest that impaired integration of new sensory evidence with prior beliefs contributes to the formation of positive symptoms in schizophrenia. Particularly, unexpected events (prediction errors) may be weighted more than appropriate. Previous findings indicate that excessive accumulation of prediction errors in patients with schizophrenia may be linked to increased perception of the world as volatile, i.e. less stable and more surprising. Empirically, estimations of environmental volatility and surprise about observed outcomes have been linked to pupil dilation. However, studies relating such pupillometric data to positive symptoms are still scarce.
Methods: To investigate the relationship between behavioral and pupillometric markers of volatility estimation and psychotic-like experiences, pupil size was recorded in (to date) 25 healthy participants during completion of a probabilistic learning task. Participants made trial-wise predictions about two possible outcomes which appeared with alternating frequencies. Frequency changes were either announced (stable block) or unexpected (volatile block). Task performance was fitted with a fictitious reinforcement-learning model. Psychotic-like experiences were assessed with the "Community Assessment of Psychic Experiences" questionnaire (CAPE-42).
Results: Data collection is ongoing and detailed analyses are pending. Preliminary results revealed a positive relationship between learning rate (i.e. weight of the prediction error) and psychotic experiences for the volatile task block ($r = 0.51$). Within the same block the effect of outcome surprise (absolute prediction error) on pupil dilation during outcome delivery was negatively related to symptom severity ($r = -0.38$) and learning rate ($r = -0.41$).
Conclusion: The positive relationship between learning rate and psychotic-like experiences is in line with former findings of increased volatility estimation and overweighting of prediction errors in schizophrenia. Similarly, the negative relationship between pupil response to surprise and psychotic experiences suggests a diminished differentiation between surprising and unsurprising events. This could be attributed to overestimation of the environment's volatility and might indicate disproportionate weighting of new incoming evidence.
Policy of full disclosure: None.

S-04-004
Prediction error and surprise in schizophrenia

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Objective: Prediction is one of the fundamental functions of brains. Prediction allows organisms to prepare for events, to ignore what is unimportant, to focus on what is known to be important, and to focus on what might be important, because it is unexpected, surprising, and unknown. An event can only be identified as unexpected if there is an expectation or prediction in the first place, and if there is a large enough deviation from that prediction. Because there is random variation in events themselves, in the perception of events, and in their prediction, "large enough" can only be a statistical judgement. If either the criterion for what is surprising is inappropriate, or if the estimate of prediction error is systematically wrong, then the balance between type I and type II errors shifts. Excessive surprise caused by overestimation of prediction error has been proposed to be a cause of both psychosis and autism (Fletcher and Frith 2009; Frith 2005; van de Cruys et al. 2014). The question whether the criterion for surprise might contribute has received little attention.
Methods: In a simulation, we varied both the misestimation of prediction error and the criterion for surprise by the same factor and calculated how often individuals with varying criteria and degrees of misestimation are surprised.
Results: We find that the criterion for surprise has a greater influence on the proportion of surprises than misestimation of prediction error.
Conclusion: Evaluation of computational theories of psychosis and autism depends on developing experimental designs that can distinguish these factors.
Policy of full disclosure: None.

S-05 Clinical high risk for psychosis in children and adolescents: findings of the Bi-national Evaluation of At-Risk Symptoms in children and adolescents (BEARS-Kid) study

S-05-001
Prediction of psychosis in children and adolescents

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Objective: Psychoses cause great burden, already in children and adolescents, and early-onset psychoses show some distinct features compared to adult-onset psychoses. Further, clinical high risk (CHR) criteria were associated with significantly lower conversion rates in children and young adolescents.
Methods: The multicenter naturalistic Bi-national Evaluation of At-Risk Symptoms in children and adolescents (BEARS-Kid) study was conducted to examine the 2-year psychosis-predictive value of CHR criteria in 8- to 17-year-olds ($N = 178$).
Results: Ten patients converted to psychosis, eight within the first and two within the second year past baseline. Thus, the conversion rate was 5.6% in relation to the number of baseline interviews and was 8.5% and 14.5% in relation to the 1- and 2-year follow-up. Six converters had been 16–17 years old at baseline, three 14–15 years and one had turned 12 years within the time of the baseline assessment; 70% were male. At baseline, $n = 6$ had met both ultra-high risk (UHR) and basic symptom criteria, and $n = 2$ each only UHR and only basic symptom criteria. One converter had initially been assessed as part of a community control and two converters as part of an inpatient control sample.
Conclusion: Our findings confirm that the conversion rate of CHR samples is age-dependent and, at 5.6%, lower in children and adolescents compared to adults (approximately 25% in 2 years). However, in line with adult samples, risk of conversion was almost tripled when symptomatic UHR and basic symptom criteria occurred together compared to UHR or basic symptom criteria occurring exclusive. Our findings highlight the need for more early detection studies in children and adolescents to gain a better insight into the developmental issues that convey differences and similarities between children and adolescents and adults at-risk for psychosis.
Policy of full disclosure: None.

S-05-002
The 2-year course of clinical high-risk criteria in children and adolescents

C. Michel (University of Bern), Bern, Switzerland

Objective: Community studies on clinical high risk (CHR) symptoms and criteria suggest a higher prevalence and lower clinical relevance of CHR symptoms in children and adolescents compared to adults, indicating a higher likelihood for their spontaneous remission over time. Thus, in the BEARS-Kid study, we studied the course of CHR criteria across 2 years in a help-seeking child and adolescent CHR sample.
Methods: Naturalistic 2-year follow-up of 166 CHR patients (age 8–17 years at baseline) who did not develop psychosis.
Results: Of the 111 initial CHR patients, only 59 (55%) still fulfilled symptomatic CHR criteria at 1-year follow-up; and of the 68 followed up over 2 years, still 53% fulfilled them. Furthermore, 76% of patients still fulfilling CHR criteria at 1-year follow-up continued to fulfill them at 2-year follow-up. Baseline age predicted persistence of CHR criteria at 1-year but not at 2-year follow-up.
Conclusion: Dies on CHR adult samples, mainly only by ultra-high-risk criteria, predominately reported persistence rates of less than 50% of the non-converters. Thus, unexpectantly, persistence rates in our young sample were even higher, indicating that CHR symptoms, when severe enough to fulfill CHR criteria, are not predominately fleeting expressions of developmental processes likely requiring clinical attention. Yet, more research into what constitutes clinical significance of CHR symptoms across late childhood and adolescence is required.
Policy of full disclosure: None.

S-05-003
Prevalence of clinical high-risk criteria in children and adolescents not suspected to develop psychosis

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In the community, clinical high risk of psychosis (CHR) criteria occur more frequently in children and adolescents compared to adults. Yet, little is known about their occurrence in clinical children and adolescents' samples. Thus, we studied how frequent CHR criteria and symptoms occur in 8- to 17-year-old inpatients with disorders that were associated with greater odds to develop psychosis in adulthood, i.e., attention-deficit hyperactivity disorder, social and specific phobia, and obsessive-compulsive disorder, eating disorders and Asperger's disorder. In the multicenter naturalistic Bi-national Evaluation of At-Risk Symptoms in children and adolescents (BEARS-Kid) study, 8- to 17-year-olds of the community (N = 235) and 8- to 17-year-old inpatients with any one of the above main diagnoses who were not suspected to be at increased risk of psychosis (N = 306) were examined for CHR symptoms and criteria with the Structured Interview for Psychosis-Risk Syndromes and the Schizophrenia Proneness Instrument, Child & Youth version. At 6.4%, the prevalence rate of CHR criteria in the community sample was almost as high as the 8.2%-rate in the inpatient sample. However, both rates were higher than the earlier reported 2.4%-rate of CHR criteria in young adults. This indicates that, irrespective of their mental health status, children and adolescents present more frequently with CHR criteria compared to adults. Thus, more research into these symptoms and their cause and meaning in children and adolescents is needed to understand their significance in this age group and to detect factors that convey their clinical relevance in adulthood.
Policy of full disclosure: No conflict of interest.

S-05-004
Role and impact of comorbidities in children and adolescents with a clinical high risk of psychosis

M. Franscini (PUK Zurich), Zurich, Switzerland

Objective: High prevalence rates of psychiatric comorbidities were reported in clinical high risk (CHR) for psychosis samples, particularly in younger patients and those with ultra-high risk (UHR) criteria. Thus, we examined the relationship between comorbid disorders and age as well as CHR criteria.
Methods: Severity of illness, functioning and a broad range of psychopathological domains were assessed in 176 patients (8–17 years of age) with an at-risk for psychosis. Clinical high-risk (CHR) criteria for psychosis were determined using the Schizophrenia Proneness Instrument, Child & Youth version (SPICY) as well as the Structured Interview of Psychosis-Risk Syndromes (SIPS). Comorbid disorders were identified using the MINI International neuropsychiatric interview for children and adolescents (MINI-Kid).
Results: At least one comorbid disorder was reported by 75% of study participants. Patients most commonly reported comorbid anxiety and affective disorders. Across all comorbid disorders we found a significant positive correlation between age of the patients and the number of comorbid disorders. Patients meeting the APS criteria showed an increased prevalence of comorbid disorders compared to patients without APS.
Conclusion: Children and adolescents with CHR for psychosis often show one or more comorbid disorders. In line with current reports from community studies, we found that the number of comorbid disorders increased with age and across the assumed early stages of psychosis, i.e., from basic symptom to symptomatic UHR criteria.
Policy of full disclosure: None.

S-06 Pathophysiology and treatment of cognitive dysfunction in schizophrenia—new perspectives

S-06-001
Neuroprotective and pro-cognitive effects of erythropoietin

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Objective: Executive functions, learning, attention, and speed of processing are imperative facets of cognitive performance, affected in many neuropsychiatric disorders. In clinical studies on patient groups as different as schizophrenia, chronic progressive multiple sclerosis, treatment-resistant major depression and bipolar disease, we consistently found that recombinant human erythropoietin (EPO) lastingly improves higher cognition. In schizophrenia, we even measured a reduction of gray matter loss by EPO, later replicated in individuals with affective disorders. Interestingly, normal genetic variation in EPO and EPO receptor (EPOR) genes co-determines the level of cognitive performance.
Methods: Comprehensive in vivo and in vitro analysis of different mouse models as well as of human patients upon EPO treatment.
Results: Employing mice for obtaining insight into mechanisms of action of EPO, we showed that EPO treatment of young mice as well as EPOR overexpression in pyramidal neurons leads to a remarkable, enduring improvement of higher cognition, together with enhanced hippocampal long-term potentiation, an electrophysiological correlate of learning and memory. At the cellular level, we observed that 3-week EPO treatment leads to an increase in the number of pyramidal neurons and oligodendrocytes in the hippocampus by $\sim$ 20%.

Surprisingly, numbers of mature cells increased in absence of cell proliferation and without decrease in apoptosis. In fact, EPO caused pre-existing precursors to differentiate into mature neurons and oligodendrocytes, unmasking this growth factor as mediator of a novel mechanism of postnatal neurogenesis and on-demand delivery of new neural cells. We have generated and start now to employ cell-type specific EPO and EPO receptor deletion mutant mice in order to delineate the cellular underpinnings of endogenous and exogenous EPO effects on cognition.
Conclusion: Taken together, EPO acts as a potent modulator of neuroplasticity and should be exploited in novel treatment strategies for human brain diseases.
Policy of full disclosure: None.

S-06-002
Fronto-parietal networks and working memory dysfunction in schizophrenia

F. Schlagenhauf (Charité Universitätsmedizin, Psychiatry and Psychotherapy), Berlin, Germany

Objective: Working memory (WM) impairment is a prominent cognitive dysfunction in patients with schizophrenia as well as subjects with high-risk metal state. Alterations in dorsolateral prefrontal cortex activation and glutamatergic neurotransmission have been suggested as potential neural underpinnings in different stages of psychosis. Here we tested if alterations in fronto-parietal networks are present in subjects with subclinical levels of psychosis and if alterations in schizophrenia patients are association with regional glutamate concentration.
Methods: We used functional MRI during an n-back working memory task in a sample of medicated and unmedicated schizophrenia patients and matched controls, and in a sample of individuals with and without subclinical delusional ideation. Fronto-parietal effective connectivity was characterized using dynamic causal modeling. Magnetic resonance spectroscopy (1H-MRS) was used to estimate glutamate in dLPFC.
Results: Individuals with high delusional ideation showed no impairment on the behavioural level. Compared to individuals with low delusional ideation, individuals with high delusional ideation showed a significant increase in dorsolateral prefrontal activation as well as reduced WM-dependent parieto-frontal connectivity. Medicated and unmedicated patients with schizophrenia showed lower WM performance and reduced activation in dLPFC compared to controls. While patients and controls did not significantly differ on local glutamate concentration, the association between local glutamate concentration and dlPFC activation was different between medication groups with a positive association in unmedicated patients but not in medicated patients.
Conclusion: Our findings show that alterations in the WM network are also present in a non-clinical population with psychotic experiences who do not display cognitive deficits. Furthermore, we provide evidence that WM dependent activation is associated with glutamate concentration in unmedicated schizophrenia patients.
Policy of full disclosure: None.

S-06-003
Impaired and intact attentional processes during working memory encoding in schizophrenia

R. Bittner (University Hospital Frankfurt, Department of Psychiatry), Frankfurt, Germany

Objective: Working memory (WM) and attention are fundamental and closely linked cognitive domains. Attention is crucial for selecting information to be encoded into WM. Patients with schizophrenia are markedly impaired in both domains. However, the interplay between these deficits remains poorly understood. Based on our previous findings regarding the central role of impaired WM encoding, we posit, that impaired attentional processes contribute to WM dysfunction specifically during the encoding stage. We tested this hypothesis in both behavioural and neuroimaging experiments.
Methods: We studied 55 patients with schizophrenia and 55 matched healthy controls performing a change detection task. Participants were simultaneously presented with both highly salient and non-salient spatial information and had to selectively encode either type of information. We investigated, whether patients with schizophrenia were biased toward a particular type of information and whether an additional top-down cue would influence this bias. In an fMRI study, we investigated 100 right-handed individuals without personal or family history of psychiatric disorders, who performed a visuospatial change detection task. We computed whole brain correlations with polygenic scores (PGS) for schizophrenia to elucidate the relationship between genetic risk and brain function during WM encoding.
Results: In the behavioural study, patients were significantly more impaired when required to encode non-salient compared to salient information without a top-down cue. However, patients could use top-down attention to overcome this bottom-up bias towards highly salient information. In fMRI, we observed a significant negative correlation between BOLD activation in the right temporo-parietal junction—part of the ventral attention network—during WM encoding and PGS for schizophrenia.
Conclusion: Our results point toward specific interactions between impairments in attention and WM in schizophrenia. They confirm the importance of the encoding stage for WM dysfunction and indicate preserved cognitive functions in patients. Additionally, preliminary evidence from magnetoencephalography indicates impairments during the early stages of WM encoding.
Policy of full disclosure: None.

S-06-004
Virtual reality training for social skills in schizophrenia

M. Ichinose (Psychological Science, Vanderbilt University), Nashville Tennessee, USA

Abstract not received in due time.

S-07 Secondary vs primary negative symptoms: implications for precision medicine

S-07-001
Secondary negative symptoms: from assessment to imaging findings

S. Kaiser (Geneva University Hospitals, Division of Adult Psychiatry, Mental Health & Psychiatry Department), Chêne-Bourg, Switzerland

Objective: Secondary negative symptoms can be caused by positive symptoms, depression, medication side-effects, social deprivation or substance abuse. While often considered 'easier to treat' than primary negative symptoms, secondary negative symptoms are a common clinical problem and the evidence for their treatment remains very limited. This presentation has two objectives: (1) to give an overview on the concept and the assessment of secondary negative symptoms

and (2) to present recent neuroimaging evidence suggesting distinct pathomechanisms for negative symptoms associated with positive and depressive symptoms.
Methods: Concerning concept and assessment of secondary negative symptoms a systematic review of the literature was conducted. To explore potential neural mechanisms of secondary negative symptoms a transdiagnostic approach was selected. We employed a modified version of the monetary incentive delay task to investigate the neural correlates of reward anticipation in patients with schizophrenia, first-episode psychosis and bipolar disorder as well as in persons with schizotypal personality traits.
Results: The use of standardized rating instruments allows identifying potential sources of secondary negative symptoms. However, establishing causality remains difficult. Regarding neuroimaging there is now consistent evidence that primary apathy/amotivation is associated with reduced striatal activation during reward anticipation. In contrast, in our sample of patients with first-episode psychosis apathy was associated with positive symptoms and both symptom dimensions were associated with increased striatal activation during reward anticipation. In patients with bipolar disorder symptoms of apathy/amotivation was associated with subclinical depression. On a neural level these symptoms were associated with reduced activation of the inferior prefrontal cortex during reward anticipation.
Conclusion: While the concept and the clinical assessment of secondary negative symptoms are now well established, it remains an open issue to what extent primary and secondary negative symptoms have shared and dissociable neural correlates. A transdiagnostic approach allows exploring potential avenues for dissociating primary and secondary negative symptoms.
Policy of full disclosure: SK has received royalties for cognitive test and training software from Schuhfried. SK has received advisory board honoraria on an institutional account for education and research from Recordati and Lundbeck.

S-07-002
Primary and persistent negative symptoms: from assessment to treatment

S. Galderisi (University of Campania Luigi Vanvitelli, Department of Psychiatry), Naples, Italy

Objective: Primary and persistent negative symptoms (NS) are associated with poor treatment response and real-life functioning in subjects with schizophrenia, both in chronic and first episode subjects. Prospective studies are still limited and the definition and assessment of primary and persistent NS using a categorical or dimensional approach are debated. The presentation summarizes main results of prospective studies on primary and persistent NS, defined within a categorical or a dimensional approach.
Methods: Within the first approach, the schedule for deficit syndrome was used to characterize deficit schizophrenia (DS, with primary and persistent NS) and non-deficit schizophrenia (NDS) in chronic patients. Within the second approach, different definitions of persistent NS (PNS) were applied in first-episode (FE) cohorts within the EUFEST and OPTiMiSE studies.
Results: In chronic patients, DS categorization was stable in 42 out of 51 subjects (82.4%). DS had greater social dysfunction than NDS subjects, both at baseline and follow-up. In the EUFEST cohort, PNS not confounded by depression or parkinsonism were present in 6.7% of the sample. Subjects with PNS had longer duration of untreated psychosis, higher frequency of loss of retention and worse global functioning after 1 year of treatment with respect to subjects with non-persistent NS. In the OPTiMiSE cohort, short-term PNS, unconfounded by the same factors, were present in 11% of the sample at the end of phase1 (after 4 weeks of amisulpride treatment). PNS subjects were more frequently non-remitted at the end of phase1 and showed a worse psychosocial functioning compared to non-PNS subjects. Seventy percent of PNS who completed phase3 (clozapine treatment) did not respond to the drug.
Conclusion: Our findings indicate that primary and persistent NS, compared to secondary, non-persistent NS, have a negative influence on treatment response and functional outcome. Failure to acknowledge this heterogeneity may hinder progress in research on NS treatment and neurobiology.
Policy of full disclosure: S. Galderisi received honoraria, advisory board or consulting fees from the following companies: Gedeon-Richter, Janssen Pharmaceuticals, Janssen-Cilag Polska Sp. z o.o, Otsuka, Pierre Fabre and Sunovion Pharmarmaceuticals.

S-07-003
Persistent negative symptoms in first episode psychosis: prevalence, predictors and prognosis

S. F. Austin (University of Copenhagen, Psychiatric Research Unit, Region Zealand), Hillerød, Denmark; C. Hjorthøj, O. Mors, M. Nordentoft

Objective: Negative symptoms are a core component of schizophrenia, impact on outcomes and often are resistant to treatment. The goal of this study was to investigate the prevalence, baseline predictors and long-term impact of persistent negative symptoms (PNS) within a large representative cohort of people with first episode psychosis.
Methods: The study had a prospective design. Patients recruited into the OPUS trial (1998–2000) with a first-time diagnosis within the schizophrenia spectrum (F20–28) were included. People were classified with persistent negative symptoms, if they experienced enduring negative symptoms, that were not secondary to psychotic symptoms, depression or medication side effects. Clinical data collected at baseline, 1 year, 2 years and 10 years was used to identify predictors of PNS and long-term outcomes.
Results: Full clinical data was available on 369 people. A total of 90 people (24%) displayed PNS, 2 years after diagnosis. Significant univariable predictors of PNS at baseline were low functioning, male sex, cannabis use, poor pre-morbid social functioning and high levels of negative symptoms. People that displayed PNS had significantly lower functioning and higher levels of psycholopathology at 10-year follow-up. A total 3% of people with PNS were recovered at 10-year follow-up compared to 20% recovered without PNS (OR 7.42, $p < 0.01$).
Conclusion: A significant proportion of the cohort displayed persistent negative symptoms which significantly impacted on long term outcomes. Researchers and clinicians need to develop effective interventions that can ameliorate persistent negative symptoms and potentially impact on illness prognosis.
Policy of full disclosure: None.

S-07-004
Apathy and functional outcome: does persistence matter?

A. Faerden (Oslo University Hospital Mental Health & Addiction Division, Acute Psychiatric Department), Oslo, Norway

Objective: Apathy is considered a key contributor to the poor functional outcome of psychotic disorders and hence a key treatment target in schizophrenia, but we are still short of effective treatments and understanding of the underlying mechanisms. Studies of negative

symptoms have been successful in making a distinction between persistent and non-persistent symptoms. This presentation will therefore review results regarding difference between persistent and non-persistent apathy and compare with studies in other brain disorders to better understand the association between apathy and functioning.
Methods: Literature search for persistent apathy
Results: The clinical state of apathy in schizophrenia is one of the five sub-symptoms underlying the negative symptom domain. Apathy is present in individuals at risk for psychosis, early onset schizophrenia, first episode psychosis (FEP) and during the following course of illness. There are few studies of persistent apathy. Results show that those with persistent high apathy level have poorer functioning than those with low or fluctuating apathy, have a longer DUP, is found more often in males, in those with a diagnosis of schizophrenia and is associated to brain areas associated with motivation. Regardless of persistence all studies find a significant relationship between high levels of apathy and poor functioning and that apathy predict poor functioning at follow up, both in short and long time follow up studies. Significant association between apathy and poor functioning is consistently found in other brain disorders, but with few studies of persistent apathy.
Conclusion: From this review it may seem that endurance does not matter in the clinical work, because high levels of apathy are consistently associated to poor functioning. But what contributes to persistent or fluctuating apathy we do not yet know and is in need of future studies in order to target the possible treatable components of persistent and non-persistent apathy.
Policy of full disclosure: None.

S-08 Moving from research to routine mental healthcare: the implementation of lifestyle interventions in people with severe mental illness

S-08-001
Implementation barriers and facilitators of an integrated multidisciplinary lifestyle intervention in inpatients with severe mental illness

J. Deenik (GGz Centraal Innova), Amersfoort, The Netherlands; D. Tenback, E. Tak, O. Blanson-Henkemans, S. Rosenbaum, I. Hendriksen, P. van Harten

Objective: The current study aimed to evaluate the implementation of a multidisciplinary lifestyle enhancing treatment for inpatients with SMI (MULTI) that showed significant health improvements on the longer term, by determining barriers and facilitators of MULTI from a patient, healthcare professional (HCP) and organisational perspective.
Methods: Responses of HCPs and patients at inpatient facilities that delivered the MULTI intervention were assessed using the Measurement Instrument for Determinants of Innovations. The instrument assessed determinants (29 items) to implementing MULTI related to the intervention, the HCPs/patients and the organisational context by using a 5-point scale and open-ended questions. Determinants to which $\geq$ 20% of the participants responded negative ("totally disagree/disagree") were considered barriers and to which $\geq$ 80% of participants responded positive ("agree/totally agree") facilitators. Responses to open-ended questions were included if the theme was mentioned by $\geq$ 2 participants. After excluding participants with limited experience or understanding of MULTI (e.g. due to night shifts or illness severity), 50 HCPs (online questionnaire) and 46 patients (semi-structured interview) were invited.
Results: Of eligible participants, 42 HCPs and 33 patients responded. Preliminary findings show that participating in MULTI turned out to be complex for the majority (60%) of patients, which could partly be related to organisational factors (e.g. lack of time for nurses to improve tailoring). Organisational factors were only reviewed as barriers by HCPs (e.g. organisational changes and financial resources). The implementation was facilitated by positive attitudes of both HCPs and patients towards MULTI and their role in it. Responses showed a strong commitment and collaboration.
Conclusion: Findings support the feasibility of MULTI, which was facilitated by positive attitudes of both HCPs and patients towards such an integrated, multidisciplinary and structured approach. Organisational strategies are needed to further improve and maintain MULTI, which showed to improve a variety of health-related outcomes in inpatients with SMI.
Policy of full disclosure: Stichting tot Steun VCVGZ supported this study by an unrestricted grant. The funder had no role in the study design, data collection and analysis, decision to publish or preparation of this abstract.

S-08-002
Introducing lifestyle interventions in mental healthcare: lessons learned from two pragmatic randomized controlled trials

F. Jörg (University MC, Groningen Friesland Mental Health Service), Groningen, The Netherlands; A. Looijmans, E. Corpeleijn, R. Schoevers

Objective: Lifestyle interventions are effective in improving physical health parameters in severe mentally ill (SMI) patients. However, an evidence-to-treatment gap prevents most patients to benefit. We conducted two large pragmatic trials in which we targeted the obesogenic environment of residential SMI patients (ELIPS, N = 818), and the intrinsic motivation of SMI outpatients (LION, N = 281), respectively. ELIPS significantly reduced waist circumference, but LION failed to show significant improvements in health, although motivation to improve dietary habits increased. Overall, effects were small and heterogeneous. The pragmatic character of both trials enabled us to study site variation and learn lessons regarding implementation facilitators and barriers of lifestyle interventions. The objective of this presentation is to give an overview of the lessons learned while implementing two pragmatic lifestyle interventions studies.
Methods: Using Wierenga's process evaluation model, we structured barriers and facilitators on five levels: (1) patients, (2) lifestyle program, (3) nurses carrying out the intervention, (4) mental health care organization and (5) socio-political context. We used patients' trial data, nurses' questionnaires, research coordinator's logbook information, semi-structured interviews with intervention developer and researchers, and policy documents. Qualitative data were analysed using the phenomenologic approach; quantitative data were used for a regression analyses where determinants (patient, nurse and process characteristics) predicted implementation success.
Results: We present nine lessons learned regarding implementation of lifestyle interventions, ranging from nurses' expectations of patients' motivation to change, allocation of sufficient time to carry out lifestyle activities, attitudes on the work floor regarding healthy lifestyle, being a role model and task responsibilities, to needing to bridge the gap between somatic and mental health care.
Conclusion: Lifestyle interventions can contribute to better health in SMI patients but (long-term) implementation in clinical practice is a challenge. The lessons learned may be of value to mental health professionals interested in implementing lifestyle interventions in their own teams.

Policy of full disclosure: Both pragmatic controlled randomized trials (ELIPS and LION) were funded by ZonMW, the Netherlands Organisation for Health Research and Development.

S-08-003
The keeping the body in mind program: from pilot intervention to routine clinical care for youth with first-episode psychosis

S. Teasdale (University of New South Wales), Sydney, Australia; P. Ward, A. Watkins, R. Morell, J. Curtis

Objective: To evaluate the effectiveness of the Keeping the Body in Mind (KBIM) lifestyle program in preventing anti-psychotic related weight-gain and improving lifestyle components in young people with first-episode psychosis.
Methods: The KBIM program was embedded within community mental health services in Sydney, Australia, and delivered by a clinical nurse consultant, dietitian, exercise physiologist and peer support worker. The KBIM program consists of individualised dietary, exercise and health coaching intervention adjunctive to best-practice mental health care. Inclusion criteria were: (1) first-episode of psychosis, (2) aged 15–25, (3) receiving concomitant care from the mental health service. The KBIM pilot study was a prospective, controlled study of people with first-episode psychosis initiating antipsychotic medication. The subsequent replication study was a multisite, singe-arm intervention delivered across three sites within a local health district. Primary outcome was change in weight and waist-circumference. Secondary outcomes were dietary components, physical activity and exercise capacity. Measures were taken at baseline, 12-week and 2-year.
Results: Sixteen people completed the KBIM pilot intervention and were compared to twelve controls. The intervention group gained significantly less weight compared to standard care controls (1.8 kg, 95% CI − 0.4 to 2.8 vs. 7.8 kg, 4.8 to 10.7, $p < 0.001$). Similar positive effects were observed for waist circumference. KBIM participants showed improvements in dietary components, physical activity level and exercise capacity. For KBIM participants, there was no statistically significant change in weight or waist-circumference at 2-year, and dietary improvements were maintained. Initial replication data obtained from 46 participants found the KBIM program restricted weight gain to 0.8 kg (95% CI − 0.8 to 2.4, $p = 0.34$) over the initial 12-week of intervention.
Conclusion: The KBIM lifestyle program appears to be effective in preventing antipsychotic-related weight gain and improving lifestyle factors in young people with first-episode psychosis.
Policy of full disclosure: The KBIM pilot study was funded by the Mental Health and Drug and Alcohol Office NSW, Australia. Subsequent, ongoing funding is from the South Eastern Sydney Local Health District.

S-08-004
Process evaluation of the SMILE lifestyle intervention for people with a serious mental illness: the experiences of patients and healthcare professionals

F. Walburg (Vrije Universiteit Amsterdam, Health Sciences), Amsterdam, The Netherlands; B. van Meijel, M. van Tulder, M. Adriaanse, H. Brandt, W. de Joode

Objective: The main objective was a process evaluation of the SMILE lifestyle intervention, exploring in-depth experiences from patient and health care professional perspectives.
Methods: A qualitative study was conducted. Using a purposive sampling strategy, data were collected through semi-structured interviews with 15 patients and 15 healthcare professionals. Questions of the interview guide were based on the Re-Aim model. All interviews were audiotaped and transcribed verbatim. A thematic analysis of the data was performed with support of the software program MAXQDA.
Results: The first results show that awareness of a healthy lifestyle seemed to have played a major role throughout the intervention, instead of actual weight loss itself. Both patients and healthcare professionals found the intervention valuable, even for patients who did not lose weight. Patients mentioned having experienced improvement in food behavior, increased exercise behavior and changes in daily life routine. Perceived facilitators by patients and healthcare professionals were: the materials and structure of the SMILE intervention, the group-based setting, and the practical aspects of the intervention. Perceived barrier for healthcare professionals was time management for preparation and giving group sessions. Perceptions on the setup of the intervention varied between healthcare professionals.
Conclusion: This study gives us insight into the perceptions and experiences of patients with SMI and healthcare professionals who were involved with a 1-year lifestyle intervention. Based on preliminary results, the SMILE intervention is perceived as a valuable addition to care by both patients and healthcare professionals. However, daily practice makes implementation difficult. This study shows the essential demands of lifestyle interventions in mental health care and could help guide development and implementation of lifestyle programs within mental health facilities.
Policy of full disclosure: None.

S-09 Exploring the links between the immune system, dopamine and the environment translational implications for schizophrenia research

S-09-001
Immune activation is related to reduced GABAergic and enhanced dopaminergic transmission in first episode psychosis patients

S. Erhardt (Karolinska Institute), Stockholm, Sweden

Objective: Immune activation, reduced γ-Aminobutyric acid (GABA)-ergic activity as well as hyperactivity of the brain dopamine system are all, and independently, suggested to be part of the pathophysiology of schizophrenia. We recently reported decreased levels of cerebrospinal fluid (CSF) GABA in first-episode psychosis (FEP) patients. The pro-inflammatory cytokine interleukin-18 (IL-18) as well as the chemokines monocyte chemoattractant protein-1 (MCP-1) and chitinase-3-like protein 1 (YKL-40) are all secreted by monocytes and macrophages peripherally, and by microglia in the central nervous system.
Methods: In the present study, markers of immune activity as well as dopamine and its metabolites HVA and DOPAC were analyzed in 41 first episode psychosis (FEP) patients and 21 age- and sex-matched healthy volunteers. Patients and healthy controls were enrolled within the Karolinska Schizophrenia Project.
Results: Plasma levels of IL-18, MCP-1 and YKL-40 were increased in FEP patients compared to healthy controls. IL-18 in CSF was below level of detection in all samples. The CSF levels of MCP-1 and YKL-40 did not differ significantly between FEP patients and healthy controls. In the CSF, dopamine levels were significantly increased in FEP patients compared to healthy controls. Significant correlations

among patients were found between plasma IL-18 and CSF dopamine and between plasma MCP-1 and CSF dopamine. CSF GABA was found to correlate with the dopamine metabolites HVA and DOPAC in patients. In healthy controls, correlations between CSF MCP-1 and CSF GABA as well as between CSF GABA and CSF HVA were found.
Conclusion: These findings are suggestive of increased immune activation concomitant with a reduced GABAergic and an enhanced dopaminergic tone in FEP patients. Stronger correlations between the immune markers, GABA as well as dopamine and its metabolites in FEP patients than in healthy controls suggest a pathophysiological signaling pathway that might be of relevance for schizophrenia.
Policy of full disclosure: None.

S-09-002
Susceptibility and resilience in immune-mediated neurodevelopmental disorders: insights from animal models

U. Meyer (University of Zurich), Zurich, Switzerland; F. Mueller, U. Weber-Stadlbauer

Objective: Epidemiological studies over the past decades have repeatedly implicated maternal immune activation (MIA) in the etiology of psychiatric illnesses, including schizophrenia, autism spectrum disorder and bipolar disorder. Not all offspring exposed to MIA, however, develop overt pathologies, suggesting that some are susceptible while others are resilient to MIA. To elucidate susceptibility and resilience in immune-mediated neurodevelopmental disorders, we used a well-established mouse model of MIA that is based on prenatal exposure to the viral mimic poly(I:C).
Methods: Poly(I:C)-based MIA was induced in C57BL6/N mice on gestation day 12. Control dams received vehicle solution only. Offspring of poly(I:C)- or vehicle-exposed dams were subjected to a comprehensive behavioral testing battery when they reached adulthood (12 weeks of age onwards). Next-generation mRNA sequencing and gene pathway analyses were conducted after behavioral testing to explore the molecular correlates of resilience and susceptibility to MIA.
Results: Behavioral characterization coupled with unbiased TwoStep cluster analysis of a large number offspring ($N > 100$) revealed that offspring exposed to MIA could be stratified into susceptible and resilient subgroups. While the former was characterized by deficits in social interaction, sensorimotor gating, working memory and spatial exploration, the behavioral profile of the latter was indistinguishable from control offspring. Susceptible and resilient MIA offspring were also dissociable by the presence of distinct molecular profiles in cortical and subcortical brain areas, involving divergent abnormalities in pathways crucial for mRNA translation, de novo synthesis and ubiquitination of proteins, synaptic long-term potentiation, and oxidative stress.
Conclusion: Using a model with direct relevance to immune-mediated neurodevelopmental disorders, our data show that MIA results in substantial phenotypic and transcriptomic variability even in the context of genetic homogeneity and under identical experimental conditions. If extended further, our model system may help to explain why only a subgroup of offspring exposed to MIA develops overt neurodevelopmental sequelae.
Policy of full disclosure: None.

S-09-003
Chronic haloperidol treatment drives neuroinflammation in rats exposed prenatally to maternal immune activation

A. Vernon (King´s College London, Basic and Clinical Neuroscience), London, UK

Objective: Evidence-based medicine suggests that a subset of schizophrenia is associated with an inflammatory syndrome. It remains unknown however if antipsychotic drugs affect neuroinflammation in the brain. We therefore determined the effects of chronic haloperidol treatment on microglia in a rat maternal immune activation (MIA) model, representative of schizophrenia pathology.
Methods: Pregnant rat dams were exposed to poly (I:C) on GD15 (4 mg/kg, i.v.; n = 5; POL) to induce MIA, or saline (n = 5; CON) as a control. Adult male offspring (n = 2 per litter), were randomly allocated to treatment with either haloperidol (0.5 mg/kg/d s.c.) or vehicle for 28 days by osmotic minipumps (all n = 10). After 28d treatment, animals were culled and perfused transcardially with 4% PFA. Fixed brain tissues were dissected, cryoprotected and microtome sectioned. Serial sections were stained for Iba1 as a marker of microglia. Density and morphology (soma size) of Iba1 + microglia were assessed in the corpus striatum (CS) and anterior cingulate cortex (ACC) using unbiased stereology. Data were analysed using 2 × 2 ANOVA in SPSS with main effects of prenatal, postnatal and pre × post-natal interactions.
Results: Strikingly, there were significant interactions between pre- and post-natal treatments for both Iba1 + density in the CS [$F(1, 32) = 5.15$; $p < 0.05$] and ACC [$F(1, 32) = 9.43$; $p < 0.01$] as well as soma size in the CS [$F(1, 32) = 11.6$; $p < 0.01$] and ACC [$F(1, 32) = 11.7$; $p < 0.01$]. Post hoc testing on this interaction confirmed a significant increase in both Iba1 + density and soma size in poly(I:C)-exposed offspring treated with haloperidol, relative to all other groups in both the CS ($p < 0.01$) and ACC ($p < 0.01$).
Conclusion: These data suggest haloperidol treatment may interact with prenatal immune activation to worsen neuroinflammation. Further research is required to understand the impact of antipsychotic drugs on microglial function.
Policy of full disclosure: None.

S-09-004
Protein misassembly as a non-genetic convergence pathway for behavioral disorders mirrored in the immune system

C. Korth (University of Düsseldorf, Neuropathology), Düsseldorf, Germany

Objective: Schizophrenia has likely heterogenous biological underpinnings. We created an animal model for a subset of schizophrenia cases inspired by previous post-mortem findings by overexpressing the full length, non-mutant human DISC1 gene in a rat (tgDISC1 rat) that exhibits aberrant signaling of DISC1-dependent pathways, and other phenotypes consistent with MATRICS criteria. We aimed to use the tgDISC1 rat as a model for detection of key physiology and biomarkers in human patients with schizophrenia.
Methods: Analysis of peripheral blood mononuclear cells-derived cDNA on Affymetrix Rat Gene 2.0 ST Gene Expression Microarrays yielded a unique signature of dysregulated genes computed by weighted gene correlation network analysis (WGCNA). Top hits were

validated in two independent cohorts (n = 16/50 and n = 54/45) of schizophrenia patients and controls, respectively.
Results: In the tgDISC1 rat, a specific immune dysregulation was obvious from WGCNA analysis, mainly characterized by a down-regulation of genes, including cytokines. Expression and pathway analysis indicated modulated genes in CD8+ dendritic and T cells, as well as macrophages, NK cells and microglia. The top hits RGS1 an CCL4 were downregulated in the tgDISC1 rat and also in the two independent patient cohorts. A combination of both was able to specify a 25% schizophrenia subset with similar gene expression changes. In this patient subset treatment resistant schizophrenia (TRS) cases were overrepresented indicating that an immune subtype could lead to resistance of classical antipsychotic treatment.
Conclusion: Modeling protein mis-assembly of DISC1 leads to a complex set of changes consistent with phenotypes also found in schizophrenia. Since immune changes in this animal model were mirrored in a subset of schizophrenia patients with unique clinical characteristics, they are likely relevant for neuro-immune interactions. Further research is necessary to reveal the role of immune changes for TRS but the tgDISC1 rat could be an animal model to investigate both TRS as well as tailored pharmacotherapies.
Policy of full disclosure: None.

S-10 Pathobiology, measurement and treatment of motor signs in psychosis

S-10-001
Motor symptoms in schizophrenia are related to disease pathophysiology rather than antipsychotic treatment

D. Hirjak (Central Institute of Mental Health), Mannheim, Germany

Abstract not received in due time.

S-10-002
Implicit encoding of movement probability and corticospinal excitability in schizophrenia

L. Dupin (INSERM University Descartes), Paris, France

Objective: Adapting behavior to environmental constraints has been found to be impaired in schizophrenia. The ability to predict the most probable consequence or the most adapted upcoming action generally relies on statistical estimation based on the context or previously accumulated evidences relevant to the situation. This study aimed at evaluating whether implicit adaptation of motor behaviour to the probability of an upcoming instruction to move (or not to move) is impaired in schizophrenia compared to healthy controls and siblings.
Methods: Behavioural and neurophysiological measures were measured in sessions with different probabilities of Go/Nogo trials. Subjects were not aware of different probabilities and implicit movement adaptation was measured by analyzing reaction times in Go trials. In addition, corticospinal excitability of the primary motor cortex was measured with transcranial magnetic stimulation at two time points, up to 1500 ms, prior to the Go/Nogo instruction. This measure thus captured the of corticospinal excitability state prior to movement, reflecting the statistical prediction of the upcoming instruction based on the implicit accumulation of evidences.
Results: Results indicated a lack of behavioural and corticospinal excitability adaptation to the probabilistic context in schizophrenia contrary to controls and siblings of patients.
Conclusion: The measure of predictive state of the excitability of primary motor cortex could give a new insight in the underlying mechanisms reflecting altered adaptation mechanisms in schizophrenia.
Policy of full disclosure: None.

S-10-003
Treatment options of psychomotor symptoms—a case for neurostimulation?

S. Walther (University Hospital Bern, Department of Psychiatry), Bern, Switzerland; D. Alexaki, L. Schäppi

Motor symptoms are intrinsic features of psychotic disorders. However, treatment options are rare and in case of antipsychotics may even worsen motor signs. The pathobiology of motor signs is suggested to include alterations of the cerebral motor system. Neuroimaging evidence points to aberrant hyperactivity in the premotor cortex in patients with severe motor inhibition. Likewise, fronto-parietal network activity is reduced in patients, which is linked to impaired fine motor function.

Noninvasive brain stimulation such as transcranial magnetic stimulation (rTMS) is a useful tool to modulate brain network function in health and disease. Results of two pilot studies will be presented demonstrating effects of specific rTMS protocols on motor impairments, including both gross and fine motor function. Given that these results can be replicated, rMTS may become an effective treatment option for motor symptoms in psychosis
Policy of full disclosure: None.

S-10-004
Smart devices: an aid for the clinician to measure motor signs

P. van Harten (Maastricht University, Department of Psychiatry), Amersfoort, The Netherlands

Objective: Movement disorders (MD) or motor signs are strongly related to psychotic syndromes. Well known are the side effects of pharmacotherapy (acute and tardive MD). However, MD (e.g. dyskinesia, bradykinesia) can also be present in antipsychotic naïve patients and in the prodromal phase of psychosis. MD can also be a prognostic factor for the development and course of psychotic syndromes. MD are clinically relevant as they can influence the quality of life severely. Clinical rating scales are often used to measure MD and motor signs. However, instrumental measurements seem an alternative, and the pros and cons are discussed.
Methods: Literature search with terms such as motor signs, MD, dystonia, dyskinesia, etc., combined with 'instrumental' or 'electronic' and results of our own research.
Results: Instrumental measurement is more reliable and more sensitive that clinical rating scales. Intraclass correlation coefficients of around 0.8 are regularly found (e.g. in an instrument that measured dyskinesia). Higher sensitivity results in a higher prevalence of MD, because subtle forms of MD are included (e.g. handwriting kinematic resulted in a higher prevalence of drug-induced MD). Another advantage is that instruments assess the steps in the process (e.g. of a walking task duration, amplitude and velocity of a stride can be measured). Furthermore, some devices are wearables making the relationship over time, between MD and environmental factors visible. A disadvantage of instrumental measurement may be the regularly found lower concurrent validity with clinical rating scales, probably due to the higher sensitivity of instrumental measurement

and because instruments often measure one part of the body while rating scales have a broader view (the clinical picture). Furthermore, instruments do not measure subjective complaints of MD.
Conclusion: Instrumental measurement of MD is in many aspects superior to clinical rating scales; however, the validity is debatable and subjective aspects of MD are not measured.
Policy of full disclosure: None.

S-11 Schizophrenia and cancer. The role of microRNAs

S-11-001
The low cancer risk in patients suffering from schizophrenic spectrum disorder. The possible role of microRNAs. Future medication strategies

E. Rizos (ISNIP), Greece; V. Zoumpourlis, N. Siafakas, E. Katsantoni

Objective: MicroRNAs are a large group of small, non-coding oligonucleotides that regulate gene expression at a post-transcriptional and translational level and are in control of many basic cellular functions, including growth, migration and death. They target approximately 30% of human genome and 70% of miRNAS identified are expressed in the CNS. Recent evidence supports a role of microRNAs in cancer and psychiatric disorders such as schizophrenia and bipolar disorder, through their regulatory role on the expression of multiple genes. The rather rare co-morbidity of cancer and schizophrenia is an old hypothesis which needs further research on microRNAs as molecules that might exert their oncosuppressive or oncogenic activity in the context of their role in psychiatric disorders
Methods: The expression pattern of a variety of different microRNAs was investigated in patients (N = 6) suffering from schizophrenia termed control, patients with a solid tumor (N = 10) and patients with both schizophrenia and tumor (N = 8). miRNA profiling was performed on whole blood samples using the miRCURY LNA™ microRNA Array technology (6th & 7th generation).
Results: A subset of 3 microRNAs showed a statistically significant differential expression between the control and the study groups. Specifically, significant down regulation of the let-7p-5p, miR-98-5p and of miR-183-5p in the study groups (tumor alone and tumor and schizophrenia) was observed ($p < 0.05$).
Conclusion: The results of the present study showed that let-7, miR-98 and miR-183 may play an important oncosuppressive role through their regulatory impact in gene expression irrespective of the presence of schizophrenia, although a larger sample size is required to validate these results. Nevertheless, further studies are warranted in order to highlight a possible role of these and other micro-RNAs in the molecular pathways of schizophrenia.
Policy of full disclosure: None.

S-11-002
MicroRNAs in central nervous system disorders

N. Siafakas (ISRIMSD), Athens, Greece

Objective: The central dogma of Biology dictates the flow of genetic information from DNA through RNA to protein. Nevertheless, it is now known that RNA molecules may perform many critical functions in the intracellular environment, expanding their role from intermediate carriers of genetic information to widespread regulators of gene expression.
Methods: Short, non-protein-coding RNA sequences, termed microRNAs (miRNA), have been shown to negatively regulate the timing and rate of protein translation via catalytic destruction, or translational repression of their complementary, target messenger RNA (mRNA). As a consequence, miRNAs may significantly affect all aspects of cellular growth, development, differentiation and apoptosis, with profound influence in many human diseases.
Results: There is now plentiful evidence that reinforces the role of biogenesis and expression of various miRNAs in neuronal function and development, with their differential expression being increasingly associated with neurodevelopmental, neuropsychiatric and neurodegenerative disorders. Single miRNAs may have multiple targets in various anatomical sites and developmental stages of the brain, whereas different miRNAs may act synergistically in a complex biochemical pathway.
Conclusion: However, knowledge about the precise role of miRNAs in CNS disorders is still lacking and further elucidation of miRNA action will enable the development of novel, miRNA-based therapies, although the additional challenge of precise, effective delivery of the therapeutic agent to the appropriate target for the avoidance of adverse side-effects will also have to be addressed. In addition, these CNS-related miRNAs will potentially serve as biomarkers for non-invasive and reliable diagnostic methods, providing at the same time the basis for targeted therapy and a better prognosis.
Policy of full disclosure: None.

S-11-003
Identification of miRNAs with potential therapeutic value in the treatment of various cancer types

V. Zoumpourlis (Institute of Biology, Medicinal Chemistry and Biotechnology, National Hellenic Research Foundation (NHRF), Athens, Germany

Objective: miRNAs are small, non-coding RNA molecules which regulate hundreds of target mRNAs post-transcriptionally. As their expression is often deregulated in several cancer types, they represent potential diagnostic, prognostic, and predictive biomarkers, as well as next-generation therapeutic targets. To this end, we have attempted to identify miRNAs potentially implicated in non-melanoma skin cancer and in p53-mutant cancers, such as breast cancer and osteosarcoma.
Methods: First, we exploited a well-established in vitro model of multistage mouse skin carcinogenesis. Similarly we aimed to characterize a p73-regulated network that may restore anti-oncogenic responses in the p53-mutant cells of osteosarcoma and breast cancer.
Results: Robust microarray and bioinformatics analysis revealed that the most profound reduction in miRNA expression occurred in a functionally coherent group of miRNAs consisting of the mir-200 family members and mir-205-5p, which displayed a pattern of progressive co-downregulation from the early toward the most aggressive stages of carcinogenesis. Restoration of miR-205-5p in aggressive spindle cells appeared to reverse the characteristics of cancer progression. We demonstrated that p73 regulates a p53-independent/p73-dependent functional network underlying cell migration. Specifically, the p73 isoforms transactivate MIR34A and MIR3158 which, in turn, downregulate their mRNA co-targets (vimentin/β-catenin/lef1) to decrease cell-migration. Increasing the level of the novel p73-dependent target MIR3158 was found to induce anti-oncogenic/anti-invasive responses in p53-mutant cancer cells.
Conclusion: In conclusion, we suggest that restoration of miR-200s and/or miR-205-5p may be used to prevent progression and metastasis in non-melanoma skin cancer, and that re-activation through over-expression of the p73-dependent target MIR3158 could have a potential translational value in the context of therapeutic targeting of p53-mutant tumors.
Policy of full disclosure: None.

S-11-004
STAT target genes networks: towards biomarkers discovery

E. Katsantoni (ISRIMSD), Athens, Greece

Objective: Signal transducers and activators of transcription (STATs) are factors that transduce signals from activated cell surface receptors to the nucleus to modulate transcription and control essential cellular functions. One of the STAT factors, STAT5, is encoded by two genes, Stat5a and Stat5b, and its constitutive activation is a hallmark of solid and hematologic malignancies. The JAK-STAT signaling pathway has been also implicated in gliogenesis and astrocyte differentiation. In neuropsychiatric disorders, such as schizophrenia, the role of STATs is not well studied. As schizophrenia is characterized by alterations of brain cell metabolism, microstructure and neurotransmission, and as such physiological functions require multiple kinase-mediated signaling events involving STATs, it is possible that such processes are linked to STAT target genes deregulation. Understanding the role of STATs in activation and repression of target genes is important for identification of biomarkers for stratification and therapeutic management, and also for designing novel therapeutic molecular strategies for disorders involving STAT deregulation.
Methods: In our lab to understand the mechanisms of transcriptional activation and repression mediated by STAT5, we combined high-throughput genomics, transcriptomics and proteomics approaches.
Results: Using these approaches, the full genome-wide map of STAT5 target genes was generated and a network of interacting proteins was defined (Nanou et al. Nucleic Acids Res. 2017 Jan 9;45(1):142–154. https://doi.org/10.1093/nar/gkw832. Epub 2016 Sep 19).
Conclusion: Various identified STAT5 target genes are currently tested for their potential to be used as biomarkers in malignancies and can be also tested in neuropsychiatric patients, or patients suffering from both malignancies and neuropsychiatric disorders. It is expected that a set of useful biomarkers will be provided for stratification and therapeutic management of the patients.
Policy of full disclosure: None.

S-12 5 years of PRONIA: what have we learned?

S-12-001
Using machine learning to predict functional and clinical outcomes in early stages of psychotic disorders

N. Koutsouleris (Ludwig-Maximilians-University), Munich, Germany

Abstract not received in due time.

S-12-002
Accelerated aging—a transdiagnostic marker of poor outcomes in early stage mental disorders?

J. Kambeitz (University Hospital Cologne, Department of Psychiatry), Cologne, Germany

Abstract not received in due time.

S-12-003
Genetic underpinnings of outcome heterogeneity in functional psychoses

F. Degenhardt (Institut für Humangenetik, Universitätsklinikum Bonn), Bonn, Germany

Abstract not received in due time.

S-12-004
Neurocognitive machine learning as diagnostic and prognostic tools in early stage mental illness

L. Kambeitz-Ilankovic (Klinik für Psychiatrie und Psychotherapie), Munich, Germany

Abstract not received in due time.

S-13 Dopaminergic dysfunction and its functional implications

S-13-001
The presynaptic dopamine system and antipsychotic response in first episode psychosis

S. Jauhar (King's College London, Institute of Psychiatry), London, UK

Abstract not received in due time.

S-13-002
Prediction error coding in unmedicated schizophrenia patients and association with presynaptic dopamine function

F. Schlagenhauf (Charité Universitätsmedizin, Psychiatry and Psychotherapy), Berlin, Germany

Objective: Prediction errors are a core mechanism to adapt behaviour based on environmental feedback. In schizophrenia patients, altered coding of reward prediction errors in frontostriatal circuits and a hyperdopaminergic state in the striatum have been described. Here we investigated the neural coding of reward prediction errors in the striatum and its relation to dopamine function in healthy controls and patients with schizophrenia.
Methods: We used functional MRI during a reversal learning task in unmedicated schizophrenia patients and healthy controls using computational reinforcement learning modelling of behaviour for model-based fMRI analyses. Presynaptic dopamine syntheses capacity was measures with F-DOPA PET.
Results: Unmedicated schizophrenia patients showed impairments in reversal learning compared to controls. Coding of reward prediction errors was reduced in the ventral striatum in patients compared to controls. Unmedicated schizophrenia patients did not differ significantly in dopamine synthesis capacity from controls, although alcohol abuse seemed to influence presynaptic dopamine function in patients. While a positive association between striatal reward prediction error

and limbic dopamine synthesis capacity was observed in healthy controls, no such association was found in schizophrenia patients.
Conclusion: Our findings of behavioural deficits during reversal learning and reduced coding of RPE are in line with previous reports in unmedicated schizophrenia patients. We could not replicate the well-established finding of heightened striatal synthesis capacity in our sample. This might be partly due to alcohol abusus in some patients, which suggests important influences factors other than psychosis on this measure. The positive correlation between DSC and BOLD RPE in healthy controls is in line with previous reports linking presynaptic dopamine function with cognitive performance, an association not observed in patients.
Policy of full disclosure: None.

S-13-003
Precision weighted prediction error—part 1: neural signals and dopaminergic modulation

K. Diederen (King's College London, Department of Psychosis studies), London, UK

Objective: Learning to accurately predict future outcomes is essential for decision-making. Learning can occur by keeping track of errors in our predictions, termed prediction errors. According to contemporary theories, a key factor in learning is the degree to which uncertainty is taken into account. This implies that prediction error signals must be weighted according to their precision to facilitate optimal learning. Such precision-weighting has been proposed to be achieved via cortical effects of neuromodulatory neurotransmitters, notably dopamine. Inspite of the strong theoretical basis for this hypothesis, there is to date a paucity of data to support the role of dopamine in the precision-weighting of cortical prediction errors.
Methods: We sought to investigate whether dopamine plays a role in weighting cortical prediction errors relative to their precision, using a between-subject, placebo-controlled pharmacological functional MRI study with a dopaminergic agonist (bromocriptine) and antagonist (sulpiride). Participants performed a previously validated task in which they predicted the magnitude of upcoming outcomes drawn from distributions with varying precision.
Results: We found that cortical prediction error signals in the superior frontal cortex are precision-weighted during reinforcement learning, and that the degree of superior frontal cortical precision-weighting is modulated by dopamine. Importantly, we also observed that an increase in the degree of superior frontal cortical precision-weighting was related to improved learning.
Conclusion: Our findings provide the first robust experimental support that dopamine modules the precision-weighting of cortical prediction errors, and that such precision-weighting is important for learning. These findings have implications for clinical conditions such as psychosis in which dopamine function is altered.
Policy of full disclosure: None.

S-13-004
Precision weighted prediction error—part 2: disruption in early psychosis and schizotypy

G. Murray (University of Cambridge), Cambridge, UK; J. Haarsma, K. Diederen

Objective: Recent theories of cortical function construe the brain as performing hierarchical Bayesian inference. According to these theories, the precision of cortical unsigned prediction error (i.e., surprise) signals plays a key role in learning and decision-making, to be controlled by dopamine, and to contribute to the pathogenesis of psychosis. We aimed to test these hypotheses over a series of experiments (see also linked presentation by Dr Diederen).
Methods: We studied learning with variable outcome-precision in patients with early psychosis (psychosis study n = 80) and associations with schizotypy in 86 healthy volunteers. We gathered fMRI data during learning and applied computational modelling and fMRI analysis to examine neural representation of precision-weighting of prediction error.
Results: Behavioural computational modelling indicated that precision-weighting of unsigned prediction errors benefits learning in health and is impaired in psychosis. FMRI revealed coding of unsigned prediction errors relative to their precision in bilateral superior frontal cortex, which was impaired in psychosis, and associated with task performance and schizotypy.
Conclusion: We conclude that healthy people, but not patients with first episode psychosis, take into account the precision of the environment when updating beliefs. Precision-weighting of cortical prediction error signals is a key mechanism through which dopamine modulates inference and contributes to the pathogenesis of psychosis.
Policy of full disclosure: None.

S-14 Visual perceptual dysfunction in schizophrenia: psychophysical, neurobiological and computational perspectives

S-14-001
(Visual) Endophenotypes in schizophrenia research

M. H. Herzog (EPFL BMI SV), Lausanne, Switzerland; J. Ramos da Cruz, O. Favrod, A. Shaqiri, A. Brand, M. Roinishvili, E. Chkonia

Objective: Schizophrenia is a heterogeneous disease strongly influenced by genetic disposition. However, genetic studies have shown that each single nucleotide polymorphism (SNP) contributes very little to the disease. For this reason, endophenotypes, located in between the genetic and clinical level, have become of great interest. Due to its heterogeneity, schizophrenia is likely not caused by one abnormality. Here, we asked the question to what extent deficits in various endophenotypes tap into the same deficits of schizophrenia.
Methods: We tested schizophrenia patients, their relatives, and controls with a battery of perceptual and cognitive tests, such as visual backward masking, out of body experience, the Wisconsin Card Sorting Test (WCST), verbal fluency, and the continuous performance task (CPT).
Results: First, we found that visual backward masking is an extremely sensitive endophenotype of schizophrenia. Deficits are specific to the psychosis spectrum and not evident in depressive patients and abstinent alcoholics. As expected from an endophenotype, not only the patients but also their siblings show clear performance deficits, as well as adolescents with psychosis. Both genetic analysis and EEG recordings point to deficiencies in the cholinergic system. We then compared performance in visual backward masking with other tests. Surprisingly, performance in most tests did not correlate with each other.
Conclusion: Our results suggest that each endophenotype is sensitive to different abnormal mechanisms. Schizophrenia is much more complex than previously thought. Heterogeneity can be best attacked by the combined investigation of sensitive endophenotypes.
Policy of full disclosure: None.

S-14-002
Disordered predictions of sequences at the millisecond level leading to self-disorders in patients with schizophrenia

A. Giersch (University of Strasbourg), Strasbourg, France; C. Duval, J. Krieg, T. Schwitzer, E. Marques Carneiro

Objective: The patients' self-reports and phenomenological analyses suggest that patients with schizophrenia experience a disruption of their experience of time continuity. The sense of self implies that oneself is extended over time and continuous, and the disruption of time continuity may originate self-disorders. We will summarize previous studies exploring the mechanisms underlying the sense of time continuity, e.g. prediction mechanisms at the milliseconds level, and impairments in patients with schizophrenia.
Methods: We showed two squares on a computer screen, with an asynchrony varying from 0 to 96 ms by steps of 24 ms. Stabilized patients with schizophrenia (N = 30) and controls (29) decided about the simultaneity or asynchrony of the stimuli and pressed on a right or left square accordingly. We analyzed trial-to trial effects and EEG signals.
Results: In both groups, the detection of an asynchrony facilitated asynchronous responses on the subsequent trial. However, patients appeared to be abnormally sensitive to a simultaneous response on trial t − 1. EEG results showed that late components (400–600 ms) at right central and centro-parietal sites were larger in amplitude in controls relative to patients, related to asynchrony/simultaneity discrimination impairments in patients. In contrast, at sub-threshold asynchronies (24 ms), a large N2-like component was selectively observed in patients at left frontal electrodes.
Conclusion: The results suggest that controls learn to predict asynchronies and thus improve performance. In contrast, patients seem to prepare for simultaneities rather than asynchronies. Moreover, EEG signals suggest that patients are abnormally sensitive to subthreshold asynchronies (24 ms). Such asynchronies would not be integrated into a fluent sequence of events, thus impairing the patients' attunement to the outer world, and possibly inducing self-disorders. The abnormality may be related to a difficulty to produce sequences of information, suggesting a possible involvement of cerebellum.
Policy of full disclosure: None.

S-14-003
A predictive-coding account of altered perceptual inference in schizophrenia

V. Weilnhammer (Charité Berlin, Department of Psychiatry), Berlin, Germany; P. Sterzer

Objective: Bayesian theories of brain function posit that perceptual inference is shaped by an integration of current sensory information with predictions about its potential causes. Optimal perception therefore requires adaptive updates of such predictions to changes in the sensory environment. According to predictive-coding schemes, violations of prior predictions by incoming evidence elicit hierarchical prediction-errors (PEs), which ensure the alignment of prior predictions with the volatile statistical properties of the outside world. Importantly, an imbalance between the impact of prior predictions and sensory evidence on perceptual inference and associated PE-signaling provides a compelling explanation for the emergence of delusions and hallucinations in paranoid schizophrenia (SCZ). Here, we investigated the balance of prior predictions and sensory evidence in healthy observers and patients diagnosed with SCZ.
Methods: To this end, we considered the phenomenon of bistable perception, where an ambiguous stimulus sparks spontaneous transitions between mutually exclusive perceptual states. In three separate studies, we developed a predictive-coding model describing the balance between prior predictions and sensory evidence during perceptual bistability, which allowed us to assess the correlates of hierarchical predictions and PEs in behavior and in model-based functional magnetic resonance imaging.
Results: Using the new paradigm of graded ambiguity, we found evidence that perceptual inference in SCZ is characterized by a stronger impact of sensory evidence relative to prior predictions, which furthermore correlated to individual symptom severity.
Conclusion: This suggests enhanced PEs in the resolution of perceptual ambiguity for patients with SCZ, which may engender the formation of delusions and the experience of hallucinations by virtue of aberrant salience.
Policy of full disclosure: None.

S-14-004
Neural oscillations in visual cortices in schizophrenia indicate a disturbance in excitation/inhibition parameters

P. Uhlhaas (University of Glasgow INP), Glasgow, UK

Objective: Aberrant Gamma-band oscillations are a consistent finding in schizophrenia patients, but the nature of the deficit, as well as the trajectory across illness stages and functional relevance remain unclear.
Methods: In our cross-sectional MEG study, we examined this question using 110 participants meeting clinical high-risk for psychotic disorders (CHRpos), 22 patients with first-episode psychosis (FEP), 37 participants with affective disorders and substance abuse (CHRneg), and a group of 49 control participants (CON). During MEG recordings, participants detected randomly occurring speed changes in a visual inward-moving grating task. Main between-group statistical analyses were based on virtual-channel reconstructed MEG data, using locations across striate-and extrastriate visual cortex.
Results: Only task-related oscillatory activity differed between the clinical groups while event-related fields were intact. Compared to controls, CHRpos and FEP groups showed reduced Gamma-power and ITPC values, whereas the CHRneg group showed elevated Gamma power but no ITPC changes. Furthermore, Beta-power was increased in both CHRpos and FEP groups, but only FEP patients showed aberrant Alpha power. Correlational analyses revealed that aberrant ITPC and Gamma-power correlated strongly with each other and with task performance.
Conclusion: These data highlight the central role of impaired gamma-band oscillations in visual cortex during emerging psychosis that could represent a biomarker for early detection and diagnosis.
Policy of full disclosure: I have received research funding from Lundbeck and Lilly.

S-15 Update on the newly published S3 guideline of schizophrenia

S-15-001
The German S3-guideline on schizophrenia: development, content and planned implementation

W. Gaebel (Heinrich-Heine-University, Department of Psychiatry and Psychotherapy), Düsseldorf, Germany

The schizophrenia guideline of the DGPPN (German Society of Psychiatry and Psychotherapy) was one of the first guidelines of the guideline program of the DGPPN starting in the mid-90 s of the last century. Since then the international scientifically based conceptual and methodological consensus on requirements of guideline development, also reflected in the guiding principles of the AWMF (Association of the German Scientific Medical Societies), has very much advanced. This development can also nicely be shown by the three DGPPN schizophrenia guideline versions, the first one being published in 1998 [1], the first revision in 2006 [2] and the second revision in 2019 [3]. According to the quality classification of guidelines (S1—S3) of the AWMF, the first revision already achieved the highest quality status of a S3 guideline (combining evidence and consensus), which was the first one at all in the field of mental health guidelines in Germany. Methodological quality assessment with the AGREE instrument demonstrated that quality in most of the assessment areas had very much improved compared to the first version, which achieved only S1/2 status [4]. The current revision version is also a S3 guideline. Guideline development, though methodologically, financially and organisationally already quite demanding, is only the first step towards implementation into clinical practice. A guideline sitting just on the bookshelf will not be very helpful to patients and the (mental) heath care system. Hence, systematic efforts for dissemination and implementation are needed additionally. This presentation will give an overview on the different aspects from planning to implenting a guideline based on the experience with the development and further plans of implementing the German S3 schizophrenia guideline.

References:

[1] DGPPN (1998) Praxisleitlinien in Psychiatrie und Psychotherapie. Band 1. Behandlungsleitlinie Schizophrenie. Redaktion: Gaebel W, Falkai P. Steinkopff, Darmstadt

[2] Gaebel W, Falkai P, Weinmann S, Wobrock T. (2006) S3 Praxisleitlinien in Psychiatrie und Psychotherapie. Band 1 Behandlungsleitlinie Schizophrenie. Steinkopff Darmstadt

[3] DGPPN e.V. (Hrsg.) für die Leitliniengruppe: S3-Leitlinie Schizophrenie. 2019

[4] Gaebel W, Riesbeck M, Wobrock T (2011) Schizophrenia guidelines across the world: A selective review and comparison. Int Rev Psychiatry 23(4):379–387

Policy of full disclosure: None.

S-15-002
S3 SZ guideline on pharmacotherapy

A. Hasan (Department of Psychiatry, Ludwig-Maximilian-University of Munich), Munich, Germany

Objective: Guidelines are important tools to improve the quality of diagnostic and therapeutic procedures in medicine. Especially for disorders of schizophrenia where a magnitude of therapeutic options, but also questions are available, guidelines are needed to guide clinicians, caregivers and other people involved in the management of schizophrenia. In Germany, the new schizophrenia guidelines are available since March 2019.
Methods: From 2012 to 2019 the German S3 guidelines for schizophrenia have been revised and published in 2019. These S3-guidelines are evidence- and consensus based. Several steps, including a planning and organization phase, the registration phase, the guideline development phase, the editing and the publication were performed according to the AWMF guidelines.
Results: A total of 162 clinical recommendations and 8 statements were developed, discussed and consented by a group of more than 40 societies, experts and relatives and patients as part of a multidisciplinary consensus process. The guideline covers the topics background, diagnostics (psychiatric and somatic diagnostics), detection of rare variants of organic psychoses (e.g. autoimmune psychosis), detection and management of somatic comorbidities, antipsychotic treatment, management of antipsychotic side-effects, psychotherapy, psychosocial treatments, the management of special circumstances (e.g. dual diagnoses, pregnancy, at-risk states, depression), neurostimulation (e.g. ECT, rTMS), rehabilitation and aspects of healthcare coordination, economic costs and quality management.
Conclusion: The new German S3-schizophrenia guidelines is currently the most recent high-quality guideline covering all aspects in the management of schizophrenia. After the development and publication, the implementation and evaluation are the next planned steps.
Policy of full disclosure: None.

S-15-003
New guideline recommendations for psychological approaches to psychosis

T. Lincoln (University of Hamburg), Hamburg, Germany

Two new national guidelines were published in 2019. One is the national S3 guideline for the treatment of schizophrenia, which is based on a broad consensus. This guideline covers multiple domains of treatment differentiated by phase of treatment and includes a section on psychological approaches. The other guideline was provided by the German Psychological Association (DGPs) and focuses solely on psychological approaches but in more detail. Both guidelines make a strong and broad recommendation for cognitive behaviour therapy and for family interventions. Both guidelines also recommend several other approaches dependent on the focus of treatment and the desired outcome. The presentation will provide a brief explanation of the methodology and recommendation system of the two guidelines. The main-focus will be on a presentation of the main guideline recommendations—including similarities and differences—and will close with a discussion of their implications for clinical practice within the German health-care system.
Policy of full disclosure: Tania Lincoln is author of several published treatment manuals on CBT for psychosis and is a lecturer in workshops on CBT for psychosis.

S-15-004
2014 Nice guidelines on psychosis and schizophrenia: 'No significant new evidence' to change the recommendations 2019

E. Kuipers (Department of Psychology, King's College London, Institute of Psychiatry), London, UK

Objective: To consider the UK NICE guidelines on Psychosis and Schizophrenia 2014 and why they remain unchanged in 2019.
Methods: Since 2014 two reviews of new evidence have been completed by NICE on this guideline. This is a robust procedure with 'experts' in the area, and wide consultation, and applies to all physical and mental health conditions to decide if a new guideline should be set up.
Results: The reviews concluded that 'no significant new evidence' was found to change the 2014 recommendations, which should therefore stand.
Conclusion: In the UK, NICE processes ensure that once a guideline has made recommendations, new evidence has to be both, significant

and related to end point outcomes to overturn or revise a recommendation.
Policy of full disclosure: None.

S-16 Basic symptoms in research and clinic: past, presence and future

S-16-001
History and origins of the basic symptom concept

J. Klosterkötter (University Hospital of Cologne), Cologne, Germany

Objective: As far back as in the 1950s Gerd Huber and his colleagues began to provide evidence for the somatosis hypothesis of schizophrenia. The symposium will outline these results and clearly show how the basic symptom concept emerged from this.
Methods: In his long career as a researcher, Gerd Huber had taken advantage of all current neurobiological examination methods. An overview of this repertoire of methods and the results obtained will be given. The constant orientation on both the general psychopathology of Carl Jaspers and the clinical psychopathology of his teacher Kurt Schneider resulted in the fact that Gerd Huber always dealt with the exact correlation between the brain organic findings of neurobiological studies and the subtle clinical-psychopathological follow-up examinations.
Results: In order to integrate these findings, it was assumed that the newly revealed symptom status would be the direct expression of the detected brain biology findings and that the diagnosis-relevant first-rank symptoms could be regarded as a reaction to these substrate-related symptoms. This transphenomenal bridging function between psychotic superstructure and brain organic substrate should express the term basic symptoms.
Conclusion: Today, this concept is to be valued primarily from two perspectives. One of these aspects is the possibility of utilizing it as an integrative research concept suitable for bridging the mind-brain gap. Highly complex experience changes in the first-person perspective and neural network anomalies in the third person perspective can be combined with the help of this concept in a plausible way. The second aspect is the perspective that the basic symptom concept opened up for the prediction and prevention of schizophrenic and other psychotic disorders. Both aspects will be discussed.
Policy of full disclosure: None.

S-16-002
Basic symptoms in the early detection of psychosis: new findings

F. Schultze-Lutter (Heinrich-Heine University, Department of Psychiatry), Düsseldorf, Germany

Objective: Contrary to the ultra-high risk (UHR) criteria for the prediction of imminent psychosis, basic symptoms criteria, i.e., cognitive-perceptive basic symptoms (COPER) and cognitive disturbances (COGDIS), aim at detecting psychosis as early as possible within the course of the developing disorder.
Methods: A review of recent findings on the prevalence, clinical significance and psychosis-predictive value of basic symptom criteria in different samples and age groups as well as on the relationship between basic symptoms and other psychosis-risk, psychotic and related symptoms.
Results: COGDIS and symptomatic UHR criteria were only reported by 1.08% of a representative Swiss community (N = 2683; age 16–40 years). Both CHR symptoms and, even more pronounced, CHR criteria were highly significantly related to the presence of non-psychotic axis-I disorders and particularly functional Impairments. Besides a family history of mental disorders, specific predictors of basic symptoms were younger age, those of APS traumatic events and lifetime substance misuse. In a merged community sample of 8- to 40-year-olds, an age threshold of 15/16 years best related APS to cognitive maturation, age thresholds of 18/19 years and early twenties for perceptive and cognitive basic symptoms related these to brain maturation. In clinical samples, a meta-analysis revealed pooled conversion rates in COGDIS-defined samples of up to 54.9% within 4 years, with conversion rates beyond 2-year observation times being significantly higher compared to those of samples established by ultra-high risk (UHR) criteria. Furthermore, in structural equation models, COGDIS was found to play a mediating role between schizotypy dimensions and related attenuated symptom dimensions; and in network analysis, criteria-relevant cognitive symptoms were closely related to positive symptoms.
Conclusion: Overall, results support etiological models of psychosis that assume APS to be the result of inadequate explanatory models and basic symptoms to be direct expressions of the neurobiological aberrations underlying psychosis, thus exacerbating psychopathology.
Policy of full disclosure: None.

S-16-003
Basic symptoms in manifest psychosis and relapse detection

E. Eisner (University of Manchester), Manchester, UK; S. Bucci, N. Berry, R. Emsley, C. Barrowclough, R. Drake

Objective: Hypotheses:

1. Basic symptoms increase prior to psychotic relapses.
2. Clinicians in the UK do not typically assess basic symptoms.
3. Adding basic symptoms to conventional early signs of relapse improves relapse prediction.
4. Monitoring basic symptoms using a smartphone app is feasible, acceptable and valid.

Methods: Retrospective study: patients relapsing in the previous 6 months (n = 23) completed an in-depth interview and verbal checklist about experiences of basic symptoms in the 3 months pre-relapse. Casenotes were examined for reports of basic symptoms and compared to a larger, randomly selected sample (n = 187). A pool of self-report items, the Basic Symptoms Checklist (BSC), was designed using quotes from interviews for use in the prospective study. Prospective longitudinal feasibility study: patients relapsing in the past year (n = 18) were asked to submit weekly self-reports of basic symptoms, conventional early signs of relapse and psychotic symptoms using a smartphone app (ExPRESS).
Results: Retrospective: 74% participants but only 5% case notes reported pre-relapse basic symptoms. Prospective: Participants completed 65% app assessments. Mixed-effects models provided preliminary evidence of concurrent and predictive validity: early signs and basic symptoms were associated with most app-assessed psychotic symptom variables the same week and with a number of psychotic symptoms variables 3 weeks later; adding basic symptoms to early signs improved model fit in most of these cases. App items showed high concurrent validity with researcher-rated psychotic symptoms and basic symptoms over 6 months.
Conclusion:

1. Retrospective reports suggested that increases in basic symptom occur pre-relapse.

2. In contrast to patient self-reports, very few clinicians mentioned basic symptoms in case notes.
3. Preliminary evidence suggests that adding basic symptoms to conventional early signs may improve relapse prediction
4. Evidence from the longitudinal feasibility study suggested that monitoring basic symptoms weekly using a smartphone app is indeed feasible, acceptable and valid.

Policy of full disclosure: None.

S-16-004
The assumed 'substrate closeness' of basic symptoms: neuroanatomical evidence

N. Koutsouleris (Ludwig-Maximilians-University), Munich, Germany

Abstract not received in due time.

S-17 The impact of social adversity on psychosis-like experiences along the normal to clinical continuum—a biological and behavioural analysis of social reactivity

S-17-001
The association between social stress with schizotypy traits and psychotic-like experiences in the flow of daily life

N. Barrantes-Vidal (University of Barcelona Clinical Psychology), Barcelona, Spain; M. Monsonet, A. Racioppi, T. R. Kwapil

Objective: Daily-life stressors, specially of a social nature, seem to play an important role in the origin and expression of the continuum of psychosis vulnerability. This study examined whether social stress and social positive appraisals in daily-life were associated, respectively, with the occurrence and the decrease of momentary psychotic-like and paranoid experiences and symptoms across the psychosis continuum.
Methods: Both social stressors and positive appraisals, as well as psychotic and paranoid experiences, were collected by means of Experience Sampling Methodology over a week. Schizotypy was assessed with the Wisconsin Schizotypy Scales. Participants were 206 nonclinical individuals oversampled for schizotypy scores (mean age = 19.8) and 113 individuals with at-risk mental states for psychosis and first episode psychosis (74 and 39, respectively; mean age = 22.5).
Results: In the nonclinical sample, appraisals of social stress (but no social contact per se) were associated with psychotic-like and paranoid experiences in daily-life, but not with diminished thoughts or emotions (negative-like symptoms). The association of stress with psychotic and paranoid experiences was moderated by positive, but not negative, schizotypy. In the clinical sample, the positive social appraisal of feeling cared for by others moderated the association between negative self-esteem and the experience of paranoia.
Conclusion: Consistent with models postulating that stress-sensitivity is a potential mechanistic pathway of, specifically, the positive dimension of psychosis, social stress only predicted psychotic-like and paranoid experiences in participants with high positive schizotypy. Furthermore, positive social appraisals showed a critical role for buffering the expression of paranoia associated to poor self-esteem in clinical risk for and early psychosis. Altogether, these findings support the notion that increased sensitivity to social cues is a critical aspect for both risk and resilience mechanisms in the continuum of psychosis.
Policy of full disclosure: None.

S-17-002
Schizotypy and its relation to the physiological response to social stress, and the event-related potentials of sensitivity to criticism and praise

P. Premkumar (Nottingham Trent University, Psychology), Nottingham, UK; P. Alahakoon, D. Babu, M. Smith, J. Baker

Objective: Schizotypy is a latent personality trait that denotes psychosis-like experiences in the non-clinical population. It includes positive traits, such as magical beliefs and perceptual aberration, and negative traits, such as social anhedonia. Schizotypy is characterised by reduced cortisol secretion following social stress, greater behavioural appraisal of standard criticism and lower behavioural appraisal of standard praise. Study 1: the aim was to test the relation of schizotypy to heartrate (HR) and skin conductance response (SCR) during a social stress test. Study 2: the aim was to test differences in the P300 event-related potentials of standard criticism and praise between high and low schizotypy.
Methods: Study 1: fifty healthy participants completed self-report questionnaires on schizotypy. Next, participants delivered a 2-min speech and engaged in a 3-min informal discussion while their HR and SCR were measured and averaged every 30 s of the stress test. Correlations were performed between schizotypy and HR and SCR. Study 2: forty healthy participants with psychometrically-defined high (n = 20) and low (n = 20) schizotypy performed an emotional attention-manipulation task. Participants read positive, negative and standard words that followed auditory praise and criticism, and their electroencephalography data were recorded. The P300 event-related potentials of attention to negative, positive and standard words were measured.
Results: Study 1: greater schizotypy related to greater HR and SCR during the informal discussion, but not the speech. Study 2: preliminary analyses of P300 amplitude in ten high schizotypy participants showed greater P300 amplitude during negative words than standard words.
Conclusion: Study 1: the findings indicate that hyperarousal of the stress response system during interpersonal interaction relates to heightened schizotypy. Study 2: P300 amplitude denotes sustained attention. Individuals with high schizotypy may have increased P300 amplitude during negative words that are emotionally linked to criticism. One explanation is that people with schizotypy are sensitive to criticism that resembles a close relative.
Policy of full disclosure: None.

S-17-003
The brain structural correlates of perceived social rejection in people with schizotypal traits

S. Tognin (King´s College London, Psychological Medicine), London, UK; M. Antoniades, V. Kumari, E. Kuipers, P. Premkumar

Objective: Schizotypy refers to subtle, sub-clinical psychosis-like phenomena that are thought to increase liability for schizophrenia. Individuals with schizotypy traits and individuals with schizophrenia manifest, to different degrees, altered social functioning. Rejection sensitivity (RS) is the tendency to expect rejection by a significant other. Prior studies investigated brain functional correlates of RS in different mental health conditions including in people with schizotypy traits, however structural correlates of RS in people with schizotypy traits are relatively unexplored.
Methods: High-resolution T1-weighted scans were collected on 25 participants with no known psychiatric diagnosis. The sample was divided into participants who scored high (> 2; n = 11, HS) and those

who scored low (< 2; n = 14, LS) on the Unusual Experiences subscale of the O-LIFE. Measures of cortical thickness (CT) and subcortical volumes were extracted from regions of interest using FreeSurfer version 6. Participants completed a RS measure and an offline task evaluating scenes depicting rejection and acceptance (− 5 sad/+ 5 happy). CT of selected cortical regions (i.e. ACC, insula) and volumes of subcortical regions (i.e. amygdala, thalamus) were correlated with the RS measure and scores in the rejection-acceptance offline task. IQ, age, gender and intra-cranial volume were entered as covariates of no interest. Bonferroni correction was applied.
Results: In the HS group, but not in the LS, the volume of the thalamus was negatively correlated with a RS measure ($r = -0.943$; $p = 0.001$). In the HS group, negative evaluation of visual stimuli of rejection was negatively associated with left insular CT ($r = -0.912$; $p = 0.004$).
Conclusion: RS scores negatively correlate with the volume of the thalamus, a region that is involved the physical experience of pain and in sensory processing. The left insula is one of the most reported areas in schizotypy literature and its structure and function have been found as altered in studies investigating emotional processing. Further replication in a larger sample is needed.
Policy of full disclosure: None.

S-17-004
Social reward processing and responding in schizophrenia: a systematic review and meta-analysis

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Objective: Schizophrenia is a mental disorder characterised by low levels of social motivation and atypical social behavior, and most work has explored this atypical social behaviour in the context of anhendonia and negative symptomatology. However, there is an alternative body of new work that positions this atypical social behaviour as a product of abnormalities in social reward processing and responding. A systematic review of social reward research in schizophrenia was conducted (December 2018) with the aim of clarifying the role that social reward system dysfunction plays in schizophrenia.
Methods: The systematic review was conducted using PubMed, Web of Science, and Scopus literature databases. Eighty-seven initial hits were filtered to 4 results after rigorous screening. Meta-analyses of behavioural results were also conducted using RevMan 5.3.
Results: All findings were analysed descriptively, with a meta-analysis of eligible studies also conducted. Findings were that individuals with schizophrenia demonstrate significantly reduced responding to social rewards in comparison to controls, and this reduced responding is borne out at behavioural and neurobiological levels.
Conclusion: Alongside these findings, this review highlights that further work investigating social reward processing and responding in schizophrenia is required and makes recommendations for how existing work can be developed e.g. integrating existing social reward paradigms. Finally, this review interprets and discusses these findings in the context of clinical symptomatology, gender, dimensional social anxiety, and previous negative social experiences.
Policy of full disclosure: None.

S-18 The aberrant salience-hypothesis and the clinical high-risk state of schizophrenia

S-18-001
Origin of the salience hypothesis and its present state of development

A. Heinz (Charité Universitätsmedizin, Campus Charité Mitte, Department of Psychiatry), Berlin, Germany

Based on addiction research regarding dopamine function, it was suggested that phasic increases in dopamine release attribute salience to reward predicting stimuli. Chaotic or stress dependent dopamine release in psychosis may thus contribute to delusional mood, a state in which personal salience is attributed to otherwise irrelevant stimuli. Computational modeling and neuroimaging suggest that errors of reward prediction are encoded by phasic dopamine release, which can help to explain why in psychosis, chaotic dopamine re-lease can encode unexpected prediction errors. In a Bayesian framework, prediction errors occur also outside of the dopamine system and indicate that the precision of prior knowledge is low compared to sensory input-driven posterior knowledge. The salience hypothesis of dopamine dysfunction in schizophrenia can thus be embedded in a wider explanatory model, which suggests that both biological (e.g. glutamate- GABAerguc dysfunction) and psychosocial factors (e.g. stress-inducing social exclusion) may impair precision of prior knowledge, thus triggering prediction errors and potentially also driving dopamine dysfunction.
Policy of full disclosure: No conflict of interest.

S-18-002
Neurobiological basics of salience in the psychosis spectrum

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Abstract not received in due time.

S-18-003
The high-risk state for psychoses: What features might result from salience aberrations?

F. Schultze-Lutter (Heinrich-Heine University, Department of Psychiatry), Düsseldorf, Germany

Objective: Clinical high risk of psychosis criteria currently includes the symptomatic ultra-high-risk criteria based on attenuated and transient psychotic symptoms (APS and BIPS), and the basic symptoms criteria, especially the COGDIS criterion based on subjectively experienced disturbances in thought, speech and attention processes.
Methods: Merged data of two general population samples from the Swiss Canton of Bern (N = 689; 8- to 17-year-olds and 16- to 40-year-olds) were analyzed for the effect of age on symptom prevalence and on the clinical relevance of CHR-symptoms, in doing so, distinguishing perception-related from thought-related symptoms.
Results: When present, CHR symptoms were mainly reported as infrequent phenomena occurring below the criteria-relevant frequency of at least once a week. Indicating an age threshold around age 15/16, perception-related APS was more prevalent and thought content-related APS less clinically relevant—i.e., less associated with non-psychotic mental disorders and/or functional impairment—below age

16. Basic symptoms had higher age thresholds with perceptive basic symptoms being more prevalent and less clinically relevant below age 19, and cognitive basic symptoms being more prevalent and less clinically relevant below the early twenties.
Conclusion: Supporting etiological models of psychosis that assume APS to be the result of inadequate explanatory models and basic symptoms to be direct expressions of the neurobiological aberrations underlying psychosis, incl. those postulated in the salience hypothesis, these age thresholds best relate APS to cognitive maturation and basic symptoms to brain maturation. Recent neurobiological findings linking basic symptoms to aberrations in cerebral activation and connectivity patterns as well as in brain metabolism and specifically to reductions in grey matter volume support this model.
Policy of full disclosure: None.

S-18-004
Synthesis capacity in clinical high-risk states

R. McCutcheon (IoPPN, King's College London), London, UK;
O. D. Howes

Objective: Both mesostriatal dopamine signalling and the integrity of a cortical salience network have been proposed to play a central role in the development of psychotic symptoms. However, the precise nature of dopamine dysfunction in psychotic disorders, how this relates to cortical networks, and the symptomatic consequences for individuals at clinical high risk of psychosis remains unclear.
Methods: Dopamine synthesis capacity as assessed using 18F-DOPA positron emission tomography (PET), and subsequent change in psychotic symptoms, was measured in 51 individuals at clinical high risk for psychosis and 19 healthy controls. A Meta-analysis of PET studies of the dopamine system in schizophrenia and clinical high-risk individuals was performed to integrate the results of this study with the existing literature. In additional cohorts of healthy controls and individuals with a first episode psychosis 18F-DOPA and resting state MRI were integrated to examine the relationship between dopamine synthesis capacity, the salience network and symptoms.
Results: Dopamine synthesis capacity was not raised relative to controls in individuals at clinical high risk of psychosis ($p = 0.5$) but did predict worsening of positive psychotic symptoms ($r = 0.35$, $p < 0.05$). Meta-analysis showed that differences between high risk individuals and controls have lessened over time. Striatal dopamine synthesis capacity was found to be linked to the connectivity within a cortical salience network.
Conclusion: Striatal dopamine synthesis capacity is associated with the worsening of psychotic symptoms in individuals at clinical high risk of psychosis but was not found to be significantly different from controls. The difference between the current results and earlier studies could reflect changes in the population referred to early detection services over time, with evidence indicating that subjects are referred earlier in the at-risk period in more recent cohorts compared to earlier cohorts
Policy of full disclosure: No conflict of interest.

S-19 Targeting patients' specific brain networks for psychotic symptoms: moving towards precision and personalized rTMS

S-19-001
Repetitive transcranial magnetic stimulation in drug-resistant hallucinations: impact of treatment response on striatal GABA and glx levels

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M. Edjlali-Goujon, D. Roman, R. Lopes, P. Thomas, R. Jardri

Objective: Hallucinations in patients with schizophrenia resist to conventional pharmacotherapy in 1 case on 4. Low frequency repetitive transcranial magnetic stimulation (rTMS) has been proposed as an efficient add-on treatment in refractory hallucinations. However, the exact molecular mechanism of rTMS on glx/GABA balance stays poorly understood, notably at distance of the stimulation site. Here, we consider the striatum as a highly probable final pathway for schizophrenia. We thus propose to compare striatal GABA and glx changes in responders vs non-responders to rTMS.
Methods: GABA/Cr and glx/Cr were measured using MEGAPRESS Magnetic Resonance Spectroscopy (MRS) before and after rTMS. Patients completed several Visual Analogue Scales (VAS), measuring severity, frequency rate and discomfort. Positive response was considered for a $> 25\%$ decrease at ($t + 1$ month) on at least 1 VAS scores, and no decrease on another VAS.
Results: 28 patients (13 responders and 15 non-responders) were included. Mean striatal GABA/Cr changes were found significantly different in responders (mean evolution = + 19.13%) vs non-responders (mean evolution = + 1.12%), $p = 0.04$. No change was evidenced in the Glx/Cr striatal ratio of rTMS responders, but we found a correlation between positive PANSS score and glx/Cr changes ($r = 0.43$; $p = 0.02$).
Conclusion: Preliminary results support specific changes in striatal GABAergic concentrations in hallucinated patients who positively respond to rTMS treatment. Further inclusions will allow to confirm these results (70 patients expected in MULTIMODHAL trial ClinicalTrials.gov Identifier: NCT01373866). MRS of GABA and Glx concentrations appears to be a promising indicator of the clinical response to rTMS.
Policy of full disclosure: None.

S-19-002
Are all hallucinated patients tuned to the same frequency? Low vs. high-frequency-rTMS

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Objective: The efficacy of 1 Hz rTMS remains controversial, and there may be insufficient evidence for 1-Hz rTMS as an adjunctive therapy to antipsychotic medication. Few controlled studies aiming to demonstrate 1 Hz rTMS efficacy reported positive results, and recent results achieved with high frequency rTMS could call the use of a low frequency stimulation into question and revive interest in rTMS for the treatment of AVH. In fact, several factors in the efficacy of rTMS such as the frequency of stimulation, the placebo effect and the brain morphology underlying the target of stimulation might explain the large inter-subject variability of efficacy of rTMS.
Methods: A metaanalysis was conducted to determine the effect sizes of placebo effect in 21 controlled studies on rTMS in the treatment of AVH in schizophrenia. MRI was also acquired in patients treated by

rTMS to evaluate the scalp to cortex distances (SDCs) and the gray matter densities (GMDs) at the target of stimulation. Finally, we evaluated the efficacy of high (20 Hz) frequency stimulation in a controlled placebo study.
Results: Weak or no placebo effect in the control groups led to reveal a superiority of active rTMS over sham rTMS in the treatment of AVH. Clinical efficacy of rTMS was also correlated with the SCD or the GMD at the region of the target stimulation. Finally, we also demonstrated that more responders were observed after 2 weeks in the active group treated by 20 Hz than in the placebo group.
Conclusion: The factors such as the placebo effect and anatomical cortical variations can impact on the efficacy of rTMS and should be taken into account for evaluating the efficacy of rTMS whatever the frequency used.
Policy of full disclosure: Honoria/expenses: Lundbeck; Otsuka; Janssen; Roche; Takeda Consulting/advisory board: Fabre; Gedeon expert: Verasci.

S-19-003
rTMS in abulia: from brain imaging to precision medicine

S. Walther (University Hospital Bern, Department of Psychiatry), Bern, Switzerland

Objective: Psychomotor slowing is a frequent problem in schizophrenia and may be associated with general motor abnormalities, catatonia or negative symptoms. Today there are no treatment options to tackle severe anhedonia/lack of drive and psychomotor slowing. Some antipsychotics may exert beneficial effects on a minority of patients in alleviating psychomotor symptoms. The question remains, which alternative approaches may help patients overcome psychmotor slowing or avolition.
Methods: Neuroimaging evidence points to alterations in structure and function of the cerebral motor system in schizophrenia patients with motor abnormalities. Brain stimulation techniques may directly infer with motor circuits, because entry nodes are located close to the skull at the brain surface. Data from two ongoing trials indicates that motor slowing could be improved by application of inhibitory repetitive transcranial magnetic stimulation of the supplementary motor area. Whether this type of stimulation does directly alter brain network function within the motor circuit, remains to be shown. In addition, one research aim is to identify the symptoms that are modifiable with rTMS.
Results: Noninvasive brain stimulation of the cerebral motor system in schizophrenia as an add-on therapy has the potential to provide individualized treatment for specific schizophrenia symptoms. Ongoing work from our lab is elucidating the target symptoms, successful protocols and ideal patients. If successful, this approach may introduce precision medicine into psychiatry.
Policy of full disclosure: None.

S-19-004
Personalized rTMS to improve chronic and treatment resistant catatonias—a proof of concept

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Objective: Chronic and treatment resistant catatonias are orphans' pathologies. No treatment has ever been developed or is currently in the pipeline for these conditions. As a toolbox, rTMS might correct abnormal brain activity in relation with psychomotor disorders provided the knowledge on where and how to modulate it using functional brain imaging (RETONIC, NCT03116425).
Methods: Thirteen patients were recruited. Their abnormal regions were outlined thanks to 3 MRI sessions using ASL sequences performed during different tasks. They were compared to 42 normal controls (threshold $p < 10–4$). Two dysfunctional networks or regions were chosen: one in the premotor cortices (verum 1) one in the prefrontal cortices (verum 2) and a normally perfused parietal region (control). Using a balanced blinded randomized cross-over design, patients were stimulated on 5 consecutive days (4 sessions per day using iTB or cTB) and evaluated in pre-stimulation phase and 1 month after.
Results: Ten patients had the periodic catatonia phenotype according to Leonhard. All had the previously reported hyperperfusion in the left central and precentral cortices. The inhibitory modulation of this region improved all patients but one according to the Clinical Global Impression—Improvement scale (minimally to very much improved) mostly by alleviating apathy. More various anomalies were observed in the prefrontal regions which correction led to a minimal improvement in two patients. The three last patients had Leonhard's manneristic catatonia phenotype. All had a complex pattern of hypoperfusion in the prefrontal regions which modulation much improved the most severely affected patient while the modulation of the placebo regions worsened his condition.
Conclusion: It is too soon to state that the personalized approach can be safely abandoned in periodic catatonia for which the inhibition of left central and precentral cortices had so dramatic effects. Yet this make the case that at the end of the day, a pure phenotypical approach might be sufficient to propose the treatment, stepping back to precision therapy.
Policy of full disclosure: None.

S-20 Novel approaches and methods to schizophrenia spectrum neurobiology: translation and precision psychiatry

S-20-001
The schizophrenia spectrum and stages of schizophrenia: findings from imaging, neuropathological and genetic studies

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Objective: Schizophrenia and other psychoses develop in adolescence and early adulthood, during a critical stage of brain maturation. A proportion of patients develop an ongoing and deteriorating course, with some developing treatment-resistant schizophrenia. The mechanisms underlying such changes remain unclear. I will examine neuroimaging findings across different stages of illness from pre-psychosis onset to chronic illness, and summarize ongoing work examining neuropathology, neuroinflammation and genetic effects that may be relevant to such changes.
Methods: I will examine findings from a number of cohorts, including: (1) early psychosis and prodromal studies from Melbourne, and other collaborative studies, which examine dynamic brain changes across illness stages; (2) studies in those with chronic schizophrenia, focusing especially on data from the Australian Schizophrenia Research Bank (ASRB), a nation-wide study; and, (3) data from our recently established Treatment-Resistant Schizophrenia biobank of > 200 subjects, including patients treated with clozapine and unaffected relatives.

Results: Findings will focus on grey and white matter changes across stage of illness and examine the relationship across age for such changes. In general, grey matter (and, to a lesser extent, white matter) decline across multiple brain regions, including frontal and temporal, insular and parietal regions during the first episode of psychosis, with findings of different age-related effects for grey matter versus white matter. Genetic studies implicate a number of systems, including genes relevant to immune function, glutamate and ubiquitin. Further neuropathological and neurochemical investigations in patients across illness stages implicate possible links with MRI brain changes, including complement, glutamate and ubiquitin.
Conclusion: Mapping dynamic brain changes in schizophrenia and psychosis and the possible link with recent genetic findings may provide clues to the neurobiology of the disorder. Further work using translational animal models presents an important way forward.
Policy of full disclosure: None.

S-20-002
Oculomotor control and brain function in schizotypy and schizophrenia

U. Ettinger (University of Bonn, Department of Psychology), Bonn, Germany; E. Faiola, M. Urquijo, N. Koutsouleris

Objective: Schizotypy refers to a constellation of personality traits that resemble, at subclinical level, the symptoms of schizophrenia. Similarity between schizotypy and schizophrenia is seen not only at the phenotypic level, but also at levels of brain structure, cognition and drug response. Still, however, it remains unresolved how and to what extent schizotypy and schizophrenia not only overlap but also diverge, given that individuals with high levels of schizotypy do not typically convert to the full-blown clinical disorder of schizophrenia. Therefore, we have studied measures of cognitive and oculomotor control as well as their neural correlates in people with schizotypy and schizophrenia patients as well as healthy, low-schizotypy controls.
Methods: Studies using experimental cognitive and oculomotor paradigms were conducted. Assessments were performed of inhibitory control in the antisaccade task and the generation of smooth eye movements in response to a slowly moving, visual target. The neural correlates of these functions were studied with the blood oxygen level dependent (BOLD) signal using functional magnetic resonance imaging (fMRI) at 3 T field strength.
Results: Both participants with high levels of schizotypy and patients with schizophrenia showed deficits in antisaccade and smooth pursuit performance, although deficits were more pronounced in schizophrenia patients. BOLD activations were observed in the expected areas of the oculomotor and motion processing networks, with both schizotypals and patients showing reduced activation in task-related areas. Schizotypals and patients could be separated from each other, however, at the level of BOLD.
Conclusion: These findings confirm previous evidence of substantial overlap between schizotypy and schizophrenia, but also point to differences between these two spectrum phenotypes.
Policy of full disclosure: None.

S-20-003
Machine-learning for multi-variate data across psychosis spectrum disorders

N. Koutsouleris (Ludwig-Maximilians-University), Munich, Germany

Abstract not received in due time.

S-20-004
MR morphometry methods for identification of risk phenotypes and biotypes

I. Nenadic (Philipps Universität Marburg Department of Psychiatry and Psychology), Marburg, Germany

Brain imaging, and structural imaging in particular, have added greatly to our understanding of the regional distribution of alterations in the brain in schizophrenia. This talk will focus on the recent developments of MR morphometric techniques, including surface-based morphometry and machine-learning tools, allowing to tap particular aspects of brain changes, such as early developmental alterations or deviation of physiological aging trajectories. Using examples from recent studies as well as unpublished data in both ultra-high-risk subjects, first-episode schizophrenia and chronic schizophrenia patients, we will demonstrate how these techniques can be used to differentiate early vs. late or progressive changes along the trajectories of illness. Also, we will illustrate the differential effects of brain structural parameters in their relation to subclinical risk phenotypes such as schizotypy, presenting data from recent studies.
Policy of full disclosure: None.

S-21 Status and perspectives on early detection and intervention in at risk mental state and first episode psychosis

S-21-001
Diagnostic procedures for prediction of psychoses? Achievements and challenges

F. Schultze-Lutter (Heinrich-Heine University, Department of Psychiatry), Düsseldorf, Germany

Objective: Current clinical high-risk (CHR) of psychosis criteria—particularly criteria relying on attenuated or transient positive symptoms and on cognitive basic symptoms—are associated with conversion rates many hundred times higher than the incidence of psychosis in the general population. Yet, non-conversions still commonly outnumber conversions, in particular in children and adolescents.
Methods: To review and discuss approaches to overcome the problem of non-converters.
Results: Many approaches to improve prediction use current binary CHR criteria as a first step and, in a second step, add probabilistic risk stratification approaches (based on regression analytic and, more recently, artificial intelligence (AI) approaches) relying on additional clinical, neurocognitive, neurobiological and/or genetic data. Yet, only few of these probabilistic predictive models have been sufficiently validated so far.
Conclusion: In particular, the new field of personalized medicine with its new powerful AI-based algorithms has the potential to greatly improve the detection and quantification of an individual's risk for psychosis—or other negative outcomes. Yet, its current main focus on neurobiological and genetic predictors carries the risk of alienating diagnostic procedures from patients' experiences, thus increasing problems with patients' compliance and, in case of psychoses, stigmatization. Furthermore, earlier research indicated that patients and clinicians alike might struggle with adequately understanding and, in case of clinicians, conveying risk probabilities.
Policy of full disclosure: None.

S-21-002
Intervention in clinical high-risk states? Current status and future perspectives

M. van der Gaag (VU University, Department of Clinical Psychology), Amsterdam, The Netherlands

Objective: The clinical high state is a heterogeneous risk profile with several aetiological pathways. Trauma, genetic endowment, autism spectrum and ADHD, cannabis abuse are in the early stages of different pathways to clinical high risk and psychosis. Interventions to prevent the development of psychosis are complex and must address the at risk appraisals and comorbid conditions.
Methods: Several interventions are reviewed for their efficacy and preliminary recommendations are made.
Results: Most evidence is for cognitive behavioural therapy to prevent psychosis. Family intervention is recommended as well, though the evidence needs to be enhanced by future research. Attenuated psychosis is also found in all other disorders and form a severity marker for that disorder. Treatment of subclinical symptoms to improve outcome in other disorders is still sparse. Because psychosis is so widespread the treatments need to be personalised and target all psychopathology and address functioning as well.
Conclusion: Cognitive behavioural therapy for clinical high risk is now being implemented in mental health systems as all World Health Organisation criteria for implementing indicated prevention in routine mental health have been fulfilled. Screening procedures must be improved and within group risk profiling is being researched at this moment.
Policy of full disclosure: None.

S-21-003
Intervention in early psychosis—current status and future perspectives

A. Bechdolf (Vivantes Klinikum, Department of Psychiatry), Berlin, Germany

Abstract not received in due time.

S-21-004
What can we learn from the US Recovery after an Initial Schizophrenia Episode-Early Treatment Program (RAISE-ETP)?

C. U. Correll (Charité—University Medical Campus, Virchow Klinikum, Department of Child and Youth Psychiatry), Berlin, Germany

Objective: To summarize the results from the US Recovery after an Initial Schizophrenia Episode-Early Treatment Program (RAISE-ETP) and outline learning opportunities for translation into the German system.
Methods: In a cluster-randomized study conducted in 34 non-academic sites and 21 US states, we compared NAVIGATE, a combined state-of-the-art pharmacologic and psychosocial treatment package, delivered by a well-trained, multidisciplinary team to "usual care" in patients with a first-episode of psychosis aged 15–40 years old and $\leq$ 6 months of lifetime antipsychotic treatment. The primary outcome as quality of life, secondary outcomes included remission, recovery, cost-effectiveness, as well as many other efficacy and safety outcomes. Patients were followed for a minimum of 2 years, with major assessments conducted by blinded, centralized raters using live, 2-way video.
Results: Altogether, 404 first-episode patients were enrolled who at baseline already had significant cardiometabolic risk factors and morbidity, despite a mean duration of only 7 weeks of antipsychotic treatment. The 223 recipients of NAVIGATE remained in treatment longer, experienced greater improvement in quality of life and psychopathology, and experienced greater involvement in work and school compared with 181 participants in community care. The median duration of untreated psychosis (DUP) was 74 weeks. NAVIGATE participants with DUP $<$ 74 weeks had greater improvement in quality of life and psychopathology compared with those with longer DUP and those in community care. Hospitalization rates were relatively low and did not differ between groups. Other outcomes, including in subgroups will be presented.
Conclusion: NAVIGATE was superior to Usual Care on most outcomes during the active intervention, giving rise to the funding of 200 first-episode schizophrenia centers across the US and to another wave of regional hub grants to improve upon RAISE-ETP. 5-Year outcome data are expected to evaluate the durability of specific gains that patients receiving RAISE-ETP had made.
Policy of full disclosure: Dr. Correll has been a consultant and/or advisor to or has received honoraria from: Alkermes, Allergan, Angelini, Boehringer-Ingelheim, Gedeon Richter, Gerson Lehrman Group, Indivior, IntraCellular Therapies, Janssen/J&J, LB Pharma, Lundbeck, MedAvante-ProPhase, Medscape, Merck, Neurocrine, Noven, Otsuka, Pfizer, Recordati, Rovi, Servier, Sumitomo Dainippon, Sunovion, Supernus, Takeda, and Teva. He has provided expert testimony for Bristol-Myers Squibb, Janssen, and Otsuka. He served on a Data Safety Monitoring Board for Boehringer-Ingelheim, Lundbeck, Rovi, Supernus, and Teva. He received royalties from UpToDate and grant support from Janssen and Takeda. He is also a shareholder of LB Pharma.

S-22 Paradigm and model contests in psychosis research: categories, dimensions or constructs

S-22-001
Foundation for a paradigm and model contest in psychosis research—Featuring CDC competitors: categories, dimensions or constructs

J. Clauss (University Hospital Strasbourg, Psychiatric Department), Strasbourg, France

Objective: Basic research on psychotic disorders aims to describe them in a way that is unambiguous, universal, refutable and reproducible. For a long time, it relied on the categories defined by the DSM. However, for several years, alternative models have been emerging: a revised categorical approach (Wernicke-Kleist-Leonhard School), dimensions (research section of the DSM-5) and constructs (RDoCs and SyNoPsis projects). The diversity of these models calls to mind and leads to question: how to produce scientific knowledge in the field of psychotic disorders? It is not a question here of choosing the most suitable model among the three cited but of characterizing each of them.
Methods: Our characterization will be epistemological. The three models will be analysed successively from the point of view of the definition of their common scientific object. How does each model conceive the psychotic disorders that it seeks to describe? In our reflection, the definition of the scientific object is considered as being based on three considerations: the real character or not of the object, its ability to be explained by a natural cause, the existence or not of

hierarchical explanatory levels between the object and its cause. The latter depend on philosophical positions that constitute a paradigmatic framework.
Results: The three models analyzed do not all conceive psychotic disorders in the same way. Where the revised categorical approach assumes them as natural entities determined by a single cause, the dimensions and constructs consider them as a combination of deviations from a norm with multiple causes that can be independent of each other
Conclusion: Since the definition of the scientific object determines the theories that will be developed to describe it, its choice is a crucial step. We must therefore reflect on how to choose the paradigmatic framework in which our future research on psychotic disorders will be developed.
Policy of full disclosure: None.

S-22-002
SyNoPsis: a translational approach dedicated to psychosis research

S. Walther (University Hospital Bern, Department of Psychiatry), Bern, Switzerland

Psychosis symptoms show a heterogeneous distribution across patients. At the same time, brain structure and function are altered in multiple ways in schizophrenia spectrum disorders. The System Neuroscience of Psychosis (SyNoPsis) framework aims at bridging clinical presentation and brain function in a novel, translational way. Symptoms are ordered according to communication channels of language, affectivity and motor behavior and approached by applying three dimensional ratings in these three domains, ranging from increased to reduced behavioral output. The clinical utility and structure of the three domains has been demonstrated in various samples. Furthermore, brain imaging studies within this framework linked alterations within the domains to clear brain dysfunction in the respective circuits. This framework is novel in its clinical approach to psychosis, providing a neurobiologically informed psychopathology and translating this knowledge into potential treatment targets with brain stimulation.
Results: Examples of research findings will be given.
Policy of full disclosure: None.

S-22-003
Brain imaging: from its use as correlate of symptomatic dimensions to its use for discovering biotypes—featuring CDC

J. Foucher (University of Strasbourg, CEMNIS-HUS/iCube-UdS, Neurophysiology-Psychiatry), Strasbourg, France; J. Clauss, L. Jeanjean, C. de Billy, B. Schorr, O. Mainberger, F. Berna, A. Obrecht

Objective: The rejection of the DSM categories (C) initiated with its third version triggered a bounce of creative thinking. Prevailing alternatives turn away from the naturalistic concept of disease and embrace the normativistic framework with the concept of dimensions (D) and constructs (C). Up to now, each research program independently almost exclusively collected evidence within their own paradigmatic framework. Yet, these are too different from one another to allow a fair comparison of their respective validity. We would like to promote the implementation of crucial experimental series (CES) to compare models of CDC research programs. We will introduce a general Bayesian framework for model comparison. Its implementation will be illustrated using brain imaging as a consensual biological readout assuming that brain (dys)function could be a mandatory link in models' causal chains.
Methods: The major brain imaging evidences supporting each program will be shortly reviewed, pointing some commonalities but also some discrepancies. The model validation procedures will be discussed, especially pointing the strengths and the flaws of verificationist and falsificationist approaches. We shall argue that both could be done through crucial experiments and how timely it might be to conduct them considering the many alternative that we have. The Bayes ratio K and the verisimilitude concepts will be introduced as tools to compare models' validity.
Results: If a single crucial experiment does not have the logical power of a disjunctive inference, CES could have this disjunctive leveraging and could fasten models' adaptation, refutation or the raise of new alternatives, i.e. biotypes.
Conclusion: While being of great benefit for the society, CES are at risks for scientists explaining why they remain the exception. But we could get around this stumbling block by adopting some common guidelines in their implementation, adopting an adversarial collaboration mindset, well in line with current "intellectual hygiene movement" in biological science.
Policy of full disclosure: None.

S-22-004
Categorical approach and the renewal of the medical model—the rediscovery of natural phenotypes: periodic catatonia and cataphasia

F. Berna (University Hospital Strasbourg, Psychiatric department), Strasbourg, France; J. Foucher, O. Mainberger, J. Clauss

Objective: DSM's failure motivated the shift from the "naturalist" paradigm of traditional scientific medicine, to the "normativist" paradigm for diseases. However, the failure could rather be due to the selection of inappropriate phenotypes. Indeed, good phenotypes should be more than reliable, they ought to have some natural foundations.
Methods: The Wernicke–Kleist–Leonhard school was able to produce such natural phenotypes. Those have been elaborated on diachronic observations, using three key principles to optimize the description process. First, the elementary symptom principle (Wernicke), which integrates symptoms in symptom-complexes. In second instance, the longitudinal principle (Kleist), that assigns one patient to one phenotype for its whole life. Thirdly, the family aggregation principle (Leonhard), which assumes the phenotype to be the same in multiplex families.
Results: This results in 35 major phenotypes of good reliability, good predictive validity and good differential validity on age of onset, hereditability, fetal event and treatment response. The presentation will focus on two particular psychotic phenotypes of the WKL classification, namely periodic catatonia (PC) and cataphasia (C). Both have a bipolar relapsing-progressive course, but they are coming with the buildup of specific residual symptoms: an impairment of psychomotricity for PC and a specific disorganization of thought and language in C. Moreover, both are stable and highly heritable phenotypes (with about 20% of affected first degree relatives) but do not have crossed liability. Finally, a recent neuroimaging study revealed a clear double dissociation of rCBF correlates between PC and C, both being meaningful relative to their residual symptomatology. This evidence refutes the single schizophrenia model and suggests better natural foundations for PC and C phenotypes.
Conclusion: In contradistinction to the consensus paradigms that has led to the ICD/DSM categories, the development and construction of

WKL classification may represent a relevant and promising scientific pathway for a renewal of the medical model in psychiatry.
Policy of full disclosure: None.

S-23 Computational models of aberrant belief formation in psychosis

S-23-001
Clinical relevance of incentive salience signals across the schizophrenia spectrum

J. Waltz (University of Maryland, Maryland Psychiatric Research), Baltimore, MD, USA

Objective: Computational and neuroimaging investigations in people with chronic psychotic illness have indicated that motivational deficits in these patients are linked to deficits in aspects of RL and attenuated reward-related signals in the ventral striatum. Our goal was to investigate whether the neurocognitive correlates of motivational deficits are the same across the schizophrenia spectrum—in unaffected first-degree relatives (FDRs) of patients with psychotic illness and adolescents and young adults at clinical high risk (CHRs) for psychotic illness as we saw in individuals with a diagnosis of schizophrenia or schizoaffective disorder (SZs).
Methods: We administered fMRI paradigms probing brain responses to reinforcement processing and learning to samples of individuals with SZ, FDRs of SZ patients, and CHR youth, along with healthy adults and adolescents. We used computational RL models to estimate learning rates on a subject-wise basis, and expected value and prediction error valence and magnitude on a trial-wise basis. We then used trial-wise estimates of expected value and reward prediction error (RPE) valence and magnitude to construct regressors for fMRI data analysis.
Results: We found that FDRs of SZ patients and CHR youth show many of the same RL deficits as adult SZ patients, to a lesser degree. These include a reduced ability to perform rapid, working-memory-dependent RL, especially when positive RPEs need to be integrated. Furthermore, reward-related signals in the ventral striatum scaled with symptoms in the CHR youth in the negative and depressive domains.
Conclusion: These findings indicate that deficits in reinforcement learning factor into impairments in motivation and goal-directed behavior in both first-degree relatives of schizophrenia patients, and adolescents and young adults at clinical high risk for psychotic illness, supporting the idea that clinically-ratable motivational deficits can be tied to specific aspects of RL across the spectrum of psychotic illness.
Policy of full disclosure: None.

S-23-002
Deficits in learning-when-to-learn relate to persecutory delusions

P. Corlett (Yale University), New Haven, USA

Abstract not received in due time.

S-23-003
Aberrant relevance detection in uncertain environments in psychosis

T. Katthagen (Charité University Medicine), Berlin, Germany

Objective: In dynamically changing environments it is crucial to dissociate the relevant from irrelevant information. A dopaminergic dysfunction in this detection was hypothesized to be central for schizophrenia patients; with decreased processing of relevant information and increased aberrant salience being attributed to irrelevant cues. While the former deficit can be directly tested the objective quantification of aberrant salience remains unclear due to the challenge of experimentally operationalizing irrelevance.
Methods: In different multimodal studies spanning unmedicated and medicated schizophrenia patients, we operationalized aberrant salience attribution as an implicit reaction time bias to one irrelevant information over another using the Salience Attribution Test (behavioural) and the Implicit Salience Paradigm (fMRI). To assess processing of relevant information, participants performed a reversal learning paradigm (fMRI). We used computational modelling for behavioural data and analysed the neural prediction errors. A correlation was probed between the latter signal and striatal dopamine synthesis capacity in a subgroup of unmedicated patients and healthy controls who also underwent FDOPA-PET.
Results: Across tasks, we found increased aberrant salience attribution to irrelevant information in schizophrenia patients. This bias correlated with negative symptoms and was related to reduced striatal prediction error signalling to relevant information. Compared to controls, patients performed worse in the reversal learning task and their striatal reward prediction error signal was decreased. Only in controls, the reward prediction error correlated with increased dopamine synthesis capacity in the limbic striatum; this correlation was absent in unmedicated schizophrenia patients.
Conclusion: We found evidence for the hypothesized bias towards irrelevant information as well as reduced neural processing of reward learning. Further, both deficits might interfere with one another. In contrast to the aberrant salience hypothesis of psychosis, this irrelevance bias correlated with negative symptoms.
Policy of full disclosure: None.

S-23-004
Beyond reward: the role of dopamine in building internal models of the world, and the relevance for psychosis

M. Nour (King's College London, Institute of Psychiatry, Psychology and Neuroscience), London, UK

Objective: World models, also known as cognitive maps, are internal representations of the structure of the environment. They are essential for guiding model-based decision-making, and can support cognitive processes such as state inference and generalisation. Abnormalities in the formation and appropriate updating of world models may play a central role in psychotic disorders, which are often characterised by false beliefs about the (causal) structure of the world. There has been much interest in the neurocomputational mechanisms that use world models to guide goal-directed decision making, with a particular focus in the role of mesolimbic dopamine in signalling decision variables such as reward prediction error. However, relatively less attention has focussed on the mechanisms that support the formation and updating of world models themselves.
Methods: In this talk I will present evidence that dopamine may play a key role in the formation and updating of world models, in addition to

its established role in signalling decision variables such as reward prediction error.
Results: First, I will summarise a selection of recent preclinical studies that show that midbrain dopamine neuron firing supports value neutral associative learning and can signal sensory prediction errors. Second, I will touch upon theoretical work that argues that multiplexed dopamine prediction error signals may play a central role in updating a model of future state occupancy in the hippocampus. Finally, I will present the results of our recent human multimodal neuroimaging study which show that neural activation in the midbrain and ventral striatum tracks the magnitude of belief updates in a partially observable environment, rather than sensory unexpectedness or reward prediction error. These neural signals, measured with fMRI, correlate with individual participant estimates of dopamine function, as measured with PET.
Conclusion: These findings have important implications for our understanding of psychotic disorders, where there is growing evidence for abnormal mesostriatal dopamine signalling.
Policy of full disclosure: None.

S-24 The frontline of research on negative symptoms

S-24-001
Motivational deficits and functional outcome: the ENSANES study

A. Mucci (University of Campania Luigi Vanvitelli, Department of Psychiatry), Naples, Italy; G. M. Giordano, I. Bitter, S. F. Austin, C. Delouche, S. Dollfus, A. Erfurth, W. W. Fleischhacker, I. Gladyshev, B. Glenthøj, K. Gütter, A. Hofer, J. Hubenàk, S. Kaiser, J. Libiger, I. Melle, M. Ø. Nielsen, O. Papsuev, J. K. Rybakowski, G. Sachs, A. Üçok, P. Wojciak, S. Galderisi

Objective: One of the obstacles to the development of effective treatments are the limitations of negative symptom assessment. This study represents a large European, multicenter, multinational validation study of the Brief Negative Symptom Scale (BNSS), promoted by the ECNP Schizophrenia Network.
Methods: Two hundred and forty-nine clinically stable subjects with schizophrenia (SCZ) were recruited from 10 European Countries. Subjects with SCZ were administered the BNSS, the Positive and Negative Syndrome Scale (PANSS), the Calgary Depression Rating Scale for Schizophrenia, the St. Hans Rating Scale for extrapyramidal (EPS) syndromes and the Personal and Social Performance scale (PSP). Convergent and discriminant validity was assessed by correlation analysis. The prevalence of subjects with moderate severity negative symptoms with and without confounding factors (i.e., positive symptoms of moderate severity, clinically significant depression or EPS) was also investigated. A confirmatory factor analysis was used to investigate the BNSS factor structure. Finally, association of negative symptoms with functioning was assessed by multiple regression analysis.
Results: Results showed excellent convergent and discriminant validity of BNSS and replicated the five-factor structure of the negative symptoms. The number of subjects with predominant negative symptoms of moderate severity, i.e. the target population for clinical trials, was found to be larger using BNSS than PANSS. Regression analysis showed that BNSS-avolition explained 23.9% of the total variance of the PSP, much more than any combination of the PANSS core negative symptoms.
Conclusion: The study validated the BNSS in the context of a multicenter, multinational large European study and demonstrated that the scale has substantial advantages over the PANSS for the identification of the target population of clinical trials on negative symptoms. BNSS provides a better assessment of avolition including, at odds with PANSS, the evaluation of the underlying motivational deficits. Our results demonstrated that these deficits have the largest impact on functional outcome.
Policy of full disclosure: A. Mucci received honoraria, advisory board or consulting fees from the following companies: Amgen Dompé, Angelini-Acraf, Astra Zeneca, Bristol-Myers Squibb, Innova-Pharma, Janssen Pharmaceuticals, Lundbeck, Otsuka, Pfizer and Pierre Fabre. G.M. Giordano declares no conflict of interest. S. Dollfus received expert/consultant fee from Pierre Fabre, Gedeon; conference invited speaker fees from Lundbeck, Otsuka, Janssen; has contracts with Prophase MedAvances and NeuroCogTrials. A. F. Austin declares no conflict of interest. I. Bitter has been, in the last 5 years, advisory board member/consultant/lecturer or received research support from Angelini, Eli Lilly, EGRIS, Janssen, Lundbeck, Pierre –Fabre, Richter and Servier. C. Delouche reported no conflicts of interest. A. Erfurth received consulting fees and/or honoraria for speeches within the last 3 years from Angelini, AOP Orphan, AstraZeneca, Eli Lilly, Ferrer, Germania, GlaxoSmithKline, Janssen, Krka, Lundbeck, Neuraxpharm, and Pfizer. W. W. Fleischhacker received grants and personal fees from Janssen, Lundbeck, Boehriger-Ingelheim, and Otsuka and personal fees from Teva, Dianippon-Sumitomo, Allergan, Gedeon Richter, and Recordati. S. Galderisi received honoraria, advisory board or consulting fees from the following companies: Gedeon-Richter, Janssen Pharmaceuticals, Janssen-Cilag Polska Sp. z o.o, Otsuka, Pierre Fabre and Sunovion Pharmarmaceuticals. I. Gladyshev received honoraria from Organica. B. Glenthøj is the leader of a Lundbeck Foundation Centre of Excellence for Clinical Intervention and Neuropsychiatric Schizophrenia Research (CINS), which is partially financed by an independent grant from the Lundbeck Foundation, based on international review and partially financed by the Mental Health Services in the Capital Region of Denmark, the University of Copenhagen, and other foundations. Her group has also received a research grant from Lundbeck A/S for another independent investigator-initiated study. All grants are the property of the Mental Health Services in the Capital Region of Denmark and administrated by them. K. Gütter reported no conflicts of interest. A. Hofer received consulting fees by AOP Orphan, Janssen-Cilag, Lundbeck and reimbursements for travel and meeting expenses by Janssen-Cilag, Lundbeck, Pfizer. He has contracts with Boehringer-Ingelheim and NeuroCogTrials. J. Hubeňák received.travel and meeting reimbursement from Lundbeck, Servier and Angelini and also received honoraria for speeches from Angelini and Servier within the last 2 years. S. Kaiser has received speaker honoraria from Recordati and Lundbeck as well as royalties for cognitive training software from Schuhfried. J. Libiger received travel grant from Gedeon Richter. I. Melle reported no conflicts of interest. M. Ø. Nielsen reported no conflicts of interest. O. Papsuev received honoraria from Pfizer, Organica and Medintorg. J. K. Rybakowski reported no conflicts of interest. G. Sachs is president of the Austrian Society of Neuropsychopharmacology and Biological Psychiatry, which is partially financed by the support from pharmaceutical companies. G. Sachs received consulting fees and/or honoraria for speeches within the last 3 years from Angelini, AOP Orphan, Alkermes, Janssen, Lundbeck, Pfizer. A. Üçok received honoraria as speaker by Janssen, Abdi Ibrahim and Otzuka. P. Wojciak reported no conflicts of interest.

S-24-002
Self-assessment of negative symptoms: is there an advantage?

S. Dollfus (Normandie University, UNICAEN Department of Psychiatry, CHU de Caen, Center Esquirol), Caen, France

Objective: Compared to the scales based on observer ratings, self-assessments have been overlooked, probably because of the idea that patients with schizophrenia are unable to accurately report their own symptoms. Nevertheless, the self- assessments present numerous advantages. They are generally very simple and easy to fill in by the patient; they allow the patients to report their overall functioning and their own symptoms; They require the patients' participation and so improve their involvement in the treatment; They are time-efficient and take less time than clinician's evaluations; they are complementary to the evaluations based on observer rating; they can provide clinical information not necessarily detected by caregivers or medical staff in a standard interview; In particular self-assessments allow the patient to express their own feelings and the level of awareness of their symptoms. They can be very useful for identification of negative symptoms at the onset of illness.
Methods: Self-assessments to be valid should have the same properties as the scales based on observer ratings on negative symptoms. They should cover the five domains of negative symptoms (social withdrawal, anhedonia, alogia, avolition, blunted affect), present good convergent and divergent validities, display with factorial analysis the 5 negative dimensions, and measure the negative symptoms whatever the language and culture. Moreover, from self-reports, it can be expected that the scale is brief and easy to understand, presents a good intra-subject reliability and has a threshold beyond which negative symptoms can be detected.
Results: All these properties regarding the Self-evaluation of Negative Symptoms (SNS) will be detailed.
Conclusion: Self-rating scales are designed for frequent use. Consequently, they can assist clinicians and researchers in time-savingly identifying patients with relevant subjective complaints.
Policy of full disclosure: Honoraria/expenses: Lundbeck; Otsuka; Janssen; Roche, Takeda Consulting/advisory board: Fabre; Gedeon expert: Verasci.

S-24-003
Using neurostimulation to target brain circuit perturbations: implications for negative symptom treatment protocols

A. Aleman (University of Groningen, Faculty of Medical Sciences, BSCS-Cognitive Neuroscience), Groningen, The Netherlands

Objective: An increasing number of studies has been published in recent years, reporting on noninvasive brain stimulation (NIBS) using electromagnetic fields in schizophrenia. Such NIBS has been applied in patients with schizophrenia to alleviate both positive and negative symptoms, albeit at different locations and different frequencies of stimulation. In this presentation, I take stock of recent findings regarding repetitive transcranial magnetic stimulation (rTMS) for negative symptoms, although I will also briefly discuss transcranial direct current stimulation (tDCS), which is a much weaker form of stimulation.
Methods: Stimulation is usually targeted over the dorsolateral prefrontal cortex. The location of stimulation is based on theoretical models of the functional neuroanatomy of goal-directed behavior. Indeed, such stimulation has previously been shown to target circuits with dopaminergic innervation. I will present as yet unpublished data from our most recent trial in Groningen, in which we tested iTBS (intermittent theta-burst TMS) over the right DLPC for improving negative symptoms (especially apathy) in patients with schizophrenia.
Results: Results for negative symptoms in schizophrenia have been mixed, although the most recent meta-analysis still shows an average stronger improvement in real rTMS conditions compared to sham stimulation. Effects on brain activation as measured with fMRI will be discussed. For our most recent randomized clinical trial using iTBS, no significant improvement was observed for real versus sham treatment (both groups improved to a small extent).
Conclusion: Methodological aspects of trial design will be discussed, that may need adaptation to maximize effects. will be discussed. Results of such trials will not only have clinical implications but will also inform neuroanatomical hypotheses. Taking all published findings together, the results of NIBS studies have clinical implications and may aid the development of novel treatment strategies.
Policy of full disclosure: None.

S-24-004
Metacognitive capacity and negative symptoms in first episode psychosis: evidence of a prospective relationship over a 3-year follow-up

S. F. Austin (University of Copenhagen, Psychiatric Research Unit, Region Zealand), Hillerød, Denmark; P. Lysaker, J. E. Jansen, A. M. Trauelsen, H. G. Lyse Nielsen, M. Buch Pedersen, U. H. Haahr, E. Simonsen

Objective: In the earliest definitions of schizophrenia, disturbances in mental functions known as negative symptoms have been identified as a core source of disability. Negative symptoms can be linked to Bleulers' concept of splitting of fragmentation of thought, affect and will. Research has shown a link between disturbances in metacognition and negative symptoms although relatively few studies have examined this relationship longitudinally. Aim is to examine whether metacognitive capacity among patients with first episode psychosis (FEP) predicted negative symptoms after a follow-up period of 3 years.
Methods: Metacognition was assessed using the Metacognition Assessment Scale-Abbreviated (MAS-A) and symptoms were assessed using the Positive and Negative Syndrome Scale (PANSS) among 59 adults with FEP. Symptoms were then reassessed at a 3-year follow-up.
Results: Significant correlations were found between baseline metacognitive scores and the expressive component of negative symptoms as well for individual negative symptoms such as blunted affect, poor rapport and alogia at 3-year follow-up after controlling for baseline negative symptoms. Self-reflectivity, the ability to think about one's own mental states was significantly correlated with the expressive component of negative symptoms at 3-year follow-up after controlling for negative symptoms at baseline ($r = -0.318$ $p = 0.015$).
Conclusion: The results are partly consistent with a Bleulerian model which understands the emergence of negative symptoms as a response in part to experience of fragmentation, particularly in terms of sense of self and others. If the link between metacognition and negative symptoms is shown to be causal, interventions that target metacognitive capacity early in the illness may have a protective effect and can facilitate long-term outcomes such as recovery. Future research should clarify the likely role of metacognition in the development and maintenance of negative symptoms.
Policy of full disclosure: None.

S-25 Neuroinflammation in severe mental disorders—from diagnosis to therapy

S-25-001
Epidemiology and meta-analysis of CSF studies and anti-inflammatory treatments suggest relevant neuroinflammation in severe mental disorders

M. Benros (Copenhagen University Mental Health Center CPH), Hellerup, Denmark

Abstract not received in due time.

S-25-002
Autoimmune encephalitis in psychiatry: results of a systematic literature review and the GENERATE data base

D. Endres (University Clinic Freiburg, Psychiatry and Psychotherapy), Freiburg, Germany

Objective: Primary psychiatric disorders are caused by complex gene–environment interactions, whereas secondary forms are based on clearly identifiable, organic causes. In this context, autoimmune encephalitides are increasingly important. Different subtypes can be distinguished with autoantibodies against either the cell surface or intracellular antigens. In addition, thyroid autoantibodies can be associated with steroid-responsive Hashimoto encephalopathy. In several cases, isolated psychiatric syndromes, mostly psychoses, turned out to be autoimmune encephalitides (so-called autoimmune psychosis).
Methods: We conducted a systematic Medline search via Ovid. Only patients with predominant psychiatric syndromes and signs of immunological brain involvement in diagnostic investigations (e.g., cerebrospinal fluid alterations) or improvement under immunosuppressants were included. Moreover, we are also currently performing a cumulative case collection of psychiatric forms of autoimmune encephalitides all over Germany (GENERATE-psych-database).
Results: The final results of the systematic review will be presented, as well as first results from the GENERATE-psych-database.
Conclusion: Case reports show that autoimmune encephalitides can mimic isolated psychiatric syndromes. Case collections are the next research step. Detection is important to facilitate more causal treatment alternatives.
Policy of full disclosure: None.

S-25-003
Deconstructing schizophrenia—by general and single case perspective

L. Tebartz van Elst (University of Freiburg, University Medical Center, Psychiatry and Psychotherapy), Freiburg, Germany

Abstract not received in due time.

S-25-004
The concept mild encephalitis hypothesis—actual results and beyond

K. Bechter (University of Ulm, Psychiatry and Psychotherapy 2), Günzburg, Germany

Objective: Mild encephalitis (ME) may underly a subgroup of severe mental disorders (SMD), especially from the affective and schizophrenic spectrum (Bechter 2001, 2013).
Methods: Actual evidence for the relevance of ME in clinical psychiatry is of interest because single cases maybe rapidly and successfully treated by immune suppressive Treatments. Here the evidence is reverie and further pathophysiological ideas for forthcoming research are outlined.
Results: Early on, from anomal model it was hypothesized and shown that even chronic cases of affective and schizophrenic disorders rapidly improved with CSF filtration (Bechter et al 1998, 1999, 2004, 2007). After the discovery of NMDAR autoantibodies by Dalmau et al in 2007 underlying some cases of limbic encephalitis an emerging variety of other CNS autoantibodies and apparently explain relevant CNS dysfunction. With this recent development in neurology also the plausibility of the ME hypothesis for severe mental disorders was increasing (Bechter 2013) and recently emerging findings, not least brain biopsy and post-mortem findings, support type of Autoimmune Psychosis (AP) in the sense of th ME hypothesis. Emerging reports and small studies allow now respective diagnostic recommendations for rather successful and often rapid immune modulatory treatments. Systemic pathology like inflammatory markers but also muscle lesions (Meltzer and Crayton 1974) may prevail. The latter may originate from CSF pathology via the CSF outflow pathway along all nerves (Bechter 2011): CSF cells, surely also microparticles, can follow this CSF outflow pathway with important consequences in the understanding of systemic symptoms in neuroinflammation in general.
Conclusion: Autoimmune psychosis (Najjar et al. 2018) in the sense of the more generalized ME hypothesis, the latter involving a variety of pathomechanisms, appears to be a new diagnostic challenge and new therapeutic options for an emerging subgroup of patients from the affective and schizophrenic spectrum.
Policy of full disclosure: None.

S-26 Translational electrophysiology in schizophrenia: predictors and models can lead to subject-specific mechanisms

S-26-001
Using magnetoencephalography to identify circuit mechanisms across illness-stages in schizophrenia

P. Uhlhaas (University of Glasgow, INP), Glasgow, UK

Objective: A considerable body of work over the last 10 years combining noninvasive electrophysiology in patient populations with preclinical research has contributed to the conceptualization of schizophrenia (ScZ) as a disorder associated with aberrant neural dynamics and disturbances in excitation/inhibition (E/I) balance. In the presentation, I will provide an update on this hypothesis through a summary of data that we have obtained with Magnetoencephalography (MEG) and Magnetic Resonances Spectroscopy (MRS) of GABA-and Glutamate levels across different illness-stages.
Methods: We obtained MEG-data in chronically medicated ScZ patients (n = 25), unmedicated patients with first-episode (FE) ScZ

(n = 25) and a group (n = 120) of participants at ultra-high risk (UHR) for psychosis. In addition, a group of healthy volunteers were recruited who were administered a subanesthetic dose of Ketamine to test for similarities between changes in neural oscillations and NMDA-R hypofunctioning across different illness stages. MEG-data were analysed for spectral power and connectivity changes at source-level at low- and high-frequencies. MEG-recordings in UHR-participants were accompanied by MRS-measurements in auditory and visual cortices.
Results: MEG-data obtained during auditory and visual paradigms suggest that reductions in gamma-band oscillations observed in chronic and first-episode (FE) schizophrenia are already present prior to the onset of psychosis. Moreover, MRS-data indicate that reduced gamma-band oscillations in UHR-participants can be partially explained by changes in GABA/Glutamate levels, highlighting the importance of changes in E/I-balance parameters in the explanation of sensory deficits and the associated oscillatory signatures.
Conclusion: The current data highlight the possibility that aberrant high-frequency oscillations and changes in E/I-balance parameters may constitute a fundamental pathophysiology mechanisms that underlies the expression of cognitive and perceptual deficits which is present prior to the onset of psychosis and thus could serve as targets for early diagnosis and intervention.
Policy of full disclosure: I have received research funding from Lilly and Lundbeck.

S-26-002
Oscillatory, computational and behavioural evidence for impaired GABAergic inhibition in schizophrenia

A. Shaw (Cardiff University, CUBRIC), Cardiff, UK; L. Knight, T. Freeman, G. Williams, R. Moran, K. Friston, J. Walters, K. Singh

Objective: The dysconnection hypothesis of schizophrenia (SZ) proposes that psychosis is best understood in terms of aberrant connectivity. Specifically, it suggests that dysconnectivity arises through aberrant synaptic modulation associated with deficits in GABAergic inhibition, excitation-inhibition balance and disturbances of high-frequency oscillations. Our objective was to address this through multimodal, non-invasive imaging and computational modelling.
Methods: Twenty-eight individuals with a DSM-IV diagnosis of SZ, and 30 age- and gender-matched healthy controls participated in a psychophysics orientation-discrimination task, a visual grating magnetoencephalography (MEG) recording, and a magnetic resonance spectroscopy (MRS) scan for GABA. Using a neurophysiologically-informed model, we quantified group differences in GABA, gamma measures and the predictive validity of model parameters for orientation discrimination in the SZ group.
Results: MEG visual gamma frequency was reduced in SZ, with lower peak frequency associated with more severe negative symptoms. Orientation discrimination performance was impaired in SZ. Dynamic causal modelling of the MEG data showed that local synaptic connections were reduced in SZ and local inhibition correlated negatively with the severity of negative symptoms. The effective connectivity between inhibitory interneurons and superficial pyramidal cells predicted orientation discrimination performance within the SZ group; consistent with graded, behaviourally relevant, disease-related changes in local GABAergic connections. Occipital GABA levels were significantly reduced in SZ but did not predict behavioural performance or oscillatory measures.
Conclusion: These findings endorse the importance, and behavioural relevance, of GABAergic synaptic disconnection in schizophrenia that underwrites excitation-inhibition balance.
Policy of full disclosure: None.

S-26-003
The neural dynamics of belief formation across the psychosis continuum

I. Dzafic (University of Queensland, Queensland Brain Institute), Brisbane, Australia

Objective: Recent theories in computational psychiatry have proposed that unusual perceptual experiences and delusional beliefs in psychotic disorders may emerge as a consequence of aberrant inference and disruptions in prediction error updating. The current study investigates anomalies in belief formation (regularity learning) and updating that are specific to the schizophrenia spectrum. Furthermore, we examine psychosis as a continuum and investigate anomalies that relate to hallucinations and delusions across all patient groups.
Methods: 66 participants (22 inpatients with a schizophrenia spectrum disorder (SZS), 22 non-psychotic inpatients (NP), and 22 non-clinical controls (NC)) completed an auditory oddball task with volatility manipulated. We recorded prediction error responses with electroencephalography and behaviorally measured regularity learning errors to inferences on the probability of sounds.
Results: Attenuated prediction error responses were specifically observed in the SZS but not in NP inpatient group, with reductions in mismatch negativity (MMN) in stable, and P300 in volatile contexts. Next, we explored the effective connectivity differences in the know auditory prediction error brain network. Dynamic Causal Modelling with Parametric Empirical Bayes analysis revealed stronger left primary auditory cortex (A1) intrinsic connectivity in the SZS compared to the NP inpatient group, which was also related to better regularity learning behaviour. Furthermore, people that experienced more hallucinations had decreased intrinsic connectivity in the right inferior frontal gyrus (IFG), which was also found to be related to poorer regularity learning behaviour.
Conclusion: The findings suggest that increased intrinsic left A1 connectivity may play a compensatory role for regularity learning in SZS compared to other patient groups. In contrast, weaker right IFG intrinsic connectivity may underlie impaired regularity learning, across all patients experiencing hallucinations. Aberrant right IFG intrinsic connectivity during prediction error updating has previously been related to impaired NMDA receptor function. These results present impetus for more targeted neuropharmacological and neuromodulatory treatments for psychosis, which target NMDA receptor function and intrinsic connectivity to normalise belief formation.
Policy of full disclosure: None.

S-26-004
Using M/EEG and modelling to probe hippocampal-prefrontal dysconnectivity and other key illness mechanisms in schizophrenia

R. Adams (UCL Department of Computer Science), London, UK; D. Bush, F. Zheng, S. Meyer, R. Kaplan, S. Orfanos, T. Reis Marques, O. Howes, N. Burgess

Objective: Frontotemporal dysconnectivity is a key pathology in schizophrenia. The specific nature of this dysconnectivity is unknown, but animal models imply dysfunctional theta phase coupling between hippocampus and medial prefrontal cortex (mPFC).
Methods: We asked whether these observations would translate to the human brain by examining neural dynamics in 18 participants with a schizophrenia/first episode psychosis diagnosis (Scz), both medicated and unmedicated; and 26 age, sex and IQ matched controls. All participants completed two tasks known to elicit hippocampal-prefrontal theta coupling: a spatial memory task during

magnetoencephalography and a memory integration task. In addition, an overlapping group of 33 Scz and 29 controls underwent positron emission tomography to measure the availability of GABAARs expressing the α5 subunit (concentrated on hippocampal somatostatin interneurons).
Results: We demonstrate that task-related increases in left medial temporal (mTL) theta power and theta phase coupling with mPFC are impaired in Scz. Importantly, the latter cannot be explained by theta power changes, head movement, antipsychotics, cannabis use, or IQ, and is not found in other frequency bands. mTL-mPFC theta coupling correlated strongly with performance in controls, but not in Scz, who were mildly impaired at the spatial memory task and no better than chance on the memory integration task. Finally, mTL regions showing reduced phase coupling in Scz overlapped with diminished α5-GABAAR availability in the wider Scz group.
Conclusion: These results indicate that mTL-mPFC dysconnectivity in Scz is due to a loss of theta phase coupling and suggest that somatostatin interneurons may have a pathological or compensatory involvement.
Policy of full disclosure: None.

S-27 Early detection and intervention of psychosis: different perspectives in clinical and research areas

S-27-001
The Heidelberg Early Intervention Center

D. Roesch Ely (University of Heidelberg, General Psychiatry), Heidelberg, Germany; E. Koch

Objective: The Early Intervention Center in Heidelberg is one of the first clinical services founded over 15 years ago by the Adult and Child and Adolescent Psychiatry Departments. An overview of the current clinical setting will be presented.
Methods: In the last 10 years over 400 patients with the discharge diagnosis schizophrenia spectrum disorder were treated in both departments. Included in this pool of patients are clinical high-risk states to multi-episode course of the disease.
Results: Clinical data including neurocognitive data will be presented.
Conclusion: Implications for the early intervention and transition concepts will be discussed.
Policy of full disclosure: None.

S-27-002
Treatment of first episode psychosis: lessons from a prospective cohort and identification of specific needs

P. Conus (Service de Psychiatrie Générale, Département de Psychiatrie), Prilly, Switzerland; P. Golay

Objective: Various early intervention programs aim at providing specific care for the early phase of psychotic disorders. While this is a valid focus, early psychosis samples are composed of a large variety of patient profiles and subgroups of patients may have distinct needs. Although generic elements of early intervention programs may fit most of the patients, clinicians should adapt treatment to these specific needs and develop personalized intervention. Data stemming from clinical naturalistic prospective follow-up often provide very detailed information on which it is possible to base the identification of such clinical sub-groups of patients. In this talk we will identify key challenges in the treatment of patients with first episode psychosis, define way to overcome them and give examples of specific patients' profile requiring specific treatment.
Methods: Data was collected prospectively at a specialized early psychosis program implemented in 2004 in Lausanne Switzerland where patients aged 18–35 are provided with treatment over 3 years.
Results: While the main challenges in the treatment relate to disengagement and lack of insight, various strategies facilitate their resolution. In addition, patients' characteristics, such as age at the time of the first psychosis episode or past exposure to trauma, allow the adaptation of treatment in order to increase chances for recovery.
Conclusion: Treatment of a first episode of psychosis requires service organization strategies as well as identification of patient sub-groups in order to improve chances for engagement, development of insight and recovery.
Policy of full disclosure: None.

S-27-003
Overlapping and differential factors in the risk profile of persons with clinical high risk for psychosis and bipolar disorder

A. Pfennig (University of Dresden, Department of Psychiatry and Psychotherapy), Dresden, Germany; K. Leopold, J. Martini, S. Pfeiffer, C. Berndt, M. Bauer

Objective: Identification of help-seeking individuals with at-risk state for the development of psychosis and/or bipolar disorders (BD) could help improving the course of illness and prevent long-term consequences.
Methods: At the early detection center for mental illness at the university hospital Dresden, Germany, from 2009 until 2018 about 900 help-seeking individuals were seen for an initial contact. Out of these, 572 were assessed with a standardized diagnostic procedure including risk instruments to assess an increased risk for psychosis and/or BD, as indicated.
Results: In the presentation, data focusing on overlapping and differential factors in the risk profile will be presented and discussed.
Policy of full disclosure: None.

S-27-004
Novel data on first episode psychosis

K. Leopold (Vivantes Klinikum Am Urban, Department of Psychiatry, Psychotherapy and Psychosomatics), Berlin, Germany

Objective: The objective of the study was to follow-up the course of substance misuse and insight into illness after 2 years of treatment in an early intervention service for psychosis in Germany and to evaluate the association of three known risk factors (substance abuse, insight into illness, and migration background) with medication compliance in young people with early psychosis.
Methods: The present analysis is a 2-year follow-up of young people with early psychosis, admitted to the inpatient unit of the early intervention service from May 2014 to May 2015. Migration background, illegal substance misuse and insight into illness were assessed at baseline and after 2 years. Medication compliance was assessed at follow-up by self-reports of the participants. If patients had withdrawn from medication without the advice of their treating clinician, they were deemed in-compliant.
Results: At baseline 65.5% of patients reported frequent substance misuse within the past 30 days with cannabis as major substance (43.1%), followed by amphetamines (13.9%). At follow-up, only 26.9% reported current substance misuse with cannabis (71.4%) still

being the predominantly used substance and 82.4% were medication-compliant. Young people with current substance misuse were significantly less likely to take their medication compared to non-user. Insight into illness at follow-up was significantly associated with high medication compliance.
Conclusion: In line with former studies cannabis use is very frequent in early psychosis. A relevant percentage of patients stop cannabis use during treatment in early intervention services. Participants who were medication compliant, were more likely to have withdrawn from substance misuse and to have good insight into illness.
Policy of full disclosure: None.

S-27-005
Prevention strategies in animal models

C. Winter (Charité CCM, Psychiatry and Psychotherapy), Berlin, Germany

Objective: Current treatments of schizophrenia comprise antipsychotics which act solely symptomatic, are limited in their effectiveness and often associated with side effects. Here we applied targeted neuro-modulation techniques during adolescence, prior to schizophrenia-relevant behavioral manifestation, using the maternal immune stimulation (MIS) rodent model of schizophrenia and tested its effects on behavior, neuro-structural and neuropathological alterations in adulthood.
Methods: Adolescent maternally immune stimulated and control rats were subjected to medial prefrontal cortex deep brain, frontal cortex transcranial direct current or sham stimulation in between postnatal days 35–47. At adulthood animals underwent a battery of cross-species behavioral testing measuring sensorimotor gating, the ability of an organism to change its behavior in the face of changing contingencies, anhedonia, and social interaction. Adjunct neurobiological focused on the striatal dopamine system, the frontal cortex parvalbumin-expressing GABAergic interneurons, and structural imaging.
Results: We found that application of targeted neuro-modulation during adolescence, prior to schizophrenia-relevant behavioral manifestation, prevents the development of positive symptoms and related neurobiological alterations in the maternal immune stimulation (MIS) model of schizophrenia.
Conclusion: Our data suggest that the medial prefrontal cortex may be a suitable target for effective preventive treatment of schizophrenia. To this end, our findings may have significant translational value, suggesting that targeting the mPFC and related circuitries before the onset of psychosis via non-invasive neuromodulation approaches may be a viable preventive strategy. Comparable investigations in the alcohol deprivation effect model of addiction further increase the significance of these data in the overarching context of implementing preventive strategies in psychiatry.
Policy of full disclosure: This research was supported by the BMBF, Germany (01EE1403A, 01EW1409).

S-28 Moving beyond the orthodoxy: periodic catatonia as a valid phenotype

S-28-001
Genetics of periodic catatonia

M. Gawlik (University of Würzburg), Würzburg, Germany

Abstract not received in due time.

S-28-002
A critical appraisal of the "periodic catatonia phenotype" and what should be the next move?

P.-M. Llorca (University Hospital Clermont Ferrand, Psychiatric Department), Clermont Ferrand, France

Objective: A phenotype is supposed to be accounted for by a rare cause of major effect, there shouldn't be much risk for the same person to suffer from more than one and one patient should have a single life-long diagnosis (longitudinal principle) which should account for all his clinical manifestations without recourse to co-morbidities. Phenotype is also supposed to be accounted for by a rare genetic anomaly, there shouldn't be much risk for the same pedigree to be affected from more than one except in case of associative mating (family aggregation principle). Accordingly, periodic catatonia is one of the rare psychotic diagnoses that fulfills the major requirements for an inheritable phenotype: reliability, life-long consistency, and familial aggregation.
Methods: We reviewed literature that makes periodic catatonia one of the rare psychotic diagnoses that fulfills these major requirements.
Results: Up to now, only degraded forms of validity have been considered for periodic catatonia. True validation supposes to find one rare cause of major effect, either at the etiological or the pathophysiological level, generally starting by looking at biological correlations. Most of the initial researches concentrated on a genetic correlate. Periodic catatonia should be accounted for by either a single high mutation rate locus or the sum of multiple rare mutations rate loci. One locus has been replicated on Chr15q14-15 but periodic catatonia seems to be genetically heterogeneous with at least one other locus and probably more than one gene per locus. However, the mutations reported so far in the SLC12A6 and the MLC1/WKL1 genes are inconclusive.
Conclusion: On a more clinical perspective, the lack of validated diagnostic criteria for this phenotype, and as a consequence the lack of validated tools for diagnosis with a good level of reliability remain issues that have to be overcome.
Policy of full disclosure: None.

S-28-003
Moving towards a brain imaging-based diagnostic biomarker for periodic catatonia

J. Foucher (University of Strasbourg, CEMNIS-HUS/iCube-UdS, Neurophysiology-Psychiatry), Strasbourg, France; C. de Billy, A. Obrecht, L. Jeanjean, O. Mainberger, J. Clauss, B. Schorr, E. A. Sauleau, L. Landré, F. Berna

Objective: Periodic catatonia (PC) is a psychomotor phenotype with a progressive-remitting course. While it can fit any disorder-diagnosis of the schizoaffective spectrum, its core features consist in a mix of hypo- and hyperkinesia resulting in distortions of expressive movements such as grimacing and parakinesias. The recent replication of a cerebral blood flow (rCBF) increase in the left supplementary motor area (L-SMA) and lateral premotor cortex (L-LPM) in acute and remitted PC-patients makes the case that these could be used as diagnostic biomarkers.
Methods: In this proof-of-concept study, 2 different MRI sequences were repeated on 3 separated days to get reliable measures of rCBF in 9 PC and 26 non-PC patients during different cognitive tasks. For each patient, the rCBF values in L-SMA [− 9; + 10; + 60] and L-LPM [− 46; − 12; + 43] were converted in t-values by being compared to 37 controls. In each region, the test was positive if the t value > 2.02 ($\alpha < 0.05$; two-tails; df = 38).

Results: Both measurements had good analytical performances. Regarding the discriminant performances of the tests, their sensitivities and specificities were significantly different from chance level except for L-SMA's sensitivities on both measures. When combining all the tests, among regions and methods, sensitivity = 98% (95% credible interval 76–100%) and specificity = 88% (72–97%). Bayesian inference of its negative predictive values for PC were > 95% regardless of the context, while its positive ones reached 94%, but only when used in combination with clinical preselection criteria. The case-by-case analysis suggests that this categorical diagnosis better accounts for the results than any symptomatic dimensions, though the two frameworks remain to be confronted on a larger psychotic population.
Conclusion: These results are encouraging.
Policy of full disclosure: None.

S-28-004
A primer to periodic catatonia with video illustrations

B. Pfuhlmann (Dresden Municipal Hospital, Psychiatry and Psychotherapy), Dresden, Germany

Objective: Originally considered by Kahlbaum to be an independent disease entity characterized by mental and motor abnormalities, catatonia is viewed as a subtype of schizophrenia in ICD-10 and as a purely syndromal specifier for various disorders in DSM 5. In view of the problems to define catatonia as a clinically homogeneous and valid diagnosis when traditional criteria are applied, an independent view of catatonia as developed by the Wernicke-Kleist-Leonhard school of psychiatry could be more appropriate.
Methods: Based on a precise differentiation of diagnostically specific qualitative psychomotor disturbances, two essentially distinct forms of catatonic psychoses can be distinguished: on the one hand periodic catatonia, and on the other hand the group of systematic catatonias. The characteristic clinical features of periodic catatonia will be demonstrated by means of video recordings.
Results: Periodic catatonia usually has an acute onset and shows a bipolar structure and a polymorphous symptomatology with various qualitative psychomotor disturbances always building the core of the clinical syndrome, especially parakinesias, grimacing, stereotypies and iterations. Hyperkinetic and akinetic distortions of psychomotor activity are characteristically intermingled in acute attacks. After one or more acute exacerbations, adynamic residual states of varying degrees of severity become apparent. Periodic catatonia has to be separated from the six different subforms of systematic catatonia. Each of them begins insidiously, runs a chronically progredient course without remissions and develops a clear-cut and stable residual state with a specific monomorphous psychomotor disturbance pattern.
Conclusion: Applying the criteria of the psychopathology of endogenous psychoses along the lines of Wernicke, Kleist and Leonhard allows a differentiation of catatonic phenotypes which can open up a fertile heuristic perspective for further aetiological research.
Policy of full disclosure: None.

S-29 Paranoia: cognitive and emotional processes in focus

S-29-001
Temporal dynamics of suspiciousness and hallucinations in clinical high risk and first episode psychosis

K. Hermans (KU Leuven, Center Contextual Psychiatry), Leuven, Belgium; Y. van der Steen

Objective: In order to elucidate the experience of suspiciousness and hallucinations in daily life in patients with a first psychotic episode (FEP) and individuals at clinical high risk for psychosis (CHR), these experiences' prevalence and co-occurrence, as well as their temporal relation to affect and delusions, were compared between groups during 6 days.
Methods: The Experience Sampling Method (ESM) was used to investigate suspicious and hallucinatory experiences, delusions, and affect at semi-random moments throughout the day in 33 CHR and 34 FEP.
Results: Overall, 91% of CHR and 59% of FEP reported suspiciousness, and 24% and 39% reported hallucinations, respectively. Hallucinations almost always co-occurred with suspiciousness, whereas suspiciousness was often present without hallucinations. Suspicious episodes were preceded by delusional intensity, and followed by increased suspiciousness in CHR. In FEP, a decrease of positive affect preceded suspicious episodes, while an increase of negative affect preceded hallucinatory episodes.
Conclusion: Our results indicated the presence of a delusional mood in CHR, which can be an experience in itself, without co-occurring with or following hallucinations. Co-occurrence of these experiences and affective disturbances were more marked in FEP. Our ESM findings suggest that attenuated delusional experiences in CHR require attention within individuals' social network.
Policy of full disclosure: None.

S-29-002
Cognitive reappraisal during an experimental social exclusion paradigm and its effects on paranoia—a comparison of participants with psychotic disorders and healthy controls

A. Clamor (University Hamburg), Hamburg, Germany; J. Sundag, T. Lincoln

Objective: Studies investigating habitual emotion regulation abilities (ER) found that patients with psychotic disorders apply maladaptive strategies more frequently than healthy controls. This could perpetuate negative affect and thereby contribute to the formation and maintenance of psychotic symptoms. The psychophysiological measure of heart rate variability (HRV) is seen as a marker for ER and is reduced in psychotic disorders. It is unknown, to which extent ER are deficient in an actual emotion eliciting situation and whether ER effort is reflected in HRV differences.
Methods: Individuals with psychotic disorders (n = 43) and healthy controls (n = 33) repeatedly played an online ball-tossing game, in which they were either excluded (i.e., received the ball once) or included (i.e., received an equal proportion of the tossed balls). Social exclusion trials in which participants were instructed to apply cognitive reappraisal were compared to "just-play" instructed trials.
Results: Participants with psychosis displayed overall higher levels of negative affect and lower HRV than healthy controls. However, in both subgroups, the instruction to apply cognitive reappraisal led to lower negative affect compared to "just-playing" the game.

Unexpectedly, HRV did not differ during "just-play" and reappraisal. Paranoia ratings were lower after reappraisal than after "just-play" with post hoc subgroup analyses revealing this to be significant in the healthy sample only.
Conclusion: Participants with psychosis seem to benefit from an instructed adaptive emotion regulation strategy. Yet, overall negative affect was higher and HRV lower in the patient group, which could indicate difficulties in spontaneous ER. Putatively, the effects of adaptive emotion regulation strategies on paranoia might be lower in clinical samples. If and in what way the reduced HRV is linked to ER needs further investigation. The results will be discussed in the light of potential treatment enhancements by targeting emotion regulation strategies specifically.
Policy of full disclosure: None.

S-29-003
Effectiveness of emotion regulation in daily life of individuals with psychosis and non-clinical controls

L. Ludwig (University Hamburg, Clinical Psychology), Hamburg, Germany; S. Mehl, K. Krkovic, T. Lincoln

Objective: Emotion regulation (ER) has been emphasized as a contributing factor to psychosis. Indeed, studies using self-report questionnaires reveal a more frequent use of putatively maladaptive and less frequent use of putatively adaptive strategies in individuals with psychosis compared to non-clinical controls (NC). However, whether ER strategies are predictive of the affect experienced in daily life and whether they are used less frequently and effectively by individuals with psychosis in daily life, is unknown.
Methods: We conducted an experience sampling study over six consecutive days, in which individuals with psychosis and current delusions (PD, n = 71) and NC (n = 42) reported ten times a day on the presence of negative and positive affect and the deployment of ER strategies (reappraisal, acceptance, awareness, suppression, rumination, distraction and social sharing). Habitual ER was assessed with a self-report questionnaire. Effectiveness of strategy use was operationalised as successive differences in positive and negative affect between consecutive time-points. Linear fixed effect models were conducted.
Results: Habitual reappraisal but not suppression was found to be predictive of affect in daily life. PD used putatively maladaptive strategies more frequently in daily life than NC. Either no differences in individual adaptive strategies or an even more frequent use (reappraisal) in PD compared to NC were found. Several ER-strategies (e.g. reappraisal, rumination) were predictive of reduced negative affect at the next prompt, independent of group. Suppression was only effective in PD and acceptance had unfavourable effects in both groups.
Conclusion: Thus, in contrast to what one would expect from habitual measures, in daily life PD demonstrated an increased use of explicit ER strategies, of which the majority helped them to reduce NA. This indicates that their increased levels of negative affect are not explicable by difficulties in deploying explicit ER strategies and questions the validity of habitual ER measures.
Policy of full disclosure: The study has been funded by the German Research Foundation (DFG LI 1298/8-1).

S-29-004
Predicting improvement of psychotic symptoms in a psychological online intervention: a secondary longitudinal analysis of an 8-week randomized controlled trial for participants with psychosis (EviBaS trial)

T. Lüdtke (UiT The Arctic University of Norway), Tromsø, Norway; S. Moritz, N. Rüegg, G. Pfuhl, T. Berger, S. Westermann

Objective: Longitudinal and experimental studies suggest that worry, negative affect, low self-esteem, cognitive biases, and low quality of sleep predict the positive symptoms of psychosis. Preliminary evidence from interventional studies indicates that ameliorating these risk factors can reduce psychotic symptoms. However, we do not know to what extent each predictor functions as a mechanism of symptom improvement during a comprehensive psychological intervention for psychosis.
Methods: We conducted a randomized controlled trial to evaluate a psychological online intervention for people with psychosis (EviBaS; Rüegg et al. 2018). Among other biases, EviBaS addresses all of the aforementioned predictors of psychosis. In the current secondary analysis, we hypothesized that favorable changes in each predictor would lead to subsequent improvements in psychotic symptoms over the 8-week intervention period. Throughout the intervention, participants reported psychotic symptoms at several time points, and provided information on presumed predictors (worry, negative affect, self-esteem, cognitive biases and sleep) in a short online questionnaire. Data analyses are pending. We plan to examine each predictor's effect on subsequent symptoms using linear mixed models, a method which accounts for the clustering of repeated observations within participants.
Results: To date, we completed data collection. Linear mixed model analyses are pending.
Conclusion: Conclusions are pending.
Policy of full disclosure: None.

C-01 Artificial intelligence/machine learning in psychiatry

C-01-001
Artificial intelligence/machine learning in psychiatry

N. Koutsouleris (Ludwig-Maximilians-University), Munich, Germany; D. Dwyer

Machine learning technologies have changed the face of multiple industries and are now seamlessly integrated into our everyday lives. The expectation is that these statistical approaches may also revolutionize medical care because of their ability to make predictions from complex data at an individual patient level. In psychiatry, multiple international teams are now using cutting-edge statistical approaches in a mission to create clinical tools that/lead to the rapid personalization of diagnoses, prognoses, and treatments within the next 5-year. Within this exciting context, it is critical for clinicians and researchers alike to understand what machine learning is, what it can and can't do, how to implement it, and what we need to consider to facilitate the safe and ethical clinical translation. In this workshop, we will address these major questions by building towards an understanding of what is required to make the mission successful.

The session is divided into three main parts that will:

1. start from the basics of describing what machine learning is, what are the fundamental elements, and what has been achieved thus far;
2. reinforce the concepts by displaying how a machine learning pipeline can be implemented in an interactive session where participants without coding experience will configure an analysis using software called NeuroMiner (www.pronia.eu/neurominer); and
3. in a round-table format that invites discussion, outline gold-standards for clinical translation that involve both practical and ethical aspects of introducing machine learning tools into the clinical environment.

To end the course, we will then present a possible future for psychiatric practice before facilitating an audience discussion of pros, cons, and concerns. At the end of the course, we expect that participants will be better equipped to engage with an exciting new field and with critical ongoing dialogue concerning its implementation into clinical care.
Policy of full disclosure: None.

C-02 How to understand and use the new ICD-11—psychotic disorders

C-02-001
How to understand and use the new ICD-11—psychotic disorders

W. Gaebel (Heinrich-Heine-University, Department of Psychiatry and Psychotherapy), Düsseldorf, Germany; A. Hasan

Description: This course will provide practical training on the use of the Clinical Descriptions and Diagnostic Guidelines for ICD-11 Mental, Behavioural or Neurodevelopmental Disorders (CDDG). The ICD-11 has been approved by the World Health Assembly on May 25, 2019 and, following a transitional period, will become the new global standard for the reporting of health information. The CDDG is the diagnostic manual for ICD-11 Mental, Behavioural or Neurodevelopmental Disorders designed for use by mental health professionals in clinical settings, produced by the WHO Department of Mental Health and Substance Abuse. The course will be primarily geared towards psychiatrists in clinical practice. The main features of the new ICD-11 guidelines and changes from ICD-10 will be described by leading global experts who have been integrally involved in the development of the ICD-11. The course will emphasize active participation through application of the new guidelines to clinical vignettes based on real cases and discussion of diagnostic dilemmas. The course will cover as the ICD-11 chapter of Schizophrenia or Other Primary Psychotic Disorders.
Methods and materials: Case studies, vignettes, slides, handouts.
Educational intentions: After the course the participants will be able to

- describe the major changes in the structure and content of diagnostic categories of ICD-11 mental disorders compared to ICD-10.
- be prepared to use the new classification for Psychotic Disorders in daily clinical practice.
- support the implementation of ICD-11 among psychiatric services and by members of national psychiatric associations.

Prerequisite knowledge: Participants should be familiar with psychiatric classification, preferentially ICD-10 or DSM-5. They should be either psychiatrists, including early career psychiatrists, or clinical psychologists with professional experience in mental healthcare settings.
List of recommended readings: ICD-11 CDDG.
International Advisory Group for the Revision of ICD-10 Mental and Behavioural Disorders. (2011). A conceptual framework for the revision of the ICD-10 classification of mental and behavioural disorders. World Psychiatry 10:86–92. https://doi.org/10.1002/j.2051-5545.2011.tb00022.x

Reed GM (2010) Toward ICD-11: Improving the clinical utility of WHO's international classification of mental disorders. Prof Psychol Res Pract 41:457–464. https://doi.org/10.1037/a0021701

Gaebel W (2012) Status of psychotic disorders in ICD-11. Schizophr Bull 38:895–898. https://doi.org/10.1093/schbul/sbs104

Reed GM, Sharan P, Rebello TJ, Keeley JW, Medina-Mora ME, Gureje O, Ayuso-Mateos JL, Kanba S, Khoury B, Kogan CS, Krasnov VN, Maj M, de Mari J, Stein DS, Zhao M, Akiyama T, Andrews HF, Asevedo E, Cheour M, Domínguez-Martínez T, El-Khoury J, Fiorillo A, Grenier J, Gupta N, Kola L, Kulygina M, Leal-Leturia I, Luciano M, Lusu B, Martínez-López JNI, Matsumoto C, Onofa LU, Paterniti S, Purnima S, Robles R, Sahu MK, Sibeko G, Zhong N, First MB, Gaebel W, Lovell AM, Maruta T, Roberts MC, Pike KM (2018) The ICD-11 developmental field study of reliability of diagnoses of high-burden mental disorders: results among adult patients in mental health settings of 13 countries. World Psychiatry 17:174–186. https://doi.org/10.1002/wps.20524
Policy of full disclosure: None.

O-01 Genetics and neurobiology

O-01-001
Multiplexed single-nucleus RNA sequencing of post-mortem human prefrontal cortex in schizophrenia and bipolar disorder

B. Ruzicka (Harvard Medical School, Psychiatry), Belmont, USA; D. Tso, M. Hourihan, S. Subburaju

Objective: Emerging technologies for single-cell transcriptomics now allow for high-throughput assessment of how molecular pathologies are partitioned across distinct neuronal circuitry and cellular subpopulations, advancing our understanding of circuitry-based information processing and its dysfunction in psychotic illness.
Methods: Postmortem human prefrontal cortex Brodmann Area 10 tissue samples were microdissected from a cohort matched for age, gender, and postmortem interval from schizophrenia, bipolar disorder, and control subjects. Cellular nuclei were isolated by gradient centrifugation and nuclei from multiple individuals were pooled and then used for single-nucleus RNA sequencing experiments on the 10X Genomics Chromium platform.
Results: Preliminary data analysis identifies multiple distinct cellular populations within Brodmann Area 10, including neuronal and glial subpopulations. While multiplexing has numerous advantages in the study design of single-nucleus RNA sequencing experiments, deconvolution of this data is not trivial, and we find the cell-hashing approach the be more successful than genotype-based deconvolution. Comparison between diagnostic groups is ongoing and demonstrates diagnosis-associated transcriptomic shifts in specific cellular subpopulations, suggesting distinct subpopulations of GABAergic interneurons are impacted differently by the pathophysiology of these disorders.
Conclusion: Single-cell genomics technologies promise to revolutionize our knowledge of the "parts list" of the cellular machinery of the human brain, as well as how molecular pathologies are distributed among those functional units in psychiatric illness. This ongoing

project demonstrates the power of assessing single-cell transcription within the human brain to elucidate the molecular pathology of psychotic disorders at a resolution not previously possible, offering insights into how this pathology operates within the complex cytoarchitecture of the human brain.
Policy of full disclosure: None.

O-01-002
Gene × environment in schizotypy: The effect of polygenic schizophrenia risk is dependent on cumulative environmental influences

T. Meller (Philipps University Marburg, Psychiatry and Psychotherapy), Marburg, Germany; S. Schmitt, F. Stein, T. Andlauer, U. Dannlowski, A. Krug, T. Kircher, I. Nenadic

Objective: Schizotypy, a multidimensional personality trait resembling subclinical psychotic-like symptoms, is a risk phenotype distributed in the general population and associated with psychosis proneness. We tested the hypothesis that psychometric schizotypy in healthy subjects is associated with polygenic risk for schizophrenia, as well as testing the association with a newly developed environmental risk score (ERS) for psychosis on schizotypy.
Methods: For 509 healthy subjects (197 male, 312 female, mean age = 32.02, SD = 11.88) from the FOR2107 cohort study, we analysed the cumulative genetic risk (PGRS) for schizophrenia and calculated the ERS based on The Maudsley Environmental Risk Score for Psychosis. Schizotypy was assessed with the Schizotypal Personality Questionnaire-Brief (SPQ-B), resulting in a total score as well as subscores for the dimensions Cognitive-Perceptual, Interpersonal and Disorganised.
Results: We find a positive correlation of the ERS with total schizotypy and all dimensions ($r = 0.10–0.14$, all $p < 0.05$), but no significant correlation of the schizophrenia PGRS with any of the schizotypy scores (all $p > 0.5$). In the moderation analysis, however, ERS did influence the effect of PGRS on total schizotypy ($p = 0.036$), with greater ERS resulting in a positive association of PGRS and schizotypy. On subscale level, this effect was restricted to an association with the Interpersonal dimension of schizotypy ($p = 0.025$).
Conclusion: Our findings show an interaction of genetic and environmental factors in the development of subclinical, psychotic-like personality features. While the lack of direct correlation of schizotypy with Sz-PRS can be interpreted as no substantial or only partial overlap in genetic architectures of subclinical vs. clinical phenotypes, the interaction with ERS highlights a role for gene by environmental interactions in the non-clinical range of the psychosis spectrum. These results might also explain why additional factors (beyond genetic risk) are needed for expression of this particular risk phenotype and the risk association with transition to psychosis.
Policy of full disclosure: None.

O-01-003
Autism dampens psychosocial dysfunction in psychosis spectrum disorders

A. Abu-Akel (University of Lausanne, Institute of Psychology), Lausanne, Switzerland; R. Upthegrove, K. Chisholm, A. Lin, P. Hansen, S. Gillespie, I. Apperly, C. Montag

Objective: Psychosocial dysfunction is a central feature of psychosis spectrum disorders. Genetic evidence suggests that dosage-sensitive genes associated with autism can reduce the risk of schizophrenia. The aim of the study is test to whether genetic risks for autism or their symptom expressions can protect against the deleterious effects of psychosis or associated genetic risk factors on psychosocial functioning.
Methods: Psychosocial functioning was assessed in healthy carriers (N = 139) of copy number variants (CNVs) conferring risk for both autism and schizophrenia, and in schizophrenia patients (N = 174) using the Global Assessment of Functioning (GAF). In individuals with first episode psychosis (N = 83), psychosocial functioning was assessed using the Social and Occupational Functioning Assessment (SOFA) scale. The CNVs risk for autism and schizophrenia is estimated in terms of their current epidemiological odds ratios for risk to either autism or schizophrenia. In the first episode psychosis and the schizophrenia groups, psychosis symptom expressions were assessed with the positive scale of Positive and Negative Syndrome Scale (PANSS), and autism symptom severity with the PANSS autism severity scale (PAUSS).
Results: In the healthy carries, psychosocial dysfunction was reduced in individuals with balanced genetic risks for autism and schizophrenia. Similarly, in the first episode psychosis and the schizophrenia groups, psychosocial dysfunction was reduced in individuals with balanced autism and psychosis symptom expressions.
Conclusion: Some individuals may present fewer psychosocial difficulties due to a balanced expression of autistic and psychosis liability. This suggests that the presence of high levels of autism symptoms or risk may protect against the deleterious effects of psychosis symptom or risk on psychosocial functioning. Our results warrant further investigations of the protective effects of autism in psychosis spectrum disorders and suggest that the concurrent assessment of autism and psychosis may be necessary to predicting illness aetiology, prognosis and diagnostic practices in both conditions.
Policy of full disclosure: None.

O-01-004
Phencyclidine intensifies the intrinsic neocortical network activity and stereotypes the responses to external stimuli

J. Norrlid (Lund University, Experimental Medical Science), Lund, Sweden; H. Jörntell

Objective: Schizophrenia is a disorder with altered information processing, but how the alteration is expressed at the neuronal network level is unknown. Phencyclidine is one of the established pharmacological rodent models of psychosis. It is known to mimic positive symptoms of schizophrenia, such as hallucinations. To investigate how the neocortical network processes information during a state resembling psychosis, we analyzed the response to sensory stimulation (which is our model to analyze the neocortical information processing) during the influence of phencyclidine.
Methods: We made intracellular whole-cell recordings of pyramidal neurons in the primary somatosensory cortex of the anesthetized rat. Meanwhile, complex patterns of electrical skin stimulation were delivered to the forepaw, before and after phencyclidine administration.
Results: Phencyclidine transformed a previously vivid and desynchronized spontaneous network activity to become more synchronized, exhibiting more stereotyped motifs of up- and down-states not present before. Sensory stimulation generated an up-state from a down-state with a higher probability than in the control, with the up-state being more stereotyped than before the injection.
Conclusion: This suggests that during psychosis, the neocortical network is set into an activity state more sensitive to external stimuli, at the same time responding to it in a more predefined way, possibly

reflective of a distorted self-generated internal activity, here shown at the neuronal network level.
Policy of full disclosure: None.

O-01-005
Neurobiological mechanisms dysfunction of temporolimbic and prefrontal cortex systems associations in hallucinatory paranoid syndrome

A. Arkhipov (IHNA & NPh RAS Human Higher Nervous Activity), Moscow, Russia; G. Rodionov, A. Maslennikova

Objective: According to temporolimbic hypothesis of paranoid syndrome in schizophrenia there is a violation of biochemical and neurophysiological levels of brain functioning. This means not only temporolimbic system neural networks but also their associations with PFC. This can be examined with study of EEG, fMRI and methylation level of genes coding regulation proteins, responsible for neural networks development.
Methods: 45 patients (F20.0) ICD-10 (25 m., 20 f.), aged 28.39 ± 0.91 yrs. Severity of psychopathological symptoms was determined by PANSS scale, in patients it was 98.1 ± 2.1. 40 matched healthy subjects (23 m., 17 f.), aged 32.55 ± 1.98 yrs. Statistical analysis was performed using ANOVA. EEG: ERP components P200, P300 and N400. Patients and matched healthy subjects were presented with emotional threatening and neutral visual IAPS stimuli at random order. MRI: reaction of 15 patients and 12 healthy subjects to similar stimuli paradigm was assessed using 3T tomograph Magnetom Verio, Siemens. The regions were defined according to the MNI atlas. Epigenetics: methylation level was assessed in peripheral blood by DNA panel screening. DNA was isolated using hemolysis techniques and using magnetic nanoparticles. PCR amplification of fragments of the promoter region of the RELN gene was conducted. Methylation was examined by bisulfate transformation of DNA samples.
Results: ERPs reveals in patients a paradox effect—a simultaneous increase of both ERP parameters—latencies and amplitudes in PFC to biologically significant stimuli. Neuroimaging study shows limbic hyperactivation and hypoactivation of highest cortical structures to emotionally neutral and the opposite results to biologically significant (threatening) stimuli in patients with paranoid schizophrenia. Epigenetic study: Patients had demethylation of the RELN gene in the promoter region from − 415 to − 530.
Conclusion: Disturbance of RELN methylation results in inadequate pruning which leads to pathological development of temporo-limbic neural networks and their associations with PFC thus inducing altered inhibition/excitation and positive symptoms in schizophrenia.
Policy of full disclosure: None.

O-01-006
The aspects of humoral and cellular immunity in schizophrenic patients

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Objective: The main aim of the study was to determine the serum levels of total T and B lymphocytes in schizophrenic patients and to find out the relationship between lymphocytes concentrations and the duration of illness.
Methods: The study included 70 schizophrenic patients (main group) and 30 healthy subjects (control group). Schizophrenic patients were selected from the Psychiatric Hospital in Skopje and diagnosed by ICD-10. The age and the sex distributions of schizophrenic patients were similar to those of control group. All the patients used adequate anti-psychotic drugs. The level of total T cell (CD3), T helper (CD4), T suppressor (CD8) and total B cell (CD19) was determined by flow cytometry using fluorescence monoclonal antibodies.
Results: In the schizophrenic patients, a significant reduction of total T cell ($P = 0.003$), T helper ($P = 0.018$) and T suppressor cell ($P = 0.024$ has been observed, while the total B cell was found to be increased ($P = 0.003$). A positive relationship was noted in the levels of total T cell, T cell classes, total B cell and duration of illness. Also, there was a positive relationship between the immunological changes and pharmacological treatment.
Conclusion: These results demonstrate a definite link between schizophrenic disorders and the immune changes during the illness. The results confirm the immunologic theory of the disease.
Policy of full disclosure: None.

O-02 Epidemiology and psychopathology

O-02-001
The role of interpersonal dichotomous thinking and self-discrepancies on positive symptoms in psychosis: a pathway analysis using structural equation modeling

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Objective: Following the Personal Construct Theory, our aim was to examine the role of distinct dimensions of personal identity, as measured with the Repertory Grid Technique, within other well-known factors on psychological models of positive symptoms. We hypothesize that high dichotomous thinking style will be directly associated with positive symptomatology. We will also explore if self-discrepancies and depressive symptoms work as both direct and indirect predictors of positive symptoms.
Methods: Eighty-five outpatients with schizophrenia-spectrum disorders completed the Repertory Grid Technique, an observed-rated interview of psychotic symptoms, and measures of cognitive insight and depressive symptoms. We used correlational analyses and structural equation modelling to explore our hypotheses. If the model was significant, we repeated it controlling for covariates: gender, age, age at onset, stage of the disorder, antipsychotic dose and lifetime hospitalizations.
Results: The model for positive symptoms had good fit statistics [$\chi^2(14) = 18.21$; $P = 0.197$; CFI = 0.98; TLI = 0.96; RMSEA = 0.059; SRMR = 0.065] and accounted for 22.3% of the variance. Depressive symptoms fully mediated the relationship between self-discrepancies and positive symptoms ($\beta = 0.217$, $P = 0.017$, ± 95% CI [0.038, 0.395]). Interpersonal dichotomous thinking directly influenced positive symptoms ($\beta = 0.25$, $P = 0.009$), but it was not a mediator of self-certainty on positive symptoms ($P = 0.148$). None of the paths of covariates for both models were significant, so they were removed.
Conclusion: This study is the first of its kind to examine the structure of personal identity in relation to positive symptoms. Our results suggest that models of positive symptoms might be improved if they consider dichotomous thinking in the interpersonal context and internal experiences of self-discrepancy as influencing symptomatology. Interventions targeted to improve personal identity factors may be useful in improving positive symptoms.
Policy of full disclosure: None.

O-02-002
Suicides and suicide attempts in cycloid psychoses and disorder manic-depressive illness

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Objective: Little is known about suicidality in schizophrenia spectrum diseases, especially in cycloid psychoses (the ICD-10 F23, DSM 298.8 prototype). This topic was also addressed in a family study applying the criteria of Karl Leonhard´s differentiated nosology of endogenous psychoses to compare cycloid psychoses (CP) and manic-depressive illness (MDI) in terms of formal genetics.
Methods: 45 index patients with CP and 32 with MDI were included. Altogether, 83% of their 325 first-degree relatives were interviewed personally about their mental history by investigators blind to the diagnosis of the index proband.
Results: In index patients with CP, suicide attempts occurred in 15.6% whereas in MDI, there were 37.5% probands with suicide attempts ($p = 0.03$). Considering cumulative lifetime risk for suicide attempts the difference between the groups was not significant. However, in CP patients the degree of suicide intent was significantly higher than in MDI suicide attempters ($p = 0.01$). In first-degree relatives, suicide attempts and suicides together occurred in 3.5% of 172 relatives of CP probands compared to 12.4% of 153 relatives of MDI probands. Considering lifetime risk for suicidal behaviour, there was a significant difference ($p = 0.003$) with a cumulative risk of 5.9% in CP relatives, and 19.6% in MDI relatives. There was still a significant difference in suicide attempts only, but not in suicides between relatives of CP compared to MDI probands.
Conclusion: Although there was no significant difference in the rate of suicide attempts between the two index patient's groups, this was the case in first-degree relatives which reflects the low heredity of CP on one hand, and high familiarity of MDI on the other. This results in many suicides and suicide attempts in the latter group. The higher rate of desperate and violent suicide attempts in CP patients in contrast to more appellative suicide attempts in MDI will be discussed.
Policy of full disclosure: None.

O-02-003
Are sleep disturbances related to cognitive impairments in psychotic disorders?

J. Fjæra Laskemoen (University of Oslo, Institute of Clinical Medicine), Oslo, Norway; M. Ingrid, T. Ueland, M. Aas, C. Simonsen

Objective: Both sleep disturbances and cognitive impairments are frequent across psychotic disorders, with debilitating effects on functioning and quality of life. This study aims to investigate if sleep disturbances are related to cognitive impairments in Schizophrenia spectrum (SCZ) and Bipolar disorders (BD), and if this relationship varies between different sleep disturbances (insomnia, hypersomnia or delayed sleep phase (DSP)).
Methods: A total of 808 participants (SCZn = 457, BDn = 351) from the Norwegian Centre for Mental Disorders Research (NORMENT) study in Norway, were included. Sleep disturbances were identified based on items from the Inventory of Depressive Symptoms—Clinician rated scale. The cognitive domains assessed were: processing speed, verbal learning, verbal memory, attention, verbal fluency, inhibition and set-shifting. Separate ANCOVA analyses with Bonferroni adjustments were conducted to test the relationship between sleep disturbances and cognitive functioning. To test if the relationship with cognitive functioning differs between insomnia, hypersomnia and DSP, three-way between groups ANOVAs were conducted.
Results: The separate ANCOVAs revealed significantly poorer processing speed and inhibition in those with sleep disturbance compared to those without ($p < 0.006$), also after adjustment for the influence of age, diagnostic group, positive and negative symptoms. Moreover, there were significant effects of insomnia and hypersomnia on both processing speed ($F = 13.6$, $p < 0.001$, $\eta^2 = 0.017$ & $F = 5.8$, $p < 0.05$, $\eta^2 = 0.007$) and inhibition ($F = 7.3$, $p < 0.01$, $\eta^2 = 0.009$ & $F = 4.1$, $p < 0.05$, $\eta^2 = 0.005$).
Conclusion: Overall sleep disturbances are not strongly linked to cognitive impairments in psychotic disorders. However, processing speed and inhibition is poorer in participants with sleep disturbance, and impairments in these domains are related to insomnia and hypersomnia. This suggests that treatment of sleep disturbances is important alongside cognitive remediation in psychotic disorders.
Policy of full disclosure: None.

O-02-004
Temporal associations between sleep quality and paranoia across the paranoia continuum

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Objective: Sleep disturbances are prevalent among individuals with a psychotic disorder and have been linked to symptoms of paranoia across the entire psychosis continuum. Emerging evidence suggests that rather than a secondary symptom, poor quality of sleep may contribute to elevated paranoid ideation.
Methods: We investigated the temporal dynamics of sleep quality and paranoid ideation using the Experience Sampling Method in 42 acutely paranoid individuals with a psychotic disorder, 32 non-paranoid individuals with psychotic disorder, and 41 individuals with high schizotypy traits. We applied time-lagged mixed multilevel modeling to tease apart the effect of poor sleep quality on morning paranoia and negative affect, and the impact of evening paranoid ideation and negative affective states on subsequent sleep quality.
Results: In the whole sample, poor subjective sleep quality predicted elevated paranoia the following morning, a relationship that was fully mediated by morning negative affect. No significant association between evening paranoia and poor sleep the following night emerged. In the everyday lives of individuals on the paranoia continuum, low quality of sleep appears to drive paranoia through its impact on negative affect
Conclusion: These findings identify sleep quality as an important target of transdiagnostic interventions for psychotic and affective symptomatology.
Policy of full disclosure: Co-author M.H. reported receiving a fee from Lundbeck as a speaker at an education grant conference and travel support from Angelini.

O-02-005
Prevalence and risk factors of victimization in patients with a psychotic disorder: a systematic review and meta-analysis

G. Pijnenborg (University of Groningen, Clinical Psychology), Haren, The Netherlands; B. De Vries, E. Van der Stouwe, J. Van Busschbach

Objective: People with a psychotic disorder are often perceived as dangerous and associated with criminal and violent behavior. However, studies show that people with a psychotic disorder are more

often victim than perpetrator of violence. The objective of this study was to review the prevalence rates for different types of victimization and perform meta-analyses to identify consistent significant risk factors that are associated with victimization.
Methods: A search was performed in three bibliographic databases: MEDLINE, PsycINFO and Web of Science. Studies were included when the sample consisted of adults with a psychotic disorder and victimization occurred during adulthood. Four categories of victimization were distinguished: 'violent victimization', 'sexual victimization', 'non-violent victimization', and 'victimization not otherwise specified (NOS). For the meta-analysis the Mantel-Haenszel method or the generic Inverse Variance was used.
Results: The electronic database search yielded 2821 references. After screening 23 studies were included. The median prevalence rate for violent victimization was 22%, for sexual victimization 32%, for non-violent victimization 20%, and for the victimization NOS category it was 18%. Meta-analyses showed that the following risk factors were significant associated with victimization: unemployment (OR 1.23), homelessness (OR 2.35), hallucination (OR 1.68), manic symptoms (OR 1.66), drugs (OR 1.90) or alcohol (OR 2.05) misuse ore abuse and perpetration (OR 4.33).
Conclusion: Dependent of the time period examined, one in five ($\leq$ 3 years) or one in three (adulthood) patients with a psychotic disorder was victim of a crime. Having a risky lifestyle is one of the explanations why people get victimized. Impaired social functioning or having hallucinations or manic episodes are factors that were also associated with victimization. Finally, there is an overlap between being a victim and acting as perpetrator. Longitudinal research on risk factors is needed to capture causal trajectories of victimization.
Policy of full disclosure: None.

O-02-006
The making of a mass murderer: the fine line between delusion and fantasy

A. Carvalho (Centro Hospitalar Tâmega Sousa, Psychiatry), Penafiel, Portugal

Objective: On July 22, 2011, 77 people were killed in two separate events orchestrated by the same man, Anders Breivik, that acted on behalf of extreme ideologies, back then initially considered psychotic. The whole world watched as the trial unrolled with conflicting notions on the diagnosis attributed to Anders. The first forensic team considered him unaccountable for his crimes, having diagnosed him with paranoid schizophrenia, therefore creating an uproar amongst the people of Norway. A second evaluation was solicited by the court and the verdict was a severe narcissistic personality disorder. Anders Breivik was convicted to 21 years in prison, the maximum sentence existing in Norway. We propose to analyze the controversial case of Anders Breivik, the author of heinous attack on July 22, 2011, in Norway, that resulted in mass murder, reflecting on the possible psychopathological mechanisms that underlie the development of such beliefs, and possibly motivate such behaviors.
Methods: We searched non-systematic literature available on the Anders Breivik trial by performing a search on MedLine for English-written articles and also by consulting the judicial process. The query used was "anders", "breivik" and "psychopathology".
Results: Right before delivering the attacks, Anders Breivik disseminated what is considered his "manifesto", as a pdf e-mail file, which consists of texts, proclaiming his bizarre beliefs about being part of a secret society of knights who will save Europe. Many psychiatrists have closely analyzed his behavior, both prior and posterior to the events, having concluded that, rather than being delusional, his grandiose ideas were narcissistic fantasies of a troubled man with a lonely and traumatizing childhood.
Conclusion: In a time where fanaticism and terrorism have been a continuous threat, cases like Ander Breivik's attract so much interest due its diagnostic difficulties, as it can be quite hard to process how can anyone considered sane be capable of committing such atrocities.
Policy of full disclosure: None.

O-03 Neuroimaging

O-03-001
Schizophrenia phenotypic classification by spatial patterns of progressive changes in cortical thickness. A longitudinal MRI study in first episode patients

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Objective: The precise phenotypic classes in schizophrenia are unknown. Single-subject level phenotyping, however, would allow for individualized clinical management and advance the understanding of SZ pathophysiology. To clarify disease-related trajectories of progressive cortical thickness changes in schizophrenia we have conducted longitudinal study in a large sample (N = 101) of first episode schizophrenia spectrum patients (FES). The main aim of this project was, to drew on heterogeneity of morphometric trajectories among FES cases to delineate subgroups independent of their phenomenological manifestations.
Methods: Cortical thickness (CT) has been assessed by use of 3T MRI scanner in 333 parcels based on Cortical Area Parcellation from Resting-State Correlations (Gordon 2016). Subsequently, hierarchical cluster analysis has been performed using data on within-subject change in cortical thickness after the onset of the disease and 12 months later.
Results: We have defined three distinct subtypes of SZ patients: Cluster 1 (70% of patients) showed slight widespread cortical thinning overlapping precisely intracortical myelin content maps. Cluster 2 (10% of patients) showed widespread atrophization with most pronounced CT reduction within cingulo-opercular region. Cluster 3 (20% of patients) exhibited overall increase in CT during 1-year follow-up suggesting edema as a probable cause.
Conclusion: Subtypization of SZ based on longitudinal morphometry may advance the understanding of SZ pathophysiology and may allow for individualized counseling and optimized clinical trial designs.
Policy of full disclosure: This study was supported by Ministry of Health, Czech Republic, grant number 16-32696A.

O-03-002
Abnormal brain structure's features as a possible etiopathogenetic cause of the clinical heterogeneity of endogenous psychoses

N. Zakharova (Psychiatric Clinical Hospital, Healthcare), Moscow, Russia; G. Mamedova, L. Bravve, S. Kartashov, V. Ushakov, A. Vartanov, V. Orlov, G. Kostyuk

Objective: In the paradigm of anatomical changes in the brain of schizophrenic patients, there are two hypotheses: neuroontogenetic and neurodegenerative. This study of brain microstructure (in particular gyrification) would make better our understanding of the

etiopathogenesis of schizophrenia. The primary concern of this research is to perform an in vivo study of the brain anatomy and physiology characteristics and determine the association between structural brain aberrances and clinical properties of endogenic psychosis in schizophrenia patients compared to healthy individuals.
Methods: The sample includes 54 patients, 18–40 years old, with a verified diagnosis of paranoid, catatonic schizophrenia according ICD-10 criteria and 36 healthy volunteers. Tractographic reconstruction of neural connections was made by DTI with the subsequent calculation of matrices of connectivity of the brain areas in accordance with Automated Anatomical Labeling (AAL) atlas. The factor analysis with Cattle's criterion and following comparative analysis using the t test were performed to the matrix. Deep analysis of the brain zones anatomy was made by FreeSurfer Software. The volumes of the cerebellum lobes were determined using the SUIT tool for SPM-12. For the calculations, the Matlab version R2018b was used.
Results: Based on the analysis of the tracts between the brain zones (according AAL atlas), three factors were identified that revealed statistically significant between the group of patients and control group. These zones include the limbic system (cingulum, right parahippocampal, right hippocampus), sensory (left postcentral gyrus) and motor areas (right precentral gyrus, left paracentral lobule, left hemisphere and vermis of cerebellum). To date, the collection of MRI images of patients of the Alekseev Psychiatric Clinical Hospital №1 and control group has been gathered, the surface-based morphometry was performed and data processing is underway.
Conclusion: Based on preliminary data, hypothesis about etiopathological mechanisms heterogeneity of psychosis development may be proposed. The risk of developing motor abnormalities ontogenetically may be established
Policy of full disclosure: This research was partially supported by Russian foundation for basic research # 17-29-02518. The authors don't have conflict of interest.

O-03-003
Pituitary volume in violent men with schizophrenia or antisocial personality disorder: relationship with childhood psychosocial deprivation

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Objective: To examine pituitary volume (which is known to be sensitive to stress) in relation to seriously violent behaviour and childhood psychosocial deprivation (including physical and sexual abuse) in people with schizophrenia or antisocial personality disorder (ASPD).
Methods: Fifty-six men [13 with schizophrenia and a history of serious violence (VSZ); 13 with ASPD and a history of serious violence; 15 with schizophrenia without a violence history (SZ); and 15 non-violent healthy participants] underwent whole brain magnetic resonance imaging and were rated on the presence of physical abuse, sexual abuse, neglect, extreme poverty, foster home placement, criminal parent, severe family conflict, and broken home (collectively 'psychosocial deprivation). Stereological volumetric ratings of the pituitary were examined for group differences and their association with childhood psychosocial deprivation ratings.
Results: There was significantly reduced pituitary volume in both VSZ and SZ groups compared to the healthy group. The VSZ group also had significantly reduced volume compared to the ASPD group, while there was a trend for this effect in the SZ group. Pituitary volume ratings correlated negatively with the severity of childhood sexual abuse and criminal parenting in the ASPD group, but no relationship was found between pituitary volume and psychosocial deprivation ratings in the other three groups.
Conclusion: The findings confirm previous research showing reduced pituitary volume in people with a chronic SZ illness and suggest that this effect may be more pronounced in schizophrenia patients with a history of violence. The association between childhood abuse and smaller pituitary volumes, seen here in ASPD, may be lost in SZ perhaps due to multiple (additional) sources of chronic stress, or the effects of chronic SZ illness.
Policy of full disclosure: None.

O-03-004
Association of cortical glutamate and working memory activation in patients with schizophrenia: a multimodal 1H-MRS and fMRI study

J. Kaminski (Charité, Department of Psychiatry), Berlin, Germany; T. Gleich, Y. Fukuda, T. Katthagen, J. Gallinat, A. Heinz, F. Schlagenhauf

Objective: Cognitive deficits like working memory impairment are core features of schizophrenia. One candidate biochemical marker for the integrity of synaptic neurotransmission necessary for cognitive processes is glutamate. It is frequently postulated that antipsychotic medication status possibly alters functional mechanisms in the living brain. We tested in vivo for group differences in activation of the dorsolateral prefrontal cortex (dLPFC) during working memory (WM) performance and with glutamate concentration in dLPFC depending on medication status.
Methods: 105 subjects (41 medicated patients, 41 matched controls and 23 unmedicated patients) took part in the study. We estimated glutamate in left dLPFC using magnetic resonance spectroscopy (1H-MRS). Subjects performed an n-back WM task (2-back vs. 0-back) during functional magnetic resonance imaging and local activation in left dLPFC was estimated. For analysis of association with medication status, we calculated linear regression models including an interaction effect with group.
Results: Medicated and unmedicated patients with schizophrenia showed significantly lower performance ($p < 0.001$) and reduced WM activation in left dLPFC as compared to controls ($p = 0.001$). We found no group difference in local glutamate concentration ($p = 0.41$). However, we found differential effects of medication status on the association between local glutamate concentration and WM activation in left dLPFC ($p = 0.017$), with a positive association in unmedicated patients but not in medicated patients.
Conclusion: We provide evidence that WM dependent activation is associated with glutamate concentration in unmedicated schizophrenia patients. Our finding points to putative allostatic changes which affect the functioning of the brain and might be altered through medication.
Policy of full disclosure: None.

O-03-005
EEG microstates in schizophrenia: a candidate endophenotype

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Objective: Electroencephalogram (EEG) microstates are on-going scalp potential configurations that remain stable for around 80 ms. Abnormal temporal dynamics of specific classes of microstates have

been suggested as a potential endophenotype for schizophrenia. For an endophenotype, it is important that unaffected relatives of schizophrenia patients also show the abnormal dynamics. To the best of our knowledge, no study analyzed the resting dynamics of EEG microstate in relatives of schizophrenia patients.
Methods: Here, we used high-density EEG to study the microstate dynamics in 5 min resting-state recordings of 38 unaffected siblings of schizophrenia patients, 89 schizophrenia patients, 69 healthy controls, 42 healthy students scoring either high or low in schizotypal traits, and 22 patients with first episodes of psychosis (FEP). We also tested the FEP patients two more times throughout 1 year to assess whether the microstates dynamics change with disease progression.
Results: Schizophrenia patients showed increased presence of a microstate class labeled C and decreased presence of a microstate class labeled D compared to controls. Siblings showed similar patterns of microstate classes C and D as chronic patients (endophenotype concept). Surprisingly, siblings showed an increased presence of a microstate class labeled B compared to chronic patients. A similar result was also found in students scoring high in schizotypal traits compared to the ones scoring low. No difference was found between FEP and matched chronic patients. Moreover, the microstates dynamics remained stable throughout 1 year.
Conclusion: Our findings suggest that the dynamics of microstate classes C and D meet most of the requirements for an endophenotype for schizophrenia. The novel finding of the increased presence of microstates class B in siblings, as well as students scoring high in schizotypal traits, may reflect a compensation mechanism opposing the vulnerability to develop schizophrenia.
Policy of full disclosure: None.

O-03-006
Incongruent manifestations of schizophrenia neurobiology

V. Strelets (IHNA&NPh RAS Human Higher Nervous Activity), Moscow, Russia; A. Arkhipov, G. Rodionov

Objective: The goal—examination of cerebral cortex activation mechanisms to stimuli of different significance.
Methods: Method—analysis of Event Related Potentials in P200, P300, N400 components to neutral and threatening IAPS visual stimuli and fMRI analysis to similar stimuli in paranoid schizophrenia patients from 19 derivations. Participants: 43 medication naive schizophrenia patients, 39 controls. Components P200, P300, N400 were considered because earlier components didn't react to significant stimuli in this implicit situation. Statistics: Mann–Whitney–Wilcoxon test (STATISTICA-10)
Results: The threatening stimuli as more significant caused higher activation of occipital and posterior temporal areas in both groups. However, in patients to the threatening stimuli both ERP parameters latency and amplitude were greater to the threatening stimuli then to neutral ones in frontal areas, and in central and temporal areas they were smaller than to the neutral ones, which is incongruent both for excitation and inhibition. The obtained results could be explained by epigenetic pathology, such as reduced expression of reelin in the brain, leading to altered early ontogenesis neurons directioning, lower density of spines and decreased synaptic plasticity.
Conclusion: Thus, it was revealed that threatening stimuli cause change of ERP parameters incongruent both for excitation and inhibition in frontal areas with simultaneous increase and in central regions with simultaneous decrease of ERP parameters.
Policy of full disclosure: None.

O-04 Neuropsychology

O-04-001
Reading skills in schizophrenia: what we know and what we need to know?

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Objective: Dyslexia has been previously linked to schizophrenia [1] and symptoms of dyslexia have also been found in their first-degree relatives [2], suggesting potential neurobiological links between these conditions. Notable differences exist between individuals with schizophrenia and healthy controls, depending on the type of reading assessment used [1]. This literature review focuses on the clinical and cognitive correlates of poor reading skills in schizophrenia.
Methods: A systematic search of various existing databases was conducted cross-referencing terms to scope all studies on standardised reading assessments in people with schizophrenia. Only peer-reviewed articles were included. Studies have had to assess reading skills using more complex measures than a single word reading test, usually including comprehension assessment.
Results: There was a negative correlation between the severity of symptoms and reading skills [3, 4, 5]. Patients were found to show greater deficits in reading than expected based on their general cognitive impairment [6], and the findings suggested that impairment in comprehension may be explained by phonological processing deficits. A proportion of patients also met the criteria for dyslexia [3, 4, 6].
Conclusion: There is consistent evidence for poor reading skills in schizophrenia. Now, we need to understand the state and trait nature of these deficits and consider their impact on everyday functioning and treatment outcomes [7].
References:
[1] Whitford V et al (2018) Schizophr Res 193:11–22.
[2] Roberts EO et al. (2013). Schiz Bull 39(4):896–907.
[3] Arnott W et al. (2011) Psychiatry Res 187(1):6–10.
[4] Revheim N et al. (2006) Schizophr Res 87(1–3):238–45.
[5] Wang J et al. (2015) Psychiatry Res 230(3):919–23.
[6] Revheim N et al. (2014) Am J Psychiatry 171(9):949–59.
[7] Ritchie SJ, Bates TC (2013) Psychol Sci 24(7):1301–1308.
Policy of full disclosure: None.

O-04-002
The influence of positive and negative symptoms on decision-making in schizophrenia

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Objective: Negative symptoms affect cognitive abilities in schizophrenia. A plausible explanation could be loss of motivation, reducing effort spent on cognitive tasks. Indeed, studies found that patients with a high load of negative symptoms show absent anticipatory motivation. This could be due to misperceiving of uncertainties and miscalibrated metacognition, leading to overconfidence and "jumping to conclusions", and thus, the arrest of further effort in problem solving. To investigate what underlies the absence of anticipatory motivation, we devised a novel visual search task.
Methods: We measured anticipatory motivation as effort spent searching in a repeated visual search task. Participants, so far, were 16 schizophrenia patients with negative symptoms, and 15 healthy

controls. Success depended on the accuracy of one's memory, and the perceived probability of the target item still being there. Maximum effort was measured in trials where the target was absent in the search array: How long would the participant go on searching? Note, search effort should be related to confidence, "it should be here somewhere" (Pfuhl et al., 2009), and this confidence was gauged by drawing a capture area.
Results: Preliminary results indicated less accurate memory in patients compared to healthy controls, but no difference in implicit metamemory. In the subset of trials where the target item could not be found search effort was, contrary to expectation, positively associated with negative symptoms.
Conclusion: This result agrees with our previous finding that positive symptoms are associated with less accurate memory but is contrary to studies finding weaker cognition to be related to negative symptoms. In contrast to our expectation, patients did not show overconfidence, but demonstrated normal implicit metamemory. Further, and contrary to expectations, higher load of negative symptoms seems to facilitate optimal search investment. This could be related to perseverative cognitive strategies, known in negative symptoms but still not fully understood.
Policy of full disclosure: None.

O-04-003
Delusional ideation as the result of error signal dysregulation in the assessment of correlation

B. Christensen (Australian National University, Research School of Psychology), Canberra, Australia; A. Harrison

Objective: This study aimed to investigate a multivariate model of cognitive mechanisms underlying delusional ideation, which incorporates both decision criteria and working memory, through their effects on correlation detection. Previous research has identified that delusion-prone individuals tend to set more liberal thresholds and accept more weakly-supported response alternatives. While working memory has been observed to have some influence, its precise role in this cognitive bias has remained unclear. Moreover, whether these factors, through their impact on correlation detection, also influence delusional thinking is also unknown.
Methods: The sample of 141 participants completed several surveys, including the Peters Delusion Inventory, and two cognitive tasks. These included the automated operation span (i.e., working memory) and a novel computer task that required participants to identify correlations between sequentially presented geometric figures. Decision criteria and correlation detection accuracy were calculated under the framework of signal detection theory.
Results: A path analysis indicated that, while correlation detection accuracy was not affected by the simple effects of either decision criteria or working memory, it was significantly influenced by an interaction between these variables. This interaction was such that lower working memory attenuates the relationship between decision criteria and correlation detection accuracy. In turn, correlation detection accuracy was found to predict levels of delusional ideation. The significance of this indirect relationship reflected partial dual-moderated mediation of the effects of decision criteria and working memory on delusional ideation, through correlation detection accuracy. An additional finding from this model was that more liberal decision criteria were associated with increased delusional ideation. Surprisingly, increased delusional ideation was also found to be predicted by higher working memory.
Conclusion: Overall, results provide support to a new cognitive model of delusional ideation through error signal dysregulation. This mechanism is discussed in the context of existing phenomenological, cognitive and neuropsychological accounts of delusional ideation.
Policy of full disclosure: None.

O-04-004
Meta-analysis of cognitive performance in drug-naïve patients with schizophrenia

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Objective: Cognitive deficits represent a significant characteristic of schizophrenia. However, a majority of the clinical studies have been conducted in antipsychotic drug treated patients. Thus, it remains unclear if significant cognitive impairments exist in the absence of medication. This is the first meta-analysis of cognitive findings in drug-naïve patients with schizophrenia.
Methods: Cognitive data from 23 studies encompassing 1106 patients and 1385 controls published from 1992 to 2013 were included. Tests were to a large extent ordered in cognitive domains according to the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) battery. Analysis was performed with STATA using the random-effects model and heterogeneity as well as Egger's publication bias was assessed.
Results: Overall the results show that patients performed worse than healthy controls in all cognitive domains with medium to large effect sizes. Verbal memory, speed of processing and working memory were three of the domains with the greatest impairments. The pattern of results is in line with previous meta-analytic findings in antipsychotic treated patients.
Conclusion: The present meta-analysis confirms the existence of significant cognitive impairments at the early stage of the illness in the absence of antipsychotic medication.
Policy of full disclosure: The authors have no conflicts of interest in relation to the subject of this study. Simon Cervenka is a co-investigator in a project supported by Astra Zeneca Translational Science Center (principal investigator: Sophie Erhardt). Lena Flyckt has received project support from Astra Zeneca for a study on relatives to patients with schizophrenia. Lars Farde is partly employed by Astra Zeneca Translational Science Center at Karolinska Institutet. Helena Fatouros-Bergman and Gunnar Edman have no conflicts of interest.

O-04-005
Empathy measures in individuals at ultra-high risk for psychosis

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Objective: Persons with schizophrenia show substantial deficits in both cognitive and affective domains of empathy. It is unknown whether empathy is affected in patients at risk for psychosis (UHR). In this study we compared cognitive and affective empathy in UHR-patients with individuals with schizophrenia and a healthy control group.
Methods: UHR patients (n = 37), outpatients with schizophrenia (n = 92) and a healthy comparison group (n = 42) completed the Interpersonal Reactivity Index (IRI), the Questionnaire of Cognitive and Affective Empathy (QCAE), Faux Pas test and Empathy Accuracy Task (EAT). Between-group differences were examined on the used empathy instruments.

Results: Preliminary results show a statistically significant difference between the three groups on the QCAE and IRI. Univariate tests show significant difference on the cognitive scale of the QCAE and affective scale of the IRI. Tukey post hoc analysis shows that UHR patients scored significant lower on the QCAE-Cognitive scale than healthy controls. On the IRI Affective scale statistical differences are found between all three groups. Healthy controls had significant lower empathy scores than patients with schizophrenia and UHR-patients.
Conclusion: Our study suggests that the cognitive component of the QCAE is affected in the UHR-group compared to healthy controls and supports the idea that cognitive empathy already is deteriorated in patients in the UHR-phase. Cognitive empathy could be a trait marker of schizophrenia. Healthy controls showed less affective empathy compared to the UHR group and patients with schizophrenia, indicating that affective empathy is not affected in the UHR-phase. Conclusions about Faux-Pas and EAT will be presented during congress.
Policy of full disclosure: None.

O-04-006
Training of facial affect recognition in schizophrenia: transfer effects to theory of mind

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Objective: Social cognitive impairment is a characteristic feature of schizophrenia and important determinant of functional outcome. The aim of this randomized controlled trial was to investigate the effects of a targeted social cognitive training program on social and non-social cognition, symptoms and functional outcome.
Methods: In a study at Oslo University Hospital in Norway, 48 individuals with schizophrenia / schizoaffective disorder were randomly assigned to receive social cognitive training and treatment as usual (n = 24) or treatment as usual (n = 24). The training was undertaken using the Training of Affect Recognition (TAR) program. TAR is a 12-session manualized training for emotion perception deficits, delivered over 6 weeks. Participants were assessed with a comprehensive clinical and cognitive protocol at baseline (T1), after completion of the intervention (T2), and at 3-month follow up. Three social cognitive domains were assessed: emotion perception (from faces: Pictures of Facial Affect, and body movement: EmoBio), theory of mind (Movie for the Assessment of Social Cognition) and social perception (Relationships Across Domains). Non-social cognition was measured with Matrics Consensus Cognitive Battery. Functioning was indexed by measures of social and non-social functional capacity. Symptoms were measured with Positive and Negative Syndrome Scale. The effect of TAR on outcome measures was investigated using linear mixed models.
Results: A significant time x group interaction effect was found for theory of mind [b = 0.79, t (71.5) = 2.52], and at trend-level for social functional capacity. There were no significant effects for non-social cognition/functional capacity, or symptoms.
Conclusion: Targeted training of deficits in facial emotion perception improved theory of mind, with durable effects. This study provides evidence for the generalizability (to a non-targeted domain) and durability (over time) of social cognitive training. Simultaneously, the study suggests that social cognitive training should be combined with other clinical interventions for functional outcome to improve.
Policy of full disclosure: None.

O-05 Treatment and mental health care

O-05-001
Don't wait, compensate! Results from a RCT evaluating the effectiveness of cognitive adaptation training in a hospital setting

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Objective: Feasible and effective interventions to improve daily functioning in people with severe mental illness (SMI) in need of longer-term rehabilitation are scarce. Cognitive Adaptation Training (CAT) is designed to improve daily functioning by compensating for cognitive deficits. Previous studies in the US showed that CAT as a psychological intervention improves functional outcomes in outpatients with schizophrenia. This study assessed the effectiveness of CAT in a hospital setting modified into a nursing intervention. Our previously conducted pilot study in a similar group of patients confirmed the feasibility of the intervention in a hospital setting and revealed promising results with regard to improvements on everyday functioning. We hypothesized that functional improvements of CAT compared to Treatment As Usual (TAU) would occur between 9 and 12 months and that these improvements could be maintained or enhanced in the year thereafter. To explore possible effects of CAT on cognition, we included cognitive measures.
Methods: This is a multicenter cluster randomized controlled trial. Nursing teams were randomized to CAT in addition to treatment as usual (CAT; n = 42) or TAU (n = 47). Everyday functioning (primary outcome) was assessed every 3 months for 1 year, with CAT follow-up for an additional year. Secondary outcomes were assessed every 6 months. Data was analyzed using multilevel modeling.
Results: CAT participants improved significantly on everyday functioning and cognitive functioning (executive functioning, visual attention, working memory and auditory attention) after 12 months compared to TAU. Improvements maintained after 24 months. Improved cognition was related to improved functioning. Other secondary outcomes (quality of life, empowerment, negative symptoms) showed no significant effects.
Conclusion: As a nursing intervention, CAT leads to sustainable improvements in everyday functioning and cognition in people with SMI in need of longer-term intensive psychiatric care. Given the paucity of evidence-based interventions in this population, CAT can become a valuable addition to recovery-oriented care.
Policy of full disclosure: None.

O-05-002
Opportunities and barriers for using the resource group methodology: qualitative results from a pilot study

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Objective: Adding the resource group methodology to flexible assertive community treatment may improve recovery processes for individuals with a severe mental illness. Patients nominate individuals to partake in their resource group, which meets regularly to discuss the patient's recovery goals. The members may be individuals from the patient's formal or informal network. In the Netherlands, this methodology has not yet been widely implemented. In 2017, a pilot study has been started to explore whether using this resource group

methodology may facilitate collaboration between different partners in the formal network of a patient and the patient's informal network and support the patient's recovery process.
Methods: The progress of the first twenty patients in the pilot was monitored closely, using a qualitative process evaluation. Structured interviews with participants and health care providers were carried out to identify barriers and opportunities of working with this new methodology.
Results: Including participants in the pilot proved challenging. Furthermore, for most participants, some difficulties in using the resource group methodology were encountered. We identified barriers associated with patient, the (in)formal networks and the health care system. In this presentation, the three key misconceptions that hindered the use of the resource group methodology will be discussed. The first misconception is that using the resource group methodology is not possible because the patient has no network. The second is that this methodology places a too heavy burden on the informal network. The third misconception is that the healthcare providers in the resource group are best suited to support the patient's recovery process. When these barriers were overcome, some patients experienced good outcomes within a year of working with the resource group methodology.
Conclusion: Working with the resource group methodology has unveiled barriers and opportunities for collaboration between the formal and informal network of a patient and supporting the patient's recovery process.
Policy of full disclosure: This pilot was funded in part by the municipality of Groningen and Menzis, a healthcare insurance company.

O-05-003
Community Treatment Orders [CTOs]—why the controversy?

D. Kantor (Services and Housing in Peel Psychiatry), Mississauga, Canada

Objective: To determine why there exists a marked variation among the opinions of the effectiveness of CTOs.
Methods: CTOs allow for the subject patient to be brought to hospital for assessment if the patient does not comply with treatment. Non-compliance is typically that of refusing/avoiding medication. A review was performed of the mental health laws in a number of geographic jurisdictions regarding the possibility to treat a patient who is refusing treatment.
Results: Although the basic elements of CTOs are similar in the different geographic jurisdictions where they exist, the laws regarding involuntary treatment vary considerably.
Conclusion: The effectiveness of a CTO is dependent upon whether its enforcement is followed by maintenance of medication.
Policy of full disclosure: None.

O-05-004
Pill or needle? Determinants of the preference for long-acting injection over oral treatment in people facing chronic illness

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Objective: Although long-acting injection (LAI) is presented as first line treatment option for patients with psychosis, negative attitudes towards this galenic negatively impact the selection of this treatment option. However, these negative attitudes may not be confined to patients but also observed in the general population.
Methods: A web-based study on 1,807 participants was conducted during which participants imagined that they had a particular chronic illness based on clinical vignettes (mental illnesses: schizophrenia, depression; somatic illnesses: multiple sclerosis, rheumatoid arthritis). The frequency of relapse and the intensity of symptoms were experimentally manipulated in the vignettes. Participants rated their subjective distress associated with each vignette, their belief in the effectiveness of treatment, and their treatment preference regarding medication. We examined under which conditions LAI was preferred over pills.
Results: Results showed that participants preferred LAI over pills in 40.5–50.8% of cases. LAI was more preferred for illnesses with low frequency of relapse, low subjective distress, and for somatic than for mental illnesses. The perceived advantage for LAI over pills and the belief about the better efficiency of LAI were the main factors that drove the preference for LAI.
Conclusion: Keeping in mind some advantages of LAI, the public negative representations of injections might partially influence patients' prejudices against LAI. These attitudes should be named and discussed with the patients when LAI seems to represent a relevant therapeutic option.
Policy of full disclosure: FB has received a speaker honorarium from Astra Zeneca, Bristol-Meyers-Squibb, Janssen-Cilag and Lundbeck. ASG declares that she has no conflict of interest. GB declares that he has no conflict of interest. SM has received speaker honorarium from Janssen-Cilag.

O-05-005
Pro-dopaminergic drugs for treating the negative symptoms of schizophrenia: systematic review and meta-analysis of randomized controlled trials

M. Sabe (Geneva University Hospital, Psychiatry), Thonex, Switzerland; M. Kirschner, S. Kaiser

Objective: Negative symptoms of schizophrenia pose a heavy burden on patients and relatives and represent an unmet therapeutic need. The observed association of negative symptoms with impaired reward system function has stimulated research on pro-dopaminergic agents as potential adjunctive treatments. Therefore, we aimed to evaluate the effect of pro-dopaminergic agents on negative symptoms in placebo-controlled randomized clinical trials.
Methods: We conducted a systematic review and meta-analysis of published randomized controlled trials (RCTs) of amphetamine, methylphenidate, modafinil, armodafinil, lisdexamphetamine, L-dopa, levodopa, bromocriptine, cabergoline, lisuride, pergolide, apomorphine, ropinirole, pramipexole, piribedil and rotigotine augmentation in schizophrenia and schizoaffective disorder. Medline, EMBASE and several other databases as well as trial registries were search for placebo-controlled trials.
Results: Eleven RCTs were included in the meta-analysis, seven trials on modafinil, two on armodafinil, one on L-dopa and one on pramipexole. Pro-dopaminergic agents significantly reduced negative symptoms, but the effect size was small and the effect was no longer significant when excluding one study in acute patients. Restricting the analysis to studies requiring a minimum severity of negative symptoms, modafinil/armodafinil showed a significant effect of small to moderate size on negative symptoms. A subset of studies allowed to calculating specific effects for the negative symptom dimensions diminished expression and apathy/avolition, but no significant effect was found. Pro-dopaminergic agents did not increase positive symptom ratings.
Conclusion: The currently available evidence does not allow formulating recommendations for the use of pro-dopaminergic agents for

the treatment of negative symptoms. Nevertheless, the observed improvement in studies requiring a minimum negative symptom severity in absence of an increase in positive symptoms clearly supports further research on these agents.
Policy of full disclosure: SK has received fees for advisory board participation by Lundbeck and Recordati on an institutional account for education and research. In addition, he receives royalties for cognitive test and training software from Schufried. The other authors report no conflicts of interest.

O-05-006
Cardiovascular risk assessment in schizophrenia patients: a comparison of risk between antipsychotics using the qrisk®3 algorithm

M. Aydin (Selçuk University, Department of Psychiatry), Konya, Turkey; S. K. Ercan, E. Yavuz, K. Altinbas

Objective: Antipsychotic medication is the mainstay of treatment in schizophrenia, but they may cause serious side-effects. Antipsychotics are known to increase the risk of cardiovascular disease (CVD). The aim of this study was to evaluate CVD risk of patients and to investigate whether increase in cardiovascular disease risk factors affected by antipsychotics in patients with schizophrenia.
Methods: The data were from patients who were consecutively admitted to Selcuk University Faculty of Medicine, Department of Psychiatry between September 2018 and April 2019 with the diagnosis of schizophrenia. Cardiovascular disease ratio (CVR) was calculated using QRISK-3-2018 algorithm. QRISK-3 risk calculator calculates a person's risk of developing a heart attack or stroke over the next 10 years.
Results: A total of 126 (76 female, 50 male) schizophrenic patients were included in this retrospective study. 41.3% (n = 52) patients were on oral and 58.7% (n = 74) patients were on depot antipsychotic medications (aripiprazole long-acting, n = 20; haloperidol decanoate, n = 21; paliperidon palmitate, n = 33; clozapine, n = 28; other oral antipsychotics, n = 24). Qrisk-3 was found to be significantly different between paliperidon palmitate and aripiprazole long-acting treatment groups, higher in the paliperidon palmitate group (consecutively; 6.89 vs 1.95; p = 0.023). Qrisk-3 was found to be significantly higher in patients only on oral antipsychotic group compared with the patients only on depot antipsychotic group (consecutively 6.78 vs 3.94; p = 0.03). Qrisk-3 was found to be significantly different between clozapine and other oral antipsychotic treatment groups (monotherapy), higher in the other oral antipsychotic group (consecutively; 9.14 vs 4.75; p = 0.046).
Conclusion: The prevalence of CVD is higher in patients with schizophrenia than in the general population. One of the explanations for increased cardiovascular events in patients with schizophrenia is treatment with antipsychotics. Risk of CVD varies due to antipsychotic medication. Qrisk-3 ratio may help while evaluating risk and prescribing antipsychotics.
Policy of full disclosure: None.

O-06 Early recognition and prediction

O-06-001
Individualized prediction of transition to psychosis in 1676 individuals at Clinical High Risk: development and validation of a multivariable prediction model based on Individual Patient Data Meta-analysis

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Objective: The Clinical High-Risk state for Psychosis (CHR-P) has become the cornerstone of modern preventive psychiatry. The next stage of clinical advancements rests on the ability to formulate a more accurate prognostic estimate at the individual subject level. Individual Participant Data Meta-analyses (IPD-MA) are robust evidence synthesis methods that can also offer powerful approaches to the development and validation of personalized prognostic models. The aim of the study was to develop and validate an individualized, clinically-based prognostic model for forecasting transition to psychosis from a CHR-P stage.
Methods: A literature search was performed between January 30th 2016 and February 6th, 2016 consulting PubMed, Psychinfo, Picarta, Embase and ISI Web of Science, using search terms ("ultra high risk" OR "clinical high risk" OR "at risk mental state") AND ((conver* OR transition* OR onset OR emerg* OR develop*) AND psychosis) for both longitudinal and intervention studies that included CHR-P individuals. Clinical knowledge was used to a priori select predictors: age, gender, CHR-P subgroup, the severity of attenuated positive psychotic symptoms, the severity of attenuated negative psychotic symptoms and level of functioning at baseline. The model thus developed was validated with an extended form of internal validation.
Results: Fifteen of the 43 studies identified agreed to share IPD, for a total sample size of 1676. There was a high level of heterogeneity between the CHR-P studies with regard to inclusion criteria, type of assessment instruments, transition criteria, preventive treatment offered. The internally-validated prognostic performance of the model was higher than chance but only moderate (Harrell's C-statistic 0.655, 95% CIs 0.627—0.682).
Conclusion: This is the first IPD-MA conducted in the largest samples of CHR-P ever collected to date. An individualized prognostic model based on clinical predictors available in clinical routine was developed and internally validated, reaching only moderate prognostic performance. Although personalized risk prediction is of great value in the clinical practice, future developments are essential, including the refinement of the prognostic model and its external validation. However, because of the current high diagnostic, prognostic and therapeutic heterogeneity of CHR-P studies, IPD-MAs in this population may have an limited intrinsic power to deliver robust prognostic models.
Policy of full disclosure: I have no relevant disclosure.

O-06-002
Schizotypal personality and childhood trauma as risk factors towards psychosis: epidemiological evidence from Qatar

P. Woodruff (Hamad Medical Corporation, The Psychiatry Hospital), Doha, Qatar; S. Khaled, S. Wilkins

Objective: Qatar has undergone recent rapid urbanization. We estimated: (1) lifetime prevalence of psychotic experiences (PEs) [delusions only, hallucinations only, and both] in the Qatari population; (2) associations between PEs and both schizotypy (genetic predisposition) and childhood trauma. We hypothesised that lifetime prevalence of PEs would be associated with childhood trauma and schizotypy.
Methods: Adults (N = 1353) were interviewed. 1286 completed all PEs questions. Arabic and English interviews included Schizotypal Personality Questionnaire (SPQ), childhood trauma (terrifying experiences, beatings, abuse) and PEs. We used multinomial logistic regression with PEs as dependent variable testing associations with childhood trauma and schizotypy.
Results: 9.3% experienced hallucinations and delusions; prevalence (delusions only) 11.6%; (hallucinations only) 7.0%. Adjusting for age and gender, schizotypy was associated with mixed PEs [OR = 16.57, $p < 0.001$]; delusions only [OR = 4.25, $p < 0.001$] and hallucinations only [OR = 2.41, $p < 0.001$]. Childhood trauma events > 2 was associated with all profiles of PEs. A mixed profile of PEs was associated with odd behaviors [OR = 2.47, p = 0.001], abnormal ideas of reference [OR = 2.33, p = 0.008], odd beliefs and magical thinking [OR = 3.07, $p < 0.001$], unusual perceptual experiences [OR = 4.37, $p < 0.001$], and suspiciousness [OR = 1.91, p = 0.032]. Delusions alone were associated with odd beliefs and magical thinking [OR = 2.31, p = 0.005] and suspiciousness only [OR = 2.16, p = 0.017]. Hallucinations alone were associated with odd beliefs and magical thinking [OR = 3.23, p = 0.001] and unusual perceptual experiences only [OR = 2.81, p = 0.011].
Conclusion: PEs were associated with exposure to childhood trauma. Individuals reporting mixed profiles of PEs exhibited higher overall schizotypy associated with psychosis. Future studies may prospectively delineate potential risk of psychosis in individuals with history of childhood trauma.
Policy of full disclosure: PW has previously received support from Lundbeck, Janssen-Cilag, Sunovion and Newbridge Pharmaceuticals.

O-06-003
Emotion recognition and childhood trauma in individuals at clinical high risk for psychosis

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Objective: Social cognition is often impaired in people in early stages of psychosis, including in individuals at Clinical High Risk of psychosis (CHR). Recent studies have focused on facial emotion recognition (FER) deficits to investigate their possible relationship with increased liability for psychosis. Impaired FER is also a strong feature in individuals with history of childhood trauma (CT). CT is highly prevalent in CHR individuals and is associated with increased risk of transition to psychosis. In this study we investigated the relationship between FER and CT in a large sample of CHR individuals.
Methods: 345 CHR individuals and 66 healthy controls (HC) were recruited as part of an EU-funded multi-centre study (EUGEI). At 24-month follow-up, 65 CHR participants developed psychosis and 280 did not. Generalized regression models were used to analyse the relationship between the Degraded Facial Affect Recognition task (DFAR) and CT, measured with Childhood Trauma Questionnaire and Childhood Experience of Care and Abuse. Logistic regressions were used to analyze the relationship between transition to psychosis and the DFAR. A statistical threshold of $p < 0.05$ was used.
Results: Analyses revealed a significant increase in transition risk with increasing mistakes during the DFAR ($\chi 2 = 7.49$, $p < 0.001$). Irrespective of the group (i.e. CHR/HC), all individuals who experienced bullying performed better in the DFAR total [p = 0.03], happy [p = 0.049], and fear [p = 0.02] conditions than those who did not experience bullying. Individuals who experienced the death of a parent in childhood made more mistakes in the neutral condition [p = 0.008], and those who suffered emotional abuse performed worse in total DFAR [p = 0.01]. No other significant associations were found.
Conclusion: Emotion misattribution is associated with increased risk of transition to psychosis while, irrespective of the group, emotional abuse and death of a parent significantly affect FER ability. Being bullied does not negatively affect FER. This could have important implications for trauma treatment.
Policy of full disclosure: None.

O-06-004
Neurocognitive deficits according to norms in adolescents with and without clinical high-risk states of psychosis

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Objective: In the early detection of psychosis, neurocognitive predictors have been suggested to enhance predictive accuracy of clinical high risk (CHR) criteria. While mainly sample-dependent means of adult samples were used so far, a recent study of an adult sample used neurocognitive deficits defined according to test norms in order to facilitate individual prediction. Yet, data on child and adolescent samples are missing.
Methods: We investigated the discriminative power of neurocognitive deficits defined according to norms in 8- to 17-year-olds.
Results: 160 CHR outpatients (AtRisk; mean age = 15.02 ± 2.20, 39% male), 270 non-psychotic inpatients (ClinS; mean age = 14.46 ± 2.43, 38% male) and 220 subjects of a general population sample (GPS; mean age = 13.91 ± 2.78, 48% male) had been assessed with a neurocognitive battery, including a verbal fluency (VF) test, the Digit-Symbol Test, TMT A and B, the Auditory Verbal Learning Test (AVLT) and the Subject Ordered Pointing Task. GPS were slightly younger than AtRisk and ClinS [Chi2(2) = 7.656, p = 0.022]; no differences were found with regard to gender and premorbid IQ. Compared to ClinS and GPS, AtRisk more frequently exhibited deficits according to norms in verbal memory (AVLT learning capacity; 22.4% vs. 10.7%; OR = 2.4, 95% CI 1.3–4.6) and VF (48.8% vs. 34.1%; OR = 1.8, 95% CI 1.1–3.0), while ClinS and GPS did not differ.
Conclusion: Partly in line with findings from adult samples, deficits in verbal memory and VF might be specifically associated with a CHR state in children and adolescents—even when compared to a more severely ill inpatient group. Yet, these findings need further examination in larger samples and longitudinal studies.
Policy of full disclosure: None.

O-06-005
Does the jumping to conclusion reasoning bias contribute to psychosis progression? Findings from the NEMSIS-II study

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Objective: Contemporary models of psychosis implicate the importance of cognitive factors in illness trajectories by transforming states of aberrant salience into frank psychosis, but studies testing proposed mechanisms remain limited. The current study aimed to investigate whether the jumping to conclusions reasoning (JTC) bias contributes to psychosis progression and persistence in the general population.
Methods: Data were derived from the second Netherlands Mental Health Survey and Incidence Study (NEMESIS-2), a three wave (T0-T2) nationally representative cohort study (N = 4618). Trained interviewers used the Composite International Diagnostic Interview (CIDI) and an add-on instrument to assess affective dysregulation (i.e. depression, anxiety, mania) and psychotic experiences (PEs), respectively. The beads task was used to assess JTC bias. Time series analyses were conducted using data from T1 and T2 (N = 8666 observations), excluding individuals with lifetime affective dysregulation and high psychosis levels at T0.
Results: We found some evidence that, compared to those without symptoms at both timepoints, individuals with lifetime affective dysregulation were more likely to progress from a state of aberrant salience (i.e. low to moderate psychosis levels: 1–2 PEs) at T1 to frank psychosis (i.e. high psychosis levels: 3 or more PEs or psychosis-related help-seeking behaviour) at T2 if the JTC bias was present (adj. relative risk ratio, RRR: 4.2, 95% CI 0.9—20.0, p = 0.08). Similarly, some evidence was found that the JTC bias contributes to the persistence of frank psychosis at both timepoints (adj. RRR: 12.9, 95% CI 0.7—253.5, p = 0.09).
Conclusion: These findings suggest, to some degree, that the JTC bias may contribute to the progression and persistence of psychosis in individuals with lifetime affective dysregulation from the general population. This adds some evidence to contemporary integrative sociodevelopmental-cognitive models of psychosis that posit the importance of cognitive factors, including biases, in the development and maintenance of psychosis.
Policy of full disclosure: The authors have nothing to disclose.

O-06-006
Psychopathological description of prodromal symptoms of psychosis in children and adolescents. A narrative review

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Objective: In the last years, there has been an increasing number of publications concerning the identification and proper management of prodromal or clinical high-risk (CHR) states for psychosis. These CHR states include two groups of criteria: the ultra-high-risk criteria (UHR), i.e. attenuated positive symptoms and brief limited intermittent psychotic syndromes; and the basic symptoms criteria (BS): the high-risk criterion Cognitive Disturbances (COGDIS) and Cognitive-Perceptive Basic Symptoms (COPER). A recent systematic review and meta-analysis of studies (Schultze-Lutter et al. 2015) showed that 2-year conversion rates of 26.7% and 19.9% using a combination of both of these criteria. Nevertheless, attenuated psychotic symptoms are also present in the normal population. A study of Kelleher and cols showed that 7.7% fulfilled criteria for attenuated positive symptoms and 3.5% for brief limited intermittent psychotic syndromes when eliminating the Distress/Disability criterion. A psychopathological characterization of CHR states is therefore of critical clinical significance. The main aim of this study is to describe the psychopathological characteristics of the CHR states on children and adolescent population.
Methods: A narrative review of studies conducted since 2013 about CHR states using UHR or BS criteria in children and adolescents was performed.
Results: Studies based on UHR criteria in children and adolescents indicate that negative and disorganization symptom clusters could be valuable predictors for a transition to psychosis. Moreover, studies conducted using basic symptoms criteria and its four dimensions show a specific relevance of the adynamia cluster. Amongst neuropsychological variables, many studies showed a baseline impairment, especially in verbal IQ, verbal memory and olfactory identification. The role of social withdrawal and global impairment needs further clarification.
Conclusion: The most important symptom clusters as possible predictors of transition into psychosis was negative and disorganization symptoms (UHR) and adynamia (BS).
Policy of full disclosure: None.

O-07 Outcome

O-07-001
Early recovery and employment outcome 13 years after first episode psychosis

P. Strålin (Karolinska Institute, Clinical Neuroscience), Tullinge, Sweden; M. Skott, J. Cullberg

Objective: To study early and late outcome after first episode psychosis in cases offered a program of highly available and continuous psychosocial support and a cautious use of antipsychotic medication.
Methods: 175 cases of first episode psychosis were recruited to the Parachute project in 1996–97. The program offered highly available and continuous psychosocial support and a cautious use of antipsychotic medication for 5 years from inclusion. Cases were assessed regularly for symptoms and function for 5 years. Outcome-data for year 13 after inclusion, were retrieved from Swedish population registries on 161 of the original cases.
Results: During the first year after inclusion the cohort improved in the scores of the Brief Psychiatric Rating Scale (BPRS) and Global Assessment of Function (GAF) to median levels that later remained rather stable. By month 12 the median GAF score was 65. 68% of the cases were in remission from psychotic symptoms as assessed with BPRS. 38% of the cases in remission and 60% not in remission had prescriptions of antipsychotic medication by month 12. By year 13 after inclusion, 42% were in employment and 55% had any dispensation of antipsychotic medication. 70% of the cases with employment had no dispensations of antipsychotic medication.
Conclusion: Many first episode psychosis cases that were offered extensive psychosocial support and cautious use of antipsychotic medication had good early recovery and good late employment outcome.
Policy of full disclosure: None.

O-07-002

The association between early-onset schizophrenia with socio-economic outcomes and cohabitation status: s population-based cohort study

C. Hakulinen (University of Helsinki, Faculty of Medicine), Helsinki, Finland; J. J. McGrath, A. Timmerman, N. Skipper, P. B. Mortensen, C. B. Pedersen, E. Agerbo

Objective: To examine the associations of early-onset schizophrenia with employment, income, and status of cohabitation from a work life course perspective
Methods: All individuals (n = 2,390,127) who were born in Denmark between 1955 and 1991, and who were alive at their 25th birthday, were included in the present nationwide cohort study. Diagnosis of schizophrenia (yes/no) between ages 15 and 25 has been used as an exposure. Employment status, annual self-employment or wage earnings, level of education and cohabitant status from the age of 25 to 61 (years 1980–2016) were used as outcomes.
Results: Diagnosis of schizophrenia (n = 9448) was associated with higher odds of not being employed (at the age of 30: OR 39.4, 95% CI 36.5–42.6), having no secondary or higher education (OR 7.4, 95% CI 7.0–7.8), and living alone (OR 7.6, 95% CI 7.2–8.1). These odds ratios were two to three times lower and decreasing over time for those individuals who did not receive treatment in a psychiatric outpatient or inpatient clinic for schizophrenia after the age of 25. Individuals with schizophrenia have cumulative earnings of $224,000 between ages 25–58, which is 14% of the amount that the individuals who have not been diagnosed with schizophrenia earn.
Conclusion: Individuals with schizophrenia have poor socioeconomic outcomes and are at high risk of living alone throughout their entire life. This results in an enormous societal loss in earnings. Individuals with less chronic course of schizophrenia had a gradual but substantial improvement over the follow-up.
Policy of full disclosure: None.

O-07-003

The quality of life of schizophrenia clients enrolled in an assertive outreach program—a 24-month follow-up study

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Objective: The Assertive Outreach Program (AOP) provides persons with severe or persistent mental illness with a community-based service. It encompasses a continuum of flexible, comprehensive interventions that assist individuals to maintain a reasonable quality of life (QOL) in the community. An important strategy is constructive engagement based on naturally supportive relationships with clients aimed at building effective functional lifestyles as defined by improved health and wellbeing. Assess from clients' perspectives changes in their QOL as a supplementary appraisal for the AOP and client management outcomes.
Methods: Two descriptive cross-sectional studies were conducted during October 2016 and October 2018 by administering the WHO-QOL-BREF. Data was captured and analyzed (descriptive and nonparametric statistics) by using SPSS 16.0 software.
Results: The sample consisted of 50 schizophrenia respondents who completed both surveys (16 females, 34 males). The majority (86%) of participants was single and the average age 52.5 years (SD 11.7). Women and older participants ($\geq$ 55 years) were more satisfied with their overall QOL than men and younger participants. Results yielded a slight increase in the WHOQOL-BREF's social relationships domain (2%) since 2016 while decreases occurred in the environment (7%), Psychological (7%) and Physical (2%) domains. Separated/divorced/widowed participants were most satisfied with the environment, psychological and physical domains than those who were single or married/living together. Women were more satisfied than men with the AOP in terms of service received, caring/involvement of staff, how the service helped and confidentiality/respect from staff.
Conclusion: The AOP positively affects the QOL of clients. However, areas of relative vulnerability occur within the environment, psychological and physical domains. Men, younger people and those in a married/living together relationship seem to be in greater need of assertive outreach support.
Policy of full disclosure: None.

O-07-004

Clinical, social and personal recovery in one model! A latent mixture Markov model describing the course of recovery in schizophrenia

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Objective: Recovery of people with severe mental illness takes place in three domains: clinical, social and personal recovery. Most studies analyze these recovery processes separately. This study aims to develop an integral recovery model including clinical, social and personal recovery. We will examine different states of recovery in patients with schizophrenia and the transition rates between the detected states.
Methods: Data of the yearly ROM Phamous screenings in the Netherlands were used (2006–2017). Clinical recovery [PANSS-R (8 items)], social recovery [Functional Remission Tool (3 items)] and personal recovery [Happiness Index (1 item)] were assessed. In total, we included 12 recovery outcomes in the latent mixture Markov model (LMMM) (total n = 2327).
Results: The LMMM demonstrated four different recovery states. Patients in state 1, the worst state, have severe problems on all three domains; patients in state 2 have also problems on the three domains, but in a lower frequency and suffer mostly from 'negative symptoms'; state 3 is recovered quite well, but characterized by suffering from 'positive symptoms'; patients in state 4 have the best recovery outcome on all domains. Most patients belong to the best state (38%); the 'negative' and 'positive' symptom state represent 21–25% of the patients and the 'worst state' represents 16%. The chance to remain in the initial state is the greatest (77% or higher). Transitions between the worst and best state hardly occur, most transitions occur between the other states. Transition from the negative and positive state (both 10%) to the best state is twice as high compared to the worst state (4–5%).
Conclusion: Four different recovery states were detected in patients with schizophrenia. Transition between states is possible, although the odds of staying in the original state are very high. This MLMM-model provides clear care needs on 12 recovery outcomes of patients per state.
Policy of full disclosure: None.

O-07-005
Individuals with schizophrenia show intact social behavior when given the opportunity to do so

Z. Kasanova (KU Leuven, Neurosciences), Leuven, Belgium; M. Oorschot, I. Myin-Germeys

Objective: Research studies report up to 80% of adults with schizophrenia (SZ) to be unemployed and 60% single, a grim outlook attributed to social apathy and anhedonia inherent to the disorder. But what if we have the cause and effect wrong? Could the social apathy be the result of limited opportunities for social interactions, due to not having access to family and work contacts?
Methods: To investigate social behavior of individuals with schizophrenia, we used ecological momentary assessments—self-tracking of mood, activities and social company—ten times a day for 6 days in the daily life of 149 SZs [45 women, M age = 38.8 years) and 143 healthy controls (HC; 87 women, M age = 39.7 years). We then divided their social interactions into those occurring in the context of work, child-care and other structured activities that SZs have limited access to, and those occurring in the context of unstructured activities such as visits and leisure that both groups can choose more freely.
Results: SZ spent 30% (SD = 21) of the time in structured social contexts, which was significantly less than the 47% (SD = 20) that HC did [$p < 0.001$, CI (− 1.04, − 0.66)]. There was no difference in time spent in unstructured social contexts, however, between the SZ (M = 20%, SD = 18%) and HC [(M = 22%, SD = 18%; $p = 0.135$, CI (− 0.36, 0.05)]. Importantly, SZ endorsed significant enjoyment of unstructured social contexts, that matched that of HC [$p = 0.459$, CI (− 0.15, 0.06)]. Moreover, SZ's employment and cohabitation were a stronger predictor of time spent in structured [$p < 0.001$, CI (0.21, 0.7)] and unstructured social contexts [($p = 0.007$ CI (0.09, 0.6)] than clinically assessed apathy [$p = 0.038$, CI (− 0.46, 0.01); $p = 0.062$, CI (− 0.45, 0.01), respectively].
Conclusion: The finding that unemployment and social isolation, rather than apathy and anhedonia, might drive social behavior in schizophrenia identifies work reintegration as an unmet therapeutic need, with important consequences for mental health policy.
Policy of full disclosure: None.

O-07-006
Associations of psychosis-risk symptoms with quality of life and self-rated health in the community

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Objective: Understanding factors related to poor quality of life (QoL) and self-rated health (SRH) in clinical high-risk (CHR) for psychosis is important for both research and clinical applications. We investigated the associations of both constructs with CHR symptoms, axis-I disorders, and sociodemographic variables in a community sample.
Methods: In total, 2683 (baseline) and 829 (3-year follow-up) individuals of the Swiss Canton of Bern (age-at-baseline: 16–40 years) were interviewed by telephone regarding CHR symptoms, using the Schizophrenia Proneness Instrument for basic symptoms, the Structured Interview for Psychosis-Risk Syndromes for ultra-high risk (UHR) symptoms, the Mini-International Neuropsychiatric Interview for current axis-I disorders, the Brief Multidimensional Life Satisfaction Scale for QoL, and the 3-level EQ-5D for SRH.
Results: In cross-sectional structural equation modelling, lower SRH was exclusively significantly associated with higher age, male gender, lower education, and somatoform disorders. Poor QoL was exclusively associated only with eating disorders. In addition, both strongly interrelated constructs were each associated with affective, and anxiety disorders, UHR and, more strongly, basic symptoms. Prospectively, lower SRH was predicted by lower education and anxiety disorders at baseline, while poorer QoL was predicted by affective disorders at baseline.
Conclusion: When present, CHR, in particular basic symptoms, are already distressful for individuals of the community and associated with poorer subjective QoL and health. Therefore, the symptoms are clinically relevant by themselves, even when criteria for a CHR state are not fulfilled. Yet, unlike affective and anxiety disorders, CHR symptoms seem to have no long-term influence on QoL and SRH.
Policy of full disclosure: None.

P-01 Psychopathology

P-01-001
Increased interpersonal distance in schizophrenia patients with paranoia

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Objective: Schizophrenia is a highly disabling disorder with intense costs for society. In particular, paranoid experience is thought to be associated with conversion to schizophrenia, aggressive behaviour, and poor outcome. Paranoid threat is sometimes hard to detect in the clinical interview, which previously hindered the search for pathobiological substrates. In contrast, we recently proposed a simple test to identify paranoid threat: personal space test.
Methods: Interpersonal distance was measured with the stop distance and fixed distance paradigm in schizophrenia patients and, age, gender and education matched healthy controls. During the stop distance-procedure the participant is positioned at one end of the room facing the experimenter from a distance of seven meters. Participants are instructed to stop at a distance, where they would start feeling less comfortable. The fixed-distance paradigm assessed subjective evaluation of comfort at given interpersonal distances of 0.5, 1.0, 1.5, 2.0 and 2.5 meters between experimenter and participant with eye contact based on a visual analogue scale (VAS) ranging from 0 mm (maximum discomfort) to 100 mm (maximum comfort). Paranoid threat was assessed with the Bern Psychopathology Scale.
Results: Paranoid threat increased interpersonal distance in the stop-distance paradigm, and reduced comfort ratings in the _xed-distance paradigm. In addition, patients with paranoid power had high comfort ratings at any distance of the fix- distance paradigm. Patients without paranoia did not differ from controls in the interpersonal distance.
Conclusion: Impaired personal space regulation is critically linked to paranoid threat in schizophrenia. Thus, we were able to replicate our finding of personal space regulation as not generally altered in schizophrenia. In fact, patients experiencing current paranoid threat share increased safety-seeking behaviour. This is of particular relevance as impaired personal space might be predictive of aggressive behaviour, social and functional outcome in schizophrenia.
Policy of full disclosure: Nothing to disclose.

P-01-002
The relationship between assertive behaviour, negative and delusional symptoms in people with schizophrenia

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Objective: To study the relationship between assertive behaviour and several dimensions of psychotic symptoms in people with schizophrenia attended in rehabilitation services.
Methods: A transversal observational design was used. A total of 42 schizophrenic people (24 men and 18 women) with a mean age of 45.3 ± 8.99 (SD) years of age, receiving treatment in a rehabilitation service were included in the study. All signed an informed consent and were assessed by the following instruments: -Peter's delusions inventory; -Gambrill and Richey assertion inventory and, -Schizophrenia Clinical Impression Scale.
Results: Higher presence of negative ($p = 0.013$) and depressive ($p = 0.025$) symptoms were related with lower probability engaging assertive behaviour. The several dimensions of delusions, distress ($p = 0.034$), preoccupation (0.043) and conviction (0.038) were related with greater degree of discomfort engaging assertive behaviour.
Conclusion: The negative psychotic symptoms are related with probability of engaging assertive behaviour; however, delusional symptoms are related to the degree of discomfort in engaging assertive behaviour. This implies that psychotic symptoms are independently related to different components of assertive behaviour. These results are clinically relevant in order to design psychosocial interventions favoring social relationships in people with schizophrenia that are in recovery process.
Policy of full disclosure: None.

P-01-003
The interrelationship between cannabis use and subtypes of negative symptoms in a 12-month follow-up study

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Objective: To investigate the relationship between cannabis use and subtypes of negative symptoms in subjects with schizophrenia spectrum disorders (SCZ).
Methods: 254 patients with SCZ (schizophrenia = 139, schizophreniform = 24, schizoaffective = 29, other psychosis = 62) in the TOP longitudinal study were assessed at baseline and at 12 months follow-up. Negative symptoms were investigated with The Positive and Negative Syndrome Scale (PANSS) and a detailed history of lifetime and current drug use were collected. Negative symptoms were divided into two factors, apathy (PANSS item n1, n3, n6, g5, g7 and g13) and expressive symptoms (PANSS item n2, n4 and g16).
Results: 29% (N = 74) reported cannabis use during the last 6 months on baseline, with a median incidence of use of 26. 56.8% (n = 42) reported continued use at 12-month follow-up. Patients reporting cannabis use at baseline had significantly higher scores related to abstract thinking (2.38 (95% CI 2.06, 2.69) vs 1.98 (95% CI 1.82, 2.14), $p = 0.049$ Mann Whitney U). When grouped into no use, low use and high use, the high use group scored significantly higher than the low use (MD: 2.92, $p = 0.047$, by ANOVA) and the no use group (and MD: 2.93, $p = 0.02$, by ANOVA) on the apathy factor. Among cannabis users we found a significant positive correlation between frequency of use and score on the apathy factor (baseline/12 month: Spearman rho = 0.288/0.353, $p = 0.017/0.009$) and sum negative score (12-month: Spearman rho = 0.363, $p = 0.008$).
Conclusion: Our preliminary findings indicate that frequency of cannabis use correlates to the apathy factor of negative symptoms and abstract thinking. The correlation between frequency of cannabis use and the apathy factor increased at 12-month follow-up. High frequency use of cannabis was associated with higher scores on the apathy factor at baseline, when compared to low use and no use, which may suggest that reduction of cannabis use may yield beneficial effects on this factor.
Policy of full disclosure: None.

P-01-004
Clinical characteristics and substance use in patients with psychotic disorder not otherwise specified

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Objective: A subgroup of psychotic patients do not meet the DSM-IV criteria for schizophrenia spectrum disorders (SZ) or Bipolar Disorders (BD). We here aim to investigate clinical characteristics including substance use in patients with Psychotic Disorder Not Otherwise Specified (PNOS).
Methods: We included 1487 patients from the Thematically Organized Psychosis-study at Oslo university hospital; 798 with SZ (schizophrenia, schizoaffective disorder, schizophreniform disorder), 539 with BD (BD type I, type II and BD not otherwise specified) and 150 diagnosed with PNOS.
Results: Patients with PNOS were significantly younger (mean 28.1 years, SD 8.8) than patients with SZ (30.7, SD 9.8) and BD (34.0, SD 11.8) ($p < 0.05$). Mean age at illness onset was the same as in SZ, which was significantly higher than in BD ($p < 0.01$). PNOS diagnosis was more frequently applied in first-episode psychosis (20%) than in multiple-episode patients (10%). PNOS patients had intermediate scores between SZ (highest) and BD (lowest) for the three subscales of the Positive and Negative Syndrome Scale ($p < 0.001$) and for the Global Assessment of Functioning scale ($p < 0.001$). PNOS had significantly higher scores for the Alcohol Use Disorders Identification Test (AUDIT) than SZ ($p = 0.001$), and higher scores than both SZ and BD for the Drug Use Disorders Identification Test (DUDIT) ($p \leq 0.001$). A total of 30.4% of PNOS had both alcohol- and drug-related problems compared to 16.5% of SZ and 18.6% of BD.
Conclusion: Patients diagnosed with PNOS are younger, more often first-episode and have significantly higher rates of substance use than SZ and BD. This indicates that diagnosis may change over time.
Policy of full disclosure: None.

P-01-005
Clinical, behavioural and neural validation of the Positive and Negative Symptom Scale (PANSS) amotivation factor

M. Kaliuzhna (Université de Genève, Department of Psychiatry), Thônex, Switzerland; M. Kirschner, M. Hartmann-Riemer, M. Bischof, S. Kaiser

Objective: Negative symptoms of schizophrenia are suggested to map onto two distinct factors—amotivation and diminished expression, which relate to different aspects of behaviour and neural activity. Most research in patients with schizophrenia is conducted with broad

symptom assessment scales, such as the PANSS, for which factor solutions allowing the distinction between amotivation and diminished expression have only recently been reported. We aimed to establish whether the PANSS factor structure corresponds to the well-established two-factor structure of the Brief Negative Symptom Scale (BNSS) and whether it allows distinguishing specific behavioural and neuronal correlates of amotivation.
Methods: In study 1 (N = 120) we examined the correlations between the PANSS factors and the BNSS factors. In study 2 (N = 31) we examined whether PANSS amotivation is specifically associated with reduced willingness to work for reward in an effort-based decision-making task. In study 3 (N = 43) we investigated whether PANSS amotivation is specifically correlated with reduced ventral striatal activation during reward anticipation using functional magnetic resonance imaging.
Results: On the clinical level, the PANSS amotivation and diminished expression were highly correlated with their BNSS counterparts. On the behavioural level, PANSS amotivation factor but not the diminished expression factor is specifically associated with reduced willingness to invest effort to obtain a reward. On the neural level, PANSS amotivation was specifically associated with ventral striatal activation during reward anticipation.
Conclusion: Our data confirm that the two domains of negative symptoms can be measured with the PANSS and are linked to specific aspects of behaviour and brain function. To our knowledge, this is the first study employing behavioural and neural measures to validate a new approach to clinical measurement of negative symptoms. Our results warrant a re-analysis of previous work that used the PANSS to further substantiate the distinction between the two factors in behavioural and neuroimaging studies.
Policy of full disclosure: None.

P-01-007
A simple technique to eliminate the most common type of "voices"

T. Gagey (ISPS Psychiatry); Yverdon Les Bains, Switzerland

Objective: 'Voice hearers' make up between 5-15% of the general population. The most common type of voices is easily identified—they are experienced as being in fixed locations in space in or around the client, each having only a single emotional tone regardless of its 'verbal' content. In this talk we will demonstrate a simple, non-drug psychological technique that quickly and permanently eliminates, one at a time, this type of voice.
Methods: Using the newly emerging fields of developmental and subcellular psychobiology, the underlying biological source for these voices was discovered to be indirectly caused by a common subcellular fungal infection. This pathogen targets ribosomes imbedded in the endoplasmic reticulum (ER) inside the cell; these damaged ribosomes then give rise to the perception of 'voices'. Treatment is done by using a simple technique to dissolve these damaged ER ribosomes. This in turn eliminates the voices in a few minutes.
Results: This technique is robust, working successfully since 2012 to eliminate targeted voices in almost all of the several hundred typical clients we've tested it on. However, our testing on severely mentally ill clients only includes about a dozen people due to a lack of test clients. There are three potential side-effects: (1) some clients may get a feeling of loneliness when their voices are eliminated (which can be dealt with by using simple trauma-therapy techniques); (2) all clients lose their dysfunctional sexual attraction to individuals who exhibit the same emotional tone as that of the eliminated voices. (3) some clients find that they may get new voices as they lose their old ones. If desired, treatment is simply to repeat the process on the new voices until this effect ends.
Conclusion: Tremendous suffering is caused by this 'voices' problem in millions of people worldwide. In the years to come, we hope that this simple technique will be used to help many of these people.
Policy of full disclosure: None.

P-02 Outcome and stigma I

P-02-001
"Please tell me what happened": a descriptive study on prevalence, disclosure and characteristics of victimization in people with a psychotic disorder

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Objective: Although people with a psychotic disorder are approximately four to six times more often victimized than the general population, victimization is not routinely assessed in mental health care. This study investigates prevalence, context and risk factors of victimization of patients with a psychotic disorder in the northern, relatively rural region of the Netherlands. Moreover, disclosure rates and awareness of psychiatrists are examined.
Methods: Information on personal crime (threats, assaults and sexual violence), property and other forms of crime, the context of victimization and disclosure was routinely assessed in 353 patients with a psychotic disorder, adults who received care at a mental health facility. In addition, involved psychiatrists reported on last year's victimization incidents in their patients.
Results: One third of the patients participants reported victimization in the previous year. More than half of the crimes were committed by someone acquainted and took place in the victim's own home or a place familiar to the patient. Younger age, having a comorbid disorder, drug use and perpetration of a crime were all positively associated with victimization. Approximately half of the reported personal crimes were disclosed to a health care professional but only in 16% of the cases the involved psychiatrist report to know about the incident.
Conclusion: This study confirms that people with a history of psychosis have an increased risk of becoming the victim of a crime. Although our results suggest that in fifty percent of cases the patients did share the information with professionals, a substantial proportion of incidents appear to go still unnoticed.
Policy of full disclosure: None.

P-02-002
Psychiatric hospitalizations of patients with severe schizophrenia treated in a case managed community-based program vs. standard care

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Objective: Case managed approach have been suggested as a way to improve treatment adherence and to prevent hospital admissions among people with severe schizophrenia. The aim of this study was to know the treatment adherence and the psychiatric hospitalizations of patients with severe schizophrenia before (standard treatment) and during treatment in a community based, case managed program. And,

also the role of oral or long-acting injectable antipsychotic medication.
Methods: Observational study, mirror image, of 10 years of follow-up and ten retrospectives, of patients with severe schizophrenia in a community-based program, with integrated pharmacological and psychosocial treatment and intensive case management (N = 344). Reasons for the Program discharge and psychiatric hospital admissions were recorded 10 years before and during treatment. And, also the antipsychotic medication prescribed.
Results: After 10 years 12.2% of the patients were voluntary discharges (In previous standard treatment: 84.3%). CGI-S at baseline was 5.9(0.7). After 10 years 51.7% of patients continued under treatment [CGI-S = 3.9(0.9); $p < 0.01$]; 19.3% were medical discharged [CGI-S = 3.4(1.5); $p < 0.001$]. The percentage of patients with hospital admissions and the number of admissions due to relapses decreased after entering the Program ($p < 0.0001$), and as well the involuntary ones ($p < 0.001$). Being on long-acting injectable antipsychotic treatment was related to these results ($p < 0.0001$).
Conclusion: Treatment of patients with severe schizophrenia in a integrated, case-managed community-based program achieved higher retention, and was effective in drastically reducing psychiatric hospitalizations, compared to the previous standard treatment. The fact of being treated with long-acting injectable antipsychotics was clearly linked to these outcomes.
Policy of full disclosure: None.

P-02-003
Treatment motivation, coping and psychosocial functioning for persons with schizophrenia: the nature of the relationships

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Objective: Introduction. Schizophrenia is characterized by impairments in motivation and coping as well as decrements in psychosocial functioning in major life areas. One important factor that has received increasing attention in schizophrenia is treatment motivation. This is to replicate and extend work on inrinsic motivation, neurocognition and psychosocial functioning in schizophrenia of Nakagami et al. (2008). This study examined the nature of the relationships among treatment motivation, coping, and psychosocial functioning for persons with schizophrenia. Hypotheses concerning both mediator and moderator mechanisms were tested.
Methods: 138 individuals diagnosed with schizophrenia were recruited as they were admitted to outpatient and inpatient psychosocial rehabilitation programs in Moscow-based psychiatric hospital. The following measures were used: measures of motivation were administered at baseline by testers blind to scores on other study variables; measures of coping (COPE, CERQ) and psychosocial functioning (PSP, EQ5D5L, SF36, Q-Les-Q-18) were administered at baseline. Data were analyzed using latent construct modeling to test for mediator and moderator effects.
Results: There were strong bivariate relationships between coping, motivation, and psychosocial functioning. The results demonstrated that coping strongly mediated the relationship between motivation and psychosocial functioning. This mediation was evidenced by: (1) the direct path from motivation to functional outcome no longer being statistically significant after the introduction of coping into the model; (2) the statistical significance of the indirect path from motivation through coping to functional outcome. There was no support for the moderation hypotheses.
Conclusion: Motivation influences psychosocial functioning through its relationship with coping. Coping is a critical mechanism for explaining the relationship between motivation and psychosocial functioning. Implications for the theoretical understanding and psychosocial treatments in schizophrenia are discussed.
Policy of full disclosure: None.

P-02-004
The concept and facilitators of personal recovery for mental health service users in Japan

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Objective: Personal recovery is a unique process of changing one's attitudes, values and developing new meaning in life beyond the illness. Some studies have discussed cultural differences in the conceptualization of personal recovery. Although the recovery concept is influenced by culture and mental health care quality, few studies have identified such conceptualizations in Japan. The aims of our study were: (1) to explore personal recovery and (2) to explore the factors promoting personal recovery of service users in Japan.
Methods: The study involved the use of semi-structured interviews and focus groups. Inclusion criteria were as follows: aged $\geq$ 18 years, able to participate and give informed consent, and having any mental disorder. A semi-structured interview guide was developed to elicit (1) Personal recovery (ex. "Was there any recent change since you experienced mental illness?") and (2) Recovery promoting factors (ex. "Is there any person, event or value that influenced your process of recovery?") The data were analyzed using thematic analysis. We also quoted comments of service users to describe subthemes.
Results: Data were obtained from 30 users of mental health services (mean age: 40.37 years; 46.67% female; 50.0% diagnosed with schizophrenia). (1) Four themes that re_ected processes of recovery were identi_ed: Connectedness (establishing new relationships and support from others.), Rebuilding identity influenced by social norms and redefining positive sense of self(overcoming self-stigma), Meaningful life and social roles and finding meaning of mental illness experiences, Personal responsibility(self-management, coping skills and maintaining well-being). Unlike the results of Western literature review (Leamy 2011), "Hope and optimism about the future" was not extracted. (2) The facilitators of recovery were sympathetic attitudes and supports from professionals, supportive people, family, friends and peers.
Conclusion: There may be cultural differences from Western European and Japanese cultures in personal recovery.
Policy of full disclosure: None.

P-02-005
Personal recovery and associated factors among psychiatric day treatment center users with a diagnosis of schizophrenia spectrum disorders in Japan

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Objective: There are few longitudinal prognostic studies on personal recovery of patients diagnosed with schizophrenia spectrum disorders, especially who participated in psychiatric day treatment center in Japan. Therefore, we aimed to demonstrate how much recovery is achieved by patients who experienced intensive psychiatric

rehabilitation. We also intended to grasp associations between personal recovery and potentially related factors.
Methods: The participants were patients with a diagnosis of section F2 in the ICD-10, registered to our hospital day treatment center between 1992 and 2012. A retrospective medical record survey for all the candidates (N = 173) has been finished, and a direct interview is underway. The present study employs a preliminary data for which the interview was completed (n = 35). The Recovery Assessment Scale (RAS, range 24–120) was used to evaluate personal recovery. Linear multiple regression analysis predicting RAS were performed, with explanatory variables such as symptom severity (PANSS), cognitive-functioning (BACS), social-functioning (SLOF), and other covariates.
Results: The age at onset (M ± SD) was 23.7 ± 6.5, at the direct interview 45.0 ± 8.6. A median period of day treatment center usage was 52 months. RAS was 84.4 ± 15.9 at the direct interview. In the regression analysis, RAS was contributed by PANSS ($\beta = -0.41$, $p = 0.013$), BACS (− 0.31, 0.036), and SLOF (0.76, 0.00013).
Conclusion: RAS in the present study, 20 years after using day treatment center, was slightly higher than that of a previous study (82.1 ± 15.8), which validated the Japanese version of RAS, participated by patients with mental illness in general (Chiba et al. Int J Nurs Stud, 2010). Symptoms, cognitive-functioning, and social-functioning were all significantly associated with personal recovery, demonstrating the largest contribution by the social-functioning. Further research will be fruitful to explore factors leading patients to personal recovery.
Policy of full disclosure: None.

P-02-006
Decreasing subjective difficulty in daily life promotes recovery of community-dwelling clients with schizophrenia

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Objective: In the context of evidence-based practice research into recovery, subjective outcomes should assume greater credibility and utilization (Anthony et al. 2003). However, verification of the relationship between recovery and subjective experience of clients in daily life has not been sufficiently investigated. This study aimed to clarify factors related to recovery of community-dwelling clients with schizophrenia and to consider the relationship between subjective difficulty and subjective factors of difficulty in daily life.
Methods: The participants were community-dwelling clients with schizophrenia who used 20 community facilities for > 6 months. The evaluation included Recovery Assessment Scale (RAS), WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) for difficulty in daily life, and Classification Assessment of Occupational Dysfunction (CAOD) for the factor of difficulty in daily life. Basic statistics were calculated in the analysis. Correlation analysis was used for total and sub-items in each assessment scale. A stepwise multiple regression analysis used RAS as the objective variable and items with significant correlation as explanatory variables. P values < 0.05 were considered to indicate statistical significance. This study was approved by the ethics committee of our institution.
Results: The participants comprised 74 community-dwelling clients with schizophrenia (male: 43, female: 31, age: 49.9 ± 11.4 years, GAF score: 59.9 ± 13.3 points, chlorpromazine equivalent dose: 581.0 ± 432.3 mg, RAS score: 82.3 ± 14.0 points, WHODAS 2.0 score: 62.5 ± 19.9 points, CAOD score: 44.6 ± 19.8 points). In the multiple regression analysis using items with significant correlation as explanatory variables, "cognition" and "occupational alienation" were selected ($R2 = 0.498$, $p < 0.001$), fig. 1. "Occupational alienation" is defined as an experience of lack of meaning in daily life.
Conclusion: The results suggest that specific support for cognitive difficulties and lack of meaning in daily activities can promote recovery for community-dwelling clients with schizophrenia. It is important to assess the subjective experience in daily life and intervene to enhance recovery of clients with schizophrenia.
Policy of full disclosure: This work was supported by Research Grants from the Mitsubishi Foundation2017 (29319).

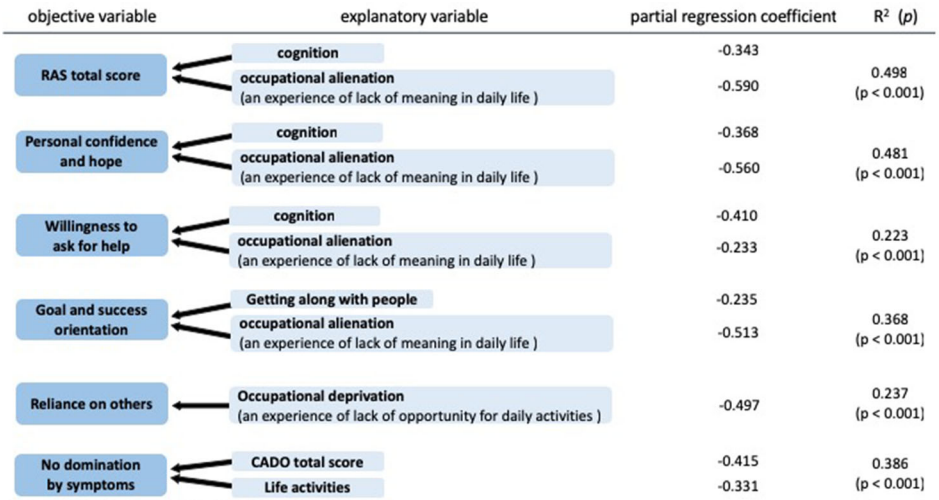

Fig 1. Multiple regression analysis model of RAS

P-02-007
Validation of the Individual Recovery Outcomes Counter (I.ROC) in people with a schizophrenia spectrum disorder

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Objective: Background: During the past decades, the focus in treatment has moved from mainly clinical recovery (symptom reduction) to attention to social and personal aspects of recovery as well. The Individual Recovery Outcomes Counter (I.ROC) is a twelve-item questionnaire which, unlike other recovery measurements, includes all three recovery dimensions. The aim in developing the I.ROC was to make a tool that facilitates personalized care and improve the wellbeing of clients. Objective: The aim of the current study was to validate the I.ROC in patients with a schizophrenia spectrum disorder who receive flexible assertive community treatment (FACT).
Methods: Method: 321 patients of four mental health care facilities in the Netherlands completed the I.ROC as part of a routine outcome assessment battery. Participants were asked to complete the measures on, in total, three time points, each 6 months apart. The I.ROC was validated by correlating it with the RAS, MANSA, PANSS, the FRS, and the HoNOS. Internal consistency, test-retest reliability, sensitivity to change, and internal factor structure were also examined.
Results: Results: A moderate positive correlation with the RAS ($r = 0.60$, $p < 0.001$) and the MANSA ($r = 0.59$, $p < 0.001$) was found. A moderate negative correlation with the PANSS ($r = -0.50$, $p < 0.001$) and the HoNOS ($r = -0.53$, $p < 0.001$) was found. Internal consistency is $\alpha = 0.88$ and test-retest reliability ($n = 48$) is $r = 0.85$.
Conclusion: Conclusions: The I.ROC is a valid and reliable instrument to measure recovery in patients with a schizophrenia spectrum disorder. Further research within different groups is needed to evaluate the psychometric properties of the I.ROC.
Policy of full disclosure: None.

P-02-008
Anti-relapse behavior of patients with schizophrenic disorders

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Objective: Relevance is determined by the need to ascertain factors for formation of anti-relapse behavior in schizophrenic disorders in order to improve quality of life of mentally ill persons and their families. Objective was to test anti-relapse behavior for effective personalized rehabilitation of schizophrenia patients based on their biological and social capabilities.
Methods: Clinical-dynamic, questionnaire survey, experimental-psychological, clinical-genealogical, methods of mathematical statistics. "Questionnaire of Anti-Relapse Behavior" developed by us included 10 questions with answers that described clinical-dynamic characteristics of the disease, psychological characteristics of patient's personality, microenvironment (family) and macroenvironment, social interactions, everyday functioning, and patient's resources. 91 patients (38 men, 53 women, aged from 22 to 55 years) with schizophrenic mental disorders (heading F2 according to ICD-10) with disease duration from 1 year to 40 years, with the number of repeated hospitalizations from 2 to 34 were examined.
Results: In most cases, respondents during relapses described "persistent symptoms of deterioration in their mental state", women more often referred to "strange sensations that begin to worsen", and men "changes in behavior that other people notice". Almost all patients referred to negative stress as "quarrel with someone" and "breaking up of close relationships or losing a friend", and positive stress was "discharge from hospital" and "completion of treatment programs". Among the ways in which respondents could reduce the risk of exacerbation to "keep taking medication every day", "go to bed and get up every day at the same time", "watch for residual symptoms that are aggravated, or new symptoms that can suddenly appear" were chosen, with women more often choosing "to eat at least two or three times a day", and men "to take daily walks".
Conclusion: Thus, certain patterns of formation of anti-relapse behavior have been identified to find ways to reduce the number of repeated hospitalizations in schizophrenia.
Policy of full disclosure: None.

P-02-009
Fighting stigma towards people with schizophrenia in Bosnia and Herzegovina

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Objective: Stigma towards people with mental disorders (in particular schizophrenia) is one of the main obstacles to successful treatment and good recovery of people with mental disorders. Stigma has strong influence to strengthening of auto-stigmatization of people with schizophrenia, but also on the lives of their families, as well as mental health professionals with whom schizophrenia is most commonly encountered outside home settings. In developing countries, due to different cultural attitudes, the stigma of mental illness is often expressed.
Methods: In this paper, we want to show one of the ways that we can help alleviate stigma against people with schizophrenia, through an example of the joint collaboration of people with schizophrenia, their families and professionals in the field of mental health in Bosnia and Herzegovina (BH) over a 1-year period.
Results: The antistigma program is developed in the country with creation of guidance for making sustainable activities, and was implemented in five local communities, where user's organizations took active roles in its creation, planning, implementation and achievements. The programs were fully supported by both ministries of health in our country, as a proof of the continued commitment of policy makers to more effectively combat the stigma of mental illness in BH. All activities were part of the Project of Mental Health in BH, supported by the Swiss Government.
Conclusion: In very complex society such is in BH created joint attitude that fighting stigma towards schizophrenia is important part of good outcomes, and more successful results provided by case management approaches in the community as adopted standard of care people with schizophrenia in BH.
Policy of full disclosure: None.

P-02-010
Values based clinical psychiatry in the twenty first century

H. Al-Taiar (Oxford Health NHSFT, The Oxford Clinic MSU), Oxford, UK

Objective: Values-based Practice (VBP) is a clinical skills-based approach to working with complex and conflicting values in healthcare. It is a twin framework to evidence-based practice (EBP).

Aim: to familarise audience with valued based practice, especially in mental health settings. The sessions will start by an ice breaking exercise asking the audience about what values are for them and clarifying VBP concept through a number of examples.
Methods: A wide variety of disciplines are already contributing to values-based medicine. Propositions/Issues of Focus: What are values and why should psychiatrists take them seriously? Researchers suggest that looking at the different values that mental healthcare professionals and patients bring to their experience in the clinical arena can help: 1. to make clinical care more patient-centred 2. to address difficult conceptual issues such as diagnosis 3. discussion of difficult ethical dilemmas in clinical practice, such as involuntary treatment.
Results: The dyadic approach In dyadic healthcare relationships, there is no relevant experience outside the consulting space. The patient brings a problem, which the doctor considers thoughtfully. The therapeutic focus is on the problem itself. Removing or ameliorating the problem is the doctor's task; the doctor takes action to do this and with that action the relationship ends. Systemic thinking In contrast, a systemic approach assumes that the patient exists within a number of social systems or groups and has different roles in each of them. Although 'the problem' has a clinical aspect, it also has meanings for the patient that are outside the doctor's experience.
Conclusion: The most important reason, however, for the increasing importance of values in medicine has to do with the emergence of a model of patient-centered practice in which the values of individual patients are central to evidence-based clinical decision-making.
Policy of full disclosure: None.

P-03 Neuroimaging and psychophysiology I

P-03-001
Regional changes of thalamic volume in antipsychotic-naïve patients with first episode psychosis

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Objective: Previous magnetic resonance imaging studies have shown thalamic volume reduction in the pathophysiology of schizophrenia. Since the thalamus is an anatomically and functionally heterogenous structure, different thalamic nuclei and their relations to the disease are important to investigate separately. Such studies have been performed but the results have been inconclusive. The aim of this study was to investigate regional volume aberrations of the thalamus in antipsychotic-naïve patients with first episode psychosis.
Methods: 20 antipsychotic-naïve patients with first-episode psychosis aged 18–47 and 21 healthy controls matched for gender, age and years of education, were examined using 3T MRI. On high resolution morphological T1-weighted sequences the thalami were manually segmented according to a validated protocol. Alterations in regional thalamic volumes were analyzed by shape analysis through spherical harmonic description with point distribution models (SPHARM-PDM) based on the manual delineation. Total brain volumes were obtained using Freesurfer 6.0.
Results: No significant difference in total thalamic volume was found between the groups. Regional thalamic inflations were seen in the centromedian nucleus in the right thalamus and in the pulvinar and mediodorsal nuclei and lateral geniculate body in the left thalamus. Deflations were seen in the lateral geniculate body and mediodorsal and pulvinar nuclei in the right thalamus and in the anterior nucleus in the left thalamus. However, neither was statistically significant after correction for multiple comparisons.
Conclusion: Regional volume analysis indicated a combination of specific volume increase and decrease. The lack of statistically significant results could arise from issues of power and larger studies are warranted.
Policy of full disclosure: None.

P-03-002
The association of striatal volume and positive schizotypy in healthy subjects and its moderation through general cognition measures

T. Meller (Philipps University Marburg, Psychiatry and Psychotherapy), Marburg, Germany; P. Grant, U. Ettinger, I. Nenadic

Objective: Schizotypy, a risk phenotype for schizophrenia, has been associated with brain structural variations, partly overlapping with those in psychotic disorders. Variations in precuneus structure have been repeatedly reported, while evidence for the involvement of fronto-striatal networks—as shown for schizophrenia—is less consistent.
Methods: We examined the relationship of morphometric variations with psychometrically-assessed schizotypy correlating brain structure (using voxel-based morphometry) and dimensional schizotypy (Schizotypal Personality Questionnaire, SPQ) in a sample of N = 115 healthy participants (54 female, mean age = 27.57 years, SD = 8.02). We further tested for a moderating effect of IQ as a proxy for general cognitive capacity.
Results: We found a positive correlation of positive schizotypy with greater volume in the putamen and pallidum ($p < 0.05$, FWE peak-level corrected), which is indeed moderated by IQ. Furthermore, there was a positive correlation of disorganised schizotypy with increased pre- and postcentral volume (all $p < 0.05$, FWE peak-level corrected). In an exploratory analysis, we also found a negative association of the disorganised schizotypy score with gyrification within the inferior frontal gyrus ($p < 0.001$ uncorrected).
Conclusion: Our findings support the notion of a continuous psychosis spectrum with similar neural correlates across the spectrum and support the role of fronto-striatal networks for schizotypal features in healthy individuals, influenced by buffering factors like intelligence. Such protective factors like general intelligence might buffer the effect of psychosis risk, as suggested by Siever & Davis.
Policy of full disclosure: None.

P-03-003
Association of cortical gyrification with psychotic-like experiences in non-clinical subjects mediated by cognition

U. Evermann (Philipps University Marburg, Psychiatry and Psychotherapy), Marburg, Germany; I. Nenadic

Objective: Psychotic-like experiences (PLE) are present in non-clinical populations, yet their association with brain structural variation, especially markers of early neurodevelopment, is poorly understood. We tested the hypothesis that cortical surface gyrification, a putative marker of early developmental alterations assumed to share genetic risk factors with psychosis phenotypes mediated by cognitive deficits, is associated with PLE in healthy subjects.
Methods: We analysed PLE from the Community Assessment of Psychic Experiences (CAPE) and cortical gyrification obtained from 109 healthy participants (55 females, mean age 29.46 ± 9.67) using 3-Tesla T1-weighted imaging and CAT12 software. Associations

between PLE phenotype and gyrification were tested with general linear models. A sub-sample of 67 individuals completed tasks from Wechsler Adults Intelligence Scale and Controlled Oral Word Association Test, which were collapsed onto three cognitive domains (CD) (working memory, verbal fluency and processing speed) using principal component analysis. PLE and neuropsychological assessments were tested using Pearson partial correlations. Correlations were further explored in mediation analysis of regions-of-interest predicting PLE by CD.
Results: Positive PLE distress correlated negatively with gyrification in the left inferior frontal gyrus, right superior parietal lobe, and precuneus. PLE depression dimension showed negative correlations with gyrification in left postcentral and right superior temporal gyri. There was no significant mediating effect of cognition on these associations.
Conclusion: Our results support a dimensional neurobiological psychosis spectrum, for the first time linking an early developmental imaging marker (rather than volume) to subclinical psychotic symptoms. We demonstrate that dimensionality and distress associated with PLE are significant drivers of variation in gyrification.
Policy of full disclosure: None.

P-03-004
Altered relationship between brain structure and cognitive functioning in patients with prominent negative symptomatology

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Objective: To investigate the underlying pathology of cognition and negative symptoms in schizophrenia is of interest, as these features are associated with worse functional outcome and respond poorly to the available treatment. Both features have been linked to brain structure abnormalities. We aimed to investigate the relationship between cognition and negative symptoms and brain structure in schizophrenia.
Methods: Schizophrenia spectrum disorder patients (n = 221) and healthy controls (n = 282) from the Norwegian TOP-study underwent 1.5 T MRI. Four patient subgroups were defined based on load of negative PANSS items; no-negative (neg $\leq$ 2), threshold-negative (neg $\leq$ 3), negative (neg $\geq$ 4) and prominent-negative (neg $\geq$ 4 on at least three items / 5 on at least two). Brain volume, cortical thickness and surface area from selected brain regions were tested for relationship with cognition and negative symptoms using univariate general linear models.
Results: Preliminary analysis reveals positive association between cognition and brain structure in dorsolateral prefrontal cortex (DLPFC), orbitofrontal cortex (OFC), anterior cingulate cortex (ACC), and fusiform and parahippocampal gyri in patients and controls combined. In patients, there was a negative association between cognition and negative symptoms, i.e. the more symptoms the poorer the functioning. Furthermore, there were significant effects of cognition on brain volume and surface area bilaterally in DLPFC, ACC and OFC and cortical thickness bilaterally in DLPFC and fusiform gyrus. There were no differences in volume, thickness, or surface area, between negative symptom subgroups. In patients with prominent negative symptoms, however, cognition was negatively associated with brain measures in left ACC, fusiform and right parahippocampal gyri, whereas in the other subgroups, cognition and brain structure were either positively associated or not associated.
Conclusion: The results showed an overall positive association between cognition and brain structure. In patients with prominent negative symptoms this relationship was reversed. The findings need replication.
Policy of full disclosure: None.

P-03-005
Neurochemical and brain functional changes in the ventromedial prefrontal cortex of first-episode psychosis patients FA combined functional magnetic resonance imaging—proton magnetic resonance spectroscopy study

H. Cen (Shanghai Mental Health Center, Division of Psychotic Disorder), Shanghai, China; K. Zhuo, Q. Xiang, H. Gan, Y. Pan, P. Xu, X. Li, Z. Zhai, Y. Zhu, Y. Li, D. Liu

Objective: Previous studies showed alterations of brain function in the ventromedial prefrontal cortex (vmPFC) of schizophrenia (SCZ) patients. The neurochemical changes were shown in the medial prefrontal cortex (MPFC) of SCZ patients. However, the relationship between neurochemical alteration and brain functional activity in SCZ patients remains unexplored. In this work, we aimed to investigate the relationship between the changes of neurochemical concentration in vmPFC, in association with brain functional connectivity alterations, in drug-naïve, first-episode psychosis (FEP) patients.
Methods: Twenty-three drug-naïve, first-episode psychosis patients and twenty-six matched healthy controls completed the study. The single voxel 1H-MRS data was acquired in vmPFC region, which was used as the seed region for resting-state functional connectivity (FC) analysis. The 1H-MRS data were processed to quantify the concentrations of GABA+, glutamine and glutamate (Glx), and *N*-Acetylaspartate (NAA) in vmPFC. Spearman correlation analysis was used to examine the relationship between the metabolite concentration, FC and clinical variables.
Results: In FEP patients, GABA+ level in vmPFC was higher and was positively correlated with vmPFC-left middle orbital frontal cortex (MOF) FC. The NAA level was negatively correlated with vmPFC-left MOF and vmPFC-right hippocampus FCs in healthy controls, but not in FEP patients (fig. 1). Both NAA level and vmPFC-left precuneus FC were associated with symptomology of FEP patients.
Conclusion: Our results indicated that vmPFC functional connectivity changes were correlated with higher local GABA+ level in FEP patients. We found a decoupling of NAA level and FCs in schizophrenia patients. The altered neurochemical concentration and functional connectivity provide insights into the pathology of schizophrenia.
Policy of full disclosure: None.

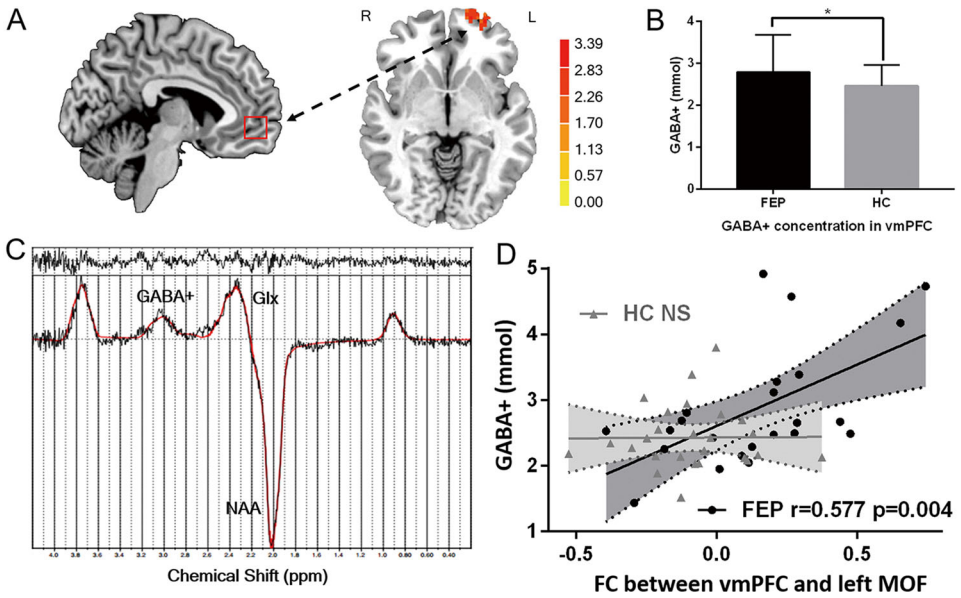

Fig. 1 Increased ventromedial prefrontal cortex (vmPFC) to left middle orbital frontal (MOF) cortex functional connectivity (FC) was correlated with higher GABA+ concentration in first-episode psychosis (FEP) patients.

P-03-006

Neurometabolic basis of subclinical psychotic experiences in early adolescents

N. Okada (The University of Tokyo IRCN), Tokyo, Japan; N. Yahata, S. Koike, S. Ando, A. Nishida, K. Kasai

Objective: Glutamatergic dysfunction is a key feature of schizophrenia. Many previous magnetic resonance spectroscopy (MRS) studies explored the alterations of glutamate levels in chronic schizophrenia (ChSZ), first-episode schizophrenia (FES), and ultra-high-risk (UHR) individuals, and results were different across studies, which may be ascribed to different regions of interest and different age groups. A recent meta-analysis revealed increased medial prefrontal levels of the sum of glutamate and glutamine (which is abbreviated as Glx) in UHR but not in ChSZ or FES (Merritt et al. JAMA Psychiatry, 2016). The question remains, however, whether glutamatergic alterations may represent vulnerability to the high-risk state or whether they are epiphenomena caused by exposure to interventions or medications. Subclinical psychotic experiences (SPEs) occur in some adolescents in the general population and increase the odds of developing psychosis in young adulthood. Investigations into the association between Glx levels and SPEs in the general adolescent population would clarify the issue.
Methods: Here, we collected MRS data of the medial prefrontal cortex including the anterior cingulate cortex in a subsample (10.5–13.3 years old) of a large-scale population-based longitudinal birth cohort and explored Glx levels related to SPE signs (N = 221). In addition, after the 2-year follow-up, we collected the same data and analyzed in the same way (12.3–15.3 years old, N = 207).
Results: We found an association between low Glx levels and high SPE signs both at baseline (p = 0.026) and at the follow-up (p = 0.017).
Conclusion: Our results from a minimally biased, large-scale sample provide new insights into the neurometabolic correlates of SPEs during early adolescence.
Policy of full disclosure: None.

P-03-007

The effect of antipsychotics on glutamate levels in the anterior cingulate and clinical response measured by PANSS: a 1H-MRS study in first-episode psychosis patients

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Objective: Glutamatergic dysfunction is implicated in the pathophysiology of schizophrenia, with studies reporting elevated glutamatergic metabolites across brain regions of patients. In this study, we investigated whether antipsychotics change brain glutamate levels in the anterior cingulate cortex (ACC), and whether there is a relationship between baseline glutamate levels and clinical response in the ACC after taking antipsychotics, in antipsychotic naïve people or minimally treated people with first episode psychosis.
Methods: The sample comprised 27 first episode psychosis patients (13 antipsychotic-naïve, 7 minimally treated, and 7 were medication-free). Clinical assessment was completed for twenty-three participants at follow up, whereas follow up glutamate data was acquired for twenty patients. Proton magnetic resonance spectroscopy (MRS) was used to measure glutamate levels. Patient symptoms were assessed using the Positive and Negative Syndrome Scale (PANSS). To test the first hypothesis, we conducted a paired sample t-test. To test the second hypothesis, we used Pearson's correlation coefficients for normally distributed data and Spearman's correlation coefficients for non-normally distributed data.
Results: There was no significant change found between baseline MRS signal (M = 13.72, SD = 2.14) and follow up MRS signal (M = 13.99, SD = 1.56); t(19) = − 0.47, p = 0.643. No significant association was found between baseline MRS signal and PANSS positive scores (r = − 0.121, n = 23, p = 0.584), and between baseline MRS signal and PANSS negative scores (rho = − 0.182, n = 23, p = 0.406).
Conclusion: The current study observed no effect of antipsychotics on glutamate levels in the anterior cingulate cortex, and the therapeutic effects were not associated with glutamate levels acquired before antipsychotic administration. This relationship needs to be further

investigated using a larger sample size. The association between changes in the glutamate levels in the anterior cingulate of first-episode psychosis patients after antipsychotic administration should be compared with a healthy population.
Policy of full disclosure: None.

P-03-008
The effects of atypical antipsychotics on regional cortical thickness and functional connectivity in patients with first-episode schizophrenia: a 6-month longitudinal study

Y. Pan (Shanghai Mental Health Center, Division of Psychotic Disorder), Shanghai, China; K. Zhuo, Q. Xiang, H. Gan, P. Xu, X. Li, H. Cen, Z. Zhai, Y. Zhu, Y. Li, D. Liu

Objective: Previous studies showed that antipsychotics induce brain structural and functional changes in patients with schizophrenia. However, the long-term effects of antipsychotics on both structure and functional connectivity of SZ patients is unclear. By combining structural and functional MRI, we aimed to investigate how brain structural and functional connectivity change under 6-month-antipsychotics treatment in patients with first-episode schizophrenia.
Methods: Thirty-three drug-naïve, first-episode psychosis (FEP) patients and twenty-six matched healthy controls completed the study. Regions with significant difference in cortical thickness between healthy controls and FEP patients were used as the seed region for resting-state functional connectivity (FC) analysis. After the screening and baseline evaluation (V0 phase), all patients received treatment with second-generation antipsychotics (SGAs), 24 patients performed follow-up visit 2 months later (V1 phase), and 12 patients fulfilled 6-month visit (V2 phase). Pearson correlation analysis was performed between the cortical thickness, peak intensity and PANSS scores.
Results: The cortical thickness in left precentral gyrus and right pars triangularis region were significant reduced in V0 phase patients, along with increased FC between these two regions and other brain areas (fig. 1). The cortical thickness reduction in left precentral gyrus and right pars triangularis region still existed in V1 phase patients (p's < 0.05), 6 months later, the discrepancies of cortical thickness in right pars triangularis region remained ($p < 0.05$), while the difference in left precentral gyrus disappeared ($p = 0.137$). Decreased FC were observed in V1 phase patients (p's < 0.01), while few changes emerged from phase V1 to phase V2 in FEP patients. Increased FC between right pars triangularis region and left middle temporal gyrus was positive correlated with positive symptoms in FEP patients.
Conclusion: Our results indicated that atypical antipsychotic treatment is effective for improvement of brain structure and function in patients with schizophrenia, ROI-based FC mainly influenced by acute treatment with antipsychotics.
Policy of full disclosure: None.

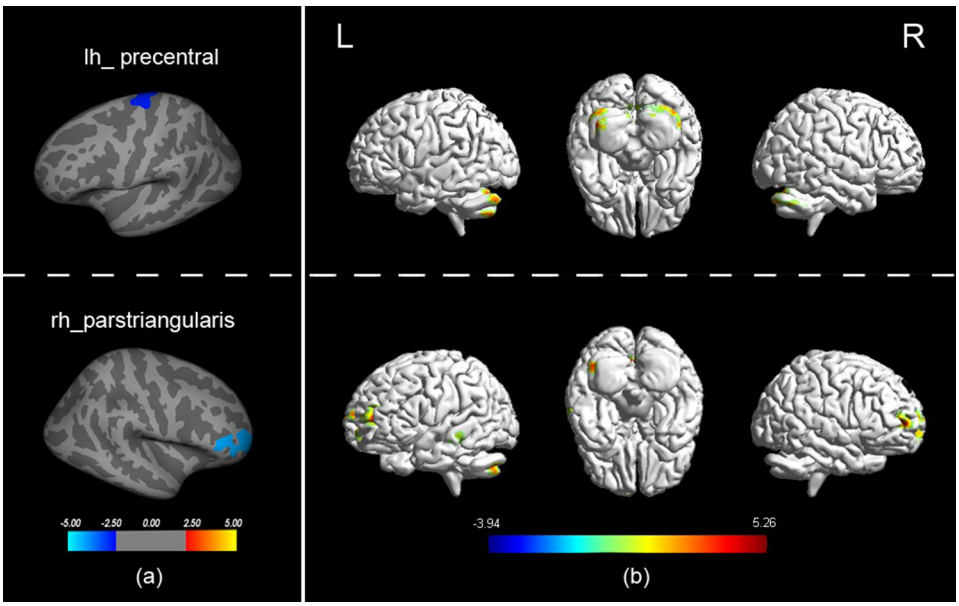

Fig. 1 Cortical thickness and rsFC differences between FEP patients and HC

P-03-009
Neuropathological background of dementia symptoms in the illness process of Schizophrenia (formerly called Dementia praecox)

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Objective: Specific neuropathological findings have not yet been confirmed in the brain of schizophrenia, that previously named Dementia praecox (by Emil Kraepelin). It is also unclear whether its pathogenesis due to neurodevelopmental disorder or neurodegeneration. In this study, we are aiming to clarify the neuropathological background of autopsy cases in which dementia symptoms observed during the illness process of schizophrenia.
Methods: Neuropathologic examinations were performed on 3 patients with cognitive decline during the illness process of schizophrenia that diagnosed by DSM-5 criteria. This research has received the approval of the ethics committee of each facility set up, has endeavored to protect personal information, and has complied with the Autopsy Preservation Act of Japan. There is no conflict of interest to be disclosed.
Results: Case 1) Onset at 30 years old, he died at 75 years old. Dementia symptoms appeared at the age of 72. < Pathologic findings > The brain weighed 1356 g. There were mild cerebrovascular disorder and argyrophilic grain disease: Saito stage II. Case 2) Onset at 16 years old, she died at 64 years old. From around the age of 50 misidentification syndrome and impairment of ADL were appeared. < Pathologic findings > The brain weighed 1146 g. No specific pathological findings were observed in paticular. Case 3) Onset at 29 years old, she died at 69 years old. Amnesia, ambulatory automatism, incontinence, and impairment of ADL were appeared from around 64 years old. < Pathologic findings > The brain weighed 1376 g. Lewy body disease: brain stem type.
Conclusion: Although there were mild degenerative findings in all 3 cases, there was no significant pathological finding that could be explained their dementia symptoms. Dementia in schizophrenia would not due to known neuropathological factors such as Alzheimer's disease or other neurodegenerative diseases and might be indicate one of specific symptoms of Schizophrenia.
Policy of full disclosure: None.

P-04 Neuropsychology I

P-04-001
Efficiency of the performance of visual perceptual tasks in patients with schizotypal disorder

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Objective: We studied the performance of visual-perceptual tasks in patients with schizotypal disorder (SD).
Methods: 40 patients with SD in ICD-10 (mean age 29.8 $\pm$ 8.3) and 100 healthy subjects (mean age 28.3 $\pm$ 8.5) underwent assessment including two series of visual-perceptual problem solving. Figures of Witkin and Goldstein were used as stimuli. In series I complex figures was consistently covered by 8 simple figures and the subject should make decision whether the complex figure contains the simple one (all 96 trials) without feedback. In series II the instruction was the same, but each trial included two complex figures presented simultaneously that increased the visual-perceptual load (all 96 trials). Statistical significance was ascertained by Student's t test.
Results: Patients with SD demonstrated the significant decrease in the correct answers in series I and II compared to healthy controls (3 ± 2 and 6 ± 2, $p \leq 0{,}01$; 2 ± 2 and 4 ± 2, $p \leq 0.01$, consequently). They also showed the increase of false choices in both series (in series I: 21 ± 19 in clinical group and 9 ± 7 in controls, $p \leq 0.01$; in series II: 11 ± 12 and 5 ± 6, consequently $p \leq 0.01$).
Conclusion: Patients with SD characterized by the reduction of efficiency of the performance of visual-perceptual tasks in a context of uncertainty. This reduction was associated with low standard-orientation and easy of subjective transformation of the targets. In series II healthy controls demonstrated the reduction of the correct and false answers. This indicates an increase of the visual-perceptual load, and at the same time compensatory adaptation of the second complex figure as the corrector for the decision-making. Patients with SD demonstrated the same patterns in series II as healthy subjects, but they had low efficiency of their decisions that suggests limitations of compensatory strategies in performance of visual-perceptual tasks in patients with SD.
Policy of full disclosure: None.

P-04-002
Impact of context on visual stream activation in Schizophrenia Spectrum Disorders (SDD)

E. Brown (Australian National University, Research School of Psychology), Canberra, Australia; B. Christensen, M. Edwards, S. Goodhew

Objective: Perceptual and cognitive dysfunction are core characteristics of Schizophrenia Spectrum Disorders (SSD). The human visual system is comprised of two major pathways: the dorsal stream (involved in the processing of spatial relationships) and the ventral stream (involved in the identification and recognition of objects). Evidence suggests selective impairment of the dorsal stream results in the perceptual and cognitive deficits observed in SSD. By comparison, the ventral stream appears intact. It remains unknown whether dorsal stream deficits are intractable or can be attenuated by context. In this study, the near-hand space paradigm (where the contribution of each visual stream to perception is modified by hand position) was used as a novel method to investigate the impact of context on visual stream activation in SSD.
Methods: An undergraduate sample with varying levels of Schizotypy was recruited. Schizotypy lies on the mild end of the SSD continuum and is a multi-dimensional personality trait consisting of unusual perceptual experiences, cognitive disorganisation, introverted anhedonia, and impulsive non-conformity. Participants completed visual tasks with their hands close to and far away from the stimuli, thereby enhancing either dorsal or ventral stream processing.
Results: Data collection is ongoing (N = 106/153). Preliminary analysis suggests a correlation between the impulsive non-conformity dimension of Schizotypy and worse performance on the near-hand (i.e., dorsal stream) task. Importantly, this correlation is not present for the ventral stream task.
Conclusion: Preliminary findings are in line with current SSD literature, implicating higher levels of Schizotypy with dorsal stream impairment. Further results will be presented. Implications regarding the impact of context (e.g., hand position) on visual stream activation in SSD will be discussed, with a view to future development of therapeutic interventions in this space.
Policy of full disclosure: None.

P-04-003
Elucidating dorsal stream deficits in Schizophrenia Spectrum Disorders using visually guided movement

E. Shen (Australian National University, Research School of Psychology), Canberra, Australia; D. Westwood, S. Goodhew, M. Edwards, B. Christensen

Objective: This study examines the nature of Schizophrenia Spectrum Disorders (SSD)-related dorsal stream deficits using the Perception Action Model (PAM). The PAM posits that the ventral and dorsal streams of the human visual system differ in how visual information is linked to subsequent behavioural outputs. Applied to SSD, the PAM predicts impairment in visual control of skilled action, despite normal featural processing necessary for object representation. Research has validated this prediction. However, the dorsal stream consists of two neural sub-pathways, each with specific functional roles (i.e., grasping versus pointing, and manipulation of stationary versus moving objects). The individual integrity of these dorsal sub-pathways was examined in this experiment.
Methods: An undergraduate sample of people with varying levels of Schizotypy, as measured by the Oxford-Liverpool Inventory of Feelings and Experiences (OLIFE), were recruited (N = 100). Using a novel visuomotor task, participants made manual estimation, reaching-to-point, and reaching-to-grasp movements under stationary and perturbed target conditions. Relevant prehension parameters were recorded using a magnetic motion-tracker (Ascension Technology).
Results: Pilot data (N = 8) show the expected effects for manual estimation; non-significant difference due to level of Schizotypy. Participants responded to tasks as expected with significant differences in peak-grip-aperture for different sized targets. Motion data is being processed to extract hand-position and angle parameters. It is expected that prehension parameters will be correlated with level of Schizotypy. Full results will be presented and discussed in this poster.
Conclusion: It is hypothesized that higher Schizotypy will lead to reduced accuracy and increased error in reaching-to-grasp, as opposed to reaching-to-point, movements. Furthermore, Schizotypy will be unrelated to accuracy of manual estimation, a ventrally driven task. These outcomes will provide greater specificity in the nature of dorsal stream dysfunction and their functional implications in SSD.
Policy of full disclosure: The primary author, Elizabeth Shen, received the Australian Government Research Training Program Domestic Scholarship (AGRTPSD) during the time this study was conducted.

P-04-004
Dorsal versus ventral GABAergic inhibition in surround suppression in Schizophrenia Spectrum Disorders

B. Reda (Australian National University, Research School of Psychology), Canberra, Australia; B. Christensen

Objective: Visual impairments are core to Schizophrenia Spectrum Disorders (SSD). They occur in 60% of patients and predict the development of psychosis. The primate visual system is anatomically divided into two major neural pathways; one occupying dorsal cortical regions (dorsal stream) and another occupying ventral cortical regions (ventral stream). Research suggests disproportionate dorsal stream impairment in SSD. However, little is known about the neurophysiological mechanisms that give rise to SSD-related dorsal stream impairment. A promising causal candidate is gamma-aminobutyric acid (GABA)-mediated neural inhibition. GABAergic dysfunction has been linked to several visual-perceptual deficits (e.g., perceptual tuning, surround suppression) and SSD. Accordingly, this study examines SSD-related performance on known GABAergic-mediated psychophysical inhibition tasks, tapping both dorsal and ventral stream. It is hypothesised that SSD performance on size surround suppression tasks be impaired while performance on chromatic surround suppression will be intact.
Methods: Participants with varying levels of Schizotypy completed size- and chromatic-surround suppression (SSS; CSS) tasks. SSS was measured using the Ebbinghaus Illusion where two reference circles on a horizontal plane were randomly surrounded by sixteen smaller or seven larger circles. Temporal and spatial configuration of CSS stimuli was identical, though reference circles were matched chromatically while surrounding circles deviated equally in hue degrees from the reference circle. Excitation purity and diameter were held constant for all CSS stimuli. A 2-up-1-down staircase revealed discrimination thresholds for each participant. Participants made size or colour judgments on 112 CSS and SSS trials, the order of which were counterbalanced.
Results: Data collection and statistical analyses are ongoing. Preliminary data will be presented in this poster. It is anticipated that higher levels of Schizotypy will be associated with greater SSS impairment in the face of intact CSS performance.
Conclusion: The anticipated interactions will suggest greater GABAergic dysfunction in the dorsal steam of people with SSD.
Policy of full disclosure: None.

P-04-005
Weakened association between available information and confidence in delusional ideation

T. Erdmann (SISSA Cognitive Neuroscience), Trieste, Italy; C. Mathys

Objective: Delusions are a positive symptom of schizophrenia. However, delusional ideation can also be found to varying degrees in the general population. While there have been reports of multiple decision-making biases associated with delusional ideation, a conceptualisation based on quantifiable mechanisms is still lacking. In the present work, we used an active information sampling task and mechanistic computational modelling with the aim to characterize the distortion of information processing associated with delusional ideation.
Methods: We conducted a series of online experiments, where healthy volunteers completed the Peters delusional ideation (PDI) questionnaire, our information sampling task, and the beads task. In our task, participants searched a series of 1-dimensional spaces for their maximum and finally made a confidence judgment about having found it. We computationally modelled belief updating during the search and related the participants confidence ratings to a normative measure of uncertainty reduction.
Results: We found that higher PDI scores were associated with higher confidence ratings in low-information situations. In general, confidence ratings were well explained by a measure for the informativeness of the outcome of a search. However, this was reduced with higher PDI scores. In accordance with this, we found PDI score to be related to a tendency to request less information in the beads task.
Conclusion: Our work represents a step towards a theoretical conceptualisation of delusional ideation in terms of information processing. We were able to quantify the degree to which an increase in delusional ideation is associated with impaired confidence modulation in low-information situations. We propose this to be a function of a general insensitivity to the amount of available information.
Policy of full disclosure: None.

P-04-006
Neurocognitive impairment with schizophrenic patients at different stages of the disease in case with and without long-term treatment

J. Mukhitova (Pavlov First SPbGMU, Clinical psychology), Saint-Petersburg, Russia; E. Isaeva, I. Shoshina, I. Tregubenko, J. Simon

Objective: The research of visual dysfunction and cognitive impairment in schizophrenia seems relevant in diagnosis and prognosis of the disease, the possibility of determining the visual perception dysfunctions as a biomarker for schizophrenia.
Methods: The study included 68 patients with a diagnosis of schizophrenia in the age from 19 till 64, the average age was 34 ± 12 years. It was used psychophysiological method of visocontrastromery, method of assessing the noise-immunity system and psychological methods for memory, attention and thinking process.
Results: In patients in the first episode the growth rate of memorization of words ($p < 0.05$), attention switching and information processing speed ($p < 0.05$) are significantly higher than in chronic patients. Patients with schizophrenia with the first psychotic episode cope worse with the release of the figure from the background ($p < 0.05$) what associated with a decrease in contrast sensitivity in the range of low spatial frequencies, to which the magnocellular system is specific. For patients with chronic disease have uneven reproduction in retrival and decreasing the level of generalization in thinking process ($p < 0.05$). "Distortion of the generalization process" is stable in different stages of schizophrenia. Patients with the first episode of schizophrenia without long-term pharmacotherapy reproduced more words, has higher number of false reproduction, higher speed of implementation, high amount of distortion and higher count of recognized images, lower coefficient of rigidity than patients with the first episode who received the treatment.
Conclusion: (1) Patients in the first episode have higher rates of memorization of words, flexability of information and speed of information processing, lower rates of isolation of the figure from the background. The distortion of the process of generalizations is consistently, whereas a decrease the level of generalization. (2) Patients with the first episode of schizophrenia without long-term pharmacotherapy demonstrate greater efficiency of memory, higher speed of information processing, mobility of nervous processes, higher flexability and distribution of attention compared with patients with taking long-term treatment.
Policy of full disclosure: None.

P-04-007
Verbal abstract reasoning in average-onset and late-onset schizophrenia patients: Pilot-study

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Objective: Numerous studies have revealed impairment of verbal abstract reasoning (VAR) in average-age onset schizophrenia (AOS). However, in late-onset schizophrenia (LOS) it remains understudied. Thus, we compared VAR in LOS, AOS, and controls.
Methods: 10 patients with AOS (M = 41.5 ± 9.8; 10 males) and 11 age-comparable controls (M = 43.5 ± 10.6; 7 males), 11 patients with LOS (M = 67.5 ± 10.7; 11 females) and 11 age-comparable controls (M = 65 ± 8; 8 females) underwent "Similarities" subtest of Wechsler Adult Intelligence Scale. Duration of illness in clinical groups was comparable (LOS: M = 17 ± 11.7; AOS: M = 17.9 ± 8.7). The Mann-Whitney U test was used to determine differences between groups. Bonferroni correction for multiple comparisons was applied ($p < 0.05/3$, i.e. $p < 0.016$). Additionally, we evaluated the number of bizarre answers per group.
Results: AOS group performed significantly worse compared to controls (U = 17.5, p = 0.006). No significant differences were found between AOS and LOS (U = 46.5, p = 0.6) as well as between LOS and controls (U = 39, p = 0.17). Performance efficacy decreased from younger controls (M = 19.6 ± 2.8) to older controls (M = 17.7 ± 2.9), then to LOS (M = 15.8 ± 2.4), performance of AOS was the poorest (M = 14 ± 5.1). Due to the lack of sex-comparability in clinical groups we checked for associations between sex and "Similarities" performance and revealed no significant correlations (rS = - 0.21, p = 0.89). There were 6 bizarre answers in AOS, 1 in LOS, and 1 in older controls.
Conclusion: The presence of differences between AOS and controls along with the absence of differences between LOS and controls might indicate that VAR is more preserved in LOS compared to AOS. Although no significant differences between clinical groups were revealed, LOS performed slightly better. Moreover, the higher number of bizarre answers in AOS than in LOS may represent qualitative differences in VAR between clinical groups.
Policy of full disclosure: The study was supported by RFBR Grant no 18-013-01214.

P-04-008
Long-term changes in semantic encoding strategy among first-episode psychosis patients

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Objective: Studies have shown that schizophrenia spectrum patients utilize less semantic clustering during encoding of organized material, leading to poorer learning and retention (e.g. Vaskinn et al. 2008). The ability to self-initiate semantic clustering is a potential target for cognitive remediation (Lepage and Guimond 2019). The present study investigated long-term changes in use of semantic clustering in first-episode psychosis (FEP) patients and healthy controls, and associations with functional outcome.
Methods: Cognitive and clinical assessments were done on a group of 55 FEP patients and 85 matched controls at baseline and at 10-year follow-up. Data collection is ongoing. Diagnoses were made using SCID-I for the DSM-IV. California verbal learning test (CVLT) semantic clustering scores from baseline and follow-up assessments were compared. Correlations between semantic clustering and functioning (GAF-F) were also calculated at baseline and 10-year follow-up.
Results: Patients had lower semantic clustering scores compared to controls at both time points. Repeated-measures ANOVA showed a significant effect of group, $F(1, 138) = 15.46$, $p < 0.001$, as well as a time, $F(1, 138) = 22.83$ $p < 0.001$, on CVLT semantic clustering scores. A group*time interaction was also found: $F(1, 138) = 4.84$, $p = 0.029$. Further, semantic clustering at follow-up, but not baseline, was significantly correlated with GAF-F scores: $r = 2.97$, $p = 0.015$.
Conclusion: These preliminary analyses found the expected reduction in semantic clustering among FEP patients. Additionally, there was a significantly larger increase in use of semantic clustering in controls compared to FEP-patients from baseline to 10-year follow-up. Although the direction of the effect cannot be assumed, a small correlation between semantic clustering and measures of functioning at follow-up support the notion that this measure is clinically relevant.
Policy of full disclosure: None.

P-04-009

Influence of luminance and contrast of visual stimuli on working memory performance and its dysfunctions in schizophrenia

C. Haenschel (University of London, Psychology), London, UK; J. Martinovic, J. Barbur, M. Kosilo

Objective: Working Memory (WM) deficits are a cardinal feature of schizophrenia and may underlie many of the patient's day-to-day difficulties. We have previously demonstrated a relationship between neural measures of visual stimulus encoding and WM performance in schizophrenia using EEG. However, the mechanism underlying this relationship remains poorly understood. Here, we investigate the influence of luminance contrast by measuring the contrast thresholds needed to achieve approximately 73% correct response and compared these to age-matched, normal means. We also investigated if stimuli defined by purely luminance or chromatic contrast influence differentially WM performance and early visual ERP responses in typical populations and in patients with schizophrenia.
Methods: Patients with schizophrenia and matched typical participants performed a modified delayed discrimination WM task while we recorded a 64 channel EEG. Stimuli for the WM task were defined along different directions in cardinal colour space (Derrington et al, 1984) to create stimuli that were isolating the luminance or two different chromatic mechanisms. We compared individually established compared to averaged contrast thresholds.
Results: Results showed increased thresholds and greater variability in functional contrast sensitivity in patients with schizophrenia compared to controls. Luminance-defined shapes resulted in higher WM accuracy and faster reaction times. Early visual ERPs (P1 and N2) responded preferentially to luminance and chromatic stimuli, respectively. This was not the case in the patient group as both the performance and ERPs were reduced. However, group differences in task performance disappeared in a sample that used individually-established contrast thresholds.
Conclusion: The data confirms the link between deficits in the early encoding phase and WM performance. These impairments may have an impact on everyday life of people with Schizophrenia. Importantly, we also demonstrate the importance of controlling for individual visual thresholds; accounting for perceptual differences in this way might remove a disadvantage in the patient group.
Policy of full disclosure: None.

P-05 Psychosocial Treatment

P-05-001

Group acceptance and commitment therapy compared to individual cognitive behavior therapy for psychosis—a randomized controlled pilot trial

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Objective: Cognitive Behavior Therapy for psychosis (CBTp) is currently a well-documented and effective treatment focusing on symptom reduction. By contrast, Acceptance and Commitment therapy for psychosis (ACTp) targets believability in symptoms. ACTp might be an effective, but not yet evidence-based treatment for psychosis. There is however a lack of studies comparing ACTp against CBTp. 1. Can Group-Acceptance and Commitment Therapy for psychosis (G-ACTp) increase valued living, quality of life, self-esteem as well as decrease impairment more effective than individual CBTp in individuals with psychosis? 2. Can individual CBTp decrease symptoms of anxiety depression and psychosis more effective than G-ACTp in individuals with psychosis?
Methods: Nineteen out-patients with psychosis were randomized to either individual CBTp or G-ACTp. A total of 14 participants completed both pre- and post-measures. Mainly t test and ANOVA were used.
Results: No differences in symptom reduction (anxiety, depression, psychosis), valued living, quality of life and self-esteem between G-ACTp and CBTp were found. Both treatments increased level of functioning pre-post treatment significantly [G-ACTp ($p = 0.001$),CBTp ($p = 0.02$)]. Valued living increased significantly pre-to post treatment in the CBTp group ($p = 0.01$). Also, self-esteem increased significantly pre-post treatment in the G-ACTp ($p = 0.050$) group.
Conclusion: This is the first study comparing G-ACTp to CBTp. No significant differences between groups were found. However, ACTp might increase self-esteem more effective than CBTp, whereas CBTp might increase valued living more effective than ACTp. This study included a small sample and the results should therefore be treated with caution. There is however a need for further larger studies comparing ACTp to CBTp. Studies should also compare group ACTp and CBTp to individual ACTp and CBTp.
Policy of full disclosure: None.

P-05-002

Positive effect of cognitive-behavioral therapy on symptoms of schizophrenia

R. Nafari (University Azad, Psychology), Marvdasht, Islamic Republic of Iran; N. Khalaj, F. Kazempour

Objective: Schizophrenia is one of the commonest disorders in the world. In spite of medical treatments, it is better to focus on the Cognitive-Behavioral Therapy to reach the pleasant effects; these treatments are known treatments on the patient positive signs.
Methods: This study is semi-experimental, and the research plan, pretest, and post test are used to the control groups. The society of the study includes all women and men who have schizophrenia in the Hafez hospital in SHiraz. They are chosen intentionally including 40 persons, they are divided into two equal groups $n = 20$ experiment, $n = 20$ control. Both groups were testified by SAPS pretest, then the experience group participated in 15 sessions of classes in the light of the cognitive behavioral treatment. The data was analyzed by statistical method (ANCOVA).
Results: After passing the 15 sessions, the experience group showed significantly positive signs compared with the control group ($P < 0.001$).
Conclusion: Cognitive-Behavioral Therapy proved to influence treatment in decreasing positive signs of schizophrenia.
Policy of full disclosure: None.

P-05-003

Development and implementation of a Mindfulness-Based Group Therapy (MBGT) for in- and outpatients with schizophrenia spectrum disorders

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Objective: In recent years, a growing number of mindfulness-based interventions, such as mindfulness-based cognitive therapy, person-

centered therapy, and acceptance- and commitment therapy, have been used for the treatment of individuals with schizophrenia spectrum disorders (SSD). A minor number of randomized controlled trials (RCTs), primarily conducted in English-speaking countries such as the UK, USA, and Australia, have demonstrated the effectiveness of mindfulness in regard to positive- and negative symptoms, depressive and anxiety symptoms, as well as rehospitalization and overall positive well-being. However, so far there have been no studies employing mindfulness-based therapy for SSD in Germany.
Methods: A mono-centre rater-blinded randomized control trails have been implemented since August 2018. Currently, 22 inpatients with SDD have participated in the first mindfulness-based group therapy (MBGT) in Germany (SENSE-study) in which they are either randomized into the experimental condition (MBGT) or control condition (TAU).
Results: Pilot results demonstrate feasibility and high acceptability of the employed MBGT revealing drop-out rates of only 8.3% and an extraordinary high rate of completed sessions (97%). Preliminary analysis shows significant between-group effects for positive symptoms measured by the PANSS ($p = 0.016$) as well as for the CHIME subscale "acting with awareness" ($p = 0.047$) and the SMQ subscale "opening awareness to difficult experiences" ($p = 0.04$). Within-group analysis revealed significant improvements for the experimental condition in depressive, anxiety and stress symptoms as well as positive and negative symptoms. Further, a significant increase in mindfulness and the 'environmental domain' of a quality of life measure (WHOQOL-Bref) has been found. For the control group, only positive symptoms improved significantly over the course of the 4-week trial.
Conclusion: Pilot results as well as challenges, strengths and limitations of the SENSE study will be discussed in view of future directions
Policy of full disclosure: None.

P-05-004
Mind-body therapies for negative symptoms of schizophrenia: systematic review of randomized controlled trials and meta-analysis

M. Sabe (Geneva University Hospital, Psychiatry), Thonex, Switzerland; O. Sentissi, S. Kaiser

Objective: Negative symptoms of schizophrenia are closely linked to functional disability and available biological and psychosocial treatments have very limited effects. Preliminary studies suggest mind-body therapies could be of therapeutic use against negative symptoms. Therefore, we aimed to evaluate the effect of mind-body therapies on negative symptoms in randomized controlled trials (RCTs).
Methods: We conducted a systematic review and meta-analysis of RCTs examining effectiveness of yoga, tai-chi, qi-gong and mindfulness on negative symptoms of schizophrenia, using different databases and trial registries. Our primary outcome was effect of mind-body therapies on negative symptoms and the secondary outcome was effect on positive symptoms of schizophrenia.
Results: Fifteen RCTs were included in the meta-analysis ($N = 1129$ patients; mean duration of 13.7 weeks and 29.5 hours of practice). Overall results revealed significant reduction of negative symptoms ratings at the end of the intervention, but moderate to high heterogeneity was present. A subgroup analysis for different types of therapy revealed a significant effect of mindfulness-based and yoga interventions on reduction of negative symptoms rating, but heterogeneity within the yoga subgroup was high. Also, our results suggested a reduction of positive symptoms for yoga interventions ($N = 1099$). A meta-regression showed that negative symptom reduction was not predicted by total hours of practice.
Conclusion: The standardized mean-difference for the effect of mind-body therapies on negative symptoms was small. The effects on negative symptoms were in our sample of studies more evident for mindfulness-based programs. These interventions do not worsen positive symptoms. Further research focusing on individuals with predominant negative symptoms is needed before mind-body therapies can be recommended as adjunctive therapy against negative symptoms.
Policy of full disclosure: Stefan Kaiser has received advisory board honoraria from Recordati and Lundbeck on an institutional account for research and teaching. Othman Sentissi received advisory board honoraria from Otsuka, Lilly, Lundbeck, Sandoz, and Janssen on an institutional account for research and teaching. Michel Sabe declares no conflict of interest.

P-05-005
A new virtual reality-intervention to train social cognition ("Dynamic interactive social cognition training in virtual reality") for people with a psychotic disorder: A pilot study

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Objective: Social Cognition Training (SCT) is aimed at ameliorating deficits in social cognition, which are commonly experienced by people with a psychotic disorder. Since research shows that cognitive remediation is most effective when it is integrated into a variety of daily-life situations, virtual reality (VR) could be an effective tool for SCT. VR is a realistic and interactive method to simulate daily life social situations. VR is also controllable, which facilitates structured practice and personalization. In a pilot study, we studied the feasibility and acceptance of a VR SCT.
Methods: Twenty-two people with a psychotic disorder participated. They took part in DiSCoVR, a VR SCT aimed at: (1) facial affect recognition (recognizing emotions of virtual characters in a shopping street); (2) social perception and theory of mind (understanding social situations and the thoughts, emotions and behavior of virtual characters); and (3) practicing social interaction in role-play with a virtual character. Acceptance and feasibility were assessed using a survey. Preliminary effects on social cognition and psychiatric symptoms were also evaluated.
Results: Seventeen participants completed the study. Participants gave positive ratings to the enjoyability ($M = 7.3$ out of 10) and difficulty level of DiSCoVR ($M = 7.2$), the combination of VR and a therapist ($M = 7.85$) and the utility for daily social contact ($M = 7.0$). 70% of participants indicated that the opportunity to practice with social situations was the most important strength of the intervention. A significant improvement of emotion perception was observed ($MD = -4.35$, $t = -4.80$, $p < 0.001$).
Conclusion: DiSCoVR is well accepted by participants and seems to be useful for simulating social contact in a way that complements participants' skill levels. The results indicate that DiSCoVR could improve emotion perception. However, these findings concern a small, uncontrolled pilot study. We are therefore currently studying the effect of DiSCoVR in a Randomized Controlled Trial.
Policy of full disclosure: None.

P-05-006
Compliance-targeted psychotherapy in patients with schizophrenia

I. Belokrylov (RUDN University, Department of Psychiatry), Moscow, Russia; V. Sokolov, A. Bryukhin, T. Lineva, E. Okonishnikova

Objective: Adherence to treatment is one of the main factors for the effectiveness of treatment of patients with schizophrenia. Low adherence is associated with frequent and prolonged repeated hospitalizations, which adversely affects the pharmacoeconomic indicators and the quality of life of patients. The study was aimed at developing a psychotherapeutic program to increase adherence to treatment (compliance therapy) and assess its effectiveness.
Methods: A sample of patients with paranoid schizophrenia (F20.0, ICD-10) in a state of therapeutic remission, observed after discharge from a psychiatric hospital (N = 72, 38 men, 34 women, average age 38 ± 7.4 years), is randomized to 2 groups of 36 people each. In the main group, patients received compliance therapy for 30 min 3 times a week for 1.5 months. In the control group, psycho-educational classes were conducted with the same frequency and duration. To assess the dynamics of compliance used test: Questionnaire perception of the disease in schizophrenia. The observation period recorded the number of re-admissions and the duration of remission during the year.
Results: The analysis revealed 2 main types of low compliance factors: cognitive, associated with a distorted view of the disease and psychopharmacotherapy; family—devaluation of treatment by relatives of patients. Given this data, the psychotherapy scheme included cognitive-behavioral and systemic-family components. In the main group, a significantly higher increase in compliance and a critical assessment of the disease was observed ($p < 0.05$). Subsequent observation recorded the main group a higher duration of remission and fewer repeated hospitalizations than in the control group.
Conclusion: The technique of compliance therapy can be recommended for systematic use.
Policy of full disclosure: None.

P-05-007
Who gets lost? Explaining dropout rates of cognitive remediation in schizophrenia

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Objective: Poor treatment adherence is affecting remission in patients with severe mental disorders. Based on a biopsychosocial treatment approach it is important to keep patients with schizophrenia in both pharmacotherapeutical and psychosocial treatment. There is an immense body of evidence concerning non-compliance with antipsychotic medication showing high dropout rates by an average of about 42% within 6 months of treatment. A significantly lower number of studies examined dropout rates of psychosocial treatments (i.e. cognitive behavioral or group therapy, cognitive remediation) and their predicting factors. Reported dropout rates vary from 0.5 to 50% with a mean of 13% depending on characteristics of the study (e. quality), the therapy (e.g. duration) as well as the patient. A higher dropout rate was often associated with male gender, higher age and a longer duration of illness. On the other hand, some evidence suggests that more severe symptoms (e.g. negative symptom), poorer functioning and poorer neurocognition (e.g. working memory) do not significantly hamper treatment adherence. The present study aimed at investigating patient related characteristics associated with dropping out from cognitive remediation in a large study population (N = 112) of an ongoing RCT.
Methods: Patients with schizophrenia participated in one of two 6-month individual cognitive remediation programs either focusing on basic cognition (attention, memory, executive functioning) or on social cognition (affect recognition, social perception, theory of mind).
Results: Predictive value of age, gender, education, occupational status, migration, duration of illness and psychosocial functioning on dropout status will be analyzed using linear regression models. Since Last-Patient-Out for these analyses will be June 2019, results can definitely be presented at the ECSR in September 2019.
Conclusion: The identification of criteria describing patients with a higher risk of adherence problems to psychosocial treatment can be used in order to develop customized interventions addressing the special needs of those patients.
ISST study group (as of 05/19): W. Wölwer, L. Eißler, N. Frommann, A. Lowe, D. Kamp, P. Ockenfelds, F. Pessanha, K. Weide (Düsseldorf); R. Hurlemann, N. Striepens, J. Schultz, U. Darrelmann, C. Kloss, S. Wasserthal, H. Högenauer, G. Ferrari, N. Schuhmacher (Bonn); F. Jessen, S. Ruhrmann, C. Baldermann, J. Kambeitz, A. Muthesius-Digón, A. Kolb, T. Haidl, C. Doll, D. Zeus, S. Hölzer, M. Hellmich, S. Schmied, U. Bergmann, F. Scheckenbach, F Fassihianifard, A. Hannig (Köln); S. Klingberg, D. Wildgruber, A. Fallgatter, U. Hermanutz, J. Richter, S. Unsöld, J. Vonderschmitt, L. Hölz (Tübingen); A. Bechdolf, K. Leopold, H. Scheibner, S. Siebert, F. Seidel, E. Blanke (Berlin); A. Brockhaus-Dumke, X. Solojenkina, B. Klos, E. Rosenbauer, S. Cinar, E. Gahr, L. Herdt, F. Henrich, S. Neff (Alzey); A. Meyer-Lindenberg (Mannheim).
Policy of full disclosure: None.

P-05-008
Clinical and demographic predictors of engagement with a weekly symptom monitoring app during a 6-month longitudinal feasibility study

E. Eisner (University of Manchester), Manchester, UK; R. Drake, R. Emsley, C. Barrowclough, N. Berry, S. Bucci

Objective: To examine the patterns and predictors of engagement with a weekly symptom monitoring app by individuals with established psychosis during a 6-month longitudinal study.
Methods: Individuals who had experienced a relapse of psychosis within the past year (n = 18) were assessed at baseline using the following measures: Positive and Negative Syndrome Scale (PANSS), Psychotic Symptoms Rating Scales (PSYRATS), Hospital Anxiety and Depression Scale (HADS) and Fear of Recurrence Scale (FoRSE). Demographic information and estimates of substance use and medication adherence were also collected. Participants were asked to use a symptom monitoring app (ExPRESS) once a week for 6 months to answer questions regarding a personalized set of early signs of relapse, basic symptoms and psychotic symptoms. The pattern of app completion during follow-up was explored in a mixed-effects model, with a random effect of participant and a fixed-effect of time. Effects of baseline variables on percentage app completion were examined using Spearman's correlations (continuous variables), Mann–Whitney or Kruskal–Wallis tests (categorical variables).
Results: Participants completed 65% of weekly app assessments, with 78% of the sample completing at least a third and 72% completing at least half of assessments. Participants responded to fewer prompts as the study progressed (OR = 0.89 per week follow-up, $p < 0.001$). Percentage app completion was significantly and inversely correlated with baseline depression ($\rho = -0.56$, $p = 0.015$) and fear of relapse ($\rho = -0.58$, $p = 0.014$), with anxiety approaching significance

($\rho = -0.48$, $p = 0.052$) and all other baseline variables non-significant.
Conclusion: Predictors of app engagement have been examined previously but a consistent picture is yet to emerge. The current study found significant effects of depression and fear of relapse. If the use of symptom monitoring apps becomes commonplace in services, it is important for clinicians to be aware that they may not suit everyone and to take additional steps to engage these individuals.
Policy of full disclosure: Sandra Bucci is a director of Affigo CIC, a not-for-profit social enterprise company spun out of the University of Manchester in December 2015 to enable access to social enterprise funding and to promote ClinTouch, a symptom-monitoring app, to the NHS and public sector.

P-05-009
Impact of group psychoeducation on cognitive insight and recovery style in the forensic mental health population: a clinical audit

M. Nimoni (Brunel University London), Uxbrigde, UK; S. Krljes, V. Kumari

Objective: Low cognitive insight and a 'sealing-over' recovery style are characteristic features of psychosis and considered to have a negative impact on illness prognosis. Group psychoeducation may improve patients' knowledge and awareness of their mental health and equip them with effective coping strategies, but this has not been confirmed, particularly within forensic mental health (FMH) populations who have a high prevalence of a comorbid substance use disorder (SUD). We aimed to (1) evaluate the effectiveness of group psychoeducation in improving FMH patients' cognitive insight and recovery style, (2) establish whether there is a relationship between high cognitive insight and an 'integrative' recovery style in FMH patients, and (3) investigate possible differences in cognitive insight and recovery style between FMH patients with and without a comorbid SUD.
Methods: Secondary data were obtained from 44 FMH patients (18–52 years; 32 males) detained in a medium secure unit, of which 16 had a comorbid SUD. The Beck Cognitive Insight Scale (BCIS) and Recovery Style Questionnaire (RSQ) were used to assess cognitive insight and recovery style. The BCIS subscales—self-reflectiveness (SR) and self-certainty (SC)—are associated with greater and poorer cognitive insight, respectively. Higher RSQ scores indicate an integrative recovery style.
Results: Overall, recovery style became more integrative but there was no evidence of improved cognitive insight post-intervention. A positive correlation was found between post-BCIS and post-RSQ scores, but not between pre-BCIS and pre-RSQ scores or between pre-to-post change on these measures. Comorbid SUD patients had greater cognitive insight (particularly self-reflectiveness) than those without; however, they were also older and controlling for age abolished this effect.
Conclusion: Group psychoeducation improves recovery style, but not cognitive insight, and there is no consistent relationship between cognitive insight and recovery style in FMH patients. Cognitive insight may be less susceptible to change and require more intense interventions.
Policy of full disclosure: None.

P-05-010
BEATVIC: effectiveness of a psychomotor resilience training for people with psychosis

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Objective: In people with a psychotic disorder childhood abuse and earlier experiences with violence lead to an increased risk of becoming victim (De Vries et al. 2018). To prevent revictimization a body-oriented resilience training using kickboxing to enhance both vitality and aggression regulation combined with interventions targeted at social cognition was developed. A study was done to explore the feasibility of the intervention and explore behavioral outcomes. This pilot was followed by an RCT to test its effectiveness compared to an active control condition ('befriending').
Methods: For the pilot 24 adults with a psychotic disorder received 20 weekly sessions in three groups. Evaluative data were gathered and changes in prevalence of conflicts and other risk factors for victimisation. In the RCT 52 new participants and 52 controls were also followed over an extra 6 months and more attention was paid to changes in physical activity. In a subgroup of patients, fMRI scans were made in order to assess potential neural changes.
Results: In the pilot mean attendance rate was 85%. A decrease in both conflicts and most of the risk factors was shown. Analysis of task-related network modulation revealed more deactivation of the sensorimotor network in those previously victimized. The data from the RCT are currently analyzed and will be presented.
Conclusion: The results support the feasibility of the BEATVIC-protocol and the importance of interventions targeted at the sensorimotor network as a source of possible inadequate reactions causing revictimization.
Policy of full disclosure: None.

P-05-011
A co-productive development of a practical guidance for patient-centered and life-oriented recovery of schizophrenia in Japan

M. Fukuda (Gunma University, Psychiatry and Neuroscience), Maebashi, Gunma, Japan

The collaborative team for the co-procuctive guidance
Objective: "A co-production project to develop a practical guidance for patient-centered and life-oriented recovery of schizophrenia" was supported by Japan Agency for Medical Research and Development (AMED) as the Research and Development Grants for Comprehensive Research for Persons with Disabilities of in 2016–2018.
Methods: Ten official medical members and nine secretary members of the project collaborated with patients and families with schizophrenia, peer supporters, mental health welfare professionals, and citizens to develop a practical guidance for patient-centered and life-oriented recovery of schizophrenia suitable for the social situation of Japan through joint meetings and intimate interviews.
Results: The guidance include the topic sections on (1) understanding of the meaning of psychosis experiences along the life course, (2) sharing the outlook of the disease course with patients and families, (3) shared decision making for psychiatric treatment, (4) support system for the carers, (5) promoting physical health, (6) comprehensive and combined systems of primary and advanced treatment, (7) guarantee of patient safety from self-injury and violence, (8) trauma-informed care in treatment settings, (9) care and social activities against social and self-stigma, (10) peer support, (11) educational and occupational rehabilitation, (12) housing first viewpoints,

and (13) future research required from patient needs. The importance of the philosophy of "patient-centered", "life-oriented", and "co-production" is stressed to be consistent through all the sections.
Conclusion: Next step for the guidance is its social implementation. It should be co-productive again and be accompanied by organization changes of psychiatric service systems and professionals. Such challenges should be understood in academic brain science context as well as in the social and ethical context. (cf. Science of recovery in schizophrenia research: brain and psychological substrates of personalized value. npj Schizophrenia 3:14, 2017).
Policy of full disclosure: None.

P-06 Neuroimaging and psychophysiology II

P-06-001
Abnormal static and dynamic resting-state brain network organization in auditory verbal hallucination of schizophrenia

H. Geng (University of Groningen, Neuroscience), Groningen, The Netherlands; P. Xu, A. Aleman, B. Curcic-Blake

Objective: Auditory-verbal hallucination (AVH) is a characteristic and detrimental symptom in schizophrenia. Previous resting-state fMRI studies have suggested that altered functional connectivity among brain regions including Broca, Wernicke and superior temporal gyrus may serve as neural mechanisms underlying AVH. In the present study, we aimed to examine whether AVH in schizophrenia was underpinned by altered connectivity among more distributed brain networks, especially, whether these network interactions during dynamic brain states in AVH patients were abnormal.
Methods: Resting-state functional magnetic resonance imaging (fMRI) data of 22 schizophrenia patients with AVH and 17 schizophrenia patients without AVH were collected. Static functional connectivity (FC) was computed using Pearson correlation between entire time courses of regions in the auditory, language, emotion and default mode and executive control networks. Additionally, sliding window and k-means were used to cluster time windows into distinct brain states based on distinct connectivity patterns. In particular dynamic states (State 3 and 6), the intra- and inter- network FC were calculated and compared between the two groups. We also compared the dwell times of these two states and the transition possibility between them and other states between the two groups.
Results: The AVH group had a decreased connectivity within the language network and between the emotion and language networks (fig. 1). Moreover, the entire time windows were divided into six dynamic brain states. AVH patients dwelled less time in State 6 and showed less possibility of switching from State 6 to itself. We also found that FC within the auditory network and between the language and executive control networks decreased during State 3, and FC in the language network decreased during State 6 in the AVH group.
Conclusion: Our study provided novel evidences of altered static and dynamic brain networks for understanding neural mechanisms of AVH in schizophrenia, detected potential biomarkers for clinic diagnose and treatment of AVH in schizophrenia.
Policy of full disclosure: None.

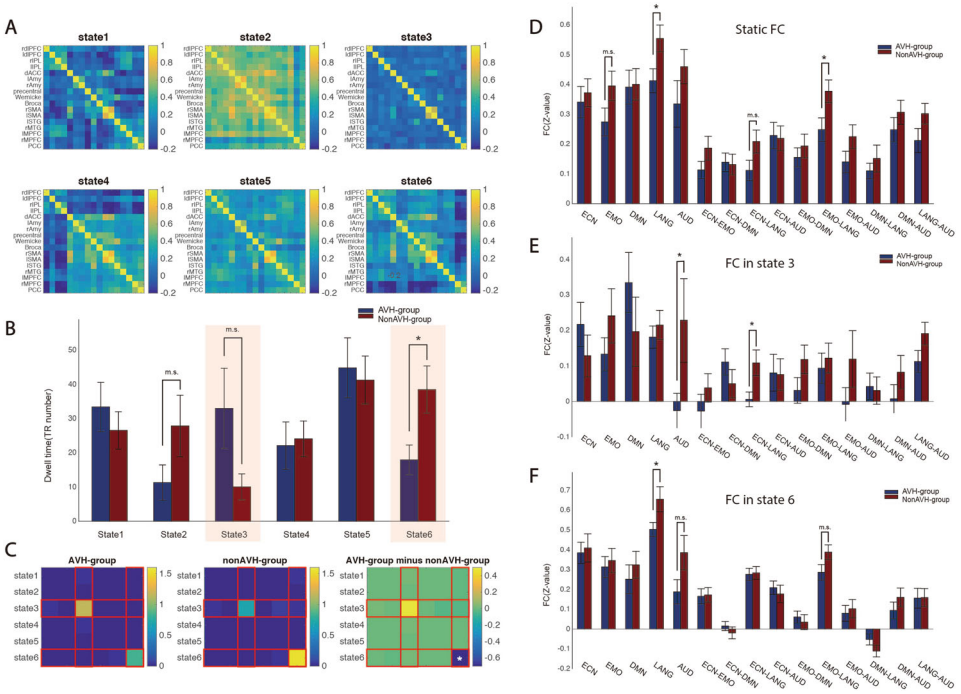

Fig. 1 Connectivity patterns, dwell times, transition probability and inter- and intra- network connectivity of six brain states during dynamic brain state.

P-06-002
Response inhibition and resting-state functional connectivity of anterior cingulate cortex in unaffected first-degree relatives of patients with schizophrenia

Y. Panikratova (Mental Health Research Center), Moscow, Russia; E. Abdullina, I. Klochkova, I. Lebedeva, P. Kananovich, U. Popovich, A. Pomytkin

Objective: Anterior cingulate cortex (ACC), being a key node of salience network, is involved in conflict monitoring and detection along with response inhibition, as well as self-monitoring in inner speech. Numerous studies revealed that altered functional connectivity (FC) of ACC in schizophrenia is associated with auditory verbal hallucinations and poor inhibition. However, FC of ACC and related cognitive functions are understudied in unaffected first-degree relatives of patients with schizophrenia (UFDRS). Thus, we compared whole-brain FC of ACC in UFDRS and controls and looked for correlations between FC of ACC and inhibition.
Methods: UFDRS (n = 13; M = 27.1 ± 4.6; 4 males) and healthy individuals without family history of mental disorders (n = 13; M = 24.7 ± 4.1; 4 males) underwent resting-state fMRI at 3T Philips scanner. The region of interest (ROI) for ROI-to-voxel analysis—ACC—was taken from Shirer's atlas (https://findlab.stanford.edu/functional_ROIs.html). By using general linear model with random effects, we compared whole-brain FC of ACC between the groups. The participants performed Color-Word Interference test from Delis–Kaplan Executive Function System battery. Inhibition was measured through performance time of the third versus the first subtest: classical Stroop task versus simple color naming. Student's t test was applied to compare this index between the groups. We also checked for correlations between FC of ACC and inhibition in UFDRS.
Results: UFDRS demonstrated increased FC of ACC with bilateral cerebellar regions {− 26; − 46; − 50} (cluster volume 5376 mm3), ($p < 0.001$ on voxel level, FDR-corrected on cluster level: q(FDRc) < 0.05). There were no significant correlations between inhibition and FC of ACC with cerebellar regions. No differences were found between groups in inhibition.
Conclusion: Our results coincide with the findings that cerebellum is involved in executive functions and its FC with ACC is altered in schizophrenia. Increased FC of ACC with cerebellum along with preserved inhibition might reflect some resilience brain mechanisms in UFDRS.

Policy of full disclosure: The study was supported by RFBR grant №17-06-00985.

P-06-003
Effect of high definition tDCS on resting state connectivity: a randomized control trial and fNIRS study

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Objective: tDCS induced neuroplasticity changes is hypothesized to alleviate auditory verbal hallucinations (AVH) in schizophrenia (SCZ). Studying the resting state brain functional connectivity before and after tDCS might help to understand tDCS induced neuroplasticity. The aim of this study was to examine the effect of add-on tDCS on AVH and resting state functional connectivity using functional near infrared spectroscopy (fNIRS).
Methods: DSM-IV-TR SCZ patients [N = 24; matched] with persistent AVH received HD-tDCS in a double-blinded RCT study. Cathode was placed over left temporo-parietal junction [2 mA current; twice-daily 20-min sessions for 5 days; intersession interval of 3-h]. fNIRS [10-min] of left fronto-temporo-parietal regions of resting brain was performed before and after HD-tDCS.
Results: tDCS resulted in significant reduction of AVH scores [$F(1, 22) = 17.12$, $p < 0.001$, $\eta 2 = 0.44$] irrespective of the verum/sham tDCS. The magnitude of change in AHRS was greater in verum (7.5 ± 2.11, $p = 0.002$, $\eta 2 = 0.36$) than sham group (4.8 ± 2.11, $p = 0.032$, $\eta 2 = 0.19$); however, this difference between verum versus sham group was not significant. Oxyhemoglobin resting state connectivity showed that after verum tDCS there was a significant increase in betweenness centrality at channel 9 (Brodmann Area 40) [$p = 0.05$, $\eta 2 = 0.16$ (fig. 1a)] and a significant increase in global network connectivity at network threshold of 0.5 [$p = 0.003$ $\eta 2 = 0.34$] (fig. 1b). On the other hand, irrespective of verum or sham tDCS there was a significant effect of tDCS on assortativity at threshold 0.65 [$p = 0.03$], threshold 0.70 [$p = 0.02$] and at threshold 0.75 [$p = 0.048$].
Conclusion: The study findings show mechanistically relevant resting state brain connectivity changes with HD-tDCS. Though the AVH reduction was not significantly different between verum and sham groups (possibly due to smaller sample), this study illustrates the potential of fNIRS to unravel the potential neurobiological changes due to HD-tDCS.
Policy of full disclosure: None.

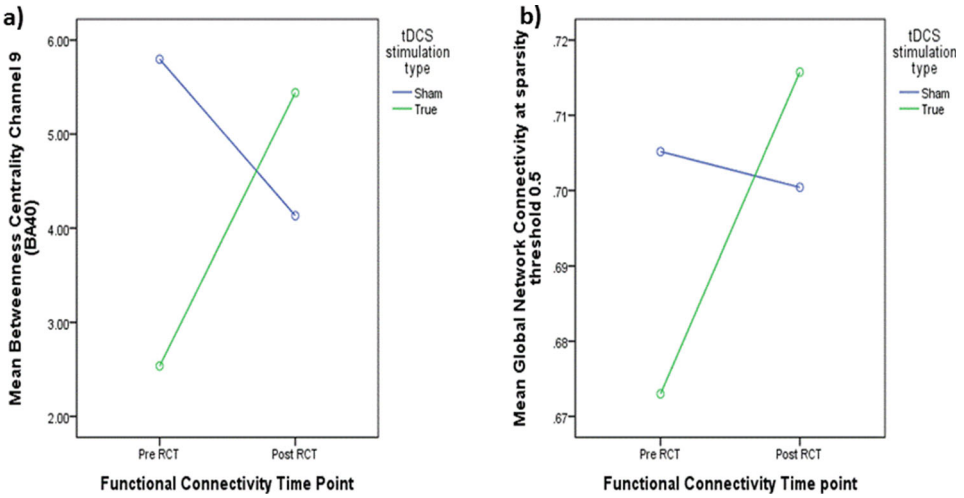

Fig. 1a, b: Shows the effect of RCT tDCS on HbO functional connectivity parameters (P-06-003)

P-06-006
Visual masking in Schizophrenia: an endophenotype and its neural correlates

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Objective: In visual backward masking, a target is followed by a mask, which deteriorates performance on the target. Masking is a very sensitive endophenotype for schizophrenia. Patients and their siblings (to a lesser extent) show strong performance deficits. Here, we investigate EEG correlates of masking across the schizophrenia continuum.

Methods: We measured high-density EEG, while performing a masking task. We report the Global Field Power (GFP), which is the standard deviation across all electrodes.

Results: First, schizophrenia patients (n = 90) have strongly reduced GFP amplitudes as compared to controls (n = 76), (fig. 1). The reduced amplitudes imply an attention allocation deficit in schizophrenia associated with the cholinergic system. Second, patients with first-episodes psychosis (n = 21) have reduced GFP amplitudes when compared to controls (n = 20), but higher amplitudes when compared to schizophrenia patients (n = 22). The neural correlates are in an intermediate state, implying a progressive development of the disease through time. In addition, the amplitudes remain stable for at least 1 year (n = 11), suggesting that further

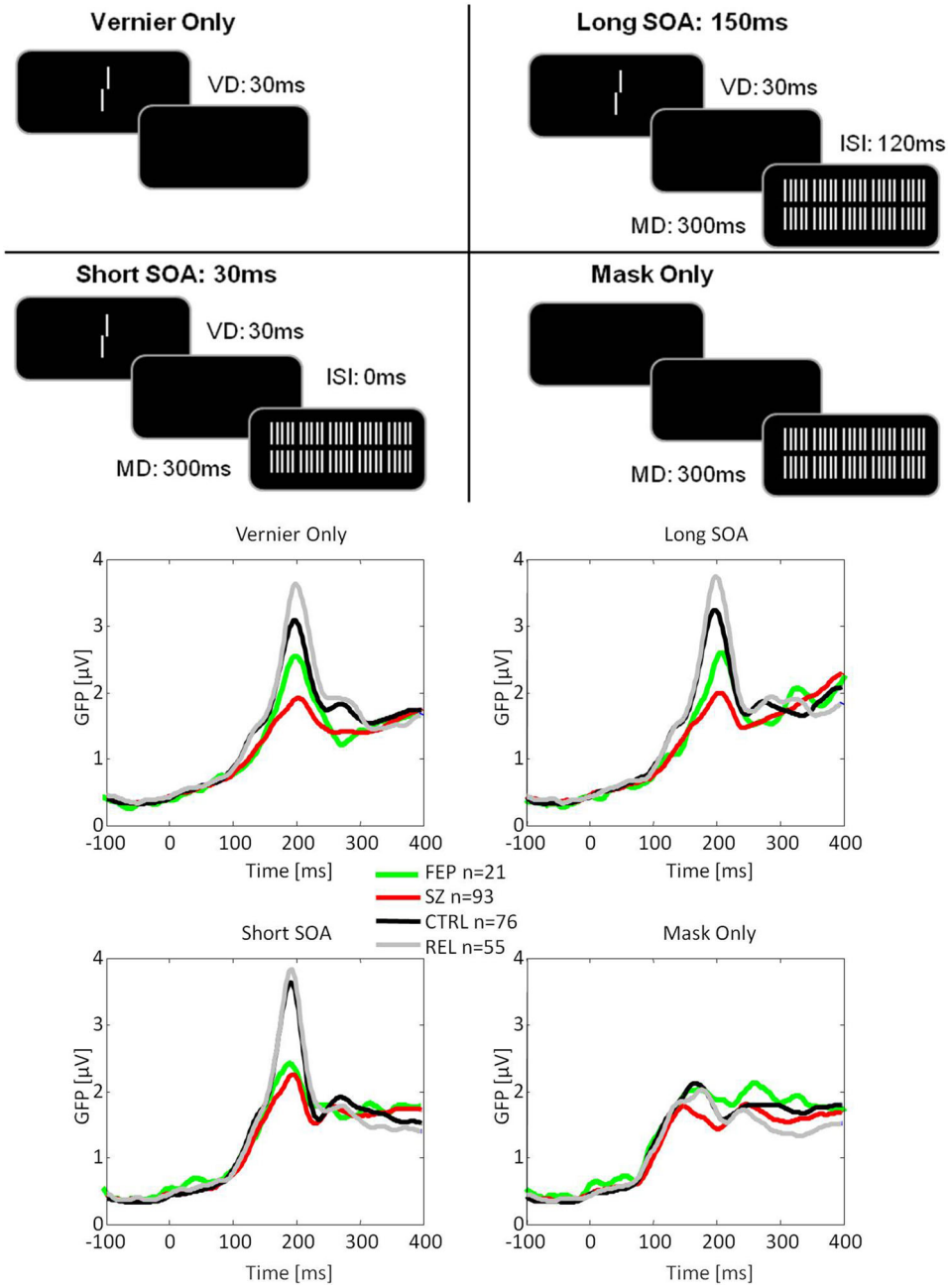

Fig. 1 Neural correlates (Global Field Power) of backward masking in patients with schizophrenia, their relatives, patients with first episode psychosis and controls.

deficits emerge slowly over time. Third, healthy participants with high schizotypal traits (n = 25) have reduced GFP amplitudes compared to low schizotypal participants (n = 20). These deficits are similar to the ones of patients, though strongly attenuated, showing that the mechanism is independent of the state of an individual (i.e., health or disease). Fourth, healthy relatives of schizophrenia patients (n = 55) have higher GFP amplitudes compared to controls. We propose that the relatives use a compensation mechanism to counterbalance for their masking deficits. Finally, patients with the 22q11.2 deletion syndrome (n = 19), who have a 30% risk for schizophrenia, have slightly higher GFP amplitudes when compared to controls (n = 18).
Conclusion: Observers with psychosis related traits or symptoms have difficulties to enhance faint visual information 200 ms after onset which explains their lower performance in visual backward masking.
Policy of full disclosure: None.

P-06-007
P3a impairment and real-life functioning in in subjects with chronic schizophrenia

C. Aiello (University of Campania, Department of Psychiatry), Naples, Italy; G. M. Giordano, A. Mucci, A. Vignapiano, S. Galderisi, G. Di lorenzo, A. Bellomo, M. Altamura, F. Ferrentino

Objective: The impairment in real-life functioning is a key aspect of schizophrenia. Different studies showed that functioning was associated with P3a, an event-related potential associated with the automatic engagement of attention and novelty processing. However, these findings were not controlled for possible confounding factors, such as neurocognitive impairment which might be cross-correlated with both real-life functioning and P3a. Within the Italian Network for Research on Psychoses, we investigated differences between subjects with schizophrenia (SCZs) and healthy controls (HCs) on P3a amplitude and relationships with functioning domains in SCZs.
Methods: Pitch- (p-P3a) and duration-deviant (d-P3a) P3a were recorded in 117 chronic SCZs and 61 HCs. We assessed psychopathology and neurocognition; functioning was measured with the Specific Level of Functioning Scale. Multiple regressions were used to predict functional domains with independent predictors: P3a, ID, age, gender, neurocognition, depression, negative symptom domains of the Brief Negative Symptom Scale, positive and disorganization dimensions of the Positive and Negative Syndrome Scale (PANSS).
Results: SCZs, in comparison with HCs, showed a significant reduction of p-P3a and d-P3a amplitudes. p-P3a amplitude ($\beta = 0.329$, $p < 0.001$), avolition-apathy domain ($\beta = -0.207$, $p = 0.019$) and PANSS positive dimension ($\beta = -0.183$, $p = 0.038$) predicted the SLOF social acceptability domain, independently from severity of the other psychopathological dimensions, demographic features and neurocognitive impairment.
Conclusion: Our results showed that abnormalities in P3a are associated with social acceptability but not with other aspects of real-life functioning, such as instrumental and interpersonal skills.
Policy of full disclosure: None.

P-06-008
Mismatch negativity impairment and poor real-life functioning in subjects with chronic schizophrenia

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Objective: The impairment in functioning of subjects with schizophrenia (SCZs) represents, to date, an unmet need in their care. Recent studies suggested that functioning was associated with mismatch negativity (MMN), an event-related potential reflecting preattentive processing. However, these studies did not clarify whether this relationship is a direct one or reflects a cross-correlation with other variables. Within the Italian Network for Research on Psychoses, we investigated the influence of illness duration (ID) on MMN impairment in SCZs and we analyzed the relationships between MMN and functioning in SCZs.
Methods: MMNs to pitch- (p-MMN) and duration- (d-MMN) deviants were analyzed in 117 SCZs and 61 healthy controls (HCs). SCZs were clustered into four groups based on ID ($\leq$ 5 years; 6–13 years; 14–18 years; 19–32 years). We assessed psychopathology and neurocognition; functioning was measured with the Specific Level of Functioning Scale. Multiple regressions were used to predict functional domains with independent predictors: MMN, ID, age, gender, neurocognition, depression, negative symptom domains of the Brief Negative Symptom Scale, positive and disorganization dimensions of the Positive and Negative Syndrome Scale (PANSS).
Results: SCZ-D showed more positive symptoms than SCZ-A and higher neurocognitive deficits than SCZ-A and SCZ-B. All groups of SCZs, compared with HCs, showed reduced p-MMN and d-MMN amplitudes. There was not any difference on MMN amplitude among the four SCZ groups (age, gender, positive symptoms and neurocognition as covariates). PANSS Positive dimension and p-MMN amplitude predicted SLOF work skills domain in SCZs, independently from other symptoms, demographic characteristics and neurocognition.
Conclusion: MMN impairment is not related to ID and is independent of psychopathology severity and neurocognitive deficits. It is associated with poor work skills independently from symptoms, demographic features and neurocognition. Our results suggest that MMN impairment might represent a biomarker of poor functional outcome in subjects with schizophrenia.
Policy of full disclosure: None.

P-06-009
Dysregulation of interpersonal space is associated with high emotional arousal in schizophrenia

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Objective: Personal space is the safe area around us causing discomfort when violated by others. Thus, it is the phylogenetic human expression of territorial behavior in animals, also termed the immediate body-buffer zone. Invasion into a subject's personal space causes discomfort and in some instances flight reactions. Impaired personal space regulation is critically linked to paranoid threat in schizophrenia. However, no studies have attempted to clarify biological markers of impaired personal space regulation in schizophrenia. We therefore aim to test the association of defective personal space regulation and electrodermal activity (EDA) as proxy of emotional arousal in schizophrenia.
Methods: Assessment of EDA and heart-rate was performed before and during a tasks of interpersonal distance (Stop-distance paradigm) in patients with schizophrenia and age, gender and education matched healthy controls. Before (baseline) and during the assessment participants wore a wristband (Empatica E4 wristband; https://www.empatica.com) including sensors measuring heat-rate and skin conductance. The stop-distance paradigm is a reliable measure of the minimal tolerable interpersonal distance. Participants have to

indicate the minimal tolerable interpersonal distance to an experimenter while the interpersonal distance is varied.
Results: In our preliminary data (n = 21). Baseline EDA before the task was associated with personal distance during the stop distance task. Higher baseline electrodermal activity was associated with larger tolerable interpersonal distance in schizophrenia patients.
Conclusion: Our results are in line with previous reports showing increased EDA in schizophrenia. Furthermore, our preliminary data shows for the first-time increased EDA at rest as associated with increased personal space in schizophrenia most likely as a potential indicator for high emotional arousal relevant for dysregulation of interpersonal distance in schizophrenia.
Policy of full disclosure: Nothing to disclose.

P-06-010
Alteration in symbol perception in paranoid schizophrenia

G. Rodionov (IHNA &NPh RAS Human Higher Nervous Activity), Moscow, Russia; P. Kudryashov, E. Lushekina, A. Arkhipov, V. Strelets

Objective: Beside psychotic and negative symptoms schizophrenia is characterized by a remarkable decrease of social functioning quality and a violation of the cognitive sphere. The physiological mechanisms of cognitive impairment in schizophrenia are not quite understood. Studies of the cognitive sphere in schizophrenia use elementary stimuli of different modalities. Numerals are a relatively simple symbol of great biological and social importance, as it is necessary in everyday life. The aim of this work was to study the neurophysiological features of sensory analysis of Arabic and Roman numerals, which differ in physical parameters, social significance, frequency of occurrence and representation in the past experience in healthy controls and in paranoid schizophrenia patients.
Methods: Current study was aimed at estimation of latencies and amplitudes of P100, N170 and P200 components of the evoked potentials (ERP) during visual presentation of Roman and Arabic numerals in healthy subjects (n = 15) and patients with paranoid schizophrenia (n = 18). Statistics: Mann-Whitney-Wilcoxon test (STATISTICA-10).
Results: Intragroup analysis found that in schizophrenia patients comparing to norm the P100 amplitude to Arabic numerals was higher in left temporal area, and, controversely, smaller in right central area, latency of N170 to Arabic numerals was shorter only in the middle parietal area, P200 latency to Arabic numerals was longer in left occipital region, and amplitude lower in middle central and right occipital areas (fig. 1).
Conclusion: In norm and schizophrenia patients, different levels of cortical areas activation to the two types of stimuli were revealed reflecting the differences in these stimuli characteristics. Activation at three stages of perception in patients indicates a violation of the order of processing of numerical information at all stages and dysfunction of the mechanism for assessing the frequency of occurence and social significance of stimuli.
Policy of full disclosure: None.

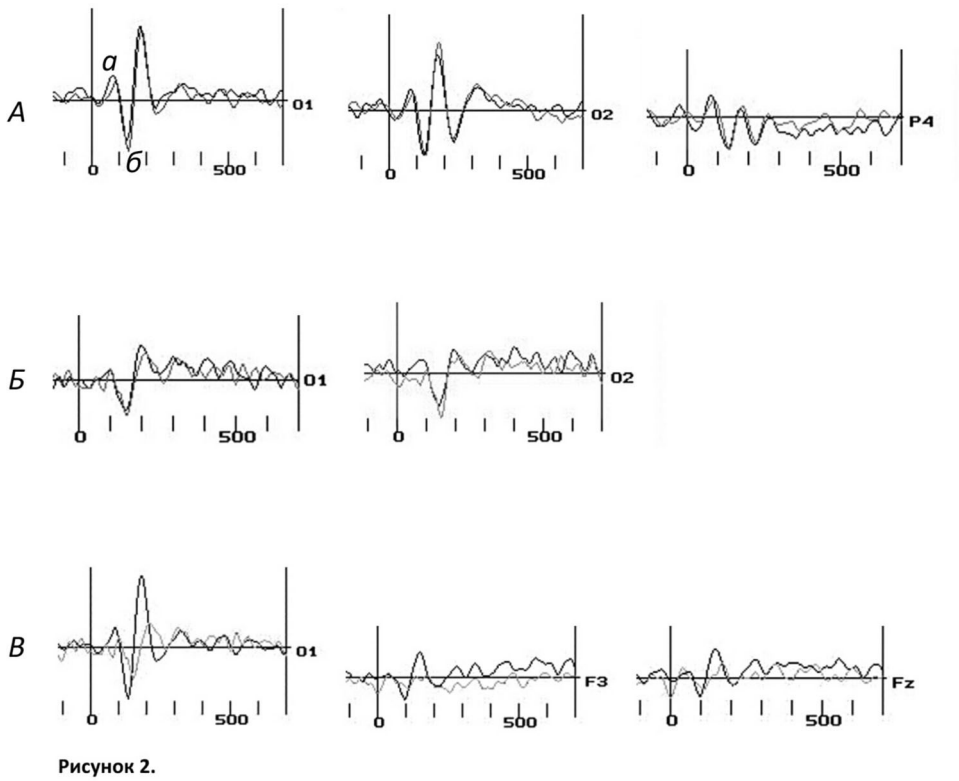

Fig. 1 ERPs to Roman and Arabic numerals in schizophrenia patients and in healthy controls

P-07 Neuropsychology II

P-07-001
Chasing detection as a measure of agency attribution in schizophrenia

R. Lisøy (NTNU Psychology), Trondheim, Norway; G. Pfuhl, W. Nederhagen Hope, R. Biegler

Objective: Our ability to detect intentional agents is an important part of human cognition and perception. We are remarkably sensitive to cues that signal intentions and goals. Even artificial stimuli in motion, like geometric shapes, are readily perceived as agents exhibiting intentional behaviour. However, the tendency to attribute agency varies between individuals.
Methods: In our modified chasing detection task, the observer is presented with video clips displaying several discs moving in random directions. In a proportion of the clips, a random disc pursues a target disc, and the observer is tasked with detecting when chasing is present. The simplicity of this task makes it appropriate for a clinical sample, and it is at this time being administered to patients with schizophrenia.
Results: From the observer's response bias, we can infer about his or her tendency to attribute agency.
Conclusion: Importantly, the response bias could reflect a corresponding tendency to attribute higher order mental states. This agency task can therefore be used to explore whether the excessive mental state attribution associated with schizophrenia, as well as the reduced attribution in autism spectrum disorder, extends to agency attribution.
Policy of full disclosure: None.

P-07-002
Theory of mind deficits in schizophrenia: effect of symptoms, gender and age of onset

M. Fiste (Psychiatric Hospital of Athens Dromokaiteion, Aegean College), Athens, Greece; G. Georgakopoulos, E. Neroutsos

Objective: Schizophrenia is a devastating mental disorder characterized mainly by the significant social decline of patients, which the overwhelming majority of research largely attributes to the deficits of these patients in Theory of Mind (ToM). ToM is a critical aspect of social cognition and can be defined as the ability to extract and anticipate intentions, thoughts, desires, intuitions, behavioral reactions, plans and beliefs of other people and also the realization that others have a mind with mental states, knowledge and motivations that may differ from ours. The aim of this study was to examine whether and if the symptoms of schizophrenia (negative / positive), age of disease onset and sex (male / female) affect the ability of ToM (mental perception) as measured by the performance of the participants in two screening tests, "The Revised Eyes Test" and "The False Belief and Deception Stories".
Methods: So far, we have assessed ToM abilities (first-order and second-order ToM stories and mental state attribution—The Revised Eyes Test) in thirty patients with schizophrenia (N = 30). Two analyzes of multiple linear regressions and a secondary analysis of an independent sample were performed to examine the underlying hypothesis.
Results: The first results show that patients with positive symptomatic predominance performed worse than those with negative predominance in both tests. Female patients seem to perform better than men and no statistically significant correlation appeared to be present with respect to the effect of the age of onset of the disease.
Conclusion: The findings so far suggest that ToM deficiencies depend on clinical and demographic factors and may direct therapeutic interventions to improve patients social functioning.
Policy of full disclosure: None.

P-07-003
Albumin antioxidant functions are depending on its conformational state

M. Uzbekov (Moscow Research Institute of Psychiatry, Brain Pathology), Moscow, Russia; V. Brilliantova, T. Syrejshchikova, N. Smolina, S. Shikhov, G. Dobretsov

Objective: Early intervention in first episode of schizophrenia (FES) accelerates onset of remission, reduces social losses and improve patient's quality of life. Knowledge of pathogenetic mechanisms of FES still remains fragmentary. Concentration and reactivity of thiol groups of albumin, which are active participants in oxidative processes, were not previously determined in blood in mental disorders. Aim. To study changes in concentration and reactivity of serum albumin thiol (SH) groups (main source of thiols in blood) in FES patients.
Methods: There were investigated 21 patients with FES at admission and 10 healthy volunteers. Serum albumin fraction SH-group concentration and reactivity were determined in Ellman reaction with dithio-bis-nitrobenzoic acid (DTNB) in presence or absence of detergent—sodium dodecyl sulfate (SDS), respectively.
Results: Differences in SH-group concentration between FES patients and controls were insignificant. It was revealed a significant decrease in reaction rate constant (Kv) in FES patients vs. control: 0.17 min^{-1} vs. 0.27 min^{-1} ($p < 0.05$).
Conclusion: Albumin antioxidant function depends not only on fraction of its reduced thiols but also on conformational state of albumin. The only SH-group of albumin molecule is located in a certain cavity (Peters 1995). At normal albumin conformation SH group becomes available for interaction with free radicals and as a result, almost the entire pool of albumin thiols may reduce oxidants. Earlier we have shown significant conformational disturbances of albumin molecule in FES patients (Uzbekov et al. Acta Neuropsychiatrica, 2013). If albumin conformation is disturbed this cavity is not available for interaction with target molecules (free radicals), then, inspite of presence of reduced SH group, albumin cannot participate in redox reactions. Characteristics of albumin thiol group may serve as biomarkers of its conformational changes.
Policy of full disclosure: None.

P-07-003
Relationship of cognitive ability and personality traits with hostile attribution bias in nonclinical subjects: theory of mind as a mediator

S. J. Koo (Yonsei University, Behavioral Science in Medicine), Seoul, Republic of Korea; Y. J. Kim, E. Seo, H. Y. Park, J. E. Min, M. Bang, E. Lee, S. K. An

Objective: Hostile attribution bias has been reported to be common from nonclinical population to serious mental illness such as schizophrenia and is known to be closely related to social cognition. The aims of this study was to investigate whether theory of mind (ToM) skills mediate the relationship between cognitive ability and personality traits and attribution bias by using the Korean version of Reading the Minds in the eyes test (K-RMET).

Methods: One hundred ninety-six (101 females) nonclinical youths were recruited. To assess general cognitive ability and ToM skills, participants were asked to complete the Raven's Standard Progressive Matrices (SPM) and the K-RMET. For personality traits, the Eysenck Personality Questionnaire (psychoticism) and Interpersonal Reactivity Index (perspective taking) were administered. To evaluate the hostile attribution bias, the Ambiguous Intentions Hostility Questionnaire was also administered. Path analysis and the bias-corrected percentile bootstrap method were performed to estimate the parameters of mediating effects.
Results: Based on Akaike Information Criterion (AIC) the best model characterized (1) two direct pathways from psychoticism and K-RMET to hostility attribution bias and (2) four indirect pathways, wherein SPM, perspective taking and psychoticism influence hostile attribution bias through K-RMET. K-RMET fully mediated the association between SPM ($p = 0.028$), perspective taking ($p = 0.027$), psychoticism ($p = 0.041$) and hostile attribution bias.
Conclusion: The main findings suggested that ToM skill such as the RMET plays an important role in explaining the relationship between cognitive ability and personality traits and hostile attribution bias. The development of remediation strategy of theory of mind skills may be needed to balance the enhanced hostility bias which is underlying the paranoia.
Policy of full disclosure: Acknowledgement: This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT & Future Planning, Republic of Korea (Grant number: 2017R1A2B3008214).

P-07-004
Relationship between jumping to conclusions and other cognitive biases and social cognition in people with schizophrenia

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Objective: The aims of the study are to relate jumping to conclusions with social cognition and other cognitive biases in people with schizophrenia attended in rehabilitation services.
Methods: A descriptive study was performed.The subjects of our study were persons from 18 to 65 years old, attended in rehabilitation services, with Schizophrenia diagnoses and other diagnoses with presence of psychotic symptoms (Depression, Bipolar disorder, borderline disorder, delusional disease, schizoaffective, and schizotypal personality). The variables included were JTC considered three tasks with different proportions: 85:15%, 60:40% and 60:40% salient task. Moreover, cognitive insight (BCIS), attributional style (IPSAQ), and Hinting Task -Theory of Mind (ToM) were assessed. A T student analysis was done in order to compare JTC with the rest of the quantitative variables.
Results: People who jump to conclusions in the salient task score higher in self-certainty BCIS ($p = 0.028$), in self attribution for negative events ($p = 0.036$) and lower in attribution to other people of negative events ($p = 0.028$). A tendency has found between the presence of JTC and ToM ($p = 0.051$). In the task of 85–15 only a tendency was found between presence of JTC and higher scores in the personalizing bias ($p = 0.079$). Moreover, in the task of 60:40 a tendency was found between presence of JTC and worse performance in the ToM test ($p = 0.051$).
Conclusion: We found a relationship between jumping to conclusions and self-certainty and self-attributions for negative events; as well as, it is a tendency that higher jumping to conclusions is related with worst theory of mind. There are important clinic implications of this, because we know that jumping to conclusions and theory of mind is related with forming delusions.
Policy of full disclosure: None.

P-07-005
"Reading the minds in the eyes": its relations with neurocognition and facial emotion recognition: findings in non-clinical youths

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Objective: Schizophrenia has been demonstrated the deficits in the "reading the minds in the eyes test (RMET)", which reflects a relatively implicit and automatic social cognitive process. In addition to this inference of the relatively complex mental states, these patients showed the impairments of facial emotion recognition of basic emotions and neurocognitive function as well. Meanwhile, neurocognitive function was also found to play a significant role in performances on RMET and basic facial emotion recognition. This study aimed to investigate the relationship between executive function and RMET, and the mediating role of basic facial emotion recognition in non-clinical subjects.
Methods: One hundred fifty non-clinical healthy youths were requested to perform the RMET. Raven's Standard Progressive Matrices (SPM) as indexing the executive function and basic facial emotional recognition test by using the Korean Facial Expressions of Emotion (KOFEE) were also administered. The percentile bootstrap method was performed to estimate the parameters of mediating effects of facial emotion recognition ability on the relations between SPM and RMET.
Results: SPM was found to be associated with the facial emotion recognition (coefficient = 0.0024, $p = 0.0306$). The facial emotion recognition and SPM were also shown to be related with RMET (coefficient = 11.6979, $p = 0.0031$; coefficient = 0.1615, $p = 0.0027$, respectively). Direct effect of SPM on RMET (95% CI 0.0571–0.2660) and indirect effect of SPM on RMET (95% CI 0.0031–0.0597) were found to be significant.
Conclusion: These findings imply that the executive function may not only directly contribute towards the complex mental states inference but also influence basic facial emotion recognition, which in turn, influences the inference of the complex mental states in healthy youths. Further study would be helpful to investigate the relationship of executive function, basic emotion recognition and complex mental state inference, and to develop the remediating strategies of impaired social cognition in the clinical patients such as schizophrenia.
Policy of full disclosure: Acknowledgement: This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT & Future Planning, Republic of Korea (Grant number: 2017R1A2B3008214).

P-07-006
The need for an even playing field: producing matched tasks to assess face processing among people with schizophrenia spectrum disorders

P. Mewton (Australian National University, Research School of Psychology), Canberra, Australia; B. Christensen, A. Dawel, Y. Shou, C. Monaghan

Objective: People with Schizophrenia Spectrum Disorders (SSD) are impaired when making judgments about human faces, including judgements regarding facial identity and emotional expression. However, debate surrounds which aspects of face processing are most impaired. Attempts to answer this question have been hampered by a methodological issue, initially recognized by Chapman and Chapman (1973, 1978)—namely, the differential deficit problem. That is, the general cognitive deficit associated with SSD can interact with task difficulty and reliability to produce between- and within-group differences that confound true differences in task-specific ability. A remedy to this problem is to match tasks across difficulty and reliability based on control-group performance before measuring clinical-group performance across tasks. This current research aims to develop robustly matched tasks to validly measure the relative impairment of people with SSD across face judgment dimensions (i.e., identity, emotion, emotional genuineness).
Methods: Using novel cognitive tasks, neurotypical participants will make two-alternative forced choice decisions about face identity, emotional expression, and the genuineness of emotional expressions. Participants will make discrimination judgements between opposing face categories (e.g., identity A/identity B, happy/sad, genuine/fake). Face stimuli were obtained from McLellan and colleagues (McLellan, Johnston, Dalrymple-Alford, and Porter 2010), and were morphed to produce a range of item difficulty.
Results: Preliminary data, currently being collected, will be presented and discussed. Results will be analyzed via Signal Detection Theory. Matched tasks will be created by selecting morph ranges for each task that equalize internal consistency and difficulty, based on reaction times and estimated using lognormal race model (Heathcote and Love 2012). Examples of matched tasks will be presented.
Conclusion: It is anticipated that results will confirm the original tasks differ in difficulty. Refined tasks will be created that are matched on difficulty and reliability which can be used for more valid comparison of face processing deficits in SSD.
Policy of full disclosure: None.

P-07-007
Emotional face processing: mechanisms of impairment among persons with Schizophrenia Spectrum Disorders

L. Hansen (Australian National University, Research School of Psychology), Canberra, Australia; B. Christensen, A. Dawel

Objective: This study considers the premise that people with Schizophrenia Spectrum Disorders (SSD) are impaired with using deliberative/analytic processing to recognise the facial emotions of others yet exhibit no impairment when intuitively/automatically processing these same facial emotions. This prediction stems from Lieberman's (2003) Dual Processing Model, which posits two routes to processing social cognitions, each with a distinct neural basis. The deliberative route primarily activates the dorsal stream (known to be impaired in SSD), while the intuitive route activates the ventral stream (known to be intact in SSD). It was hypothesized, therefore, that under conditions that induce intuitive emotional processing, people with higher levels of SSD symptoms would perform equivalently to those with lower levels of SSD symptoms.
Methods: Intuitive emotional processing was induced in undergraduate participants with varying levels of Schizotypy by having them respond to morphed facial emotion stimuli under time constraints (i.e., less than 200 ms) or high cognitive load conditions (i.e., while simultaneously performing simple mathematics computations). Faces were drawn from the Karolinska Directed Emotional Faces database and both reaction time and accuracy were measured in the discrimination task.
Results: Preliminary data, which is currently being collected, will be presented and discussed.
Conclusion: It is expected that the results will support the hypothesis that people with high levels of Schizotypal symptoms will exhibit impairment in processing the facial emotions of others only when they are permitted to adopt analytic processing strategies. However, when constrained to using intuitive processing, it is expected that they are able to perform equivalently to individuals with low levels of Schizotypal symptoms. This research has broader implications for the underlying mechanisms of social deficits and the effective use of social cognitive training for people with SSD.
Policy of full disclosure: None.

P-07-008
Great expectations: Investigating the role of prior expectations in the development of hallucinations

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Objective: The current study proposes a new explanatory model of hallucinations based on the Bayesian Decision-Making Theory (BDT). Hallucinations are perceptions that occur in the absence of sensory evidence. While these false perceptions are usually associated with psychotic illnesses, they are also experienced by 4–10% of the general population, suggesting that hallucinations may be part of normal perception. However, a neuro-perceptual framework for explaining hallucinations across different populations is missing. Applied to perception, the BDT posits that normal perception results from the interaction between two sources of information—prior expectations/knowledge (the prior) and sensory evidence (the likelihood ratio). Fundamental to the BDT is its multiplicative nature. In this context, it is posited that hallucinations can be explained by an undue reliance on prior expectations when faced with low quality sensory evidence.
Methods: Using a novel visual psychophysical task, participants made both detection and orientation judgments of Gabor patches under varying levels of contrast. The prior probability was manipulated by presenting a specific orientation with greater frequency. False-alarms were operationalized as laboratory-based hallucinations.
Results: Participants acquired a strong perceptual bias that closely resembled the induced prior on all signal and no-signal trials. The magnitude of this effect was significantly larger in false alarm and hit trials, suggesting a strong impact of priors on false perceptions. In a convenience sample of healthy undergraduate students, the acquired perceptual bias was not associated with self-reported hallucination-proneness.
Conclusion: Findings support a BDT model of hallucinations by demonstrating the impact of expectations on false perceptions. More research is necessary to ascertain the neural underpinnings of this effect. Additionally, the results indicate some shortcomings of current self-report hallucination scales and their validity.
Policy of full disclosure: None.

P-07-010
Screening for cognitive impairment in late-onset psychosis

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Objective: Processing speed, executive functions, memory and language are impaired in late-onset schizophrenia (LOS) and very late-onset schizophrenia-like psychosis (VLOSLP) compared to normally aging individuals. These disturbances may range from mild to severe. We examined usefulness of The Montreal Cognitive Assessment (MOCA) to detect cognitive impairment in a mixed group of LOS/VLOSLP compared to healthy controls.
Methods: The Montreal Cognitive Assessment (MOCA) was administered to the mixed group of LOS/VLOSLP (n = 25, M = 61.4 ± 8.1, 24 females) and healthy controls (n = 22, M = 56.9 ± 8.7, 16 females). To determine differences between groups Student's t test was applied.
Results: Clinical group performed significantly worse compared to controls [t(45) = 3.87, p = 0.0004]. Mean scores were 22.3 ± 4 for LOS/VLOSLP and 26.1 ± 2.6 for a control group. Noteworthy, 24% of patients demonstrated normative scores (26 and more), 56% of patients had scores between 19 and 25, finally, 20% of patients scored less than 19.
Conclusion: Clinical group demonstrated relatively high heterogeneity of cognitive impairment. Scores on the MOCA of most patients indicate mild cognitive deficit. A few patients scored less than 19, which may point to severe cognitive dysfunction. Finally, some patients showed normative scores. The MOCA may be a useful tool for cognitive screening in late-onset psychotic patients but further validation is needed.
Policy of full disclosure: None.

P-08 Neurobiology and genetics

P-08-001
Adaptor of neuronal nitric oxide synthase 1 (NOS1AP) SNPs and working memory networks an fMRI imaging genetics study

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Objective: NOS1AP is thought to be involved in glutamatergic and nitrinergic neurotransmission. It has been implicated as a risk gene for schizophrenia and associated with cognitive dysfunction. Overexpression of NOS1AP has been observed in dorsolateral prefrontal post-mortem brain tissue of patients with schizophrenia. Furthermore, SNPs in the NOS1AP gene have been associated with established schizophrenia endophenotypes. These findings suggest that the influence of NOS1AP variants may have observable effects in neural systems implicated in schizophrenia. However, there are currently no neuroimaging studies investigating the effects of NOS1AP on working memory (WM). In the present study, we investigate the impact of common genetic variants of NOS1AP on the cortical WM network using fMRI.
Methods: 98 healthy individuals underwent fMRI in a 3T Siemens Trio scanner during the performance of a visuospatial change detection task. FMRI data were analyzed and preprocessed in Brain Voyager QX 2.8. Additionally, a multiscale curvature driven cortex-based alignment procedure was used to minimize macro-anatomical variability between subjects. Subsequently, data were analyzed using a random-effects multi-subject general linear model. Analysis of NOS1AP SNPs was performed with PLINK 1.9. In a whole brain exploratory-analysis we investigated a total of 32 SNPs.
Results: For SNP rs4584372 we observed a significant effect on dorsolateral prefrontal activation during the encoding phase of our WM task. The c-allele of this SNP was previously linked to abnormal PPI. In our data, this allele as associated with a stronger decrease of a dorsolateral prefrontal region which typically exhibits deactivation during the encoding stage of WM. For the other SNPs no significant finding emerged.
Conclusion: Our data link NOS1AP risk variants to abnormal information processing and brain function. Specifically, they implicate NOS1AP in WM dysfunction during the encoding of information into WM. Interestingly, disturbances of component processes appear to be a main cause for WM dysfunction in schizophrenia.
Policy of full disclosure: None.

P-08-002
Differentiation of schizophrenia spectrum disorders with psychomotor syndrome

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Objective: The aim of the research was to make the typological differentiation in patients diagnosed with schizophrenia spectrum disorders. Also, we would like to detect biomarkers as objective phenomenological differences. In our study we had formed and examined two groups of patients with different syndromes. We had collected blood samples of schizophrenia patients and healthy people to determine the content of the telomeric repeat (TR) in the cell free and genomic DNA.
Methods: The sample includes 100 patients from the Psychiatric Clinical Hospital 1 n. a. N.A. Alekseev of Healthcare Department of Moscow. There were 54 patients with paranoid syndrome and 46 observations of psychomotor phenomenon, according to ICD-10 and DSM-V. The control group consists of 80 healthy volunteers. The degree of symptoms was evaluated by the international psychometric scales—PANSS, SAS, NGS-A, Bush-Francis Catatonia Scale. To determine the level of the biomarkers in the blood plasma we had used the phenol extraction and flow cytometry. In research was used Kolmogorov–Smirnov statistics.
Results: In the catatonia group there were six time more points compared to paranoid group according to the BFCRS [24.4 vs 3,8 ($p < 0.005$)]. We had determined that there is significantly increased TR in cell free DNA of two groups of patients compared to healthy control. Also, we had established that TR in cell free DNA in two patient groups is significantly increased compared to genomic DNA. While TR is significantly decreased in cell free DNA compared to genomic DNA in healthy group. The distribution of TR in cell free DNA is equal for both groups of patients.
Conclusion: The results of the research could help to explain the etiopathogenesis in schizophrenia spectrum disorders.
Policy of full disclosure: This research was supported by Russian Science Foundation (Grant no. 18-15-00437). Authors don't have conflict of interest.

P-08-004
CSF levels of the presynaptic proteins synaptosomal nerve-associated protein 25 (SNAP-25) and synaptotagmin-1 (SYT1) in patients with first-episode psychosis

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Objective: Recent findings suggest that increased synaptic pruning may be a key disease mechanism in schizophrenia. Alterations of

synaptic proteins in cerebrospinal fluid (CSF) is one possible approach to study synaptic turnover in vivo. The presynaptic synaptosomal nerve associated protein 25 (SNAP-25) and synaptotagmin-1 (SYT1) play an important role in the SNARE complex, involved in neurotransmitter exocytosis. Moreover, postmortem studies have shown low expression of SNAP-25 in patients with schizophrenia. The purpose of this study was to analyze CSF concentrations of SNAP-25 and SYT1 in patients with first-episode psychosis (FEP) compared to healthy controls (HC).

Methods: We examined CSF SNAP-25 by immunoprecipitation mass spectrometry (IP-MS) in 44 FEP patients, (of which 23/44 were antipsychotic naïve) and 21 healthy controls.

Results: Numerical decreases in SNAP-25 and SYT1 were observed in patients compared to controls, however the differences were not statistically significant (2.2 ± 0.1 vs 2.7 pg/mL ± 0.2; p = 0.065 and 387.9 ± 19.4 vs 446.3 pg/mL ± 39.1; p = 0.137 respectively) (fig. 1). Although not significant, in the FEP group, patients with short-term exposure to antipsychotics showed lower SNAP-25 (2.0 ± 0.2) compared to patients without treatment (2.4 ± 0.2) (p = 0.15). Including age, gender, BMI, antipsychotics and tobacco use as covariates did not change the relationships.

Conclusion: Our study indicates a numerical decrease of levels of CSF SNAP-25 and SYT1 in first-episode psychosis and larger studies could possibly ascertain this. Thus, our results do not indicate an excessive ongoing synapse destruction in FEP subjects and suggest that identification of high-risk subjects in the early prodromal phase is necessary for successful therapeutic interventions aimed at reducing synapse destruction and cognitive symptoms.

Policy of full disclosure: None.

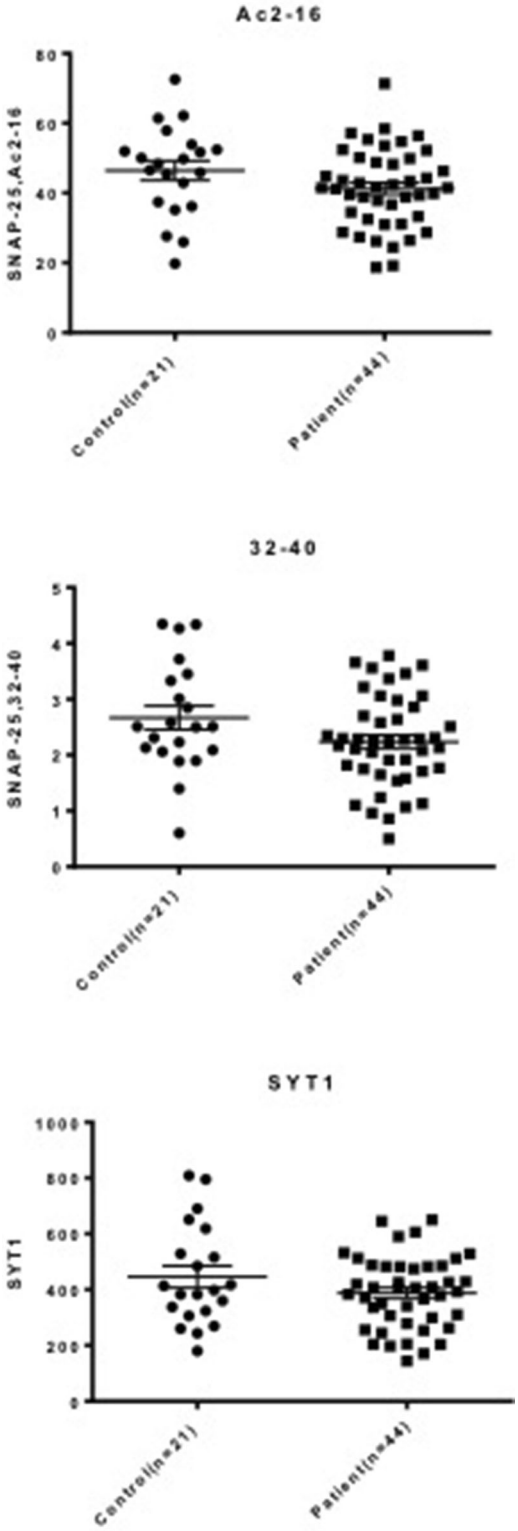

Fig. 1 Distribution of SNAP-25 and SYT1 in healthy controls and FEP patients.

P-08-005

Neural noise: an underlying neurobiological mechanism of visual hallucinations

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Objective: Bayesian models of perception suggest that visual hallucinations (VH) may arise from an over-reliance on expectations when faced with imprecise sensory (visual) information (Geisler and Kersten 2012). This raises questions regarding the cause(s) of imprecise visual information among those experiencing VH. We propose that neural noise (i.e., random and spontaneous neural activity) is a promising candidate cause. Research demonstrates that people with Schizophrenia, and others prone to VH, manifest high amounts of neural noise in cortical processing areas. However, the relationship between neural noise and VH is yet to be established experimentally. Such investigations are essential to ascertain whether neural noise simply coincides with VH, or whether it is an underlying cause of VH. The current study employs transcranial electrical stimulation to induce neural noise in the brains of healthy participants. In particular, previous research has suggested that high frequency-transcranial random noise stimulation (hf-tRNS) increases neural noise levels by generating a random noise frequency. However, given basic stochastic resonance principles it is unclear whether a maximum current hf-tRNS is sufficient to generate noise levels that detrimentally impact perceptual performance. This preliminary study aims to validate the effects of hf-tRNS on neural noise.
Methods: Varying levels of external noise were applied to a visual discrimination task in conjunction with the perceptual template model (Lu and Dosher 2008) to quantitatively estimate internal neural noise (i.e., additive and multiplicative) levels in healthy observers under sham and hf-tRNS conditions.
Results: Preliminary data show perceptual performance significantly improved under hf-tRNS compared to sham conditions at high external noise levels ($p = 0.014$). Modelling and statistical analysis are ongoing and will be presented in this poster.
Conclusion: These findings suggest that a maximal hf-tRNS current is insufficient to detrimentally impact perceptual performance, and instead appears to improve performance in the face of high external visual noise.
Policy of full disclosure: None.

P-08-006

Neuropathological investigation in an autopsy case of schizophrenia with Glyoxalase 1 (GLO1) frameshift mutation

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Objective: Glyoxalase 1 (GLO1) mutation was identified in a subpopulation of schizophrenic patients. It is assumed that impairments of cellular detoxification (e.g. accumulation of Advanced glycation end products (AGEs)) by decreased activity of GLO1 is associated to the pathophysiology of schizophrenia. However, neuropathological findings are not reported in schizophrenic patients with GLO1 mutation. We herein report neuropathological findings in an autopsy case of a schizophrenic patient with GLO1 frameshift mutation.
Methods: The patient was a man aged 69 years at death. At age of 20 years, he had onset of schizophrenia. In addition to routine histological examination, immunohistochemical staining [anti-AGEs, anti-Tyrosine hydroxylase (TH), anti-Neuropeptide Y (NPY), anti-Nogo-A] was performed. There is no conflict of interest to be disclosed. This study was approved by the Nagoya University School of Medicine Ethical Review Board.
Results: The whole brain weighed 1346 g. Microscopically, neuropathological changes of neurodegenerative disease were very mild (neurofibrillary tangles: Braak stage II, senile plaque: Braak stage A, α-synuclein: none, TDP-43: none). In Klüver-Barrera staining, density of myelin was decreased, in white matter of mainly frontal lobe, and temporal and parietal lobe. AGEs were accumulated abundantly in soma and neurite of neuron in the cortex. They were also accumulated in the white matter. We have observed few and sparse TH immunopositive varices, and serpentine and sparse NPY immunopositive fibers. Moreover, in that brain, we have observed the less density of Nogo-A positive oligodendrocytes (OLG) than that of schizophrenia without rare variants.
Conclusion: These phenomena indicate that disruption of neuronal network including catecholaminergic system, GABAergic system and oligodendrocyte-myelin based from accumulation of AGEs might be associated to the pathophysiology of schizophrenia with GLO1 frameshift mutation.
Policy of full disclosure: None.

P-08-007

Prevention of social interaction and dopaminergic deficits in a maternal immune activation neurodevelopmental mouse model by treatment of adolescent offspring with the PDE9 inhibitor BI 409306

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Objective: Maternal immune activation in mice is used to study neurodevelopmental disorders such as schizophrenia. Injection of the viral mimic poly(I:C) in pregnant mice causes disruption of neuronal development of the offspring leading in adulthood to deficits in social behavior and the dopaminergic system. BI 409306 is a selective phosphodiesterase-9 (PDE9) inhibitor currently under development for intervention in patients with Attenuated Psychosis Syndrome (APS) (NCT03230097). PDE9 inhibition is hypothesized to improve the NMDA-receptor signaling cascade by increasing cGMP levels to strengthen synaptic plasticity in individuals with APS. In this study, we have investigated the effect of BI 409306 administered during adolescent age on the behavioral deficits of the adult offspring from the poly(I:C)-based mouse model.
Methods: Pregnant C57BL6/N mice were treated with poly(I:C) (5 mg/kg, i.v.) or control (saline, i.v.) solution on gestation day 12. All offspring ($n = 21–22$/group) were administered orally once daily with BI 409306 (1 mg/kg) or vehicle starting at post-natal day (PND) 30 for 4 weeks or until PND72-114, when they are subjected to a behavioral tests: social interaction, pre-pulse inhibition (PPI) and amphetamine-induced hyperlocomotion. Statistical analyses were done by one-way ANOVA followed by Fisher's LSD post hoc.
Results: Treatment with BI 409306 during adolescence significantly prevented the social interaction deficits ($p < 0.005$) at adult age of the offspring, whereas in addition to that continuous treatment from PND30 until adulthood prevented amphetamine hyper-responsiveness as well ($p < 0.05$). PPI was not affected.
Conclusion: For the first time we could show that treatment with the PDE9 inhibitor BI 409306 during adolescence offsets social behavior and dopaminergic deficits observed in adult offspring of this neurodevelopmental mouse model related to schizophrenia. Thus, our findings support the test of BI 409306 for early intervention in patients with APS.
Policy of full disclosure: None.

P-08-008

A schizophrenia-like behavioral trait in rats and its relationship with striatal and frontal dopamine turnover

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Objective: In rodents, some behaviors are applied to model psychiatric symptoms, but no single test or paradigm adequately captures the disorder's phenotype in toto. Considering this limitation, we have recently employed confirmatory factor analysis (CFA) to behavioral data in an animal model of schizophrenia, the Spontaneously Hypertensive Rats (SHR) strain. CFA allows testing whether a non-observable latent trait (e.g., intelligence, depression, schizophrenia) underlies observable variables (e.g., symptoms). Our data show that a continuous schizophrenia-like trait (SLT) underlies five animals' behavioral responses: locomotor activity, rearing behavior, social interaction, prepulse inhibition of startle and contextual fear conditioning. Interestingly, SLT behaves as a continuum in both strains, with higher values among SHRs, when compared to controls (Wistar rats) (Peres et al. 2018). Here, we aimed to evaluate whether SLT would correlate with neurochemical assessments.
Methods: A cohort of 16 Wistar rats and 16 SHRs were submitted to the aforementioned behavioral assessments. These data were included in the CFA model, and SLT was calculated for each animal. Dopamine and its metabolites levels were measured in striatum and in prefrontal cortex (two brain regions involved in the pathophysiology of schizophrenia) by HPLC for turnover calculation ((DOPAC + HVA)/dopamine).
Results: Dopamine turnover in prefrontal cortex displayed a positive correlation with SLT in both strains. With respect to striatum, dopamine turnover predicted SLT values in a differential manner between strains: there is a positive correlation among SHRs, and a negative correlation among Wistar rats.
Conclusion: Our findings indicate that there is a relationship between a behavioral SLT and dopamine neurotransmission. In prefrontal cortex, the higher the dopamine levels, the higher the SLT. With respect to striatum, our data suggest the existence of a cut point that lies between the strains where the relationship of SLT with dopamine turnover reverses. This cut point may discriminate where the relationship becomes pathological.
Policy of full disclosure: None.

P-08-009

Altered levels of dopamine transporter in frontal pole and associative striatum in schizophrenia: a postmortem human brain study

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Objective: The dopamine hypothesis in schizophrenia has been discussed for several decades. It has been proposed that in schizophrenia there is a hypodopaminergic state in the prefrontal cortex and a hyperdopaminergic state in the striatum; the hyperdopaminergic state in the striatum due to synaptic dopamine elevation, particularly in the dorsal striatum. The dopamine transporter (DAT), which is a regulator of dopamine concentration through the reuptake of dopamine from the synaptic cleft by the pre-synaptic neuron, is one of the molecules that may be involved in the dopaminergic pathophysiology of schizophrenia. Therefore, we measured levels of DAT in the cortex and striatum.
Methods: Levels of DAT were measured in the gray matter from frontal pole (Brodmann's area (BA) 10) and striatum from 15 subjects with schizophrenia and 15 controls using in situ radioligand binding of [3H]mazindol (15 nM) displaced by mazindol (1 μM) quantified using autoradiography. Klüver-Barrera stained sections were referred in order to detect the boundary between the gray matter and the white one within BA10. Approval to collect human tissue was obtained from the Ethics Committee of the Victorian Institute of Forensic Medicine.
Results: Levels of [3H]mazindol were higher in BA10 from subjects with schizophrenia ($t = 3.11$; $df = 19.77$; $p = 0.0055$; Cohen's $d = 1.14$) but lower in the dorsal striatum from those with the disorder ($t = 3.61$; $df = 25$; $p = 0.0013$; Cohen's $d = 1.40$).
Conclusion: The changes in levels of [3H]mazindol imply that levels of DAT are that higher in BA 10 but lower in the striatum from subjects with schizophrenia. We hypothesis that higher levels of DAT in BA10 could be contributing to low synaptic dopamine whereas lower levels of striatal DAT in the striatum could be contributing to a hyperdopaminergic state in that CNS regions.
Policy of full disclosure: None.

P-08-010

The relevance of inflammation for psychosis: A bibliometric study from 1990 to 2018

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Objective: In the last decades, the importance of the role played by inflammation in many chronic disorders has become increasingly evident. In the last years, the research in inflammation this aspect has therefore been accentuated, even in the case of mental disorders such as psychosis. Effectively, the number of publications about the relationship between inflammation and psychosis that has been growing visibly. To better describe this growing trend, this quantitative study examines the pattern of publications of these two topics: "inflammation" and "psychosis/schizophrenia". Our hypothesis was that the curve of publications will have an upward-sloping form.
Methods: We have conducted a bibliometric study focused on two different sources of data: (1) scientific articles on Scopus ad (2) generic entries in Google search. Searches are presented by years from 1990 to 2018 so that an analysis (both graphical and numerical) of the frequency pattern of publications and comparison between both data sources can be done.
Results: The graphical display of both journal articles and web-based publication follows a clear upward slope beginning with 5 journal articles in 1990 (206 Google items) mounting to 448 articles in 2018 (641,000 Google items) in a consistently growing pattern. Yearly increases in both data sources weakly correlate ($r = 0.17$) and while journal articles increased from 1990 to 2018 by a ratio of 1:90, for Google items this ratio was of 1:3112. Similarly, while in 1990 Google items surpassed the number of journal articles by a ratio of 41:1 in 2018 this ratio was of 1431:1.
Conclusion: Both the scientific activity and general interest (as reflected by web-based items) on the topic of inflammation and psychosis/schizophrenia, has experienced a dramatic growth in recent years. However, one might wonder whether the latter pattern of growth is disproportionate with respect to the available scientific evidence.
Policy of full disclosure: None.

P-09 Early recognition and prediction

P-09-001
Early intervention in psychoses—a Singapore perspective

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Objective: Early Intervention in Psychosis was started with the objective of reducing DUP (duration of untreated Psychosis) and stigma, improving outcome and quality of life of those with psychosis and their families and raising awareness about psychosis. DUP and functioning was looked at before and after the initiation of EPIP.
Methods: This was a naturalistic retrospective study. We looked at 2635 consecutive patients under EPIP services since 2001 to 2017 and compared the DUP and functioning and returning to age appropriate roles after initiating the programme. All of them fulfilled the diagnoses in the psychotic spectrum disorders (brief psychotic disorder, Schizophreniform disorder, Schizophrenia, Schizoaffective disorder, bipolar disorder with psychotic features, depression with psychotic features, delusional disorder and psychotic disorder, not otherwise specified). Data relating to duration of untreated psychosis (DUP) and clinical and Sociodemographic characteristics were obtained. Diagnosis was made by the treating psychiatrist using the SCID-1. Positive and Negative Symptom Scale (PANSS) and Global Assessment of Functioning Scale (GAFS)—total, symptoms and disability, and Clinical Global Impressions (CGI)—severity of illness were done.
Results: 85.8% had remission or significant reduction in symptoms as measured by PANSS, 83.7% experienced significant improvement in functioning as measured by GAF and 76.5% returned to performing age appropriate roles. DUP reduced from a median of 12–4 months.
Conclusion: Early Intervention in Psychoses is effective in reducing DUP and improving functioning and helps in better engagement of patients.
Policy of full disclosure: None.

P-09-002
Cognitive impairments in individuals at clinical high-risk for psychosis: relationships to clinical symptoms and functioning and prediction of functional outcome

K. Haining (University of Glasgow), Troon, UK

Objective: Research in individuals at clinical-high risk (CHR) for psychosis has focused on developing algorithms to predict transition to psychosis. However, it is becoming increasingly important to also address continuous measures of outcome, such as functional status. This study investigated the relationship between cognitive performance, clinical symptoms and functioning at baseline as well as predictors of poor functional outcome (PFO) at 6- and 12-month follow-up.
Methods: Data was available for 132 CHR individuals at baseline, 96 at 6 months and 79 at 12 months. In addition, 47 CHR-negative (CHR-N) participants who did not meet CHR criteria and 55 healthy controls (HCs) were recruited. At the Universities of Glasgow and Edinburgh, CHR status was assessed using the Comprehensive Assessment of At-Risk Mental States (CAARMS) and the Schizophrenia Proneness Instrument, Adult version (SPI-A) while cognition was assessed by the Brief Assessment of Cognition in Schizophrenia (BACS) and the Penn Computerized Neurocognitive Battery (CNB). Global, social and role functioning scales were used to measure functional status. The primary outcome variable was Global Assessment of Functioning (GAF) score at 6- and 12-month. Data was analyzed using linear and logistic regression analyses.
Results: Impairments in emotion recognition, verbal memory and processing speed were associated with clinical symptoms and functioning at baseline, explaining between 4% and 19% of the variance. PFO at 6-month was predicted by impairments in attention and processing speed, working memory, global functioning and role functioning, while reduced attention accuracy and poor global functioning predicted PFO at 12-month. The areas under the curve for the 6- and 12-month prediction models were 0.871 and 0.782, respectively, demonstrating high discriminative abilities.
Conclusion: These findings highlight the potential utility of cognitive measures to predict functional outcome in CHR-participants. In addition, the current findings highlight the importance of interventions to address poor functioning and cognitive impairments in emerging psychosis.
Policy of full disclosure: None.

P-09-003
Psychopathological symptoms associated with global functional outcome in ultra-high-risk individuals and patients with first-episode psychosis

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Objective: Ultra-high-risk for psychosis (UHR) and first-episode psychosis (FEP) are considered to be different clinical stage. Recent studies suggested that UHR is a heterogeneity group compared to FEP. Although both groups are defined by positive symptoms, it is not clear whether patients with UHR and FEP individuals have different relation between their symptoms and long-term functional outcome. The aim of the present study was to examine the relationship between these symptoms and global functional outcome.
Methods: The participants included 26 UHR individuals and 24 patients with FEP. The Structured Interview for Prodromal Symptoms was used to select UHR individuals. We assessed global function using the Global Assessment of Functioning (GAF) scale and psychopathological symptoms (positive, negative and general psychopathological symptom) using the Positive and Negative Syndrome Scale (PANSS) at baseline and at follow up after 1–3 year. We calculated partial correlation coefficients between PANSS scores and GAF scores adjusting for age, years of education and antipsychotic dose.
Results: The correlational analyses revealed that general psychopathological symptom at baseline was significantly associated with GAF score at follow-up in UHR ($r = -0.70$, $p < 0.01$). In FEP, changes in all sub-item scores of PANSS between baseline and follow-up were associated with a change in GAF score between baseline and follow-up significantly associated with (positive symptom: $r = -0.50$, $p < 0.01$, negative symptom: $r = -0.46$, $p < 0.01$, general psychopathological symptom: $r = -0.56$, $p < 0.01$).
Conclusion: Psychopathological symptoms had different relation with global functional outcome between UHR and FEP. Among UHR individuals, general psychopathological symptom (e.g. depression, anxiety and luck of judgement and insight) may be a predictor of long-term functional outcome and an effective treatment target. Among FEP patients, improving psychopathological symptoms, may effect on global functional improvement. However, severity of these early symptoms may be not suitable for prognostic predictor.
Policy of full disclosure: None.

P-09-004
Stress and psychosis: a scoping review of the socioenvironmental factors predisposing people to psychotic disorders

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Objective: Limited understanding about the aetiology of psychotic disorders inhibits the treatment and prevention of these conditions. This paper will clarify the current evidence about the nature and strength of socioenvironmental factors as risks for developing psychotic disorders. This evidence will consequently identify how studies on psychotic disorders in indigenous populations can improve our understanding of these factors while reinforcing indigenous mental health services.
Methods: As this research aims to examine the extent and nature of existing research, a scoping literature review was identified as the appropriate study method. Six databases were searched for relevant papers, with hand-searching also performed.
Results: Four broad categories of socioenvironmental risk factors were identified. Living in urban settings is a risk factor for psychotic disorders, independent of the 'social drift' phenomenon. A traumatic childhood is consistently associated with the development of psychosis in adulthood. Although migrants show higher rates of psychosis, the evidence suggests the risk is not in the process of migration but in the ostracism of those migrant groups. Studies examining the link between social marginalization and psychosis find that a range of socioenvironmental stressors contribute to the development of psychotic disorders.
Conclusion: Increasing evidence indicates that psychosis is one of the many adverse outcomes of social inequality. Psychotic disorders may not only be the cause of vulnerability but also a result, highlighting the critical need of those with the disorders for the support of their health services and communities. In colonized countries such as Australia where the rates of psychotic disorders are significantly higher amongst indigenous populations, the government has a duty to respond to this need and address the disadvantages leading to these chronically poor health outcomes. The development of mental health services tailored to the needs of indigenous populations is key to stopping the perpetuating cycle of social disadvantage.
Policy of full disclosure: None.

P-09-005
Is schizotypic maternal personality linked to sensory gating abilities during infancy?

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Objective: The influence of maternal personality on childhood risk factors for mental health is widely acknowledged with links identified between parental psychopathology and event-related potentials (ERPs). Core neuropsychological dysfunctions of potential future psychopathologies may be present during childhood, shaping the development of adult personality. Schizotypy is a personality dimension within the general population elevated among the schizophrenia-spectrum and their first-degree relatives. Sensory gating is the pre-attentional habituation of responses distinguishing between important and irrelevant information, which are atypical in schizophrenia.
Methods: The present research investigated whether 6-month-old infants of schizotypic mothers display sensory gating abnormalities. A paired-tone paradigm: two identical auditory tones, stimulus 1 and stimulus 2, probed neural activation during 15-min of sleep. Mothers completed the Oxford and Liverpool Inventory of Feelings and Experiences-Short Form as an index of schizotypy dimensionality. Thirty-five infants and fifty-three mothers were included in final analyses.
Results: The infants' P50 ERPs displayed differences between stimulus 1 and stimulus 2 [$t(34) = 2.062$, $p = 0.047$], with no clear group distinction. A series of significant correlations were observed between suppression ratio/ differences measures and maternal schizotypy. This could be perceived as the beginning of individual differences, although deficits are not robust enough to drive distinctions. The maternal cohort displayed differences between Stimulus 1 and 2 [$F(1, 51) = 8.56$, $p = 0.005$], but also dissociations between groups [$F(1, 51) = 6.14$, $p = 0.017$]; control mothers illustrated differences between stimulus 1 and 2, whereas the schizotypic mothers illustrate a deficit compliant with that across the schizophrenia-spectrum.
Conclusion: Sensory gating can be detected in 6-month-old infants although no group differences were observed. The infants of schizotypic mothers appear not to be at higher risk than normal, at least at 6-month-of age. The sensory gating deficit observed among schizotypic mothers supported the continuous nature of the schizophrenia-spectrum and sensory gating as a stable endophenotype.
Policy of full disclosure: None.

P-09-006
Polygenic risk, stress sensitivity and psychosis: an experience sampling study

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Objective: Recent years have seen significant advances through genome-wide association studies, suggesting that genetic risk of psychosis is broadly distributed and can be operationalized by polygenic risk scores (PRS). There is also evidence that stress sensitivity, characterized by greater emotional reactivity and more intense psychotic experiences in response to minor stressors in daily life [measured with Experience Sampling Methodology (ESM)], is elevated in individuals with an increased familial risk of psychosis, but, to date, there is no molecular genetic study to investigate this issue. This study aimed to investigate whether stress sensitivity is elevated in first-degree relatives of patients with non-affective psychosis and healthy controls with higher PRS for schizophrenia.
Methods: A total of 80 first-degree relatives of patients with non-affective psychosis and 73 healthy controls completed the 6-day ESM protocol to assess stress sensitivity for whom the PRS was calculated in the GROUP study. Linear mixed effects models were used to examine whether stress sensitivity was elevated in first-degree relatives and healthy controls with higher PRS for schizophrenia.
Results: We found that the association between minor stressors and negative affect was significantly greater in both first-degree relatives (likelihood ratio test (LRT) for stress × PRS, Chi-square = 4.0, $p = 0.046$) and controls (LRT for stress × PRS, Chi-square = 5.4, $p = 0.021$) with higher PRS, while controlling for confounding. Also, minor stressors were associated with an increased intensity of psychotic experiences in first-degree relatives (LRT for stress × PRS, Chi-square = 8.7, $p = 0.003$) and controls (LRT for stress × PRS, Chi-square = 5.2, $p = 0.032$) with higher PRS.
Conclusion: Our findings suggest that polygenic risk amplifies emotional reactivity and increases intensity of psychotic experiences in response to minor stressors in daily life. Given polygenic risk is elevated in first-degree relatives, it may impact on individuals to a greater extent via these pathways in this population.
Policy of full disclosure: None.

P-09-007
A mobile-based app to monitor social functioning for youth at-risk of psychosis: feasibility study

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Objective: (1) To test initial usability of an app (SOMO, (fig. 1)); and (2) to confirm that SOMO is acceptable, feasible, and safe to monitor daily social functioning among youth at clinical high-risk (CHR) for developing psychosis.
Methods: Participants: 24 CHR participants (12–30 years old) used SOMO for 2 months to test its initial feasibility to monitor social functioning. Measures: (1) SOMO comprises 13 daily questions regarding social interactions in-person or online covering: type of relationship, time spent together, quality of the interaction, activities done, conflict and resolution, meaningfulness of the interaction, subjective opinion of the socialization, and level of loneliness. (2) Social functioning was assessed with the Social Functioning Scale (GF:S), which assesses peer relationships, peer conflict, age-appropriate intimate relationships, and involvement with family members. (3) Qualitative data of the SOMO was gathered through the 23-item Mobile Application Rating Scale (MARS) covering questions about engagement, functionality, aesthetics, information provided, and subjective quality of SOMO. Analyses. (a) Descriptive information of (1) usability data (i.e., loggings, social relationships, ad meaningfulness) and (2) the app quality ratings (i.e., engagement, functionality, aesthetics, and information) was collected.
Results: There were 750 loggings over the 2-month testing period, with 50% of participants logging in at least every other day. Participants had 690 in-person interactions and 497 online interactions. The most meaningful interactions were considered the ones with their partner, followed by interactions with friends, casual friends, family, others and strangers in-person respectively. Participants reported conflict in 18.2% of their interactions. SOMO obtained a high overall score on the MARS (M = 4.38). Ratings for engagement (M = 3.91), functionality (M = 4.54), aesthetics (M = 4.56), information (M = 4.51), subjective score (M = 3.89), and perceived impact in behavior (M = 3.52) were higher than other relevant mHealth apps. All participants rated SOMO as safe. Social functioning did not change significantly after using SOMO.
Conclusion: SOMO demonstrated initial acceptability, feasibility, and safety among CHR participants.
Policy of full disclosure: None.

Figure 1. Principal components of SOMO – Mountains background

P-09-008
Predictors of psychosis in methamphetamine users

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Objective: Methamphetamine-associated psychosis (MAP) is an increasing health problem, but it may develop only in a subset of methamphetamine (MA) users. This study examined factors related to recent MAP among individuals recently using MA.
Methods: Individuals recruited into the study included those aged 18 years or more, of both sexes, who reported MA use in the month prior to admission. Any recent psychosis was confirmed using the Mini International Neuropsychiatric Interview—Plus, Psychotic Module. Quantitative hair analysis was carried out to confirm recent use of MA and measure the amount of MA use. We compared several characteristics between those who had recently experienced psychosis and those who had not.
Results: This study included 120 participants who had not experienced psychosis and 113 participants who had. The mean age was 28 years and mean abstinence was 17 days. The levels of MA concentration in hair were not significantly different between groups ($p = 0.115$). Based on the final logistic regression model, the independent factors associated with MAP (odds ratio, 95% confidence interval) included being male (4.02, 1.67–10.90), $\geq$ 16 days of MA use in the past month (2.33, 21.23–4.52), MA dependence (9.34, 2.44–61.84), hospitalization history related to substance abuse (3.68, 2.00–7.00).
Conclusion: Health professionals should closely monitor the development of MAP in MA-dependent men who frequently use MA and have a history of hospitalization for substance abuse. Hair analysis may add no benefit for the prediction of the development of MAP.
Policy of full disclosure: None.

P-10 Diagnosis/comorbidity

P-10-001
First episode psychosis and comorbid ADHD, autism and intellectual disability

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Objective: Comorbidity between neurodevelopmental disorders and psychotic disorders is common, but little is known about how neurodevelopmental disorders influence the presentation and outcome of first episode psychosis.
Methods: A nation-wide cohort (n = 2091) with a first hospitalization for psychosis between 2007–2011 and at ages between 16–25 at intake was identified from Swedish population registries. Comorbid diagnoses of neurodevelopmental disorders were identified at first psychosis hospitalization and for ADHD also by dispensations of psychostimulants before the first psychosis hospitalization. Data from the registers on hospitalizations and dispensations of antipsychotic and psychostimulant medications during the year before and 2 years after the first psychosis hospitalization were analysed. Self-harm and substance use disorders were identified by ICD10 codes at hospitalizations.
Results: 2.5% of the cohort was identified with a diagnosis of intellectual disability, 5.0% with autism and 8.1% with ADHD. A larger proportion of cases with Autism (OR = 1.8, $p < 0.05$) and intellectual disability (OR = 3.1, $p < 0.01$) were using antipsychotic medication year 2 compared to the rest of the cohort. Delusional disorder was

more common in the autism group (OR = 2.3, $p < 0.05$) at first psychosis hospitalization. ADHD was associated with higher risks for substance use disorders and self-harm both before and after the first psychosis hospitalization. Year 2 substance use disorder had a OR = 2.6 ($p < 0.001$) and self-harm OR = 4.1 ($p < 0.001$).
Conclusion: Psychosis with comorbid ADHD is associated with high risks for substance use disorders and for self-harm, while psychosis with comorbid autism and intellectual disability is associated with longer treatment and higher doses of antipsychotic medication.
Policy of full disclosure: None.

P-10-002
Overlapping deficits in Autistic Spectrum Disorders, Schizophrenia and Schizophrenia Spectrum Disorders

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Objective: Exploration of overlapping deficits in Autism Spectrum Disorders (ASD), Schizophrenia and Schizophrenia spectrum disorders (SSD).
Methods: 30 articles obtained on literature search: databases EMBASE, PsychINFO, Medline, CINAHL—search items were Schizophrenia, Autism, Asperger Syndrome and Differential diagnosis.
Results: Overlap exists in genetic risk loci for ASD and SSD including set of copy number variant loci and specific genes e.g. CNTNAP2 and NRXN1. Hypotheses include underdeveloped vs dysregulated overdevelopment of social—brain phenotypes (Crespi 2010). ASD, high risk of psychosis and first episode psychosis share atypical language and social neurodevelopment features (Seymour 2011). Autistic children can present with adolescent psychosis. Childhood or adolescent onset Schizophrenia may also show autistic features. Autistic adolescents may show schizophrenia spectrum traits including social communication deficits, schizotypy, disorganisation and bizarre behaviour. Differences exist in age of onset, interest in others, main positive symptoms, anatomical abnormalities. ASD patients are more rigid, have more difficulties set shifting, have more theory of mind and empathy deficits, get more upset with routine change than those with schizophrenia. Interference management possibly differentiates children with ASD who developed schizophrenia later. Both Schizophrenia and ASD score highly on self-reported Autism Spectrum Quotient compared to non-clinical group.
Conclusion: Phenotypic similarities and common risk factors question dichotomous separation of Schizophrenia and ASD highlighting potential for misdiagnoses. Genetic and neuroanatomical research suggests that both are neurodevelopmental. ASD may be the vulnerability to Schizophrenia alongside the comorbidity. Anamnesis from developmental perspective and molecular genetic studies may alter diagnostic categories. Continuum from intellectual disability through ASD to Schizophrenia model and dual diagnosis of ASD in Schizophrenia may tailor therapeutic strategies. Research needed on ASD in treatment resistant psychosis, age of onset, childhood onset Schizophrenia and comparative responses to neuroleptics. Collaborative efforts between child and adult psychiatry are vital.
Policy of full disclosure: None.

P-10-003
Pseudoneurotic schizophrenia and Borderline personality organization. Notes on a case report

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Objective: Pseudoneurotic schizophrenia describes a subgroup of patients presenting prominent anxiety symptoms disguising a latent psychotic disorder, in whom theoretically the psychic defence system was still capable of utilizing neurotic reactions for the preservation of the adaptive ego function. Although this diagnosis has been abandoned by recent classification systems, current focus on pre-psychotic stages of schizophrenia has broaden the field of psychosis towards borderline and even neurotic symptomatology, reverbing the clinical intuition of earlier descriptivists, and paralleling the psychodynamic postulate of a continuum model of personality organization. The authors propose to review the classic concept of pseudoneurotic schizophrenia, presenting a case that meets criteria, while arguing that borderline personality organization could be a more comprehensive hypothesis.
Methods: Pubmed, PsycInfo and Google Scholar databases were searched, applying the search terms pseudoneurotic schizophrenia, borderline personality organization. Only articles written in English, Portuguese or Spanish language, published in peer reviewed journals, were eligible. The clinical process of the patient was consulted.
Results: The authors report the case of a young woman referred to psychiatric consultation presenting with depressive and anxiety complaints in an apparently anankastic personality. Throughout treatment, the patient showed a mosaic of pan-neurotic symptoms and quasi-psychotic phenomena with only partial response to optimized pharmacological strategies, while eliciting strong and polarized countertransference from the psychotherapeutic team.
Conclusion: The case reported demonstrates the clinical and diagnostic difficulties when approaching patients presenting ever changing symptomatology. Integration of different theoretical models may benefit patients the most, without subjugation to a strict atheoretical diagnostic.
Policy of full disclosure: None.

P-10-004
Intimate partner violence amongst patients diagnosed with severe mental disorder

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Objective: Intimate partner violence (IPV) has a remarkable impact on individuals' and communities' mental health. Traumatic experiences, including interpersonal and intimate violence, are more common in people diagnosed with severe mental disorders (SMD) than in general population.
Methods: We conducted a cross-sectional study of 102 adult patients diagnosed with schizophrenia, bipolar disorder or schizoaffective disorder. All patients were clinically stabilized at the time of study. Epidemiological, biographical and clinical data were collected using clinical records and the Traumatic Life Events Questionnaire (TLEQ). Answers to items 11d + 20d (intimate partner psychological violence) 14 (intimate partner physical violence), and 18d (intimate partner sexual violence) were combined in order to obtain a global estimation of lifetime IPV experiences. We compared answers by gender, diagnosis, comorbidity with posttraumatic stress disorder

(PTSD) and history of childhood abuse by performing chi-squared analysis.
Results: 52.9% of the sample were male. Mean age was 39.4 (SD 10.4) years. The most common diagnosis was schizophrenia (51%). 24.5% (15% of men and 35% of women, $p = 0.016$) reported at least one lifetime episode of IPV victimization of some kind (psychological, physical, and/or sexual). Physical abuse was most frequently reported (21% overall; 15% of men, 27% of women, $p > 0.05$). Patients with a history of childhood abuse were nearly 5 times more likely to have suffered IPV (OR = 4.7, $p = 0.002$). No differences were detected by main diagnosis or PTSD comorbidity.
Conclusion: Our research supports gender, childhood trauma and mental disorders as relevant factors in IPV analysis and prevention. Results are in line with current literature. Several ethiopathogenic frameworks could help explain results, including diathesis of the trauma, psychosocial vulnerability to revictimization and intersectional feminist theory. Though findings are plausible and inspiring, our study design was not optimal for a thorough analysis of IPV amongst patients with SMD, nor conceived from a gender perspective.
Policy of full disclosure: None.

P-10-005
Support for adolescents and young adults (AYA) with 22q11.2 deletion syndrome

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Objective: Children's life prognosis has been improved because of the development of perinatal and pediatric medicine. Thus, it has become possible for children with special health care needs (CSHCN) to reach adolescents and young adults with special health care needs (AYASHCN). Along with that, the importance of seamless transition from childhood medical care to adult medical treatment is increasing when CSHCN goes to AYASHCN. Not only in medical care but also in social welfare and education, it is necessary to provide growth-promoting support.
Methods: We had a lot of meetings with associations of families and people with 22q11.2 deletion syndrome and started outpatient clinic for 22q11.2 deletion syndrome. We roughed out about their diverse needs from our clinical experiences. Through the narrative of persons with 22q11.2 deletion syndrome and their families, who have overlap of three disabilities of physical, mental, and intellectual, we reconsidered integrated care for AYA with intractable diseases in Japan.
Results: Since childhood, they often experience physical disorders including congenital heart disease and intellectual disorders. They also often suffer from psychotic symptoms like schizophrenia with onset from AYA. The overlap of three disabilities of physical, mental, and intellectual, makes their lives extremely hard. Thus, they need integrated and tailored care. However, existing standard frameworks of supports are not flexible. Physical and mental healthcare systems are dichotomized. Supports for children and adults are divided, despite the importance of support that enables them to actively decide their own way of life and choose services as "adults".
Conclusion: We have to improve our medical and social welfare systems to develop inclusive society, which can support children continuously along with their physical and mental growth. Seamless transition from childhood to adult health care and medicine, integrative medical care of physical and mental disorders, and better access to welfare and educational system are needed.
Policy of full disclosure: None.

P-10-006
Early prevention of dental caries in newly diagnosed schizophrenia: a population-based cohort study

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Objective: Compared to the general population, patients with schizophrenia have a high incidence of dental caries. However, evidence about early development of dental caries in schizophrenia is scant. This study was to investigate the association with risk factors for dental caries in patients with newly diagnosed schizophrenia.
Methods: We enrolled a nationwide population-based cohort of patients with newly diagnosed schizophrenia within 1 year of periodontal disease development in Taiwan. Exposure to antipsychotics was categorized according to their type and duration, and the association between exposure and dental caries was evaluated through logistic regressions.
Results: Of the 3,610 patients with newly diagnosed schizophrenia, 2,149 (59.5%) had an incidence of treated dental caries. Younger age, female sex, high income level, a 2-year history of dental caries, and exposure to first-generation antipsychotics, and antihypertensives were independent risk factors for treated dental caries. Hyposalivation, the adverse effect of first-generation antipsychotics and antihypertensives, was potentially associated with an increased risk of treated dental caries. Therefore, hypersalivation from first-generation antipsychotics for treated dental caries was associated with a protective factor.
Conclusion: The present study emphasizes early prevention of dental caries in patients with schizophrenia. Besides paying more attention to the aforementioned risk factors, helping with oral hygiene, and decreasing consumption of tobacco, alcohol, and sugary drinks, we highlighted that the clinic should avoid prescribing concomitant antipsychotics, particularly first-generation antipsychotics and antihypertensives, as possible as could to schizophrenic patients.
Policy of full disclosure: None.

P-10-007
Leptin and adiponectin reflecting cardiovascular risk in psychotic disorders

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Objective: Psychotic disorders (PD) are associated with low-grade inflammation, increased body weight and cardiovascular disease (CVD) risk. Leptin and adiponectin are adipose tissue derived cytokines (adipokines) with atherogenic and anti-atherogenic properties, respectively. We hypothesized that leptin, adiponectin or their ratio could be associated with enhanced CVD risk in PD, independent of BMI and other cardio-metabolic risk factors.
Methods: We measured fasting plasma levels of leptin and adiponectin in 818 patients with PD (schizophrenia- or bipolar -spectrum disorder) and in 59 healthy controls (HC). We calculated the leptin/adiponectin (L/A) ratio and atherogenic lipid ratios total cholesterol/high-density lipoprotein; HDL-c (TC/HDL) and triglyceride/HDL-c (TG/HDL) as markers of CVD risk. Partial correlation (adjustment: age, sex, BMI and insulin resistance) and logistic regression analysis (adjustment: same as partial + DDD antipsychotic treatment, smoking and CRP) was used to evaluate association with lipid ratios and CVD.

Results: Evaluating atherogenic lipid ratios as continuous variables by partial correlation analysis revealed negative associations between adiponectin and TG/HDL and TC/HDL ($r = -0.30$, $p < 0.001$ for both) and a positive association with the L/A ratio ($r = 0.27$ and 0.25, $p < 0.001$, respectively). Significant associations were not observed in controls. Further evaluation of CV risk within patients using logistic regression with established sex-adjusted cut-offs for the lipid ratios revealed a 105% higher risk of elevated TG/HDL per SD increase in L/A ratio (HR 2.05, 95% CI 1.40–2.99, $p < 0.001$) and 54% higher risk of elevated TC/HDL per SD decrease in adiponectin (HR 0.65, 95% CI 0.51–0.84, $p = 0.001$).
Conclusion: Adiponectin and the L/A ratio are associated with atherogenic risk in PD, beyond established cardio-metabolic risk factors such as BMI, low-grade systemic inflammation and insulin resistance. Modification of adipokines through dietary and physical intervention may be beneficial for reducing CV risk in PD.
Policy of full disclosure: O.A.A. has received speaker's honorarium from Lundbeck. All other authors repot no conflicts of interest.

P-10-008
Somatogenically provoked schizophrenia episodes in patients with Hodgkin's lymphoma

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Objective: Somatic diseases and their conditions sometimes responsible for the development of psychotic states. Hematological malignancies and their treatment could lead to such conditions. The aim of this research is to study the features of manifestations of schizophrenia episodes in patients with Hodgkin's lymphoma.
Methods: In sample N = 76—eight patients with somatogenically provoked hallucinatory-paranoid episodes of schizophrenia were identified by clinical-psychopathological method.
Results: The psychopathological structure of psychosis was determined by a combination of endogenous and somatogenic pathology. Along with the common signs of somatogenic psychoses (confusion with disorientation in time and place, psychomotor agitation, daily fluctuations with an increase in evening and night-time) there are also psychopathological disorders inherent in endogenous-process disease were detected in the debut of psychosis. Later, as the patient's somatic condition normalized with the reverse development of consciousness disorders and other somatogenic disorders, the manifestations of psychosis did not reduce, but acquired the syndromically complete nature of a psychotic episode within paroxysmal schizophrenia. Thus, the improvement of the physical condition was accompanied by the crystallization of delirium (impact on thoughts and actions by personnel, including with the help of medical equipment), the change of frightening visual hallucinations with verbal pseudo-hallucinations. The manifestation of hallucinatory-delusional symptoms was accompanied by aggression with attempts of physical violence against the "pursuers"—health workers and neighbors in the ward. In cases of somatogenically provoked episodes of schizophrenia, endogenous psychosis acquired a protracted course; remission was formed only after 2.5–3 months, even with adequate therapy
Conclusion: Hematologists in their daily practice should take into consideration the likelihood of the development of somatogenous episodes of schizophrenia in patients with Hodgkin's lymphoma, which should be managed with the direct involvement of a psychiatrist.
Policy of full disclosure: None.

P-11 Drug and alternative treatment

P-11-001
Antipsychotic treatment at a newly established early psychosis inpatient unit

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Objective: Specialist early intervention services have been shown to improve patients' outcome with early and adequate antipsychotic treatment being an important determinant. Atypical antipsychotic monotherapy with the lowest effective dose regimen is recommended for first episode psychosis (FEP). The aim of this study was to assess psychopharmacological treatment of patients with FEP at a newly established early psychosis inpatient unit within a general psychiatric service in a general hospital.
Methods: Charts of all patients admitted to the early psychosis inpatient unit of the Clinical Division of Social Psychiatry of the Medical University of Vienna between 01.01.2016 and 31.03.2017 were assessed. FEP consisted of a first episode of affective, schizophreniform, acute polymorphic, organic or substance-related psychosis according to ICD-10.
Results: 127 patients were admitted during the said period, among whom 91 (71.7%) were diagnosed with psychosis at time of discharge. 39.6% (n = 36) of those had a FEP, whereof 58.3% (n = 21) were diagnosed with schizophreniform, schizotypal or delusional psychosis, 27.8% (n = 10) with affective psychosis, 11.1% (n = 4) with substance-related psychosis and 1.8% (n = 1) with organic psychosis as main diagnosis at time of discharge. Atypical antipsychotic monotherapy at discharge was prescribed in 75% (n = 27) of FEP cases with no clear difference regarding sex distribution (73.7% of men, 76.5% of women). 66.7% of patients with schizophrenia-spectrum disorders, 80% of those with affective disorders, and 100% of those with either substance-induced or organic psychoses received antipsychotic monotherapy. The other 25% (n = 9) of FEP patients were discharged with a combination of two atypical antipsychotics. Additional psychopharmacological medication was prescribed in 38.9% (n = 14) of FEP cases.
Conclusion: Challenges in offering specialized early psychosis service within general psychiatry may include structural issues as well as establishment of compliance to guidelines. This first descriptive overview of a newly established service shows large guideline-conformity regarding antipsychotic treatment.
Policy of full disclosure: None.

P-11-002
Use of long acting injectable in a brief hospitalization unit: Incidence in the stay of patients diagnosed with schizophrenia (3 years follow-up)

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Objective: We intend to evaluate the use of long-acting injectable antipsychotics in a population diagnosed with schizophrenia, in a Psychiatric Brief Hospital Unit (BHU) and see the impact on the management of the unit and the quality of life of patients.
Methods: Retrospective, cross-sectional naturalistic study on the use of long acting injectable antipsychotics in a psychiatric hospital unit for adults over a period of 3 years (2015, 16 and 17). 12 months of

follow-up to determine the rates of abandonment of treatment, the use of antipsychotic therapy, change of treatment and re-admissions. It is compared with oral antipsychotics and we see differences by age groups ($\leq$ 35 years vs. $>$ 35 years), in the statistical analysis, we apply averages, rates, percentages, Pearson correlation coefficient and linear regression
Results: Pearson correlation:—polytherapy, presents significant correlation with: o Days of admission: ($P < 0.0005$) o Change of treatment before 1 year: ($P < 0.002$) Linear regression:—Polytherapy predicts it significantly: o Re-admissions of patients with LAI ($P < 0.007$) o Re-admissions of patients with ORAL ($P < 0.009$) o Changes in treatment before 1 year after discharge ($P < 0.02$) o Days of admission ($P < 0.005$) Average stay of patients diagnosed with Schizophrenia in these 3 years:—There is a reduction of 6.82 days, going from 26.4 days in 2015 to 19.58 days in 2017
Conclusion: We observe an increase in the use of LAIs that, in addition to increasing spending, have an impact on better management and a higher quality of life:—decreases readmissions / relapses—decreases polytherapy—decreases the average stay—the use of LAI in population <= 35 year, presents a lower rate of readmissions
Policy of full disclosure: None.

P-11-003
Use of clozapine and long acting injectables antipsychotics, alone and in combination, in 3 years period in an adult psychiatric unit

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Objective: (1) Analyze the incidence of serious side effects, (2) compare the incidence of rehospitalization and premature change/abandonment of treatment. (3) See differences between patients of different ages ($\leq$ 35 years vs $>$ 35 years)
Methods: Transverse retrospective naturalistic analysis of the use of long acting injectable antipsychotics, Clozapine and the combined use of both, in a brief psychiatric hospitalization unit, and 1-year follow-up after hospital discharge, in relation to rehospitalization and premature change/abandonment of the treatment after discharge, Excel is used for graphs and spss 24 for descriptive statistics (Pearson correlation and linear regression, rates and %)
Results: The total number of patients prescribed Clozapine is 56 patients, of which 28.5% are 35 years old or younger and 71.43% are over 35 years old; Of these, 19.64% are women and 80.36% are men Of the patients with the combination Clozapine + LAI, there are 39 patients (12 in 2015; 16 in 2016; and 11 in 2017), 69.64% of the total of patients with clozapine, Re-enter before the year 13 patients of 39: 33, 33% in the 3 years (2015–16 and 17), Of those who only use clozapine without combining with anything, there are 17 patients (7 in 2015, 4 in 2016, and 6 in 2017), 30.36% of all patients with clozapine, re-enter before the year 4 patients of 17 : 23.53%
Conclusion: During the 3 years, no incidence has been recorded due to serious side effects in the use of clozapine, neither in monotherapy nor in combination with LAIs antipsychotics, there is a significant correlation between the maintenance of the treatment and the non-readmissions and also with the use of polytherapy—the combination therapy predicts better the maintenance of the treatment for more than 1 year—re-admissions better predict the non-maintenance/abandonment of treatment.
Policy of full disclosure: None.

P-11-006
Persistent hyperprolactinemia in a chronic schizophrenic patient with partial empty sella, after amisulpride initiation

G. Thomaidis (Papanikolaou General Hospital, Psychiatric Department), Thessaloniki, Greece; P. Angos, K. Papadimitriou, A. Simitsi, M. Yavropoulou, A. Vlachaki, A. Kyrannas

Objective: To describe an unusual case of hyperprolactinemia, in a patient with partial empty sella and investigate on its causal factors. Empty sella and partial empty sella are rare neuroimaging entities, connected to hyperprolactinemia. Amisulpride is one of the second-generation antipsychotics (SGA), connected to prolactin levels elevation. Mechanical pressure on the Hypothalamic–pituitary axis contributes to hyperprolactinemia.
Methods: A 28-year old female patient with resistant, chronic schizophrenia, treated consistently and as a last line of therapy, with clozapine and quetiapine, was hospitalized (November–December 2017), after relapse. Patient appeared with menstrual circle disorders during the last 6 months after clozapine initiation, obesity and increased facial hair growth. Prolactin levels had been measured before hospitalization (06.09.2017 1687 mIU/L, moderate hyperprolactinemia). Clozapine was continued. Quetiapine was interrupted and amisulpride was initiated, leading to symptom remission. During a second hospitalization, remission from psychiatric symptoms was observed, but elevated arterial pressure was measured (systolic: 150–170 mm Hg), symptoms of amenorrhea became persistent and prolactin levels, measured at 3013 mIU/L (10.01.2018). MRI revealed partial empty sella with slight pressure on the frontal pituitary lobe (fig. 1). Amisulpride was discontinued and clozapine was continued as monotherapy, in higher dosage.
Results: Prolactin levels at 08.02.2018, were 1451 mIU/L ($\sim$ 60% reduction), decreased compared to previous measurements. Psychiatric symptomatology remained stable, the patient was discharged from hospital and the patient continues symptom—free for $>$ 1 year. Prolactin levels remained high after treatment and bromocriptine was initiated, resulting to prolactin level suppression (1255 mIU/L at 07.05.2018 and decreasing after this date) and menstrual circle restoration.
Conclusion: Hyperprolactinemia can be managed properly in the clinical setting, even if unusual comorbid factors are present. A mechanical model is briefly proposed for empty sella related hyperprolactinemia, including elasticity theory for some cases.
Policy of full disclosure: None.

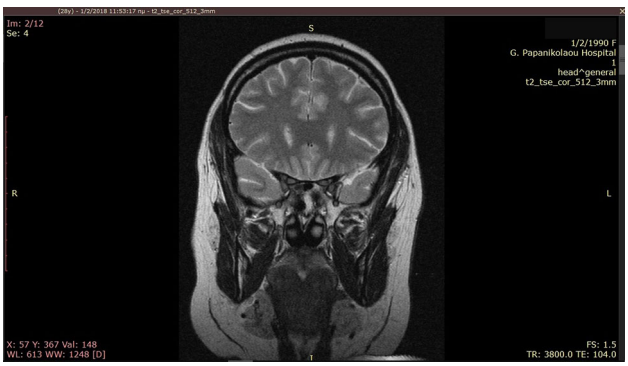

Fig. 1 Patient MRI 01.02.2018

P-11-007
Improvement of antipsychotic-induced hyperprolactinemia with the addition of aripiprazole

M. Aydin (Selçuk University, Department of Psychiatry), Konya, Turkey; U. Egilmez, K. Altinbas

Objective: Antipsychotics can affect the tuberoinfindubular pathway and cause hyperprolactinemia. Hyperprolactinemia is known to cause amenorrhea, oligomenorrhea, galactorrhea, gynecomastia, bone loss and sexual dysfunction. These side effects increase risk of antipsychotic nonadherence and pose problems in the long-term management of patients. Aripiprazole, a partial dopamine D2 receptor agonist, can lower prolactin concentrations and potentially reduce prolactin-related effects when given with antipsychotics. In this presentation, we describe patients who developed symptomatic hyperprolactinemia while taking antipsychotic treatment and which improved with the introduction of aripiprazole.
Methods: The files of patients with hyperprolactinemia due to antipsychotic use were retrospectively analyzed. The patients who treated with aripiprazole for the treatment of hyperprolactinemia and whose treatment had not changed for at least 1 year were included. Sociodemographic-clinical features and prolactin levels were obtained from the files of Selcuk University, Faculty of Medicine, Department of Psychiatry.
Results: A total of 12 schizophrenic female patients were included in the study. The mean age of the patients was 45.58 $\pm$ 10.15; the period of antipsychotic drug use was 12–60 months (mean 23.67 $\pm$ 15.13); paliperidone palmitate doses (n = 9) 75–150 mg (mean 102.78 $\pm$ 29.17), clozapine 500 mg/day, amisulpride 400 mg/day; haloperidol 10 mg/day; haloperidol decanoate 200 mg/month; initial PANSS scores were 49.58 $\pm$ 6.52, and PANSS scores after treatment were 47.92 $\pm$ 7.42. Prolactin values of the patients before the addition of aripiprazole were 135.92 $\pm$ 62.90; Prolactin levels were determined as 40.55 $\pm$ 24.03 after addition of aripirazole. The dose of aripiprazole added for the treatment of hyperprolactinemia ranged from 2.5 to 15 mg/day (mean 6.67 $\pm$ 3.59 mg/day). The duration of prolactin evaluation after aripirazole adding ranged from 12 to 25 days.
Conclusion: Adjunctive aripiprazole therapy was generally well tolerated and may be beneficial for reducing hyperprolactinemia induced by antipsychotic drugs.
Policy of full disclosure: None.

P-11-008
Risperidone induced hypertriglyceridemia: a case report

P. Sharma (Boston University Medical Center, Psychiatry), Allston, USA

Objective: A rare case of risperidone induced hypertriglyceridemia
Methods: Describing a rare case of hypertriglyceridemia induced by risperidone.
Results: The patient is a 31-year-old gentleman from Nepal with no medical comorbidity, who had a 5-year psychiatric history of ongoing auditory hallucination and delusions of a sexual nature. The patient was diagnosed with schizoaffective disorder and was started on risperidone 2 mg daily. His baseline laboratory workup showed lipid values in the normal range, with fasting triglyceride level of 60 mg/dL, HbA1c of 5.7, low-density lipoprotein (LDL) level of 60 mg/dL, total cholesterol of 180 mg/dl and fasting blood glucose (FBG) at 80 mg/dl. Four months after initiation of treatment with risperidone, a repeat fasting lipid profile revealed serum triglyceride level of 1220 mg/dL with a direct LDL of 100 mg/dL, and total serum cholesterol of 447 mg/dL. His other metabolic panels were within normal limits (HbA1c: 5.9, BMI: 23.6, TSH:3.82 uIU/ML, FBG: 99 mg/dl) The hypertriglyceridemia improved considerably after he was switched from risperidone to aripiprazole.
Conclusion: There is a high incidence of metabolic dysregulation in patients with schizophrenia or schizoaffective disorder treated with second-generation antipsychotic medications. Risperidone interacts particularly with serotonin 5HT2A receptors and only to a little extent with 5HT2C receptors. Although there have been reports of rapidly worsening triglyceride levels on existing metabolic syndrome cases with antipsychotic treatment (Kohen 2010), an increase of more than 500% has rarely been noted. Physicians treating patients with risperidone should be aware of the potential for the development of hypertriglyceridemia and monitor the patients accordingly. This case illustrates that careful individualized monitoring is necessary. We recommend general metabolic monitoring and dietary consultation for patients with psychotic disorders as previously recommended, including those treated with risperidone.
Policy of full disclosure: None.

P-11-009
More than just antipsychotic: Clinical, social, and economic effectiveness of Paliperidone Palmitate in recent-onset schizophrenia

E. Lyubov (Moscow Research Institute of Psychiatry), Moscow, Russia; N. Semenova

Objective: Paliperidone Palmitate (PP) is a long-acting second-generation antipsychotic that has shown to be effective and well tolerated in clinical trials. This is a multicenter mirror image study of PP (1-year pre and post initiation of PP) used in a routine clinical practice. The purpose of this study is to compare clinical, social, and cost effectiveness outcomes of 12-month PP of 75–100 mg eq. treatment vs. oral neuroleptic or depot forms of other neuroleptics for revolving-door patients with recent-onset schizophrenia and high hospitalization rates (ICD-10).
Methods: The patients were invited to complete validated questionnaires assessing clinical and social issues (ASC, BPRS, DAI-10, PETiT, EQ-5d VAS, CAN-R, RAQ-16, and SDAS-9). Data were collected at a baseline, and again 3, 6, 9, and 12 months later.
Results: 172 patients were included in this study. 140 patients (81.4%) patients completed the study. 23.8% patients achieved complete (> 6 months) remission (BPRS). PP has been shown to be well tolerated, according to patients' self-assessment (ASC). The resource-saving potential of PP was achieved with a 20-fold decrease in the risk of relapses and re-hospitalization with an increase in the cost of an additional day remission by 40%. Reduced risk of aggression (SDAS 9, PSP d) and suicidal behavior, positive changes ($p < 0.001$) in satisfaction and treatment adherence (PETiT), positive PP attitude (DAI-10 items); quality of life and functioning (EQ-5d VAS), potential for recovery (RAQ 16), needs development (CAN-R). There is no correlation between the quantitative and qualitative scales.
Conclusion: The introduction of PP had a significant impact on clinical and social outcomes. Drawing mainly on the cost effectiveness issues, the study integrates data, attempting to further the understanding of health resource utilization outcomes. Implications of the results for future psychosocial intervention studies targeting quality of life, potential for recovery, and needs development are discussed.
Policy of full disclosure: None.

P-11-010

A mechanobiologically grounded treatment of traumatic brain injury-induced acute psychosis, applying innovative osmotherapy and risperidone. Case report, recovery, follow-up and physical model

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Objective: To test and control the instant and long-term effect of osmotherapy, on the antipsychotic treatment response rate, robustness and duration, on a patient with mild to severe TBI induced psychosis (primary) and cognitive decline (secondary).
Methods: Deformation of normal average cortical convolution patterns, is a direct physical result of edema and hematoma, commonly occurring after Traumatic Brain Injury (TBI). Psychosis and cognitive decline, are related to the level and duration of deformation and its functional impact. Response to antipsychotics, has been linked to the gyrification pattern, in first-episode psychosis. Mathematical modelling, comparing a spheroid and a cortical morphology, has linked cortical gyrification pattern, to optimal cortical information rate. Acetazolamide is a novel osmolytic factor, with promising results in TBI. The application of combined and prolonged osmotherapy, for the acceleration and optimization of antipsychotic treatment is presented. A TBI patient with subtle pathological personality traits, completed first line osmotherapy in a neurosurgical department (3CT-scans), showed persisting disorientation and memory gaps during the 10-day rehabilitation period (1CT-scan) and was transferred at the psychiatric department after acute onset psychosis. Two new osmotherapy cycles were applied, with mannitol (cycle 1) and acetazolamide (cycle 2), (day D1-D8), plus low dose risperidone (D1-present). Vitamin supplementation was added at D15. New CT-scan was performed at D5 and MRI at month M4.
Results: Comparative cortical deformation reduction (CT-scans) (Image 1). Psychotic symptomatology ceased rapidly (D8), orientation, insight, memory and superior cognition, were sequentially restored (D10-D35). MRI and Neuropsychological testing confirmed the results at months M3 and M4.
Conclusion: Osmotherapy repetition, can be studied as a means of optimization of antipsychotic treatment and cognitive rehabilitation in TBI induced psychosis.
Policy of full disclosure: None.

P-12 Outcome and Stigma II

P-12-001

Does insight in schizophrenia change its outcome?

S. Neves Vieira Martins (Centro Hospitalar do Tâmega e Sousa, Department of Psychiatry and Mental Health), Portugal; P. Macedo

Objective: Clarify and emphasize the importance of insight in the concerning the development, treatment adherence and subsequent quality of life in patients with schizophrenia.
Methods: It was carried out a narrative literature review by performing a search on PubMed for English-written articles. The query used was "Insight" AND "Schizophrenia" AND "Adherence".
Results: Impairment of insight is a primal feature of schizophrenia, however it is a complex term to define. It can be described based on three fundamental components: acknowledgement of the disease, understanding of its effects and attitude towards it. Regarding positive symptoms, it has been established that lack of insight is linked to greater aggressiveness and productive symptoms such as delusions and psychomotor agitation. Although there appears to be an association between insight and this kind of manifestations, it is not exclusive to all stages of the illness. When talking about negative symptoms, it is possible to perceive that the connexion is not as strong as with the other aspects of schizophrenia. Nevertheless, it's possible to connect lack of insight and negative symptoms to poor treatment adherence. As for neurocognitive dysfunction present in schizophrenia, impairment of insight can lead to greater deficits especially in executive function and working memory. Patients with poor insight are less likely to accept potential treatment leading to a worse prognosis.
Conclusion: In conclusion, insight might have an important role in the development and treatment response in schizophrenia. Hereupon, further research should focus on the improvement of this feature, in order to facilitate the management of this disease.
Policy of full disclosure: The authors declare no conflict of interests.

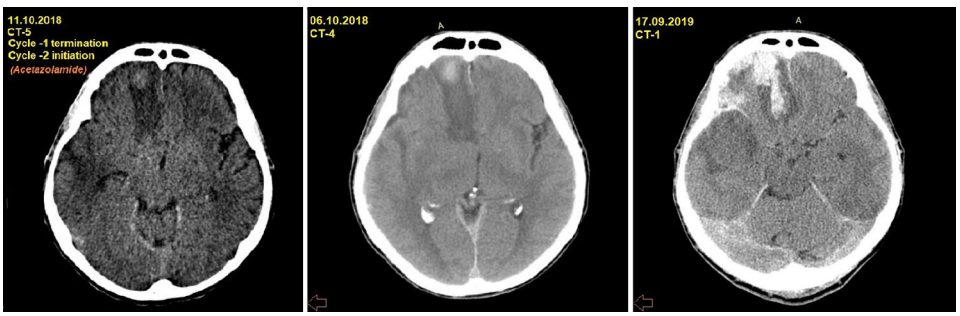

Fig. 1 Case CT scans at first and second admission and after first cycle of osmotherapy (P-11-010)

P-12-002

Independent living skills and cognition in average-onset and late-onset schizophrenia patients: Pilot-study

E. Abdullina (Moscow State University, Neuro- and Pathopsychology), Moscow, Russia; M. Savina, G. Rupchev, M. Morozova, V. Pochueva, V. Sheshenin, Y. Panikratova

Objective: Functional and cognitive decline is frequently observed in average-age onset schizophrenia (AOS). Severe cognitive symptoms can deteriorate daily functioning. However, independent living skills, cognition and their association in late-onset schizophrenia (LOS) remain understudied. Thus, we examined the relationship between cognitive tests performance and functional status and also compared them in LOS and AOS patients.
Methods: There were two clinical groups: 8 AOS patients ($M = 51.3 \pm 7.2$; 7 males) and 8 LOS patients ($M = 67.8 \pm 9.9$; 8 females), with comparable illness duration (22.6 ± 9.1 and 19.9 ± 11.9 respectively). Cognition was assessed through the Brief Assessment of Cognition in Schizophrenia (BACS). Independent living skills were measured by Autonomy Scale (AS) (Morozova, Rupchev, 2015), the semi-structured interview that includes 5 subscales each of 1–4 points assessing: (1) fatigue and abulia; (2) communication skills; (3) social connections; (4) communication with health professionals; (5) daily functioning and compliance. The Mann–Whitney U test was used to determine differences between groups. The association between AS and cognitive tests was estimated by Spearman's rank correlation.
Results: AOS group performed significantly worse on Digit Sequencing Task ($U = 0.0$, $p = 0.0007$), Verbal Fluency ($U = 7.0$, $p = 0.008$) and Tower Test ($U = 9.5$, $p = 0.01$) of the BACS. Composite score on AS was also significantly worse in the AOS group ($U = 7.5$, $p = 0.009$). Cognitive tests performance and AS composite score significantly correlated only in the LOS group (Digit Sequencing Task: $rS = 0.75$, $p = 0.03$; Verbal Fluency: $rS = 0.82$, $p = 0.01$; Symbol Coding: $rS = 0.79$, $p = 0.02$).
Conclusion: AOS patients showed more severe executive dysfunction and functional decline. Significant positive correlation between cognitive and functional abilities is found only in LOS group, thus more preserved independent living skills may be related to less severe cognitive deficit. To clarify associations between functional inabilities and cognitive dysfunction in AOS patients' further studies are required.
Policy of full disclosure: None.

P-12-003

Association between clinical indices and risk of suicidal ideation, attempts, and completed suicide in psychotic disorders: a registry linked study

S. Gohar (Cairo University, Department of Psychiatry), Cairo, Egypt; I. Melle

Objective: To assess the associations between demographic and clinical data (i.e. symptom severity and level of functioning, number of episodes and attempts, substance use, body mass index, and medications) and risk of suicidal behaviour (ideation, attempts, and completed suicide) in a clinical sample of patients with schizophrenia and bipolar disorders
Methods: The sample is consisted of 1079 participants with the following diagnostic categories: schizophrenia spectrum group ($n = 717$) and bipolar spectrum group ($n = 362$). They were recruited consecutively from five major hospitals in Oslo, from 2003 to 2015, as part of Thematically Organized Psychosis (TOP) Study. The Regional Committee for Medical Research Ethics approved the study. Baseline demographic and medical information were gathered based on the clinical interviews and from medical records. In addition, we linked our database to all causes of death registry of Norway to retrieve data concerning the participants with completed suicide ($n = 14$). SCID-I was used for diagnosis in addition to Positive and Negative Syndrome Scale (PANSS) with its five-factor analysis to assess symptoms severity. Standardized procedures are conducted in physical examination including body mass index (BMI). Bivariate and multivariate analyses were performed to evaluate associations between lifetime suicidal attempts and clinical indices.
Results: Preliminary results indicate the presence of significant association between earlier age of onset, high BMI, tobacco smoking, increased number of psychotic/hypomanic episodes, and lifetime suicidal attempts in schizophrenia group. While in bipolar group, the presence of comorbid alcohol/other substances' use and increased number of depressive/mixed episodes were associated with increased suicidal attempts. Final results are expected to be present by the end of June 2019

Conclusion: Individuals with frequent psychotic and mood episodes are at increased risk of suicidal attempts. The type of episode is an important clinical predictor of risk of suicide in psychotic disorders.

Policy of full disclosure: The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7-PEOPLE-2013-COFUND) under grant agreement no 609020—Scientia Fellows. In addition, the study was supported by grants from Stiftelsen KG Jebsen, the Research Council of Norway (#223273, # 248778) and the South East Norway Health Authority (#2017-112).

P-12-004

Treatment characteristics (case managed vs standard; oral vs. long-acting injectable medication) related with suicide prevention among people with severe schizophrenia

J. J. Fernandez-Miranda (SESP Asturian Mental Health Service, AGC SM-V-HUCAB), Gijon, Spain; S. Diaz-Fernandez, D. F. Frias-Ortiz

Objective: Lack of compliance potentially strengthens suicidal behavior among people with schizophrenia. The purpose of this study was to know the retention in treatment of people with severe schizophrenia, suicide rates among them and treatment characteristics (case managed vs standard; oral vs. long-acting injectable medication) related.
Methods: A 8-year prospective, observational, open-label study of patients with severe schizophrenia (GCI-S ≥ 5) undergoing community based, case managed treatment in Gijon (Spain) ($N = 200$). Assessment included the Clinical Global Impression severity scale (CGI-S) and the WHO Disability Assessment Schedule (WHO-DAS) at the beginning and after three, 12, 24, 36 and 96 months. And also, medications prescribed, laboratory tests, weight, adverse effects reported, hospital admissions and reasons for treatment discharge, including deaths by suicide, were recorded.
Results: CGI-S at baseline was 5.9 (0.7). After 8 years 42% of patients continued under treatment [CGI-S = 4.1 (0.9); $p < 0.01$]; 37% were medical discharged [CGI = 3.4 (1.5); $p < 0.001$] and continued standard treatment in mental health units; 10% were voluntary discharges. Twelve patients died during the follow up, four of them by suicide (2%; suicide rates among people with schizophrenia in standard treatment in Spain between 5–10%). 65% of all patients were treated with second-generation long-acting-injectable antipsychotics, with high tolerability. Among them, there was higher retention (4 vs 16 patients voluntary discharges; $p < 0.01$) and less suicides than patients with oral antipsychotics (1 vs 3 patients).
Conclusion: Retention in treatment of patients with severe schizophrenia in a case managed programme and treated with second generation long-acting antipsychotics was really high and seemed to

be useful to decrease risk of suicide among them. Both treatment characteristics helped to improve treatment compliance and suicide risk prevention than standard treatment and oral medications.
Policy of full disclosure: None.

P-12-005
Case managed community program vs. standard treatment for people with severe schizophrenia: treatment adherence and suicide attempts

S. Diaz-Fernandez (SESPA AGC SM V-HUCAB), Gijon, Spain; J. J. Fernandez-Miranda, D. F. Frias-Ortiz

Objective: To know the suicide attempts of patients with severe schizophrenia before (standard treatment in mental health units) and during treatment in a comprehensive, community based, intensive case managed program. And also the role of antipsychotic medication (oral or long-acting injectable) in these outcomes.
Methods: Observational, mirror image study of 10 years of follow-up and ten retrospective (standard treatment) of patients with severe (CGI-S =>5) schizophrenia under treatment in a integrated, case managed community based program (N = 344). Reasons for Program discharge (including deaths by suicide) and suicide attempts before and during treatment were recorded. Also, antipsychotic drugs used.
Results: After 10 years 12.2% of the patients were voluntary discharges (In previous standard treatment: 84.3%). CGI-S at baseline was 5.9(0.7). After 10 years 51.7% of patients continued under treatment and 19.3% were medical discharged. Suicide attempts decreased significantly compared to the previous 10 years ($p < 0.0001$). The fact of being treated with oral and not with long-acting antipsychotics (LAI), both before treatment in the Program ($p < 0.001$) and especially during it ($p < 0.0001$), was related to higher risk of suicide attempt.
Conclusion: Retention in treatment of patients with severe schizophrenia in a case-managed community-based program, with integrated pharmacological and psychosocial treatment, was high, and effective in drastically reducing suicidal attempts. The fact of being treated with long-acting injectable antipsychotics clearly influenced the achievement of these outcomes. Intensive case management and regular LAI antipsychotic use helped to improve treatment compliance and to prevent suicide behavior than standard treatment and oral antipsychotic use.
Policy of full disclosure: None.

P-12-006
Structural analysis of recovery in community-dwelling clients with schizophrenia using structural equation modeling

A. Watanabe (Kitasato University, Rehabilitation), Sagamihara, Japan; T. Kawaguchi, M. Sakimoto, Y. Oikawa, K. Furuya, T. Matsuoka

Objective: One factor promoting recovery is participation in various activities of living (Thornicroft et al. 2014). Recovery is considered to change not only through participation in daily activities but also in relation to difficulty in daily life depending on the performance situation and environment of the daily activities. However, verification of this relation remains insufficient. This study aimed to clarify the structural features of recovery of community-dwelling clients with schizophrenia using Structural Equation Modeling (SEM) and quantitatively understand the factor structure of recovery based on difficulty in daily life.
Methods: Participants were community-dwelling clients with schizophrenia who used 20 community facilities for > 6 months from April 2017 to March 2018. The evaluation included the Recovery Assessment Scale, WHO Disability Assessment Schedule 2.0 for difficulty in daily life, and Classification Assessment of Occupational Dysfunction for the factor of difficulty in daily life. In the analysis, a causal model of recovery was created for hypothesis construction. SEM was used to estimate the relation of factors extracted from the evaluations including "recovery", "difficulty in daily life" and "factor of difficulty". Fitness of the model was based on GFI (Goodness of Fit Index), AGFI (Adjusted GFI), and RMSEA (Root Mean Square Error of Approximation). This study was approved by the ethics committee of our institution and each facility.
Results: Participants comprised 74 community-dwelling clients (43 men, 31 women, age 49.9 ± 11.4 years, Modified GAF 59.9 ± 13.3, chlorpromazine equivalent dose 581.0 ± 432.3 mg). The fit indices of the model showed an excellent fit: GFI = 0.911, AGFI = 0.873, and RMSEA = 0.031 (fig. 1).
Conclusion: There was an appreciable causal relationship between each factor. Difficulty in daily life and the factor of difficulty were found to be factor structures of recovery. The results suggested that in intervention and support to encourage recovery of clients with schizophrenia, understanding these causal relationships would enable more effective support.
Policy of full disclosure: This study was supported by Research Grants from the Mitsubishi Foundation2017 (29319).

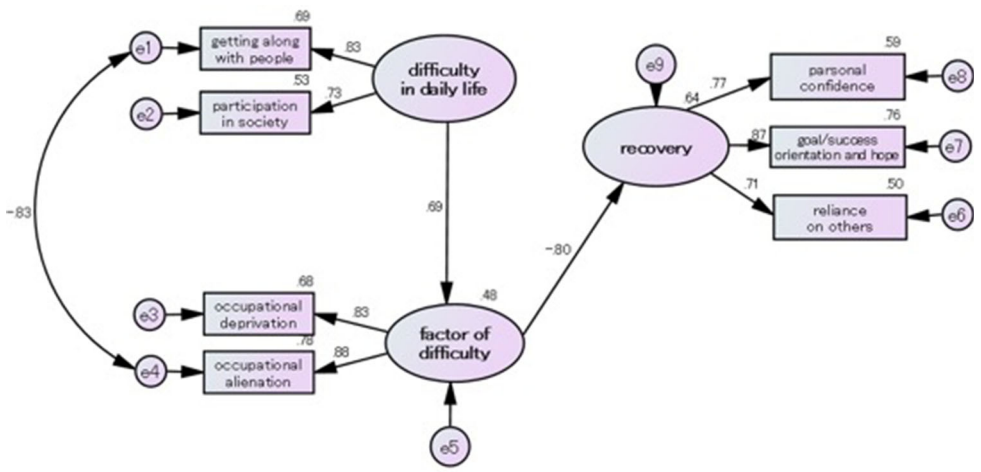

Fig. 1 Causal relationship in recovery (P-12-006)

P-12-007

Difficulties in daily life of community-dwelling clients with schizophrenia: cluster analysis based on functioning and the recovery process

T. Kawaguchi (Kitasato University, Rehabilitation), Sagamihara, Japan; A. Watanabe, M. Sakimoto, Y. Oikawa, K. Furuya, T. Matsuoka

Objective: Although providing rehabilitation services focusing on subjective difficulties in daily life is important in schizophrenia, the make-up of these difficulties in daily life as reflected by functioning and the recovery process is unclear (Świtaj et al. 2012). This study aimed to clarify the make-up of the difficulties in daily life of people with schizophrenia by cluster analysis based on functioning and the recovery process.

Methods: Participants were enrolled from 20 community facilities in 2017. Recovery Assessment Scale (RAS), Modified-Global Assessment of Functioning Scale (GAF) and WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) were used as assessment scales. Clusters were classified by Ward's hierarchical clustering method with RAS and GAF score, and WHODAS 2.0 scores as indices of difficulties in daily life in each cluster were compared by the Kruskal-Wallis test and the Steel-Dwas multiple comparison test. Statistical significance was indicated by $p < 0.05$. The ethics committee of our institution approved this study (B16-200).

Results: The cluster analysis technique divided the 74 participants (male/female: 43/31, age 49.9 ± 11.4 years) into 4 clusters: Cluster A (GAF: 50.5 ± 8.3, RAS: 86.2 ± 8.7), Cluster B (GAF: 73.8 ± 6.4, RAS: 77.3 ± 7.3), Cluster C (GAF: 52.6 ± 10.3, RAS: 60.2 ± 9.4), Cluster D (GAF: 69.2 ± 7.9; RAS: 101.9 ± 5.5). Cluster C had significantly higher scores (indicating that clients feel more difficulty in daily life) than other clusters for each item of WHODAS 2.0 ($p < 0.001$; Figure).

Conclusion: The results indicated that the difficulties of daily life may reflect functioning and the recovery process and suggest that assessment of both functioning and the recovery process as indices of rehabilitation is important. The present results may contribute to rehabilitation of clients with schizophrenia.

Policy of full disclosure: This study is supported by Research Grants from the Mitsubishi Foundation 2017 (29319).

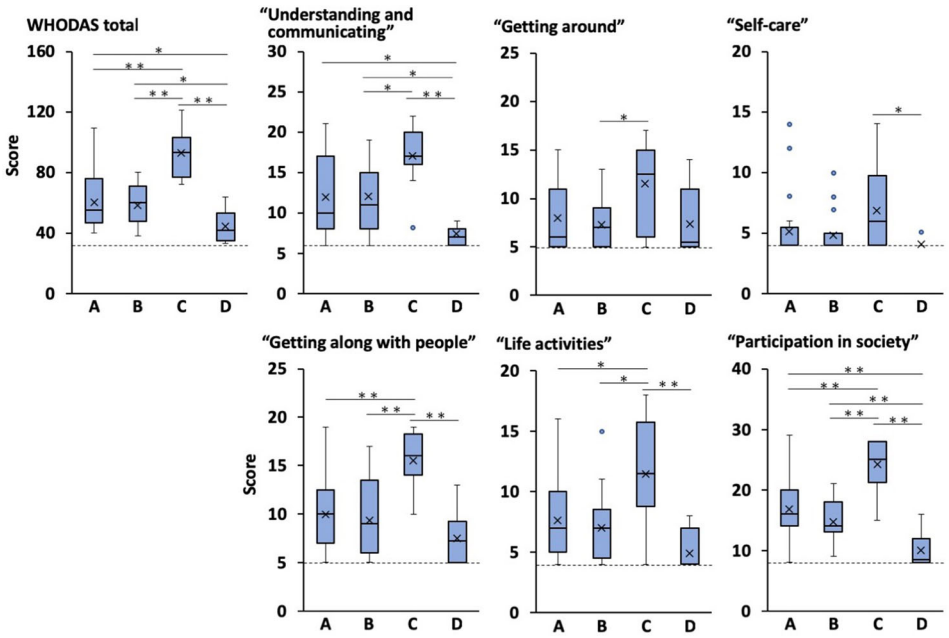

Fig. 1 Comparison of WHODAS 2.0 scores in each cluster

A: Cluster A; **B**: Cluster B; **C**: Cluster C; **D**: Cluster D; ＊: $p < 0.05$; ＊＊: $p < 0.01$; Dot (○): outlier; Cross (×): mean; Dashed line: lower limit of score range **(P-12-007)**

P-12-008

The narratives of self-recognition in schizophrenia: time to precise identity processes in recovery?

M. Koenig (Université Paris, 8 LPN EA 2027), Saint-Denis Cedex, France; M.-C. Castillo

Objective: The recent developments in the field of healthcare (Values-based medicine, recovery from psychiatric troubles) place the person rather than the illness at the centre of the healing process. By valuing experiential knowledge, personal resources and capacity of choice (empowerment) they pay a renewed attention to the narratives of persons, and lead to the rehabilitation of qualitative research. This has been of particular importance in the field of psychiatry with the development of the conception of recovery. We propose a dynamic analysis of the recovery process reported by persons diagnosed as having schizophrenia. Our qualitative research aims to contribute to a comprehensive approach of the psychological movements involved in this evolution.
Methods: We applied a textual analysis (Iramuteq software) to semi-directive interviews conducted in psychiatric services with 26 subjects having received a diagnosis of schizophrenia according to the DSM-IV-Tr criteria (mean age 32.7, mean of duration of disease 13.1 years). These persons were referred to us by their psychiatrist who attested of a positive evolution of their trouble. All the participants gave their written consent to participate in the research. The interview grid focused on 3 topics: the history of the disease, the appraisal of the evolution, and the projection in the future. The recorded and transcribed interviews were processed using a computer program of textual analysis which uses a hierarchical descending classification to create classes of discourse according to the word patterns most frequently used by the subjects.
Results: The categories put forward by the software allow to distinguish 3 processes grounded on the narrative activity: the awareness of trouble, the self-recognition and the self-recognition in the illness experiences.
Conclusion: Promoting narrative activity in schizophrenia enable to integrate the experiences of trouble into the self, which is at the core of the recovery process.
Policy of full disclosure: None.

P-12-009

Distribution of psychiatric disorders causing non-graduation among Japanese national undergraduate university students: has clinical manifestation of schizophrenia become less severe?

Y. Fuse-Nagase (Ibaraki University, University Health Center), Mito, Ibaraki, Japan; K. Yasumi, N. Hirai, T. Marutani, K. Kajitani, I. Namura

Objective: This study aimed to identify the types of psychiatric disorders, including schizophrenia, resulting in non-graduation among undergraduate Japanese national university students.
Methods: We requested the health administration facilities at all national universities in Japan to participate in a survey of the causes of non-graduation among undergraduate students each year. Data from three sequential academic years (2014–2015, 2015–2016, and 2016–2017) were analyzed to identify those students who required temporary leave or dropped out because of a psychiatric disorder. We used the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) codes as diagnostic criteria.
Results: The number of universities participated was 60, 60, and 66 for each academic year, respectively. The total number of registered students was 929,402. We obtained the ICD-10 codes of 2052 students who required temporary leave because of a psychiatric disorder. Mood disorders (F3) were identified as the most frequent, affecting 46% of the study cohort. This was followed by neurotic, stress-related, and somatoform disorders (F4, 32%). Both disorders of psychological development (F8) and schizophrenia, schizotypal, and delusional disorders (F2) occurred at a rate of at 8%. We also obtained the ICD-10 codes of 364 students who dropped out because of a psychiatric disorder. F3 disorders were the most frequent (36%) followed by F4 (30%) and F2 (13%).
Conclusion: F3 and F4 are more common causes of non-graduation than F2 among undergraduate students. Compared with a previous survey (Nakajima J, 1989 in Japanese), the percentage of schizophrenia as a cause of non-graduation has decreased, which is consistent with our previous report (Fuse-Nagase et al. 2016). However, the percentage of those who dropped out with F2 was higher than that of those who required temporary leave. This suggests, at least in part, that schizophrenia has a poor prognosis.
Policy of full disclosure: None.

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