blinded to phonetic analysis, with the Positive And Negative Syndrome Scale (PANSS). Acoustic features were extracted with OpenSMILE, employing the Geneva Acoustic Minimalistic Parameter Set (GeMAPS), which comprises standardized analyses of pitch (F0), formants (F1, F2 and F3, i.e. acoustic resonance frequencies that indicate the position and movement of the articulatory muscles during speech production), speech quality, length of voiced and unvoiced regions. Speech features were fed into a linear kernel support vector machine (SVM) with leave-one-out cross-validation to assess their value for psychosis diagnosis.

**Results:** Demographic analyses revealed no differences between patients with schizophrenia and healthy controls in age or parental education. An automated machine-learning speech classifier reached an accuracy of 82.8% in classifying patients with schizophrenia and controls on speech features alone. Important features in the model were variation in loudness, spectral slope (i.e. the gradual decay in energy in high frequency speech sounds) and the amount of voiced regions (i.e. segments of the interview where the participant was speaking). PANSS positive, negative and general scores were significantly correlated with pitch, formant frequencies and length of voiced and unvoiced regions.

**Discussion:** This study demonstrates that an algorithm using quantified features of speech can objectively differentiate patients with schizophrenia from controls with high accuracy. Further validation in an independent sample is required. Employing standardized parameter sets ensures easy replication and comparison of analyses and can be used for cross linguistic studies. Although at an early stage, the field of clinical computational linguistics introduces a powerful tool for diagnosis and prognosis of psychosis and neuropsychiatric disorders in general. We consider this new diagnostic tool to be of high potential given its ease of acquisition, low costs and patient burden. For example, this tool could easily be implemented as a smartphone app to be used in treatment settings.

**T60. GENETIC INFLUENCES ON MEMORY FUNCTIONS AND RELATED BRAIN STRUCTURES AND ASSOCIATIONS WITH SCHIZOPHRENIA SPECTRUM DISORDERS: A NATION-WIDE TWIN STUDY**

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**Background:** Impaired memory is among the most profound cognitive deficits observed in patients with schizophrenia. Evidence from twin studies suggests that memory is mainly influenced by genetics. Moreover, a few twin studies have demonstrated genetic overlap between specific memory functions and schizophrenia. Memory deficits in schizophrenia seem to involve abnormalities in frontal cortical areas and the middle temporal lobe, particularly the hippocampus. In the general population, twin studies have consistently demonstrated genetic influences on brain volumes, however, evidence from twin pairs discordant for schizophrenia suggests that hippocampus volumes may be more susceptible to environmental effects in patients.

**Methods:** Twin pairs concordant or discordant for a diagnosis in the schizophrenia spectrum were recruited nation-wide by linking The Danish Twin Register and The Danish Psychiatric Central Research Register. Both monozygotic (MZ) and dizygotic (DZ) proband pairs as well as healthy control (HC) pairs were identified. A total of 216 twins participated in this study consisting of 32 complete MZ and 24 complete DZ proband pairs, 29 complete MZ and 20 complete DZ HC pairs, and six twins from proband pairs were included without their sibling. Verbal memory was assessed using the list learning task from the Brief Assessment of Cognition in Schizophrenia (BACS), visual memory using the Rey Complex Figure Test (RCFT) and associative memory using 15 word pairs. Structural brain scans were acquired with T1-weighted sequence on a Phillips 3.0 T Achieva MRI scanner with a 32-channel SENSE head coil. Images were processed using FreeSurfer (version 5.3) and the Desikan-Killiany atlas was used to extract the volumes of bilateral hippocampi, superior frontal, rostral and caudal middle frontal cortices as well as the whole brain volume. Structural equation modelling was applied to examine the genetic and environmental contributions to the variability in memory and brain measures and to quantify associations with schizophrenia spectrum liability.

**Results:** Significant heritability estimates were observed for verbal memory (h2=0.53), visual memory (h2=0.58) and associative memory (immediate h2=0.33, delayed h2=0.54), whereas the copy and recognition task from RCFT were only explained by unique environmental factors. Except for verbal memory, all memory measures were significantly associated with schizophrenia spectrum liability, and these were mainly due to overlapping genetic factors. Genetic factors also significantly contributed to whole brain (h2=0.36), right superior frontal (h2=0.48), left rostral middle frontal (h2=0.40) and hippocampal volumes (right h2=0.29, left h2=0.50). Common environmental factors significantly influenced whole brain (c2=0.51), right hippocampus (c2=0.51) and right rostral middle frontal (c2=0.47) volumes. Hippocampal volumes were significantly associated with schizophrenia spectrum liability, and for the left hippocampus this association was due to overlapping genetic factors.

**Discussion:** Specific memory measures and related brain areas were heritable, providing further evidence of the importance of genetics in memory functioning. Furthermore, the majority of the applied memory measures and left hippocampal volume were (genetically) associated with schizophrenia spectrum liability, suggesting a partially shared etiology. The heritable memory measures and related brain areas showing associations with disease may represent endophenotypes for schizophrenia spectrum disorders. In future analyses, we plan to examine the covariance between memory, brain volumes and schizophrenia.

**T61. FEELINGS OF SHAME AND GUILT IN INDIVIDUALS AT ULTRA-HIGH RISK FOR PSYCHOSIS**

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**Background:** Self-conscious emotions, such as shame and guilt, play a key role in one’s thoughts and behaviors. Our study investigated how shame and guilt were different concerning multiple aspects of social cognitive abilities, and we evaluated the self-conscious emotions in individuals at ultra-high risk (UHR) for psychosis.

**Methods:** Firstly, one hundred and sixty-six healthy youths were assessed for shame and guilt using the test of self-conscious affect, for empathy using the interpersonal reactivity index (IRI), and for Theory of Mind (ToM) ability using the ToM picture stories task. Multiple linear regression analysis was performed to predict shame and guilt from the social cognitive variables. Secondly, twenty-four UHR and 24 age- and sex-matched normal controls were compared for shame, guilt, empathy, and ToM ability.

**Results:** In healthy youths, regression analysis with shame revealed that fantasy (t=3.0, p=0.003, β=0.22) and personal distress (t=5.8, p<0.001, β=0.42) of IRI and affective ToM (t=2.0, p=0.044, β=0.14) were significant determinants. In the regression model of guilt, there were
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