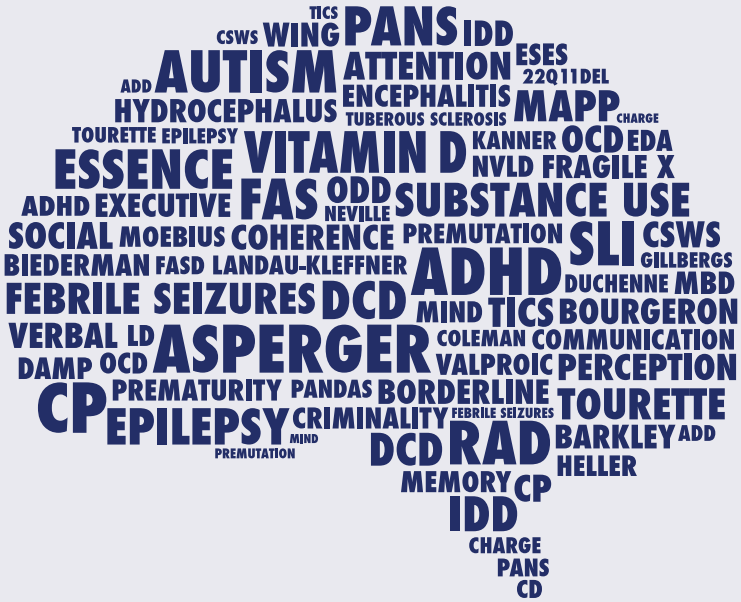


# ESSENCE 2018

GOTHENBURG | SWEDEN | 10-11 APRIL
AT THE SWEDISH EXHIBITION AND CONGRESS CENTRE

# PROGRAM

Gillberg Neuropsychiatry Centre
Sahlgrenska Academy

UNIVERSITY OF
GOTHENBURG

Welcome to the

# ESSENCE 2018 Conference

Dear delegates, speakers, sponsors and other friends,

We are delighted to welcome you to Gothenburg and to ESSENCE 2018, the first ever major international conference devoted to ESSENCE. We thank you for choosing to come to this event, and for all the support that you provide in various ways.

During the next exciting two days, delegates will have the opportunity to listen to – and engage with – many of the most distinguished international experts in the field of ESSENCE.

We hope that our very well-attended conference will not only disseminate state-of-the-art knowledge in the field , but also create important new contacts and collaborations, strengthen existing relationships and raise awareness of all forms of ESSENCE in Scandinavia and around the world.

We look forward to meeting you and hope that the conference will live up to all your high expectations!

**Welcome to ESSENCE 2018!**

*Christopher Gillberg*
*Professor and Chair of the Organising Committee*





# PROGRAM OVERVIEW

## Tuesday April 10th

| | |
|---|---|
| 07:30 – 09:30 | **REGISTRATION** |
| MAIN AUDITORIUM: | |
| 09:30 – 09:40 | **OPENING SESSION: ESSENCE OF THE ESSENCE** – *C Gillberg, Sweden* |
| 09:40 – 10:30 | **KEYNOTE: ESSENCE: Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations** – *C Gillberg, Sweden* |
| 10:30 – 11:00 | COFFEE |
| 11:00 – 12:40 | **AUTISM, ADHD, AND RELATED DISORDERS I** |
| 11:00 – 11:20 | **The reality behind the rise in autism diagnoses** – *S Lundström, Sweden* |
| 11:20 – 11:40 | **"Comorbidity"** – *C Gillberg, Sweden* |
| 11:40 – 12:00 | **Developmental consequences of mindblindness** – *F Happé, UK* |
| 12:00 – 12:20 | **Neuropsychological function in ESSENCE** – *A Lundervold, Norway* |
| 12:20 – 12:40 | **Biological rhythms, sleep and ESSENCE** – *M Posserud, Norway* |
| 12:40 – 13:50 | LUNCH |
| 13:50 – 15:10 | **AUTISM, ADHD, AND RELATED DISORDERS II** |
| 13:50 – 14:10 | **The Tic-OCD spectrum** – *PH Thomsen, Denmark* |
| 14:10 – 14:30 | **Regression in adolescents with autism: causes and consequences** – *M Ghaziuddin, USA* |
| 14:30 – 14:50 | **Epilepsy and ESSENCE** – *H Cross, UK* |
| 14:50 – 15:10 | **ADHD and problematic sexual behaviour** – *N Långström, Sweden* |
| 15:10 – 15:40 | COFFEE |
| 15:40 – 18:05 | **AUTISM, ADHD AND RELATED DISORDERS III** |
| 15:40 – 16:00 | **Eating disorders and ESSENCE** – *M Råstam, Sweden* |
| 16:00 – 16:20 | **Reading, writing and ESSENCE** – *J Åsberg Johnels, Sweden* |
| 16:20 – 16:40 | **Fragile X syndrome and FMRP: a key to other disorders and their effective treatment** – *R Hagerman, USA* |
| 16:40 – 17:00 | **22q11 deletion syndrome** – L Wallin, Sweden |
| 17:00 – 17:30 | **KEYNOTE: MAPP: Maltreatment-Associated Psychiatric Problems** – *H Minnis, UK* |
| 17:30 – 17:50 | **SUMMING UP DAY ONE** – *C Gillberg, Sweden* |
| 17:50 – 18:05 | **ADHD** – *E Donell, Sweden* |
| 18:05 – 18:15 | **Welcome to Gothenburg** – *Lord Mayor Lena Malm and Vice President of the Regional Council Per Tenggren* |
| 18:15 | **WELCOME RECEPTION and POSTER EXHIBITION** |
| 19:45 | **GALA DINNER** |

# PROGRAM OVERVIEW

## Wednesday April 11th

MAIN AUDITORIUM:

| | |
|---|---|
| 09:00 – 09:30 | **KEYNOTE: THE EVER CHANGING BRAIN** – *N Hadjikhani, USA* |
| 09:30 – 10:30 | **GENETICS, EPIGENETICS, AND THE BRAIN I** |
| 09:30 – 09:50 | **Genetics of ESSENCE** – *T Bourgeron, France* |
| 09:50 – 10:10 | **Pre- and perinatal factors in ESSENCE** – *L Thompson, UK* |
| 10:10 – 10:30 | **Population impact of stress, maltreatment and neurodevelopmental problems** – *P Wilson, UK* |
| 10:30 – 11:00 | COFFEE |
| 11:00 – 12:10 | **GENETICS, EPIGENETICS, AND THE BRAIN II** |
| 11:00 – 11:20 | **Cholesterol, steroids, and vitamin D** – *C Allely, UK* |
| 11:20 – 11:40 | **Neuroanatomy of autism** – *M Bauman, USA* |
| 11:40 – 12:10 | **KEYNOTE: GENETICS RESEARCH REVEALS THE VARIABILITY OF BRAIN DEFICITS IN AUTISM** – *L Waterhouse, USA* |
| 12:10 – 13:10 | **SCREENING AND DIAGNOSIS** |
| 12:10 – 12:30 | **Screening for language disorder and autism- what is the point?** – *C Miniscalco, Sweden* |
| 12:30 – 12:50 | **Early diagnosis of ESSENCE** – *E Fernell, Sweden* |
| 12:50 – 13:10 | **'Detected' but 'undiagnosed': Intellectual disability in the paediatric clinic** – *A O'Hare, UK* |
| 13:10 – 14:20 | LUNCH |
| 14:20 – 15:20 | **OUTCOME AND INTERVENTION I** |
| 14:20 – 14:40 | **Outcome of ESSENCE** – *E Billstedt, Sweden* |
| 14:40 – 15:00 | **Girls and women with ESSENCE** – *S Kopp, Sweden* |
| 15:00 – 15:20 | **Evidence basis for intervention in autism** – *E Fernell, Sweden* |
| 15:20 – 16:00 | **OUTCOME AND INTERVENTION II** |
| 15:20 – 15:40 | **Psychopharmacology in ESSENCE** – *J Buitelaar, The Netherlands* |
| 15:40 – 16:00 | **SSRIs for depressed mood in young people with ESSENCE** – *E Eriksson, Sweden* |
| 16:00 – 16:20 | COFFEE |
| 16:20 – 17:20 | **OUTCOME AND INTERVENTION III** |
| 16:20 – 16:40 | **Supplements and diets in ESSENCE** – *M Johnson, Sweden* |
| 16:40 – 17:00 | **Working with adult women with autism** – *D Zener, Canada* |
| 17:00 – 17:20 | **Problem solving and parenting programmes** – *C Puckering, UK* |
| 17:20 – 17:30 | **CLOSING SESSION Summing up day two** – *C Gillberg, Sweden* |





# KEYNOTES

## ESSENCE: Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations

*Gillberg, Christopher*
*Institute of Neuroscience and Physiology, Gillberg Neuropsychiatry Centre, Gothenburg, Sweden*

ESSENCE (Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations) is an umbrella concept for early onset "neurodevelopmental" disorders such as ADHD, Tic Disorders, DCD, Language Disorder, Autism and Intellectual Disability. These disorders/problem clusters almost never exist in isolation, instead they overlap or co-occur with other categories of problems subsumed under the umbrella. At very young ages, it can be difficult, indeed impossible, to determine which of the problem types is going to be the most functionally disabling during the individual´s lifetime. There are well-documented interventions for many of the different symptoms/diagnostic categories and it is essential that strengths and difficulties are recognized as early as possible so that affected children and their families can access the best possible help and treatment. Each individual (regardless of age) raising major concerns because of ESSENCE symptoms or problems needs to be assessed by a competent team of (a minimum of) medical doctors, psychologists, nurses, and education specialists, who can establish and prospectively reevaluate a "holistic" (multifaceted) diagnosis, and – in collaboration with family/preschool/school/workplace – initiate and monitor individualized psychoeducation, and other interventions/treatments.

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## MAPP: Maltreatment-Associated Psychiatric Problems

*Minnis, Helen*
*Institute of Health and Wellbeing University of Glasgow, UK*

This presentation will discuss maltreatment-associated psychiatric and neurodevelopmental disorders (e.g. Attention-Deficit/Hyperactivity Disorder – ADHD – Autism, Tic Disorders and Learning Disabilities). New research will be presented showing that children who have experienced abuse and neglect are at significantly higher risk of having complex, overlapping neurodevelopmental disorders but that the abuse and neglect may not cause these. This changes our thinking about the interplay between maltreatment and neurodevelopmental complexity: it shows that ALL maltreated children need a thorough neurodevelopmental and psychiatric assessment and that neurodevelopmental disorders such as ADHD and Autism should be considered in children and adults with "trauma-related disorders".

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## The ever changing brain

*Hadjikhani, Nouchine*
*Harvard Charlestown, USA, Institute of Neuroscience and Physiology, Gillberg Neuropsychiatry Centre, Gothenburg, Sweden*

Autism is a neurodevelopmental disorder that begins already in utero and affects neurons during essential development processes, including proliferation, neuronal growth and differentiation, migration, synapse formation and network construction. Abnormalities in eye-contact are one of the diagnostic criteria of autism, and individuals with autism often report that looking in the eyes of others is stressful, or even that 'it burns'. Here I will present a possible unifying theory of the molecular pathology that could be at the neural basis of abnormal eye-contact in autism, and illustrate it with evidence from our brain imaging research. In that model, an abnormal balance between the excitatory and inhibitory systems results in hyper-connected face processing subcortical pathways. Over time, this hyperconnectivity develops into a hypersensitivity of the amygdala to eye-contact, leading to an aversive reaction to direct eye-gaze. In everyday life, such oversensitivity may lead to attempts to decrease one's arousal levels, and simply avoiding eye-contact with others is one common strategy among people with autism. However, such a strategy is unlikely to come without costs because the eyes carry important interpersonal and deictic information during social interactions and communication, and eye-avoidance may result in cascading effects leading to improper development of the social brain.

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## Genetics research reveals the variability of brain deficits in autism

*Waterhouse, Lynn*
*The College of New Jersey, Graduate Global Programs, Ewing, NJ, USA*

Twenty Autism Spectrum Disorder (ASD) genetics papers from 2017 were retrieved from the database Google Scholar in order of relevance. Among these 20 papers, 3 were gene case studies, 3 proposed models of ASD gene regulation of brain development, 3 reviewed multiple ASD genetic studies, and 11 presented data from group studies of ASD-linked gene variants. These 20 papers reported genes that tied ASD to OCD, ADHD, intellectual disability and schizophrenia. The papers claimed that gene variants resulted in many different brain deficits in ASD, including impaired neurogenesis, impaired synaptogenesis, and impaired total brain growth in microcephaly and macrocephaly. Also claimed were "emotional reaction" deficits in the amygdala, and impaired "social bonding" function of the oxytocin/vasopressin system in the amygdala and hypothalamus in ASD. Other brain regions claimed included "theory of mind" deficits in the posterior superior temporal sulcus at the temporoparietal junction, and "reward and language" deficits in the brain's prefrontal-thalamic circuitry. These brain findings from just 20 papers are too varied to be synthesized. A more expansive review (Waterhouse, London, and Gillberg, 2016) similarly demonstrated that ASD brain findings could not be synthesized. What medical treatment progress requires is that the ASD diagnosis be taken apart.

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# ORAL

DAY 1, Tuesday April 10th

## AUTISM, ADHD, AND RELATED DISORDERS I

## The reality behind the rise in autism diagnoses

*Lundström, Sebastian*
*Institute of Neuroscience and Physiology, Gillberg Neuropsychiatry Centre, Gothenburg, Sweden*

During the last decades the prevalence of autism has increased greatly, a "fact" that has been much debated. Very little evidence, however, supports any notion of a change in the real autism pathogenesis or epidemiology. In this presentation, data will be presented from a nationwide study ($n \approx 28.000$) in which all individuals has been screened for autism. The results from the screening have then been contrasted to the individual clinical diagnoses. Even though there is a remarkable increase in autism diagnoses, there is no support that the symptoms constituting autism is on the rise. Furthermore, it also seems very likely that autism diagnoses today are assigned on substantially fewer symptoms than 10 years ago. Taken together, the rise in autism prevalence most likely stems from secular administrative changes rather than any change in the underlying susceptibility. Possible societal changes affecting the change in prevalence is briefly discussed.

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## "Comorbidity"

*Gillberg, Christopher*
*Institute of Neuroscience and Physiology, Gillberg Neuropsychiatry Centre, Gothenburg, Sweden*

The word comorbidity seems to have been launched by Alvan Feinstein in 1970. He referred to comorbidity as "any distinct additional entity that has existed or may occur during the clinical course of a patient who has the index disease under study". Almost fifty years on, the word has taken on so many different meanings that it has become almost impossible to have a view on what the current state-of-the-art might be. This is perhaps particularly true in psychiatry, where all sorts of extra-algorithm problems/behaviours/syndromes have come to be regarded as "comorbid", i.e. co-existing alongside the syndrome (e.g. autism or ADHD) that is encapsulated in the diagnostic algorithm for that syndrome. This is one of the reasons why concepts such as ESSENCE are needed. In the vast majority of clinical cases of ESSENCE, the impairing problems suffered by the individual are not completely covered by one particular diagnostic label. It is not really a question of co-occurring disorders but of individuals showing a range of symptoms that "belong to" different named "disorders" that have been conceptualized and delineated at writing desks and votes at committee meetings. The individual with ESSENCE does not usually have several different disorders, but he/she meets criteria for more than

one diagnostic category. Furthermore, almost all individuals with ESSENCE will meet criteria for different disorders at different time-points in their lives. Two examples, one female and one male will be presented, demonstrating the need for holistic and repeated assessments over time, often from infancy through to adult age.

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## Developmental consequences of mindblindness

*Happé, Francesca*
*Institute of Psychiatry, Psychology & Neuroscience (KCL), Social, Genetic & Developmental Psychiatry Centre, London, UK*

Many of the social and communication difficulties that define autism can be well understood as reflecting impairment in theory of mind or 'mentalising'. For example, delays or deficits in attributing mental states would make it hard to comprehend deception, keep secrets, track others' pretend play, and interpret irony. However, beyond these 'on-line' effects, deficits or delays in mentalising have significant developmental consequences. This talk presents on-going and past research on downstream effects of mindblindness in autism, including impact on measured intelligence, language, and self-awareness. Mentalising can be seen as a gatekeeper, opening the way to skills and knowledge acquired through social osmosis. Gatekeepers also keep things out; I will suggest that mentalising is obligatory in neurotypical (non-autistic) people, and that mindblindness in autism may also carry some benefits.

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## Neuropsychological function in ESSENCE

*Lundervold, Astri J.*
*University of Bergen, Department of Biological and Medical Psychology, Bergen, Norway*

Neuropsychological functions in children are better mapped to symptom dimensions than to specific disorders. Presentation of cases with ESSENCE showing different neuropsychological characteristics and outcomes, and presentation of results from three recently published Bergen Child Study (BCS) papers focusing on inattention, one of the common features of children with ESSENCE. The two cases showed neuropsychological results ranging from being non-conclusive, to giving arguments for further examinations and specific advice to parents and teachers. The BCS studies showed that symptoms of inattention reported in primary school are i) strong predictors of social function, partly mediated by slow processing speed ii) predictors of academic achievement in high school, over and above the contribution of intellectual function and that iii) items reflecting sustained attention and distractibility were associated with the strongest impact for academic achievement when the separate items were analysed by statistical machine learning approaches and extensive cross-validation methods. Assessment of neuropsychological function in children should not be restricted to those with a given diagnosis. Identification of and remediation procedures to help primary school children showing characteristics described within the concept of ESSENCE must be prioritised.

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## Biological rhythms, sleep and ESSENCE

*Posserud, Maj-Britt*
*Department of Clinical Medicine, University of Bergen, Norway*

Rhythm is life; from the quick pace in pulse and breath, through intermediate circadian cycle to the all-encompassing cycle of life and death. The rhythms of our heart and breath provide a window into the autonomous nerve system and its regulation/activation. Our sleep pattern is a window into the circadian cycle that is vital for hormonal regulation and neuronal development and growth. Sleep is restorative and regulatory. Sleep is crucial for health and development, for learning and memory formation. Sleep problems and metabolic disease have been viewed as secondary to psychiatric disorders and their pharmacological treatment. But sleep problems are now increasingly thought of as more causally involved in the development of psychiatric disorders, and there is also evidence that common pathways could lead to both sleep problems, autonomic dysfunction and mental health problems. The presentation will provide an update of the associations between ESSENCE conditions, the autonomous nerve system and the circadian rhythm/sleep regulation. The strong impact of sleep on mental health and development, and the high somatic mortality associated with ESSENCE conditions warrant that focus on somatic health and sleep be integral parts of the clinical work-up and treatment in all ESSENCE conditions.

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# AUTISM, ADHD, AND RELATED DISORDERS II

## The Tic-OCD spectrum

*Thomsen, Per Hove*
*Aarhus University Hospital Risskov, Centre for Child and Adolescent Psychiatry, Risskov, Denmark*

Ritualistic, stereotyped behaviour can be seen as part of several psychiatric disorders in children and adolescents. OCD (obsessive-compulsive disorder) is characterised by the presence of obsessions and compulsions in which the child usually has a rational insight into the exaggeration of the symptoms. However, often comorbidity is seen between OCD, Tourette syndrome and autism. Based on new results from the largest study to date on children and adolescents with OCD (the NordLOTS study), the challenges in differentiating between obsessions, tics and stereotyped autistic behaviour will be presented. Also, the evidence for effective treatment for OCD with comorbid tics or autistic symptoms will be presented and discussed.

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## Regression in adolescents with autism: causes and consequences

*Ghaziuddin, Mohammad*
*University of Michigan, Psychiatry, Ann Arbor, USA*

Regression in autism refers to a period of decline in acquired skills that usually occurs before three years. However, some autistic persons also experience a period of significant

decline during their adolescence. Since this decline occurs in already compromised individuals, it can be more accurately labeled as decompensation, similar to the process seen in general medicine. This presentation discusses the causes and consequences of decompensation in adolescents with autism based on a review of the literature and case series. An early diagnostic clue is obsessive slowing with worsening of existing autistic rituals. Other prodromal symptoms include worsening mood; sudden onset of mania; emergence of psychosis; progressive food restriction; increasing psychomotor retardation; catatonia; and stupor. Its exact cause is not clear. Precipitating factors include infections; surgical procedures; uncontrolled epilepsy, and several psychiatric conditions. Associated risk factors include level of IQ; family psychiatric history; and polypharmacy. Treatment often requires multidisciplinary inpatient care. While most patients regain some level of functioning, complete recovery is rare. Decompensation during adolescence in autistic individuals can lead to serious consequences. More studies are needed to correctly diagnose and treat this ominous condition.

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## Epilepsy and ESSENCE

*Cross, Helen*
*The Prince of Wales's Chair of Childhood Epilepsy, Head of the Developmental Neuroscience Programme at UCL-Great Ormond Street Institute of Child Health, Honorary Consultant in Paediatric Neurology Great Ormond Street Hospital for Children NHS Foundation Trust, London and Young Epilepsy, Lingfield, UK.*

Epilepsy is a condition where individuals are prone to recurrent epileptic seizures. However it remains a symptom of many different conditions, and therefore more accurately we should refer to the epilepsies. The new ILAE framework for the classification of the epilepsies, recognises the need to describe the epilepsies at different levels from seizure type to syndrome, and also recognises the emphasis we should place in diagnosis on aetiology. The high rate of cognitive and behaviour difficulty seen in association with childhood epilepsies is now well recognised, and is highlighted in the classification framework as comorbidities which should be recognised as part of the overall condition, as described by ESSENCE. Recent population data in both preschool, and school age children have highlighted that such difficulties are present from an early stage, and indeed unrecognised in many, with children at risk of academic underachievement. There needs to be early recognition of the risk and occurrence of such difficulties, with support given to both parents and staff from an early stage.

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## ADHD and problematic sexual behaviour

*Långström, Niklas*
*Department of Medical Epidemiology and Biostatistics, Uppsala University, Sweden*

ADHD is the most prevalent of the ESSENCE conditions and likely the one most often overrepresented in clinical and forensic services among individuals with "problematic" sexual behaviour. I will present findings from a review of the clinical and forensic scientific literature on the strength and character of the link between ADHD and problematic sexual behavior. The foci are sexually preoccupied or hypersexual behaviour, paraphilic disorder, and sexually abusive or coercive behaviours. Implications of the findings for clinicians and practitioners in settings meeting clients with problematic sexual behaviours will be discussed briefly.

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# AUTISM, ADHD AND RELATED DISORDERS III

## Eating disorders and ESSENCE

*Råstam, Maria*
*Lund University, Clinical Sciences Lund, Department of Clinical Sciences Lund, Lund, Sweden*

To present findings related to the overlap between the eating disorders and the so-called neurodevelopmental disorders, particularly ASD and ADHD. Data from a) the Child and Adolescent Twin Study in Sweden (CATSS), a large population-based longitudinal twin study, b) the Gothenburg anorexia nervosa study, a prospective controlled community-based (partly population-based) longitudinal study of teenage-onset anorexia nervosa, and c) the overlap between eating disorders and ASD/ADHD in clinical settings. Six in every 1000 nine-year-olds in a nationwide general population had severe restrictive eating problems. The risk for ASD was increased in girls and boys with restrictive eating problems. The 30-year follow-up study of anorexia nervosa found significant childhood problems with social cognition and obsessionality, traits enhanced during the eating disorder and persisting after recovery. The clinical studies found that autistic eating behaviours were frequent in anorexia nervosa patients, even after weight restoration. Eating disorders were overrepresented in adults with ESSENCE. Eating disorders are sometimes resistant to treatment, especially if underlying neurodevelopmental problems are neglected. The ESSENCE approach will be useful for the development of characterisation, diagnostic formulation, and targeted interventions in eating disorders.

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## Reading, writing and ESSENCE

*Åsberg Johnels, Jakob*
*University of Gothenburg, Gillberg Neuropsychiatry Centre & Division of Speech and Language Pathology, Gothenburg, Sweden*

Literacy is generally considered a human right that opens doors to education, entertainment, employment and independence (www.unesco.org/new/en/education). Developmental dyslexia is defined by persistent word reading problems that cannot be accounted for by low chronological or mental age, or by severely inadequate instruction. The focus of this talk is on presenting dyslexia as a diagnostic category. In doing so, I describe how dyslexia is diagnosed; how it differs from reading problems mainly affecting comprehension; how word reading is weakly associated with IQ; how developmental precursors to dyslexia can be observed already in pre-school children,

or even earlier; how dyslexia negatively affects school learning, job opportunities and mental health; how dyslexia to some extent can be ”treated” through intervention and compensatory strategies; and, most importantly, how dyslexia often co-occurs with other neurodevelopmental problems, including ADHD and autism. In particular, I argue that an ESSENCE framework is essential for delivering effective help for children with reading difficulties and other neurodevelopmental problems.

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## Fragile X syndrome and FMRP: a key to other disorders and their effective treatment

*Hagerman, Randi*
*MIND Institute, University of California Davis Medical Center, USA*

FMRP, the protein missing in Fragile X syndrome (FXS) is a regulator of the translation of hundreds of mRNAs needed for synaptic plasticity, GABA and glutamate balance and modulation of some ionic channels important for neuronal function. FMRP levels have also been found to be deficient in the brains of individuals affected by ASD, bipolar disorder, major depression and schizophrenia who do not have an FMR1 mutation. Therefore the development of targeted treatments for FXS that have the potential to reverse the neurobiological abnormalities resulting in FXS are likely to be helpful for other disorders that have a deficiency of FMRP. Metformin, a type 2 diabetes treatment, has emerged as a targeted treatment for FXS because the absence of FMRP upregulates the MEK-ERK pathway and metformin down-regulates MEK-ERK and also the mTOR pathway. In the Drosophila and mouse models of FXS metformin rescues behavioral, cognitive and neurobiological features of FXS. Use of metformin in children, adolescents and adults with FXS have demonstrated clinical benefits and currently a controlled trial is taking place at 2 sites in Canada and at the MIND Institute. Additional targeted treatments for FXS include low dose sertraline in young children, cannabidiol (CBD) and trofinetide, and evidence for benefits in other disorders including Rett syndrome and ASD will be presented.

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## 22q11 deletion syndrome

*Wallin, Lena*
*Institute of Neuroscience and Physiology, Gillberg Neuropsychiatry Centre, Gothenburg, Sweden*

The 22q11 Deletion Syndrome (22Q11DS) can cause varying degrees of symptoms of varying degree. Effects on the brain include cognitive impairment and neurodevelopmental as well as psychiatric disorders. Studies on the prevalence of psychiatric disorders (including neurodevelopmental disorders) in 22q11DS have mainly focused on children and adolescents. Studies have reported schizophrenia occurring in about 25 % of individuals with 22q11DS, making it the strongest known molecular genetic risk factor for schizophrenia. This is a prospective longitudinal study of 90 individuals with 22q11DS from childhood or adolescence into adult age. Baseline evaluations were performed in 2007. In the current study, new psychiatric assessments using structured diagnostic interviews, and questionnaires are performed. Preliminary data on prevalence and type of psychiatric disorders as well as neurodevelopmental disorders and comparisons with the baseline evaluations will be presented. We also aim to present some preliminary data on whether neurodevelopmental disorders or severe deficits in executive functioning in childhood are related to risk of developing psychosis later. Increased knowledge about psychiatric and neurodevelopmental disorders of individuals with 22q11DS will provide a better knowledge basis in order to enable improved care for these individuals.

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DAY 2- Wednesday 11th April

# GENETICS, EPIGENETICS, AND THE BRAIN I

## Genetics of ESSENCE

*Bourgeron, Thomas*
*Unité Génétique humaine et fonctions cognitives, Université Paris, Institut Pasteur Paris, France*

The genetic architecture of ESSENCE is complex, and made up of a combination of common and rare gene variants. Within ESSENCE, our early studies pointed to one biological pathway associated with autism related to the synapse. Among the pathogenic genes, synaptic cell adhesion molecules (neuroligins and neurexins) and scaffolding proteins (SHANK) are crucial for synapse formation/maintenance as well as correct balance between inhibitory and excitatory synaptic currents. These findings significantly advanced our knowledge on the possible causes of autism. However, they also (unintentionally) contributed to the emergence of a simplistic conception of autism as a binary trait: mutated vs. non-mutated or affected vs. non-affected. This simplification neglects the large phenotypic heterogeneity of autism and ESSENCE, whose genetic architecture – like most complex traits – cannot be reduced to a single gene. In this presentation, I will discuss our recent results coming from human studies in large populations and genetic isolates as well as mouse studies that shed new light on the inheritance of autism and related disorders and some of the underlying mechanisms. Finally, I will illustrate how we are currently studying Resilience to understand why some carriers of deleterious mutations seem to be protected (The Resilients) while others are severely affected.

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## Pre- and perinatal factors in ESSENCE

*Thompson, Lucy*
*Institute of Health and Wellbeing, University of Glasgow, UK, Institute of Neuroscience and Physiology, Gillberg Neuropsychiatry Centre, Gothenburg, Sweden*

A sound understanding of development for prospectively-recruited population-representative cohorts in the early years of life is necessary before we can prevent, identify, and treat early onset neurodevelopmental and mental health problems. Our systematic literature review (Thompson et al 2009) demonstrated that birth cohort

studies have provided a wealth of data for improving our understanding of how conditions develop over time and how outcomes later in life can be influenced by exposures in childhood. But these studies rarely included observations in the early months and years and no one study provides a broad view of early neurodevelopment across a population. This presentation will revisit the question of what birth cohort studies have measured in the very early months of life by (a) updating on the studies included in the 2009 review, (b) providing an overview of new studies that would now fit our review criteria, and (c) providing a brief update on recent developments in our understanding of the contribution of pre- and perinatal factors in the development of ESSENCE.

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## Population impact of stress, maltreatment and neurodevelopmental problems

*Wilson, Philip*

*University of Aberdeen, Institute of Applied Health Sciences, Inverness, UK*

The societal burden of suboptimal child development is enormous, and the potential benefits of dealing effectively with this challenge are huge. Improving the mental health of the whole population requires consideration of how to optimise population coverage, how best to identify children at developmental risk, what interventions to offer and how best to engage families in those interventions. This presentation will examine mental health data from a near-complete urban administrative dataset and reflect on its implications for the way we might deliver services in the future.

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# GENETICS, EPIGENETICS, AND THE BRAIN II

## Cholesterol, steroids, and vitamin D

*Allely, Clare*

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The “extreme male brain” theory of autism [Baron-Cohen, 2002] has generated hypotheses about the role of elevated fetal sex steroids such as testosterone in the development of autism. However, it does not discuss the contribution of other factors such as sex chromosome effects or the involvement of other steroid hormones proximal to testosterone in biosynthesis pathways including: vitamin D, estradiol, cortisol, and progesterone. So, although the majority of research to date has focused on fetal testosterone and autism, it appears that the actions of testosterone as well as other precursor steroid hormones within the same biosynthesis pathway may all contribute to fetal development in autism [Baron-Cohen et al., 2015]. Our group recently reviewed studies that linked some of the steroid hormones, specifically vitamin D, with levels of cholesterol. The present review was too multifaceted, complex, and conceptual to adopt a systematic PRISMA (PRISMA, Preferred reporting items for systematic reviews and meta-analyses) review format [Liberati et al., 2009; Moher, Liberati, Tetzlaff, & Altman, 2009]. However, we were strictly inclusive in the searches conducted on relevant databases (PsycINFO and Pubmed, etc.) and articles subsequently identified as relevant to the present hypothesis paper. We did not selectively include articles because of favorable results or which supported our conceptual arguments. All articles which were identified as relevant were included regardless of findings. Based on evidence from the relevant research literature, we present a hypothesis that there may be a link between cholesterol, vitamin D, and steroid hormones which subsequently impacts on the development of at least some of the “autisms” [Coleman & Gillberg]. Our hypothesis, driven by the peer reviewed literature, posits that there may be links between cholesterol metabolism, which we will refer to as “steroid metabolism” and findings of steroid abnormalities of various kinds (cortisol, testosterone, estrogens, progesterone, vitamin D) in autism spectrum disorder (ASD). This review indicates that there may be links between “steroid metabolism” and findings of steroid abnormalities of various kinds (cortisol, testosterone, estrogens, vitamin D) in autism. Further research investigating these potential links is warranted to further our understanding of the biological mechanisms underlying autism.

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## Neuroanatomy of autism

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To identify neurobiological mechanisms in the brain that may underly disorders of sensory processing. 36 rats were chronically administered pharmacologic treatment. Pre-pulse inhibition (PPI) and sensorimotor gating of the startle reflex response was assessed. Animals were sacrificed, brain tissue sliced and anatomic regions of interest selected. H1 receptors and a7-nicotinic acetylcholine receptor binding were assessed using autoradiographic techniques. Neurotransmitter receptor levels were measured in each region and correlated with behavioral data. Antihistamine treatment recovered PPI by working through the histaminergic and cholinergic neurotransmitter systems in the inferior colliculus, insular cortex, anterior cingulate and to a lesser extent, in the amygdala and hippocampus. Resulting data strongly supports the involvement of higher cortical systems in the regulation of sensorimotor gating. It is likely that many neural networks work in parallel to modify sensorimotor gating and the human pathology related to sensory processing is most likely heterogeneous. The results of these preliminary studies strongly implicate the pharmacotherapeutic potential to improve sensorimotor gating. Further research is underway to investigate additional neurotransmitter systems and expanded sensorimotor processing networks.

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## SCREENING AND DIAGNOSIS

### Screening for language disorder and autism- what is the point?

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The feasibility of language and autism screening has long been questioned, especially for children below age 3 years. However, in Sweden almost 100% of preschool children, aged 0-5 years of age, participate regularly in both health surveillance and screening at certain key-ages performed by professionals at Child Health Care Centers (CHC). This presentation will give a brief summary of the outcome of ESSENCE in 2.5-year-old screening-positive children. Results from Swedish longitudinal population-based studies of the outcome of CHC screening will be reviewed. The presentation will report findings from screening studies in Gothenburg, where we used 1) language screening, or 2) a combination of language and autism screening when the child was 2.5 years, and 3) follow-up five years later. Many children identified by the language and, or autism screening performed at age 2.5 years and thereafter clinically assessed had neurodevelopmental/ neuropsychiatric disorders or problems at 8 years of age. Children who screen positive for suspected language disorder and, or autism at 2.5 years constitute a heterogeneous group. Many of them continue to have difficulties in several developmental areas and at different levels five years later. They need a multidisciplinary ESSENCE-team to identify coexisting neurodevelopmental disorders.

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### Girls and women with ESSENCE

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Girls with ESSENCE (for instance ADHD and autism) have more or less been overlooked in the bourgeoning of research into child neuropsychiatry. The reasons for this are poorly understood. Recently awareness of the phenomenon has increased and researchers from different countries have published valuable knowledge about girls with ADHD. Still, the very limited research focusing on girls with autism is a considerable problem, not least for clinical practice. The presentation will provide an update on the outcome for girls with autism and ADHD based both on a review of published scientific papers and on results from of an ongoing follow-up study of about 100 clinical girls diagnosed with autism and/or ADHD at 3 to 18 years of age, 15-17 years after the first evaluation. The young women in the follow-up study are now 20-35 years old. The young women and (in most cases) their parents have been interviewed during 2016-2017 and different self-ratings scales as well as different diagnostic instruments have been used.

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### Early diagnosis of ESSENCE

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Early diagnosis of ESSENCE requires recognition both of the broad variety of symptoms and disorders included in the concept, and of the fact that age at identification of problems and diagnoses will vary. There is always the need to take a holistic perspective even though there may be only one major problem or marker symptom that causes concern among parents, preschool or school staff. My presentation will include research data on which problems can be identified at what age. Screening has been debated in many countries and pros and cons have been presented. The value of surveillance at child health care centres and school health units will be highlighted taking into account the heterogeneity of children with developmental problems both as regards aetiologies, symptom severities, comorbidities/ESSENCE and possibilities to initiate interventions. Implications based on research findings for early identification and diagnosing of ESSENCE and of sharing results with caregivers, preschool and school staff will be discussed.

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### ‘Detected’ but ‘undiagnosed’ Intellectual Disability (ID) in the paediatric clinic

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This talk will discuss the relationship between early developmental impairment (‘ESSENCE’ type presentations) and the diagnosis of intellectual disability, particularly for children and young people with mild to moderate forms who are in mainstream school, and who attend paediatric development clinics. Key findings from the screening study employing the Child and Adolescent Intellectual Disability Screening Questionnaire (CAIDS-Q) (Ethics reference: 14/EM/1024) in paediatric development clinics across Lothian, South East Scotland employing intellectual disability criteria IQ <70 (WISC-4) and impairment of adaptive functioning (ABAS), demonstrated marked underascertainment of the diagnosis along with distinct clinical features. Key findings were that the diagnosis of mild to moderate intellectual disability was substantially delayed compared to other children with neurodevelopmental diagnoses, even though all the children and young people were undergoing multidisciplinary monitoring and care, including attending paediatric development clinics. Findings reported from two further observational studies of children and young people from across the City of Edinburgh, presenting from mainstream school with marked additional support needs at key educational transitions, are discussed and compared to those of the screening study. Intellectual disability is considered to affect around 2% of children and young people with up to 50% underascertainment previously reported. The European DAFFODIL project (Dynamic Assessment of Functioning and Oriented at Development and Inclusive Learning project) reported that static standardised psychometric tests were the most frequently applied, and assessment practice was mainly used to determine whether a child should be placed in a special needs programme. This is

against the background of increasing special needs (termed additional support needs in Scotland) and the UN convention which states that inclusive education is a fundamental human right for every child. Our findings suggest ambivalence towards establishing a formal diagnosis of intellectual disability in children and young people who, nevertheless, have very significant ongoing needs. We suggest that this leaves children and young people and their families without an explanation for their functional difficulties, despite 'Early Symptomatic Syndromes Eliciting Neuropsychiatric Clinical Examinations' and leaves them vulnerable to poorer outcomes on transition to adult life.

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## OUTCOME AND INTERVENTION I

### Outcome of ESSENCE

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Several cross sectional studies of groups with neurodevelopmental disorders have been performed but longitudinal studies of representative cohorts are rare. This presentation will give a brief summary of the outcome of autism and ADHD, from childhood into adulthood. Results from Swedish longitudinal populations-based studies of the natural outcome of these ESSENCE disorders will be reviewed. The presentation includes studies of a) adults diagnosed with autism in childhood in the 1970s and 1980s, b) adults diagnosed with Asperger's syndrome in childhood in the 1980s and 1990s, teenagers/ young adults diagnosed with autism or ADHD or both autism and ADHD in childhood in 2005-09, young adults diagnosed with ADHD in childhood in the 1970s and, c) 4-7 year-olds diagnosed with autism in preschool years in 2008-2010. The focus will be on general outcome and on diagnostic and cognitive stability as well as aspects of quality of life. Predictors for good versus poor outcome will be presented. The majority of children with ESSENCE continue to have difficulties at different levels, both in the shorter and in the longer term.

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### Evidence basis for intervention in autism

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Children referred for assessments due to suspicion of autism today differ from those seen in clinics twenty or thirty years ago. As reflected by the increased prevalence of clinically diagnosed autism, many more children with milder types of autism and without intellectual disability (ID) are nowadays also referred. This, in itself, will affect results of outcome studies. Comparing outcome results from old and new autism studies cannot be taken as evidence for changes in autism outcome. When discussing autism and intervention,





the almost universal existence of additional disorders or problems, "comorbidities" or ESSENCE need to be considered since they will influence intervention and outcome. Since the 1980s behavioural modification programmes have been developed and evaluated both in randomised controlled trials (RCTs) and in naturalistic settings. Results from meta-analyses and Cochrane database analyses of early behavioural intervention, with and without aspects of intensity considered, social-communication focused interventions, multimodal developmental based interventions and naturalistic developmental behavioral interventions have been evaluated and will be presented in this overview.

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## OUTCOME AND INTERVENTION II

### Psychopharmacology in ESSENCE

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The EU-AIMS (European Autism Interventions - A Multicentre Study for Developing New Medications) is the largest single grant for autism in the world, and the largest for the study of any mental health disorder in Europe. EU-AIMS involves a novel collaboration between organisations representing affected individuals and their families (Autism Speaks), academia and industry who for the first time in the world have come together to develop the infrastructure underpinning new treatments for autism. Patient organizations, academic and industry join forces to develop and assess novel treatment approaches for autism. The overall aim is to find new methods for the development of medications for autism. Autism is a common neurodevelopmental disorder but effective medical treatments for the core symptoms are still lacking. Although novel genetic and pre-clinical approaches are beginning to identify aetiology-based treatment targets there are still considerable challenges in testing them in clinical trials. This includes the need for objective diagnostic, stratification, and outcome measures that are accepted by international regulatory authorities. The EU-AIMS Longitudinal European Autism Project (LEAP) is a multi-centre, multi-disciplinary study to identify biomarkers that will allow stratification of patients into more biologically homogenous subgroups; and that may serve as surrogate endpoints. We became the first joint academic-industry network to obtain scientific Qualification Advice from the European Medicines Agency (EMA). The EMA broadly endorsed the proposed population selection criteria and methodologies (cognitive, eye-tracking, EEG, MRI, and biochemical biomarkers) for patient stratification (Loth et al., 2015). Key recommendations included the need to establish sensitivity and specificity across all biomarker modalities, and to define cut-offs for quantitative stratification markers. As an exploratory study the large number of endpoints tested was recognized. Therefore, replication will be required, in particular to validate biomarkers as surrogate end points. This presentation will provide the scientific background and rationale for the biomarkers that have been proposed and accepted, the design of the study (Loth et al. 2017; Charman et al. 2017), and first findings from the analyses of

cognitive data, structure MRI, task-related MRI and resting-state MRI scans.

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### SSRIs for depressed mood in young people with ESSENCE

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ESSENCE diagnoses are often accompanied by depressed mood and other indices of depression. While the efficacy of selective serotonin reuptake inhibitors (SSRIs) in the depressed adult, though questioned by some, has been confirmed beyond doubt, and while the usefulness of SSRIs for treating childhood obsessive compulsive disorder is well-established, the possible antidepressant effect of SSRIs in children and adolescents remains highly controversial. Item-specific, patient-based post hoc analyses of drug company-sponsored placebo-controlled trials addressing the possible antidepressant effect of SSRIs in the young are conducted, the aims being to establish i) to what extent these drugs display efficacy, and ii) if such an effect is associated with age, gender and baseline symptom profile. The possibility that SSRIs may elicit or aggravate certain symptoms will be addressed as well. Preliminary data suggest an antidepressant effect of SSRIs to be at hand in the young but to be positively related to age. The possible influence of gender and baseline symptom profile on the possible benefit and risk of using SSRIs for the treatment of depressed mood in young patients, with or without an ESSENCE diagnosis, will also be discussed.

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## OUTCOME AND INTERVENTION III

### Supplements and diets in ESSENCE

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Interest in the role of nutrition and diet for neurodevelopment and learning has inspired much research over several decades. Interventions for ADHD which have been tested in many trials are supplement treatments (mainly Omega 3-6 fatty acids) and elimination diets such as oligoantigenic “few foods” diets and “food additives exclusion” diets. Several reviews and meta-analyses have analyzed the combined results of these studies, but conclusions vary. This presentation will give a brief overview of currently available research and future perspectives.

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### Working with adult women with autism

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Autism is thought of as a predominantly male condition, but this belief is being challenged as a new understanding of the female ASD profile emerges. Women with ASD largely camouflage their characteristics in an effort to pass as neurotypical. As a therapist in private practice in Toronto, Canada, Dori Zener, MSW RSW sees many women and teens that experience mental health issues due to late identification of ASD. Often, life challenges such as the increasing complexity of social, academic or work demands chip away at coping skills until ASD becomes more evident. This presentation will discuss the INVEST approach for supporting women with Autism: Identify Needs, Validate, Educate, Strengthen and Thrive. Case examples will be used to highlight the mental health challenges experienced by this population. Clinical strategies will be shared on how to equip women with the tools and confidence to face the everyday bombardment of the sensory social world and how they can protect themselves from autistic burnout. Wellness includes developing distress tolerance strategies, learning how to identify, express and regulate emotion, and developing realistic parameters on time and energy. Through supportive, empathetic counseling, many clients feel validated and understood for the first time and can move toward self-acceptance and self-compassion.

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### Problem solving and parenting programmes

*Puckering, Christine*
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Tajikistan is a low-income country, the poorest in Central Asia, and faces major development challenges. At any one time there are up to 300, children between the ages of 0-6 living in Baby Homes in Tajikistan. Between 20-30% of these children would be classified as having a disability and the rest are at risk of acquired disability as the result of being in institutional care. There is a general lack of community social service infrastructure, knowledge and motivation to support families who are having difficulties in caring for children, especially if their child has a disability and if the family has few financial or social resources. Often mothers are left to care for their disabled child without wider family support as a consequence of shame and stigma. Mellow Parenting, along with Health Prom, have created Family Support Centres and Mobile Outreach teams which prevent babies and young children from entering institutional care and support families to stay together. These new social services focus on family crisis intervention, befriending, fostering and training in early childhood development. Mellow Parenting groups have been developed in the Family Support Centres and IRODA centre for children with autism, offering support for parents and active intervention to promote parent-child interaction. Sixty-eight families were involved in the first phase of the intervention. All except one family completed the fourteen-week programme with reported gains in parental wellbeing and confidence, greater understanding by the parents of the children’s needs and better parent-child interaction. Twenty-four children were planned to be admitted to institutions. None were admitted and two children already in an institution were taken home. Training of trainers who offer initial training and ongoing supervision in Russian (the second language) was an essential step in the establishment of a sustainable intervention.

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# POSTERS

3797374 - P01

CATEGORY: SCREEN

## Early identification of and facilitation for children with symptoms of ADHD in preschool

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Children with ADHD spend most of their day in kindergarten or preschool. To ensure positive development it is essential that preschool staff have good knowledge of facilitation and teaching of preschool children with ADHD.

This study sought to increase knowledge of early identification of ADHD symptoms in pre-school aged children, and education and facilitation for those children for preschool staff, educational advisors and parents. The study investigated whether a teaching and supervision program for professionals and parents would increase the knowledge of early symptoms associated with ADHD, and of facilitation and education for those children.

The educational team and parents of 15 pre-school children with symptoms associated with ADHD were included in the study. Pre-program focus group interviews assessed participants' expectations, current knowledge and attitudes. In addition to serve as a baseline measure the information from these interviews influenced the content of the teaching and supervision program (TSP). The TSP included lectures, group assignments with supervision, and bring-home assignments between teaching sessions. The themes for the teaching and supervision program were; (1) General information on ADHD, (2) Assessment and parent-professional cooperation, (3) Facilitation for children with ADHD symptoms, (4) Effective strategies for challenging behaviors, (5) Risk- and success factors for inclusion. The post-program focus-group interviews assessed self-experienced learning and changes in attitudes.

The analysis of focus group interviews and notes participating teams made during assignments indicates that participants experience increased knowledge in early identification of symptoms associate with ADHD in pre-school aged children. Further the analysis clearly indicated that participation in the TSP lead to increased knowledge on facilitation and education of pre-school children with symptoms associated with ADHD, and that the participation in this study lead to changes in educational practices.

This study implemented a model to increase competence in professionals and parents in ADHD related behaviors. This study indicates that this model is effective in increasing knowledge and alter practices.

3859575 - P02

CATEGORY: SCREEN -

## The system of early detection and intervention of children with ESSENCE in Slovenia

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Objectives: Slovenia has a long tradition of a broad network of primary care paediatricians and systematic examination of children, including neurological examinations and developmental screening tests. There is also a network of developmental departments and in bigger towns mental health departments. This enables early detection and intervention for children with ESSENCE.

Method: We did an overview of the follow-up of children, who visited one of the developmental departments at the Community Health Centre in Ljubljana. Primary care paediatricians sent us the children with perinatal risk factors, abnormalities at neurological examination, or atypical/abnormal development.

Results: There were 429 children born in 2009. In 20% of the children the problems were more complex and the multidisciplinary approach was needed. In these cases we cooperated with the mental health department and kindergartens. Among the 429 children there were 175 children with perinatal risk factors.

Conclusion: The network of primary care paediatricians and the system of systematic examinations offer a good opportunity for early detection of children with ESSENCE. The network of multidisciplinary teams is required to offer the follow-up and early intervention to those with developmental problems, as well as good coordination between health care, educational and social system.

3870460 - P03

CATEGORY: SCREEN -

## Development and initial validation of the ESSENCE-Q South Slavic language versions

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Objectives: To translate the ESSENCE-Q screening instrument for neurodevelopmental disorders into South Slavic languages, namely Bosnian, Bulgarian, Croatian, Macedonian, Montenegrin, Serbian, and Slovenian.

Methods: The ESSENCE-Q (12 items, possible total scores 0-24) was translated into languages abovementioned in a multiple-step process. Afterwards, it was administered via interviews with one parent for a total of 112 children under the age of 6 assessed for developmental difficulties. Forty of the screened children had one or more neurodevelopmental disorders (NDDs).

Results: The translated questionnaires have appropriate content and face validity, with sound conceptual, item, semantic, and operational equivalence with the original. Only two items were found to be incomprehensive ("Motor development/milestones" and "Funny spells/absences). Thus, slight modifications were applied, preserving the original meaning. On average, children with NDDs had significantly higher scores than healthy children or children with psychological symptoms not related to NDDs ($F(df) = 38.27(2)$, $p < 0.001$). Based on receiver operating characteristics analysis, an optimal cut-off of ≥4 had 85% sensitivity and 72.2% specificity.

Conclusions: The ESSENCE-Q versions developed in this study have promising measurement properties when screening for children with NDDs in countries speaking South Slavic languages.

3871065 - P04
CATEGORY: SCREEN

## Screening for neurodevelopmental disorders in clinical settings with the ESSENCE-Q South Slavic language versions

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Objectives: To test the sensitivity and specificity of the parent form of the ESSENCE-Q South Slavic language versions as a screening instrument for neurodevelopmental disorders (NDDs) in clinical settings.





Methods: Children under the age of 6 assessed for developmental problems from seven centers in Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Serbia, and Slovenia were included. Forty eight children had one or more NDDs, while 86 were of normal development. One parent per child completed the ESSENCE-Q with 12 items (possible scores 0-24).

Results: Cronbach's alpha for the total score was 0.91. The area under the curve (AUC) was 0.96, where an optimal cut-off ≥ 3 had sensitivity of 0.96 (95% confidence interval [CI]: [0.86, 0.99]) and specificity of 0.84 (95% CI: [0.75, 0.91]). The diagnostic accuracy was similar when screening boys and girls separately (Youden index was 0.78 and 0.79, respectively), while it was greater when screening children aged 12-36 months than children aged 37-72 months (Youden index was 0.86 and 0.57, respectively).

Conclusions: The ESSENCE-Q South Slavic language versions completed by parents could be used as a screening tool to identify children with NDDs in clinical settings. The screening instrument might have greater diagnostic accuracy when screening younger than older children, but this trend should be further confirmed.

3871326 - P05
CATEGORY: SCREEN

## Comparing the evidence and "lessons learned" with developmental and social-emotional screening between Scandinavia and the USA

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Objectives: What are the "lessons learned" and research opportunities to improve the early identification of developmental-behavioral delays and at-risk conditions using the Ages & Stages Questionnaire (ASQ) and ASQ:Social-Emotional (ASQ:SE) in Scandinavian and United States (US) populations?

Methods: A comparative review was performed investigating the use of the ASQ and ASQ:SE in Denmark, Norway, Sweden and the US. Selection criteria included peer-viewed studies over the past 20 years in the birth-through-five-year age group.

Results: The Danish, Norwegian and Swedish ASQ have not been properly re-normed and validated. The ASQ:SE is only available in Danish. The Norwegian ASQ is out-of-date. The Swedish ASQ is not commercially available. Danish ASQ and ASQ:SE studies show promise for home visit and preschool settings. In US medical settings, periodically administering the ASQ and ASQ:SE has been proven to be feasible, and dramatically improves early detection and intervention rates. In Scandinavia and the US, there is insufficient evidence that screening improves outcomes over time.

Conclusions: US studies highlight many practical lessons about implementing the ASQ and ASQ:SE. In Scandinavia, research opportunities exist to improve early detection rates with universal screening. Randomized controlled trials are needed to investigate outcomes in screened versus unscreened cohorts.

3871741 - P06

CATEGORY: SCREEN

## eCAP DAWBA: a multi-centre randomised controlled trial of an online triage tool for concerns about a child's mental health

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Objectives: To assess whether use of the online Development and Wellbeing Assessment (DAWBA) soon after a concern is first raised about a child's mental health can result in improved mental health in children and young people, reduced waiting times to services, and improved appropriateness of referrals.

Methods: Following a successful one year pilot, we are recruiting families in Highland Scotland and Northern Savo, Finland, to participate in a RCT where they will either receive the DAWBA along with usual care, or usual care only. All families of children aged 2-18 years where there is a mental health concern will be offered participation. The primary outcome is the parent-complete Strengths and Difficulties Questionnaire (SDQ) at 6 months post-randomisation. We will collect detailed process information and conduct meta-analysis across the two sites.

Results: Our pilot study (Scotland) found the DAWBA to be practicable within usual referral /decision making procedures, and provided useful practical feedback. We began recruiting to the eCAP DAWBA RCT in Scotland in April 2017 and expect to begin in Finland in January 2018. We will present recruitment to date along with a description of the baseline SDQ scores and demographic information on those already recruited.

Conclusion: Routine use of an online triage tool may help improve young people's access to mental health services.

3888365 - P07

CATEGORY: SCREEN

## The Strengths and Difficulties Questionnaire (SDQ) for preschool children -- a Swedish validation

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Background: In Sweden 80-90% of children 1-5 years attend preschool and that environment is well suited to identify behaviours that may be signs of mental health problems. The Strengths and Difficulties Questionnaire (SDQ) is a well-known short and structured instrument measuring child behaviours that indicate mental health problems well suited for preschool use.

Aim: To investigate whether SDQ is a reliable and valid instrument for measuring behavioural problems in children aged 1-3 years and 4-5 years in a Swedish population, as rated by preschool teachers.

Methods: Preschools situated in different sized municipalities in Sweden participated. The preschool teacher rated each individual child. Concurrent validity was tested using the Child-Teacher Report Form (C-TRF) and Child Engagement Questionnaire (CEQ). Exploratory factor analysis was conducted for age groups, 12-47 months and 48-71 months.

Results: The Preschool teachers considered most of the SDQ items relevant and possible to rate. For the children aged 12-47 months, the subscales "Hyperactivity" (Cronbach alfa=0.84, split half=0.73) and "Conduct" (Cronbach alfa=0.76, split half = 0.80) were considered to be valid. For the age group above 47 months, the original four- factor solution was used and showed reasonable validity.

Conclusions: SDQ can be used in a preschool setting by preschool teachers as a valid instrument for identifying externalizing behavioural problems (hyperactivity and conduct problems) in young children, while there seems to be some difficulty in identifying emotional problems. Clinical implications SDQ could be used to identify preschool children at high-risk for mental health problems later in life.

3757447 - P08

CATEGORY: CLINICAL

## Physical health in children with ESSENCE

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Objectives: A holistic approach is the basis of "ESSENCE" (Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations), a collective term for early-onset neuropsychiatric problems, which exhibit similar and overlapping symptoms in early development. With increasing numbers of children being diagnosed with Neurodevelopmental disorders (NDDs) such as Autism Spectrum Disorder (ASD), Attention-Deficit/Hyperactivity Disorder (ADHD), and/or Learning Disorder (LD) attention has been drawn to these children´s physical health as well.

Aims: Our study aims to identify prevalence of physical problems (migraine, epilepsy, asthma, cancer, diabetes, psoriasis, lactose intolerance, celiac disease, diarrhea, constipation, daytime enuresis and encopresis) in a nationwide population of 9- or 12-year-old twins and compare the prevalence of these physical problems in subpopulations of children with one or several disorders within the ESSENCE group (ASD and/or ADHD and/or LD).

Method: Data from the Child and Adolescent Twin Study in Sweden (CATSS) - a nation wide study of physical and mental health problems in twins – was analysed. During a telephone interview parents of 9 or 12 years old twins rate their children's mental health using the previously validated Autism- Tics, ADHD and other Comorbidities (A-TAC) inventory and answer questions about the existence of different physical problems in the twins. The present study analysed information on 28 058 children, 9 or 12 year-old twins. With the help of clinically validated cut-offs on the A-TAC's ADHD; ASD and LD modules, children with one two or all three diagnoses were identified. The prevalence of defined physical problems was estimated in these groups and compared to the group of twins who had none of these ESSENCE disorders.

Results: Generally, physical problems were significantly more prevalent in the ESSENCE groups, mainly pronounced in children with indications of more than one NDD.

Conclusion: Our results indicate a high rate of physical problems in children with ESSENCE. The finding underscores the need for heightened clinical attention as regard to the physical health of children with ESSENCE in order that holistic treatment can be offered.

3869137 - P09

CATEGORY: CLINICAL

## School Attachment Monitor (SAM): Automating attachment measurement for middle childhood

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Objectives: The quality of attachment in early life is known to hold the key for children's concurrent mental health and across life span. Yet, measurements of attachment require intensive training and rating is a lengthy and demanding task. We present work in progress which aims to develop a novel technology, School Attachment Monitor (SAM), to automate key steps and features of validated Manchester Attachment Story Task (MCAST).

Methods: SAM is being designed and developed with active input from children and clinicians. Our latest prototype involves smart dolls equipped with motion measurement units, and a new generation of camera to record sessions with the capacity to capture imperceptible data for computing information, such as proximity of dolls. We have developed a child-friendly software which guides the child through the task via a pop-up avatar. So far, 60 4- to 8-year-olds participated in Phase 1 where they received SAM and MCAST with approximately 10 weeks' interval. Algorithms for automatic rating of attachment classification is being developed.

Results: We will present agreement ratio between SAM and MCAST, together with the result of analysis. Efficiency and accuracy of our algorithm, and the level of categorisations which it affords, will be discussed.

Conclusions: We will suggest academic and clinical contexts in which SAM may be an effective and useful alternative to MCAST.

3870945 - P10

CATEGORY: CLINICAL

## Validation of the new Social Emotional Assessment Measure (SEAM) with two psychopathological questionnaires and user perspectives on their usability

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Objectives: The limited knowledge on assessments using strength-based questionnaires gave rise to this investigation of the relationships between a strength-based assessment measure, a psychopathological screening instrument, and a diagnostic instrument.

Methods: The following questionnaires were applied; Caregiver-Teacher Report Form (C-TRF), Strengths and Difficulties Questionnaire (SDQ), and Social Emotional Assessment Measure – Research Edition (SEAM). The relation and variation of the questionnaires' scores were analyzed. In addition, we examined the perspectives of 59 child care providers on the questionnaires' clarity, relevance, and acceptability based on a low-risk sample of 2–5-year-old Danish children (n = 292).

Results: The SEAM Empathy Index is directly and positively related to the SDQ-T Prosocial subscale, while the SEAM Self-regulation & Cooperation Index is directly and negatively related to the SDQ-T Conduct problems subscale and the C-TRF Aggressive behavior and Attention problems subscales. The child care providers rated the relevance and acceptability of the SEAM more positively than the two other questionnaires.

Conclusions: The relationship among the questionnaires is relevant information for clinicians and researchers. In addition, the higher acceptable of the SEAM is an important finding for studies, as it might lead to higher response rates.

3871005 - P11

CATEGORY: CLINICAL

## The social relationship problems of children with Disinhibited Social Engagement Disorder (DSED): A systematic review

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Objectives: To systematically review the social relationship problems of children with Disinhibited Social Engagement Disorder (DSED).

Methods: Following PRISMA guidelines, a comprehensive search of PsycINFO, Medline, Embase, CINAHL and Royal College of Psychiatry journals was undertaken by CD+SI. Inclusion criteria: a) DSED (or ICD-10/DSM-IV terminology) or indiscriminate friendliness and maltreatment/severe deprivation and b) measure of social relationships/communication. Studies were limited to English. SI co-rated 50% of articles.

Results: 52/271 articles were read in full and a further 15 excluded. The qualitative synthesis included 37 studies. Six themes arose: i. Social relationship problems compared to peers, ii. Child-carer difficulties iii. Non-verbal communication, iv. Differential diagnosis (mainly ASD), v. deficits of higher cognitive skills impacting social function and vi. Persistence of DSED.

Conclusion: Children with DSED may have a broader range of problems than indiscriminate approaches e.g. bullying and understanding of friendships. Indiscriminate symptoms can persist and underlying factors such as poor inhibitory control may factor. Overlapping symptoms with disorders such as Autism also highlight need for careful assessment. Children with DSED represent a vulnerable group likely to benefit from early assessment to support social and emotional development.

3871310 - P12

CATEGORY: CLINICAL

## Neurodevelopmental comorbidity -- a systematic review

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Objectives: A systematic review of the scientific literature to: 1) determine the prevalence of co-existing neurodevelopmental problems in children and adolescents; 2) review the impact of multiple neurodevelopmental childhood problems on adult health, wellbeing and social functioning.

Methods: The protocol is registered in PROSPERO. MEDLINE, EMBASE, PsycInfo and CINHAL databases were comprehensively searched for studies with participants from the general population or clinical settings with multi-domain neurodevelopmental childhood data. Studies of single problems, behavioural phenotypes of identified genetic syndromes and randomised control trials were excluded.

Results: Initial results after searches and duplicate removal revealed 1271 papers. After title screening, 289 abstracts were reviewed. Sixty papers were included following full text review. Prevalence data for combinations of neurodevelopmental problems were extracted and tabulated. A common comorbidity was ADHD and behavioural disorders with prevalence of between 9% and 78% of children with ADHD. There were few large longitudinal studies reporting adult outcomes of childhood neurodevelopmental comorbidity.

Conclusions: Since introduction of ESSENCE, comorbidity of childhood developmental difficulties appears more widely accepted in research. Patterns of comorbidity warrant further epidemiological investigation.





3871549 - P13

CATEGORY: CLINICAL

## The Autism Spectrum plus Eating Disorders Scale (ASEDS). Different causes for the comorbid conditions.

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Objectives: Construct a female-specific Autism Spectrum plus Eating Disorder Scale (ASEDS), that would help elucidate the relationship between these two disorders.

Methods: During the first year of the study, we assessed 67 newcoming outpatient (age 16 or older) for ASD and ED, and interviewed them about possible causes of their eating disorder. Emerged themes were used to design a scale. In the second year, we continued the assessment and administered the scale to the newcoming patients to assess its validity.

Results: Six main themes emerged: emotional reactivity, interoception, sensory hypersensitivity, special interests, feeding/eating patterns and gender non-conformity (androginy). Forty-eight participants were assessed and nine recieved a clinical ASD diagnosis. The scale consisted of 48 scored items ($\alpha$=.907) and 22 filler items. Both AQ, $R^2$=.460, $F(1,46)$=41.0, $p<.001$, and RAADS-R, $R^2$=.362, $F(1,46)$ = 27.6, $p<.001$, explained a significant proportion of variance. There was also a significant group difference between ASD plus ED (M=84.3, SD=12.9) and ED only participants (M=55.5, SD=18.9); $t(46)$=4.34, $p<.001$.

Conclusions: ASEDS is a promising scale to understand ASD and ED comorbidity. Longitudinal research and larger samples are needed to further assess its validity. Comorbid ED and ASD may require specifically tailored interventions and clinicians can capitalize on the knowledge of different etiologies.

3871566 - P14

CATEGORY: CLINICAL

## Parallel Lives: Living with Reactive Attachment Disorder (RAD)

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Objectives: Reactive attachment disorder (RAD) is as a disorder found in children who have suffered maltreatment and is characterised by a failure to seek and respond to comfort, lack of emotional responsivity and persistent negative mood. Typically, RAD is as a disorder of infancy because the symptoms associated respond to an adequate caregiving environment and cease to exist past the pre-school years. However, recent

research has found that for some children this disorder continues to present past early childhood (Moran et al 2016; Zimmerman et al 2015). Despite this, there are no accepted criterions for RAD beyond the pre-school age.

Methods: Further evidence of the pervasive nature of this disorder is shown through the case studies of three boys whose diagnosis of RAD were still evident in middle and late childhood. Despite their many years of living in loving and stable homes, all three continued to have significant difficulties with family relationships, emotional regulation and failure to respond and seek comfort. The authors interviewed the boys and their families to gain their views and the impact that the symptoms cause on day to day life.

Results: The three boys all had persistent symptoms into middle childhood and/or into adolescence. Despite developmental changes in the nature of the symptoms, all still fulfilled DSM 5 criteria for RAD.

Conclusions: The case studies provide an overview of the emotional and practical difficulties that this disorder causes both the individual and the family, and highlights the pervasive consequences of childhood maltreatment.

3871584 - P15

CATEGORY: CLINICAL

## The importance of self-advocacy of people with autism in the context of progressive reforms

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Objectives: Autism diagnosis tripled in the recent years. This tendency puts both services and public authorities in a difficult situation: they meet more and more people with autism-specific needs. To tackle these challenges, the government adopted a national Autism Strategy, and an EU-funded project 'Eight Points' has also been launched, aiming to train hundreds of professionals, and to improve different services.

Methods: Progressive reforms cannot be realised without the participation of people with disabilities. The UN CRPD makes it mandatory for State Parties to consult disabled people - through their organisations - regarding all decisions that are taken about them. There is a gap between human rights and reality: 200 autism-focused NGOs work in our country today, but none of them are led and controlled by people with autism.

Results: Self-advocacy is crucial because people with autism are increasingly critical towards mainstream concepts such as normalisation "We are not broken, we don't need to be fixed ur cured."). They openly differentiate themselves from parent-led organisations (e.g. Autism Self-Advocacy Network). Self-advocates need special, human rights-based support to be empowered and become leaders of organisations.





Conclusions: The importance of self-advocacy is "evidence-based". Professionals have to help people with autism to form their own organisations.

3871720 - P16

CATEGORY: CLINICAL

## The CHIld Mental health in Education (CHIME) Project: a novel cohort study of child mental health in schools using routine data

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Objectives: To routinely measure social and emotional wellbeing for a whole population of children at key developmental stages, and to demonstrate the range of applications of these data.

Methods: Strengths and Difficulties Questionnaire (SDQ) data were collected through annual returns in schools at three stages: preschool (age 4-5; teacher completed), Primary 3 (age 7-8; teacher completed) and Primary 6 (age 10-11; child completed). Teacher and child respondents may give a different view of child mental health than the more usual parent-completed data, which is coloured by the parent's own mental health. ChiME data is unusually complete with virtually no attrition of the most deprived children.

Results: To date, these data have been used to demonstrate no impact of a city wide parenting program, and to elucidate differences by schools and city areas, independent of the home background of the child. Data are fed back to schools to use, e.g., in class planning, and city wide data is useful for allocation of increasingly scarce resources.

Conclusion: Routinely collecting data on social and emotional wellbeing for children is a useful way of understanding children across the socioeconomic spectrum. The data are simple yet can be used in complex and nuanced analyses to aid understanding of factors related to children's healthy psychological development.

3871746 - P17

CATEGORY: CLINICAL

## Learning to Observe: development and evaluation of the Child and Adult Relationship Observation (CARO)

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Objective: To develop a simplified version of the Mellow Parenting Observation System (MPOS) for use (a) by early years / primary care professionals in day-to-day practice and (b) as a research tool. MPOS shows good predictive validity, but rating is complex, time-consuming, and it is difficult for researchers to become reliable.

Methods: Stage 1 – consensus discussion about streamlining of existing MPOS coding

and scoring system; Stage 2 – correlation of old and new systems to test for agreement; Stage 3 – trial training of new system with health visitors (public health nurses); Stage 4 – analysis of pre- and post-training ratings using a novel smart phone app.

Results: Stages 1-3 have resulted in a refined system – called the Child and Adult Relationship Observation (CARO). The simplification includes (a) reduction in number of coding dimensions used, (b) removal of potential multiple coding of each interaction element, and (c) applying a limit of one positive and / or one negative code per 10 second segment of interaction. Stage 4 is in progress and the poster will feature inter-rater reliability data from pre- and post-training ratings as well as feedback from practitioners.

Conclusion: CARO may be useful as a simple observational tool for use both in clinical practice and in research studies. The smart phone app may make it possible to rate interaction footage in real time.

3871946 - P18

CATEGORY: CLINICAL

## Type of comorbidity is of ESSENCE for social problems in children with ADHD. Data from the Bergen Child Study

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Objectives: To explore social problems in a population-based clinically examined sample of children with ADHD relative to control children and children with other psychiatric disorders. Furthermore, to examine the contribution of ADHD symptoms and comorbid disorders to social problems in children with ADHD.

Methods: The Bergen Child Study included 329 clinically assessed children derived from the total population. Children with full-scale intelligence quotient (FSIQ) below 70 or with missing data were excluded, leaving 276 children. Comorbid disorders were grouped into ESSENCE (Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations) or non-ESSENCE comorbidity in sub-analyses. Social problems were measured using the Strengths and Difficulties Questionnaire (SDQ) peer problems subscale from parents and teachers.

Results: ADHD-diagnosis predicted social problems, as did level of ADHD-symptoms and comorbidity within the ESSENCE domains, but not other comorbidities, even after controlling for differences in sex and FSIQ.

Conclusions: As in clinical studies we found that social problems were more common in children with ADHD than in control children, but also above that found in children with other psychiatric disorders. ESSENCE comorbidity is prevalent in ADHD and especially debilitating for social function and should be addressed in all children with ADHD.





3899268 - P19

CATEGORY: CLINICAL

## Intellectual disability and coexisting autism and ADHD in Down syndrome: a population-based study

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Objectives: This study, aiming at identifying Autism spectrum disorder (ASD), ADHD and level of ID in Down syndrome (DS), was based on the total population of children and adolescents with DS (5-18 years) in the Swedish county of Uppsala.

Methods: The diagnosis of ASD, ADHD and ID was assessed in accordance with clinical praxis.

Results: A high proportion of ASD was found. For the study cohort, the rate was 41%. The proportion of children with ADHD was 34%. The level of Intellectual Disability (ID) was analysed. ID was found to be more profound than reported earlier. A majority (27%) of the teenagers had severe or profound ID. The corresponding figure in the younger age group (5-12 years) was 35%. ID was more severe when ASD was present. The more severe ID, compared to earlier reports, could possibly be due to the population-based design, with 100% participation, thereby including also children with the most profound ID. We cannot explain the lower levels of IQ among the teenagers with DS, i.e. whether this is a sign of early intellectual decline or if the age groups differ in other aspects. The population-based design should empower the results. In Uppsala County, there is a centralised follow-up program, including all children (0-18 years) with DS, which means that all patients with DS in the targeted age group have been reached. A limitation of the study is that only two thirds of the cohort took part in the ASD-ADHD assessment. The ID-study was based on the total population of 60 children.

Conclusions: Our cohort had a more profound ID than that reported in earlier studies. This is most prominent for the teenagers. More than half of the children have another developmental disorder in addition to ID. Children with DS and ASD generally have a more severe level of ID.

3943772 - P20

CATEGORY: CLINICAL

## The structure and clinical functions of the Helsinki University Hospital Pediatric Neuropsychiatric unit

*Raaska, Hanna**

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Helsinki University Hospital (HUH) Pediatric Neuropsychiatric unit was formed by unifying a child psychiatric and a neurocognitive unit in 2015. Its mission is to offer multi-disciplinary diagnostic services and timely patient- and family based treatment in severe

neuropsychiatric disorders. In this specialized unit child neurological and psychiatric teams co-operate from the referral to the rehabilitation and therapy plans.

HUH serves a hospital district with 180 000 children under 13 years of age. The department of HUH Child Psychiatry, treating a total of 5200 patients, received a total of 2600 new referrals in Sept 2016 – Sept 2017. Out of these patients, some children with neuropsychiatric disorders cannot benefit from the commonly used diagnosis-based, time-limited elective treatment processes due to the complex presentation of their disorder. They require more extensive assessment, tailored support programs, medication strategies and frequent follow-ups. The HUH Pediatric Neuropsychiatric unit was formed to treat these children. In addition to diagnostic assessments and individualized interventions, its purpose is to give consultations, and develop treatment strategies for the children with complicated disorders. The HUH Pediatric Neuropsychiatric unit received 150 new referrals, with 450 patients visiting the unit between Sept 2016-Sept 2017.

In this poster presentation we will describe some of our individualized treatment processes. These interventions are based on cognitive-behavioral intervention model and parents are involved in all of them.

3975988 - P21

CATEGORY: CLINICAL

## Adverse childhood experiences and neurodevelopmental disorders -- a double jeopardy for juvenile mania?

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Objectives: The aims of the study were to understand the relative importance of the contribution of adverse childhood experiences (ACEs) and neurodevelopmental disorders (NDDs) to juvenile mania symptoms, and to investigate a model for the interaction between ACEs and NDDs that would explain why some adolescents are at a greater risk of developing mania.

Methods: We used a prospective sample from a nationwide birth cohort study, comprising 3,348 twins born in Sweden between 1998 and 2001. Parents reported on ACEs and NDDs at age 9 and on symptoms of mania at age 15.

Results: Having ACEs or NDDs at age 9 significantly increased number of mania symptoms at age 15. NDDs seemed to have a slightly higher risk effect on mania symptoms than ACEs (boys/girls: d = 0.23/0.28), although this difference was not statistically significant. Children who have experienced both ACEs and NDDs are at double jeopardy for juvenile mania as they showed significantly more mania symptoms than children with ACEs-only (d = 0.48/1.40) and girls with NDDs-only (d = 1.03). Males with both exposures did not differ significantly in mania symptoms from males with NDDs-only (d= 0.19).





Conclusions: The study suggests that apart from ACEs, NDDs are an at least equally important factor to consider in the development of severe mental disorder. Families of children presenting with ACEs and/or NDDs need increased support.

3805672 - P22

CATEGORY: LANGUAGE

## Orofacial function in a group of children and adolescents with Speech Sound Disorder (SSD)

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Objectives: This study explores and describes orofacial function, speech characteristics and background factors related to speech sound disorders (SSD) in a group of children and adolescents 6-16:7 years.

Methods: Sixty participants (mean age 8:3 years, 14F/ 46M) were consecutively recruited from referrals to an orofacial resource center for speech and oral motor examination. Background questionnaire (MHC Questionnaire) on heredity, medical conditions, neurodevelopmental disorder, and speech development was used. Orofacial function was screened using the Nordic Orofacial Test-Screening (NOT-S). Speech production and intelligibility was assessed using The Swedish Articulation and Nasality Test (SVANTE) and The Intelligibility in Context Scale (ICS).

Results: The speech impairment varied from mild to very severe. Intelligibility was affected in 92%. A majority (87%) of the participants displayed difficulties in orofacial functions. Most affected domains were chewing and swallowing (42%) and masticatory muscles and jaw function (38%). Co-existing gross motor difficulties (29%) and a confirmed neuropsychiatric diagnosis (14%) were common.

Conclusions: Results from this study emphasize the needs for further assessments beside speech and articulation in children with SSD. It also confirms that children with SSD often have concomitant orofacial sensory motor deficits.

3871334 - P23

CATEGORY: LANGUAGE

## Speech and language profiles in 4-to-6-year-old children with early diagnosis of autism spectrum disorder without intellectual disability

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Objectives: This study aimed to investigate speech and language profiles in a community-representative group of preschool children with autism spectrum disorder (ASD) without intellectual disability (ID).

Methods: The 83 participants, age 4-6 years, were a subgroup of a large research cohort of 208 Swedish preschool children diagnosed with ASD before age 4.5 years. After diagnosis they had obtained intervention at a specialized habilitation center. At a two-year follow-up, comprehensive research data on their speech and language abilities were collected by two speech-language pathologists.

Results: Moderate to severe language problems were found in almost 60% of the children; only one in six had no such problems. Nearly half exhibited a combination of receptive and expressive language difficulties, of which a majority also had phonological difficulties, here defined as pronunciation problems and/or problems with phonological processing.

Conclusions: The findings highlight that many children with ASD without ID face major language challenges similar to those seen in children diagnosed with language disorder. These coexisting speech and language problems in children with ASD without ID require specific assessments, interventions and follow-up to ensure an optimal and adapted school situation for the child.

3871523 - P24

CATEGORY: LANGUAGE

## Deficits in attention affect speech in noise processing: A pilot study

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Objective: Moderate levels of white noise have been shown to help people with attentional deficits focus on cognitive tasks (Sikström & Söderlund, 2007). This is a counterintuitive finding given that our research (Rönnberg et al., 2013) indicates that noise interferes with speech understanding and that individual performance is predicted by i.a. differences in attentional capacity. This pilot study tests hypotheses of auditory distraction in persons with ADHD using a speech understanding task in noise conditions that vary in attentional load.

Method: Participants (ADHD vs. controls) listened to sentences in two different intelligibility conditions: clear and vocoded speech. Speech recognition thresholds (SRT) for the intelligibility conditions are estimated under three different noise conditions: white noise, fluctuating speech-shaped noise, and two-talker babble.

Preliminary Results: ADHD had higher SRTs under distorted speech conditions, suggesting that deficits in attention affect both noise attenuation performance and subsequent signal interpretation. However no differences in SRTs were observed between groups when the speech was free from distortion in the presence of white noise or babble. Continuing research investigates the types of acoustic environments that are disturbing versus facilitating for ADHD with respect to individual differences in cognitive capacity.

3749207 - P25

CATEGORY: GIRLS

## Girls on the autism spectrum and their special interests

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Objectives: The purpose of this qualitative study was to gain an understanding of the special interests of high functioning girls with autism spectrum disorder (ASD), the meaning the girls lay on their hobbies, and their impact on the girls' identity, well being, and social participation.

Method: Information was obtained with open interviews with seven girls at the age of 11-18. A constructivist grounded theory approach was applied to categorise data and identify key concepts. Comparative methods were employed throughout the analysing process in order to detect similarities and differences in the data.

Results: All participants described similar special interests as well as their importance in the girls' daily lives. The interests, which most often were pursued in solitude, enabled the girls to dwell in "a different world", where there were less demands for communication and interaction. Often the interests reflected the girls' ongoing need for drawing, reading and writing. The girls strongly identified with their interests and described their overall positive impact on their well being.

Conclusion: The findings point to the importance of acknowledging the special interests of girls with ASD and using these to promote their positive identity and well being in the present and as a way to prepare for their future.

3784555 - P26

CATEGORY: GIRLS

## To include or not to be included, that is the question. The importance of early intervention and inclusion highlighted through girls with Asperger syndrome's school experiences.

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Objective: The main aim of the study is to gain insight into whether girls with Asperger syndrome (AS) have experienced inclusion in school. Moreover, the aim is to highlight how teachers practice the concepts of early intervention and inclusion in school.

The overall research question is: What experiences do girls with AS have as regards early intervention and inclusion in school?

Method: The study uses a constructivist research paradigm, and is conducted through qualitative research methods. The empirical foundation is in-depth interviews with ten girls with AS in higher secondary school, and also interviews with the girls' teachers (those with class management function). Observations in the girls' classrooms will give complementary data. To reach the right informants, diagnosed with AS I got help from professionals in Children and Adolescent Psychiatric Clinic (BUP).

Results: Preliminary analyses of the interviews show that teacher skills and ability to build good classroom environment are of great importance for the girls' wellbeing and academic development. The girls highlighted the importance of teacher knowledge about AS. The girls in this study said that they would prefer to be in smaller groups, or to have some of the lessons alone with the teacher because they had difficulties with the great number of students gathered in one and the same classroom.

Conclusions: Given that the study has not yet been completed, definitive conclusions cannot be drawn. However, based on the interviews, it it clear that the girls have experienced both exclusion and inclusion. The girl's experience of inclusion depended on the teacher's ability to build a good relationship with to the girls, in the classroom, and also whether or not the classroom environment was characterized by a positive attitude towards diversity.

3830841 - P27

CATEGORY: ADULTS

## Understanding one´s body and movements from the perspective of young adults with autism

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Objectives: Studies of how persons with autism perceive their bodies and movements are scarce. Difficulties in perceiving the surrounding world along with disturbed motor coordination and executive functions may affect their physical and psychological development negatively. The aim was to explore the experiences of body and movements in young adults with autism and to investigate how two physiotherapeutic instruments may capture these experiences.

Methods: Eleven young adults (16-22 years) with autism were interviewed and assessed with Bruininks-Oseretsky Test of Motor Proficiency and Body Awareness Scale Movement Quality and Experience. The interviews were deductively analyzed and conceptually integrated to the results of the assessments in a mixed-methods design.

Results: Experiencing conflicting feelings about their bodies/movements, led to low understanding of themselves. The assessments captured these experiences relatively well, both movement quality and quantity. Positive experiences and better movement quality were related to having access to strategies in daily living.

Conclusions: Combining motor proficiency and body awareness assessments was optimal for understanding the experiences of the participants. Movement quality rather than quantity provided more information as to how well the participants understood their bodies and movements and hence acquired useful strategies.

3871872 - P28

CATEGORY: ADULTS

## Subjective experience in adults with ASD

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Objectives: The objectives are to identify and describe subjective experiences in autism spectrum disorder, and compare them with the anomalous self-experiences known to be present in schizophrenia spectrum disorder. By doing so the study contributes to the description of the autism concept in autism spectrum disorder and schizophrenia spectrum disorder respectively.

Methods: Subjective experience is explored by phenomenologically based semi-structured interview, together with ratings on level of function and burden of symptoms in young adult participants with Aspergers syndrome and schizotypal disorder respectively. Self-evaluations on symptoms and well being are also obtained.

Results: Results of the statistical analyses of collected data will be presented.

Conclusions: Anomalous self-experience could be 'the missing link' necessary to differentiate between autism spectrum disorder, and schizophrenia spectrum disorder, when in doubt. A correct diagnosis is imperative to guide choice of treatment, as well as of crucial importance for both clinical and personal recovery. However, as subjective experience in autism spectrum disorder is a relatively unexplored perspective, the study will shed new light on the concept of autism, regardless of direction of results.

3872355 - P29

CATEGORY: ADULTS

## Elderly persons with autism in Sweden -- a register study of diagnoses, psychiatric care utilization and psychiatric medication of 601 individuals

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Objectives: Although autism spectrum disorders (ASD) often are considered life-long disabilities, little is known about elderly persons with ASD. This study describes health-related data from nation wide registers concerning elderly Swedes with registered ASD diagnoses during 2002 to 2012.

Methods: In a cohort of 7936 persons eligible for disability services and aged 55 or above in 2012, 601 persons with ASD diagnoses registered in specialist medical care were identified. Register data concerning intellectual disability (ID) diagnoses, other psychiatric diagnoses, psychiatric care and psychiatric medication were reviewed.

Results: Childhood autism was the most common ASD diagnosis. Asperger's syndrome was more common in persons born in or after 1950 than in older persons. The majority had no ID diagnosis recorded. Affective disorders, anxiety and psychotic disorders were most common; alcohol/substance abuse disorders were uncommon. Of persons with Asperger´s syndrome 43% had been psychiatric inpatients. Neuroleptics were prescribed to 88% of patients with ASD and ID.

Conclusion: Individuals with ASD reach high age, and require support and services, also when there is no ID. There is a need for psychiatric care, especially for persons with Asperger's syndrome. Psychotropic medications were common.

3876180 - P30

CATEGORY: ADULTS

## Examining narratives of successful men on the autism spectrum: The role of identity and self-efficacy

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Objectives: Researchers have examined the unique characteristics of men and women on the autism spectrum, yet little research has examined the ways that their experiences may differ. This study was conducted to explore the internal and external factors that have enabled men on the autism spectrum to achieve success in their lives. The findings of this study were compared to those of a previous study, which explored the perceptions of successful women on the autism spectrum.

Methods: Ten men on the autism spectrum, who consider themselves successful, were interviewed and encouraged to share their experiences of education, career and relationships, and to discuss their perceptions of factors that had enabled them to achieve success or deal with obstacles at different stages of their life.

Results: Analysis of the men's narratives revealed that in contrast to women, the construction of their professional and personal identity was a key factor in their perceptions of success. In particular, the men revealed that they utilised logic and problem solving processes to tackle challenges, but still struggled with personal interactions and relationships.

Conclusions: Recognising that men develop their identity and solve problems differently than women on the autism spectrum is important in developing strategies to support the self-efficacy of these individuals as they move into adulthood.

3898832 - P31

CATEGORY: ADULTS

## Understanding the experience of individuals with autism in the prison and prison staffs understanding and knowledge of autism

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Objectives: The case reports reviewed by Allely (2015) clearly highlighted that inmates with ASDs can experience numerous difficulties within the prison environment such as poor relationships with prison staff and other inmates. Specifically, it is important to bear in mind that the environment is experienced as particularly stressful, distressing and intense for many individuals with ASD compared to their neurotypical fellow inmates. The present project will contribute to the sparse literature on prison staffs' knowledge and understanding of autism spectrum disorder. The study will also contribute to the relatively little research which has been conducted exploring the experience of prison in individuals with ASD.

Methods and Results:

Stage 1: The Questionnaire: Prison Staff and Prisoners with ASD

The questionnaire for prison staff (36 items) explores their awareness and understanding of ASD in prisoners.

The questionnaire for prisoners with ASD (35 items) includes: "Do you think that prisoners with an autism spectrum condition are more vulnerable (e.g. victim of bullying or intimidation) than other prisoners?" and "Do you feel the staff have adequate skills/ knowledge to work with the difficulties and needs of individuals with an autism spectrum condition in the prison?".

Stage 2: Interviews: Prison Staff and Prisoners with ASD

Building on the information gained from the questionnaires we would be seeking to interview a minimum of 10 prison staff and possibly a minimum of 6 prisoners.

Stage 3: 'Developing a Toolkit for Prison Staff to Increase Identification, Recognition and Understanding of Autism Spectrum Disorder within the Prison Environment'

Primarily based on the information derived from Stage 1 and 2.

Stage 4: Evaluation of the Toolkit developed at Stage 3.

We would be evaluating the usefulness of the Toolkit following its publication and use within the prisons for a minimum of six months. We would develop a short questionnaire seeking the opinions of the perceived usefulness of the toolkit and any suggestions for improvements. We would be aiming to get these views of the Toolkit from everybody who use it.

Conclusions: It is crucial that research in this area is translated into meaningful and enduring outcomes, ultimately improving the lives of individuals with ASD who are engaged with the justice system.

3904747 - P32

CATEGORY: ADULTS

## The Five To Fifteen (FTF) questionnaire used as a retrospective assessment of childhood symptoms in the context of adult assessment

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Objective: The Five to Fifteen (FTF) questionnaire is often used to retrospectively assess childhood symptoms in individuals assessed for a neurodevelopmental disorder (NDD) at adult age. However, this kind of retrospective usage has not been scientifically evaluated. We aimed to analyze retrospective usage of the FTF in adults with NDD and controls without NDD.

Methods: Out of a tertiary outpatient cohort we analyzed those individuals who (1) had the FTF data completed by significant others, and (2) were diagnosed with autism spectrum disorder ASD (n=158) or ADHD (n=133) without intellectual disability. Moreover, we conducted a web survey to collect FTF data from general population adult control group without NDD (n = 738), retrospectively rated regarding childhood symptoms by their parents.

Results: We will present the first preliminary results comparing the two NDD groups (ASD and ADHD without ID) and general population controls regarding retrospective





Five to Fifteen assessment of childhood symptoms. Further comparisons will be made to previously published data on FTF used for assessment of children with and without NDD, respectively.

Conclusions: Our study will increase the knowledge of retrospective usage of FTF to estimate childhood symptoms in individuals assessed for NDD as adults.

3868092 - P33

CATEGORY: GENETICS

## A framework to identify contributing genes in patients with Phelan-McDermid syndrome

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Objectives: Phelan-McDermid syndrome (PMS) is characterized by a variety of clinical symptoms, including intellectual disability (ID), absent or delayed speech, and autism spectrum disorders (ASD). It results from a deletion of the distal part of chromosome 22q13 that in most cases includes the SHANK3 gene. SHANK3 is considered a major gene for PMS, but the factors that modulate the severity of the syndrome remain largely unknown.

Methods: We investigated 85 patients with 22q13 rearrangements.

Results: We explored the clinical features associated with PMS, and provided evidence for frequent corpus callosum abnormalities. We then mapped several candidate genomic regions at the 22q13 region associated with high risk of clinical features, and suggest a second locus at 22q13 associated with absence of speech. Finally, in some cases, we identified additional clinically relevant copy-number variants at loci associated with ASD,

such as 16p11.2 and 15q11q13, which could modulate the severity of the syndrome. We also report an inherited SHANK3 deletion transmitted to affected daughters by a mother without ID nor ASD, suggesting that some individuals could compensate for such mutations.

Conclusions: We shed light on the genotype-phenotype relationship of PMS patients, a step towards the identification of compensatory mechanisms for a better prognosis and possibly treatments of patients.

3870322 - P34

CATEGORY: GENETICS

## Investigating clinical & genetics subtypes of sensory processing sensitivities in autism spectrum disorder

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Objectives: Sensory processing sensitivities are a critical cornerstone for characterizing and understanding Autism Spectrum Disorder (ASD). These prevalent symptoms correlate with symptoms severity and cognitive impairments, suggesting shared biological mechanisms. Understanding these mechanisms may shed light not only on sensory processing deficits but also on ASD. This study characterizes extreme cases of high and low sensory sensitivity among subjects and investigate its correlation with mutations in pathways related to ASD.

Methods: The analysis was done on 420 subjects of the C0733 cohort including 165 with ASD, 210 first-degree relatives & 97 controls. Low and high sensitive participants were selected based on the Short Sensory Profile [SSP; Dunn, 1999]. We used GRAVITY (http://gravity.pasteur.fr) to analyze all exonic variants.

Results: Preliminary analysis showed a normal distribution of scores in all groups but with statistically significant differences in variance. The exploration of the GABA and GLUT pathways suggests that likely gene disruptive mutations in GABA have stronger impact on Perceptual Sensibility than GLUT. For Missense mutations, there was no difference between groups.

Conclusions: Those results show how hypo/hyper-sensitivity in ASD may be caused by the higher clinical heterogeneity, with deleterious genetic mutations as one underlying cause.





3871674 - P35

CATEGORY: GENETICS

## The genetic architecture of autism in the Faroe Islands

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Objectives: The genetic landscape of autism spectrum disorder (ASD) is highly heterogeneous. It remains very challenging to identify for each patient the combination of risk alleles. Here, we assessed the genetic architecture of families with ASD within the insular population of the Faroe Islands.

Methods: We performed and analyzed Illumina genome-wide genotyping and Whole-Exome Sequencing of 286-373 individuals (including 36 patients with ASD, 61-67 unaffected siblings, 59-68 parents and 124-208 controls).

Results: We show that the Faroese population is more recent and homogeneous than reference HapMap3 populations. We also show that the inbreeding coefficient is higher in patients compared to controls. In some patients, we could identify mutations that may contribute to the ASD risk. Analysis of copy-number variants identified genes previously associated with ASD such as de novo deletions affecting MECP2, NRXN1 and the 22q11.2 region, inherited variants affecting NLGN1 and TBL1X, and new compelling candidates involved in neurodevelopment.

Conclusions: The genetic causes for ASD in the Faroe Islands were not different from those in other European cohorts. We reveal three novel candidate genes for ASD, IQSEC3, RIMS4 and KLRN that are essential for neurodevelopment and could lead to new insights regarding the genetic basis of ASD and potentially novel therapeutic strategies.

3934670 - P36

CATEGORY: GENETICS

## The drosophila orthologs of TCF4, NRX1, CNTNAP2 and ERC2 are necessary for normal habituation

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Objectives: Variants and/or mutations in TCF4, NRXN1, CNTNAP2 and ERC2 genes are associated with a wide spectrum of psychiatric conditions including intellectual disability, autism, schizophrenia and hyperactivity. We propose a behavioral approach in an efficient genetic model to explore the mechanism by which these genes may be connected and how they cause disease. Habituation is a fundamental and evolutionarily conserved form of learning that has shown to be highly relevant to ID and autism.

Methods: Conditional knockdown of Drosophila da, nrx1, nrxIV and brp, the orthologs of TCF4, NRXN1, CNTNAP2 and ERC1/2, was induced either pan-neuronally or in neuronal subtypes. We used the previously described automated light-off jump habituation paradigm (Kramer et al, PLoS Biol. 2011).

Results: Knockdown of any of the four tested genes gives rise to defects in habituation. These defects are consistently present when the knockdown is induced in gabaergic neurons. We are currently exploring activity and sleep patterns as additional behavior readout.

Conclusions: Our results are consistent with the previously proposed hypothesis that defects in inhibitory neuronal network could be a common risk factor for neuropsychiatric conditions. Assessing a behavior in different neuronal subtypes can help us to understand more about localized and sometimes antagonistic effect of some genes in disease. We propose to further explore the interaction between these genes by pharmacological testing and accessing common molecular pathways.

3871769 - P37

CATEGORY: RISK

## Risk factors for final diagnosis of Autism Spectrum Disorders (ASD) in toddlers with developmental delays

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Objectives : The purpose of our study was to describe the demographic and phenotypic profiles of a French cohort of toddlers with developmental delays. We also aimed to estimate if the cumulative effect of risk factors (RF) known to be associated with ASD increases the probability to receive a final diagnosis of autism.

Methods: We collected and analyzed the clinical data of children aged <36 months, referred to a tertiary care Child Psychiatry Unit (Robert Debré Hospital, Paris, France). Four groups of RF were considered: genetic, maternal, perinatal risk factors and birth parameters below or over the 5th centile. We used a logistic model to estimate the influence of the cumulative effect of RF on ASD diagnosis. With a linear model, we finally tested the effect of these RF on the severity of core ASD symptoms, measured with the ADOS-2.

Results: Out of a total of 162 children included, 138 met DSM5 criteria for ASD. The probability to receive a diagnosis of ASD increased with the number of RF ($p<0.01$). However, no association was found between ASD severity scores and RF (or their accumulation).

Conclusions: In our cohort, the association of RF increased the probability to receive an ASD diagnosis. This finding could help to reinforce Health Policies aiming to improve early detection of toddlers with ASD by primary care including general practitioners and family pediatricians.

3769413 - P38

CATEGORY: NEURO

## EEG neural variability distinguishes 16p11.2 deletion and duplication carriers

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Objectives: Copy number variations (CNV) at the 16p11.2 chromosomal locus are associated with myriad clinical features including intellectual disability and autism spectrum disorder (ASD). The aim of this study is twofold: 1) to determine whether 16p11.2 deletion (DEL) and duplication (DUP) carriers demonstrate a distinct and reciprocal pattern of EEG activity as represented by neural variability and signal-to-noise (SNR) measures; 2) to examine whether the identified EEG activity relates to IQ and ASD-related traits.

Methods: EEG data of the 16p11.2 CNV and typical groups were previously collected as part of the Simons Variation in Individuals Project (Simons VIP Consortium, 2012). Neural variability measures, as estimated by single trial ERP and SNRs, were analysed in the CNV (n=28) and typical groups (n=11).

Results: Intra-participant variability in ERP amplitude was significantly higher in DEL compared to controls. SNRs did not differ between the groups. Patterns of EEG activity did not support indications of gene-dosage effects. Correlations were found between neural variability and IQ for DEL.

Conclusions: The findings indicate that 16p11.2 CNV groups have a distinctly atypical pattern of EEG activity that is gene-dosage independent and related to IQ. This further corroborates interpretations of neural variability as relating to cognitive processing and neural plasticity.

3860714 - P39

CATEGORY: NEURO

## Assessing false belief understanding in children with autism using a computer application - a pilot study

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Objectives: The main aim was to study False Belief understanding on a self-instructing computer application (the FB-task) in children with and without Autism Spectrum Disorder (ASD).

Methods: Sixty-eight children with ASD and a comparison group consisting of 98 typically developing (TD) children participated, matched for age with a mean age of 7:5 years. The FB-task was based on classical FB protocols, and additionally included a manipulation of language in an attempt to explore the facilitating effect of linguistic support during FB processing. Specifically, the FB-task was presented in three different conditions, narrative, silent, and auditory interference.

Results: All TD children and 75 % the children with ASD were able to complete the FB-task. In terms of success rate, children with ASD did not perform above chance level on the FB-task in any condition while the TD group did in all. Significant differences were found between groups in two conditions, narrative and silent (with TD children performing better) but not for interference condition.

Conclusion: As expected, children with ASD had difficulties passing the FB-task. No evidence was found in our study for the idea that access to language support facilitated the FB performance. The unexpectedly low result in both groups questions the clinical usefulness of the task in its current form and/or for the current age group.

3860780 - P40

CATEGORY: NEURO

## The CPT-3 versus the QB-test: a task-oriented computerized assessment of attention-related problems in out-patient children, preliminary findings from the BUP-Orkdal Pilot

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Objectives: Unbiased measures of attention are important in the assessment and diagnosis of attention-related disorders such as ADHD. Two popular assessments of attention-related problems in Norway are CPT-3 and the QB-test. The aim of the Bup-Orkdal Pilot was to examine the results of CPT-3 and the QB-test to compare the sensitivity and usefulness in the clinical assessments.

Methods: Children (N=20, females = 6) aged 8-17 years with attention-related problems were invited to participate when admitted to the out-patient clinic. In addition to the CPT-3 and the QB test, the patients were assessed with Kiddie-SADS, ADHD-RS, parent and teacher interviews, physical and pedagogic examination. Patients were diagnosed by counseling psychologists or psychiatrists. Patients were divided between those with an ADHD diagnosis (N=16) and those without (N=4).

Results: Regardless of diagnosis the QB-test indicated attention-related problems in all children. Two or more atypical scores on the CPT-3 were the best predictor of an ADHD diagnosis ($P<.05$), while commission errors on the QB-test were the most diagnostic sensitive single item ($P<.01$).

Conclusions: The main finding was that two or more atypical scores on the CPT-3 were highly correlated with a diagnosis of ADHD. Which threshold for “atypical” scores one should use in the diagnosis of attention-related disorders is discussed.

3868832 - P41

CATEGORY: NEURO

## Child maltreatment, autonomic nervous system responsivity, and psychopathology: A systematic review

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Objectives: Child maltreatment may affect autonomic nervous system (ANS) responsivity. This review aimed to systematically evaluate the evidence regarding the effects of maltreatment on cardiovascular ANS responsivity in children, and to examine how ANS responsivity may mediate or moderate the association between child maltreatment and psychopathology.

Methods: Electronic searches of five databases were conducted, keyword searches in relevant journals were performed, reference sections of relevant articles were hand searched, and experts in the field contacted. Articles were extracted according to strict inclusion criteria. The quality of each of the selected studies was assessed.

Results: The search produced 573 articles; 16 met the inclusion criteria. The majority of the studies reviewed suggested blunted cardiovascular responsivity and sympathetic activation in response to stress in maltreated children compared to non-maltreated children, with mixed findings around vagal responsivity. ANS responsivity was shown to moderate, but not to mediate, risk of psychopathology among maltreated children.

Conclusions: Child maltreatment may be associated with blunted sympathetic activation in stressful situations, and differences in maltreated children’s ANS responsivity may contribute to risk of psychopathology.

3870377 - P42

CATEGORY: NEURO

## Driving behaviour in a simulator - A new driving assessment method for individuals with ADHD and autism

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Objectives: The objective of the study was to assess and compare the driving behaviour among novice drivers with and without ADHD/autism in a driving simulator.

Methods: 40 clients from a driving assessment unit were recruited for the study. The inclusion criteria were a confirmed diagnosis of ADHD and/or autism and no driving experience. Another 40 individuals without any neurodevelopmental disorders (nor driving experience) were used as a control group. The simulator was equipped with automatic transmission and the program required no previous driving experience.

Results: The participants with ADHD/autism made more driving errors than the control group. They had twice as many crashes, drove more often too fast and had difficulty to identify hazards in specific traffic environments. However, there was a large variation in number of errors of the group, i.e., several individuals performed as expected for an unexperienced driver.

Conclusions: Before individuals with ADHD/autism can obtain a learner's permit they need a medical certificate. However, to assess fitness to drive for individuals with neurodevelopmental disorders is difficult as no gold standard procedure exists. The driving simulator program can be a useful tool and a possibility to assess behaviours that can be challenging for individuals with ADHD/autism but important for safe driving.

3871426 - P43
CATEGORY: NEURO

## Magnetoencephalographic (MEG) gamma oscillations and sensory sensitivity in people with and without ASD.

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Objectives: People with ASD often demonstrate hypo- and hypersensitivity to sensory stimuli of different modalities. Altered balance between neural excitation (E) and inhibition (I) was suggested as one of the mechanisms of ASD and may contribute to these sensory issues. To find functional correlates of sensory sensitivity in people with ASD and neuro-typical (NT) adults we investigated MEG gamma oscillations that are known to be closely related to activity in E-I circuits.

Methods: MEG was recorded while subjects watched high-contrast concentric gratings moving at 1.2, 3.6 or 6.0 deg/sec that effectively induced visual gamma oscillations in our previous study in children. Sensory sensitivity was assessed in all participants using Sensory Profile questionnaire.





Results: Participants with ASD had higher sensory sensitivity then the NT individuals ($p<0.05$). Corroborating the previous results we have found acceleration of gamma oscillations and suppression of gamma response with increasing velocity of visual motion. ASD individuals tended to suppress gamma response less with increasing motion velocity. In both NT and ASD individuals, as well as across the combined groups the greater suppression of gamma response correlated with lower sensory sensitivity.

Conclusions: The velocity-related changes in gamma response may appear useful to characterize the E/I balance in the visual cortex.

3901191 - P44
CATEGORY: NEURO

## Atypical prior construction and adjustment in autism: evidence from a tactile discrimination task

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Objectives: Bayesian theories were formulated to explain the computational and neurophysiological counterparts of atypical perception in Autism Spectrum Disorders (ASD). In this framework, perception is influenced by both the precision of sensory inputs and our expectations (priors). ASD might be characterized by an imbalance in the way prior and sensory evidence are traded. Our study aims at testing and refining this hypothesis.

Methods: Neutotypical (NT) and ASD adults performed two tactile frequency discrimination tasks designed to elicit the so-called time-order effect (TOE), whereby the percept of the first stimulus appears to be strongly biased toward priors in an ambiguous context. We developed a computational model to quantify the relative weights of prior belief and sensory information onto perceptual decisions.

Results: Both ASD and NT subjects showed a TOE, revealing the construction of priors and their influence on perception. Yet, contrary to NT, ASD participants did not flexibly modulate the weight of prior on perception, when the perceptual context varied.

Conclusions: People with ASD can implicitly build and adjust priors, but with a slower dynamic than NT. This atypical perceptual inference fits with well-known higher level symptoms in ASD, such as inflexibility or resistance to change.

3901332 - P45
CATEGORY: NEURO

## A cross-syndrome study of facial emotion recognition in children with Autism Spectrum Disorder (ASD), and Attention-Deficit/ Hyperactivity Disorder (ADHD)

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Introduction: Alterations in facial emotion recognition have been associated with both Autism Spectrum Disorder (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD). However, very few studies have specifically compared these two disorders.

Objectives: This cross-syndrome study assesses differences between school-aged children with ADHD and with ASD in their ability to label facial expressions of six basic emotions.

Methods: We administered a computer-based task to groups of children with ASD, ADHD and typically developing control (TD) participants, matched for age, sex and IQ.

Results: A percentile bootstrap on the number of correct responses revealed that overall, the ASD and ADHD groups were less accurate than the TD group. A closer look at the participants' responses indicated that a higher proportion of ASD children demonstrated a bias compared to TD controls. This was not the case for ADHD children. Taking into account response biases, the ASD and ADHD groups were less accurate in recognizing angry and happy faces. In ADHD, fearful faces were less accurately recognized compared to the TD group.

Conclusions: We found both similarities and specificities between ASD and ADHD groups when compared to TD. However, no difference was found between these two groups supporting the view that emotion recognition might be a viable endophenotype in neurodevelopmental disorders.

3901350 - P46

CATEGORY: NEURO

## Decisions of individuals with Autism Spectrum Disorders (ASD): Risk-aversion and/or rationality?

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Objectives: Risk-aversion and rationality have been identified as core features of decision-making in Autism Spectrum Disorders (ASD). As risk-aversion often appears to be a rational strategy in experimental decision-making, this study aims to determine clearly whether risk-aversion sustains rational decision-making in ASD adults.

Method: 22 ASD and 21 matched TD adults completed a financial decision task in which they had to choose between sure/risky options. In the equal expected value (EV) condition, the EV of the two options was equal. In the unequal EV condition, the EV of the sure option was alternately higher/lower than the EV of the risky option.

Results: A generalized estimating equation model revealed that the ASD group was overall more risk-averse than the TD group. In the unequal EV condition, the ASD group chose more rational options than the TD group only when risk-aversion was the most rational strategy. In fact, both groups made similar choices when risk-aversion was the less rational strategy.

Conclusion: Increased rationality of ASD participants was specifically limited to situations requiring risk-aversion. Yet, when risk-aversion was inappropriate, choices in both groups did not differ. As such, this study confirmed that risk-aversion is a core feature of ASD, and showed that ASD individuals can adaptively switch their strategy to avoid negative consequences.





3904573 - P47

CATEGORY: NEURO

## Perception/action coupling using a paradigm of visual preference in children with Autism Spectrum Disorders (ASD)

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Objectives: To quantify, through measures taken from the visual exploration behavior, spontaneous distinction of actions presenting with a variable perception/action coupling, following that the video was presented in the forward reading direction ("Forward", strong coupling) or in the backward reading direction ("Backward", weak coupling) in two groups of children (7-17 years), with or without an Autism Spectrum Disorder (ASD).

Methods: While children were passively viewing videos of daily actions, an eye-tracking system measured the number and duration of their eye fixations.

Results: During the familiarization phase (each video was presented alone), we first verified that the two groups behaved similarly in terms of general attention to the videos. In a test of visual preference (the two types of videos, "Forward" and "Backward", were presented in competition), we found that the number and distribution of the fixation times were modulated by the strength of the perception/action coupling in the control participants, but not in the participants with ASD.

Conclusions: Impairments in the construction of actions representations have been hypothesized in autism (Schmitz et al., 2003). This study further reveals that the presence of a perception/action coupling can be measured using a 10 mn passive test with an eye-tracking system.

3997642 - P48

CATEGORY: NEURO

## Autism Spectrum Disorder (ASD) and vitamin D levels at birth: A case control study

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Objectives: To address the hypothesis that low 25-hydroxyvitamin D levels at birth is a risk factor for autism (ASD).

Methods: Since the early eighties whole blood samples collected on specialized filter paper has been drawn from all Faroese newborns according to the neonatal screening program. Participants in this cross-sectional population-based study of 29 Faroese ASD cases and 160 age-matched controls were born between 1985 and 1993. From the identified filter-cards, the levels of 25(OH)D2 and 25(OH)D3 (summed and reported as total 25(OH)D) were measured by mass spectrometry.

Results: No significant difference in mean 25(OH)D was found between the ASD cases (27.0 nM, SD=12.7) and the control group (25.5 nM, SD=10.9). For both cases and controls the mean 25(OH)D levels did not vary according to the season of the year in which they were sampled (cases: p=0.59 and controls: p=0.24). Further the difference in season of birth between cases and controls was not significant (p=0.355).

Conclusions: This study does not support the hypothesis that low 25-hydroxyvitamin D levels at birth is a risk factor for autism (ASD) as we found no difference in 25(OH) D concentration among ASD cases and controls at birth. The small sample size is a limitation and it would have been an advantage to use siblings as a joint environmental and genetic control group instead of age-matched controls.

3857840 - P49

CATEGORY: TREATMENT

## Parents' experiences of support and interventions from society: A six-year follow-up of children assessed for suspected autism spectrum disorder

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Objectives: Early interventions are important for children with developmental problems such as autism spectrum disorders (ASD). Parents of these children have also been described to have a burdensome life situation related to the child's problems. The aim of the study was to obtain better knowledge of parents' experiences of support six years after their child had been assessed for ASD.

Method: We sent a semi-structured questionnaire to all 101 parents whose children (<4 years of age) had been assessed for ASD about six years earlier. Eight open-ended questions were then analysed thematically using a hermeneutic phenomenological approach.

Outcome: From the open-ended questions three themes were identified; parental responsibility, resources and competence among actors in society, and inequality. The parents felt they had to take a big responsibility for securing support for their child, and found the support from society given unequal and uncoordinated. They also experienced a lack of individualisation of services and interventions.

Conclusion: The essence of parents' comments was the experience of authorities and societal actors trying to push the responsibility onto someone else. This requires collaboration and coordination between different societal bodies. Continuous longitudinal support for children identified with neurodevelopmental problems at an early age is warranted.

3868467 - P50

CATEGORY: TREATMENT

## Validating core elements of art therapy for children 6 - 12 with autism spectrum disorders (ASD).

*(during submission the data analysis is not finished yet)*

*Author: C. Schweizer (MA), Stenden University of Applied Sciences, Leeuwarden, and University of Groningen, The Netherlands: celine.schweizer@stenden.com;*

Objectives: Children with autism (ASD) are often referred to art therapy (AT) because of problems with their self-esteem, flexibility, emotion regulation and social behaviour (Schweizer, Knorth & Spreen, 2014). It is not the ASD diagnosis that matters in AT but the characteristics of the individual child.

Two instruments have been developed of consensus-based core elements of AT: Observation of a child by the art therapist (OAT-ASD) and (Self-) Evaluation of the Art Therapist (EAT-ASD). The OAT-ASD aims to contribute to requiring insight and evaluating specific factors as art expressions and behaviour of the child with autism during AT sessions (for example: The child uses varied art materials and/or techniques). The EAT-ASD aims to contribute to requiring insight in the therapeutic alliance as part of the AT treatment (for example: The art therapist supports the child with learning new skills and techniques.

Methods: AT professionals (N=49) and AT students (N = 25) judged with a 5.Likert scale the items of the OAT-ASD and the EAT-ASD by observation of four video fragments (5 min.) about various AT situations with children diagnosed with ASD. Interrater reliability and validation of the instruments was developed in a three rounds mixed method design. In these successive rounds comments, discussions and ratings from judges enabled to clarify the items and to compute agreement with Weighted Kappa.

Results: Items in both instruments resulted in moderate up to almost perfect agreement

scores. Items in both scales have improved in reliability, feasibility, content validity. Professionals as well as AT students found the scales very helpful in observing AT sessions with ASD children. Training of respondents contributed to higher agreement;

Conclusions: Items in two instruments (OAT-ASD and EAT-ASD) for evaluating art therapy with a child diagnosed with ASD have been tested with moderate up to almost perfect interrater reliability. Results are more reliable when the art therapist is trained before applying the instruments. Reliability of both instruments will contribute to evidence based evaluation of AT in autism.

3869098 - P51

CATEGORY: TREATMENT

## Results of a phase 2 randomized double-blind placebo controlled study (VANILLA) investigating the efficacy and safety of a V1a antagonist (RG7314) in adult men with ASD

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Objectives: Vasopressin, a modulator of social behaviors, is a target of interest for treating Autism Spectrum Disorder (ASD) core symptoms. The phase 2 VANILLA study (NCT01793441) evaluated the orally-available vasopressin 1a receptor inhibitor RG7314 in adult men with high-functioning ASD for safety and efficacy on socialization and communication.

Methods: The staggered parallel-group, randomized, double-blind, placebo-controlled study evaluated RG7314 1.5, 4 or 10 mg administered daily PO for 12 weeks. The study proceeded sequentially through 4 stages per safety data review: placebo, 1.5 mg; placebo, 4 mg; placebo, 10 mg; placebo, 1.5 mg, 10 mg. The primary outcome was the caregiver-rated Social Responsiveness Scale 2 (SRS-2). Secondary outcomes included the Vineland-II Adaptive Behavior Scale (VABS-II) and Clinical Global Impressions Improvement (CGI-I) scale.

Results: The trial enrolled 223 patients (per stage n = 17, 111, 24, 71, respectively) with 17% dropout. Baseline characteristics were (mean ± SD): age, 25±6.53 years; full-scale intelligence quotient, 98.0±16.52; SRS-2 t-score, 77.5±7.26, CGI-S, 4.4±0.55; VABS-II composite, 60.8±13. RG7314 appears to be safe and well tolerated. Final efficacy outcome measures will be presented.

Conclusions: VANILLA provides valuable data on RG7314 safety and efficacy on socialization and communication.





3870476 - P52

CATEGORY: TREATMENT

## Comparing auditory noise treatment with stimulant medication on cognitive task performance in Attention-Deficit/Hyperactivity (ADHD) disorder patients

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Background: Recent research has shown that acoustic white noise (80 dB) can improve task performance in people with Attention-Deficit/Hyperactivity Disorder (ADHD). We have compared the effect of noise exposure with the effect of stimulant medication on cognitive task performance in ADHD.

Objectives: The aim of the present study was to compare the effects of auditory noise exposure and stimulant medication for children with ADHD on a cognitive test battery. A group of typically developed children (TDC) made the same tests as a comparison.

Methods: Twenty children with ADHD and twenty typically developed children matched for age and gender performed three different tests (word recall, spanboard and n-back task) during exposure to white noise (80 dB) and in a silent condition. The children with ADHD diagnosis were tested with and without central stimulant medication.

Results: In the spanboard- and the word recall tasks, but not in the 2-back task, white noise exposure led to significant improvements for both non-medicated and medicated children with ADHD. No significant effects of medication were found on any of the three tasks.

Conclusion: Exposure to white noise led to an improvement that was larger than the one of stimulant medication thus opening up the possibility of using auditory noise as a non-pharmacological treatment of cognitive ADHD symptoms.

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| H01:19 | Cereb |
| H01:20 | Shire |
| H01:22 | SFI |
| H02:04 | Riksförbundet Attention |
| H02:06 | Autism- och Aspergerförbundet |
| H02:08 | Ågrenska |
| H02:10 | Mun-H-Center |
| H02:12 | SANE - Swedish Society for Autoimmune Infection-Triggered Neuropsychiatry / Förbundet Autoimmuna Encefaliter med Psykiatrisk Presentation |

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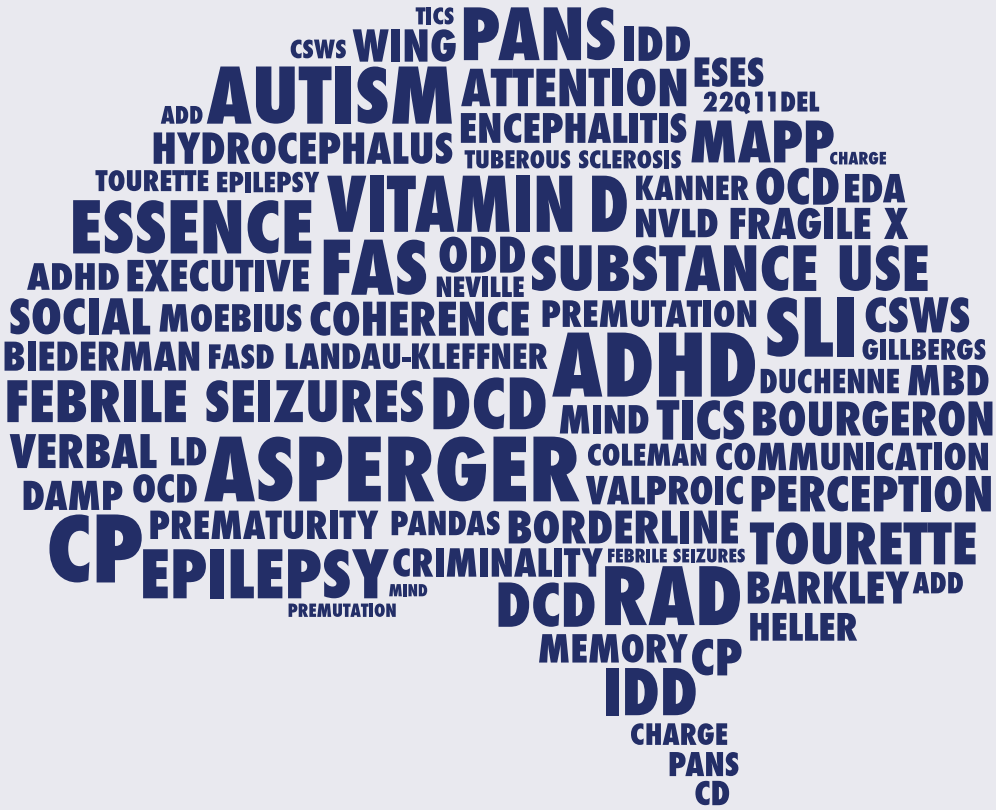


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