using census tract-level data from the American Community Survey linked to individual addresses. Factor analysis with orthogonal rotation produced four neighborhood-level factors. With the addition of NDS, five independent variables were entered into two separate linear regression models with AOP and DUP as the dependent variables respectively; final models were derived from stepwise backward elimination, controlling for known predictors of AOP and DUP; and individual-level socioeconomic variables.

Results: Reliable census tract data were available for 143 participants. For the linear regression model pertaining to AOP, after stepwise backward elimination, the remaining independent predictor was neighborhood-level residential instability ($β = -0.210$; $p = 0.018$). This variable remained significant after controlling for known risk factors such as gender, family history, and age at first cannabis use ($β = 0.237$; $p = 0.017$) and after controlling for patient-level residential mobility ($β = -0.195$; $p = 0.031$). Regarding the linear regression model for DUP, after stepwise backward elimination, the remaining independent predictors were the General Socioeconomic Status neighborhood factor ($β = 0.269$; $p = 0.007$), the Low Household Value neighborhood factor ($β = -0.190$; $p = 0.046$), and NDS ($β = 0.339$; $p < 0.001$). After controlling for known predictors of DUP, including MOO, history of incarceration, and age at first cannabis use, NDS and MOO remained significant (NDS: $β = 0.326$; $p = 0.008$; MOO: $β = 0.466$; $p < 0.001$).

Discussion: We found initial evidence that neighborhood-level characteristics are associated with important outcomes that affect the prognosis of early psychosis. Residential instability was associated with an earlier AOP and perceived neighborhood disorder was associated with a longer DUP. The association between the social environment and prognostic factors, widely explored in other health conditions, may have significant implications on the understanding and management of psychosis and should be further explored. Area-level context, beyond the individual level, might be considered when implementing services and policies that could contribute to improved outcomes among those with early schizophrenia.

T136. DO VITAMIN D SUPPLEMENTATION DURING THE FIRST YEAR OF LIFE PREDICT COGNITION IN PSYCHOSES DURING MIDLIFE?

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Background: Schizophrenia (SCZ) has been associated with cognitive impairment. The lack of vitamin D was associated with over 2-fold risk for mild cognitive impairment, and vitamin D could also associate with cognitive performance which may be explained by the role of vitamin D in the development of central nervous system or in neuroprotection. Vitamin D supplementation during the first year of life has been associated with a reduced risk of SCZ in males within the Northern Finland Birth Cohort 1966(NFBC 1966), but no studies have examined it’s possible association with later cognition in midlife.

Methods: The study is based on the NFBC 1966 concerning 12.058 live-born children in 1966 in Northern Finland. The final study population of this study (N= 257) consisted of 60 persons with schizophrenia spectrum disorder (SSD) and of 171 non-psychotic participants formed the reference group.

Results: The study population (N= 2579 included 60 subjects with SSD, 26 persons had NSSD, and 171 non-psychotic controls formed the reference group. There were more men among those having psychosis (52.3% vs. 47.7%), respectively while the control group had more women (49.7 vs. 50.3, respectively). Only 13.2% of participants in the entire study population had received vitamin D supplementation irregularly or not at all. On the other hand, 51.1% had taken vitamin D supplementation more than the recommended dose. Because the number of those who got vitamin supplementation under recommended dose (<2000IU/day) was not more than 3 persons (1.2% of the whole study population), the association of the dose vitamin D supplements with later cognition was not analyzed. Therefore, the frequency of vitamin D supplementation (coded as regular or irregular/none) was utilized in final analyses. The frequency of vitamin D supplementation was not associated with cognition in midlife either among those having psychosis or in the control group.

Discussion: The main finding of this study was that no association was found between the frequency of vitamin D supplementation during first year of life and cognition in midlife either among those having psychosis or in the control group.

T137. CLASSIFICATION OF RECENT-ONSET PSYCHOSIS BASED ON RESTING-STATE FUNCTIONAL CONNECTIVITY AND THE RELATIONSHIP TO NEUROCOGNITIVE IMPAIRMENT

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Background: Impairments in cognitive functioning are a core feature of psychotic disorders and they have been associated with resting-state functional connectivity (rsFC) alterations in patients suffering from psychosis (Dauverman et al., 2014). Multivariate pattern analysis (MVPA) has proven to be a useful tool in the investigation of rsFC alteration in psychosis and in detecting subtle differences in multidimensional data sets (Kambeitz et al., 2015). In this study, we differentiated recent-onset psychosis patients (ROP) from healthy controls (HC) using a Support Vector Machine (SVM) classification based on rsFC. Furthermore, we investigated the relationship of the discriminative rsFC pattern to neurocognitive measures.

Methods: Resting-state fMRI and neurocognitive measures were obtained from 220 HC and 115 ROP across 7 sites of the PRONIA consortium. The rsFC matrix was estimated for each subject by calculating pairwise correlations between mean time series of 90 brain regions based on AAL parcelation. A L1-regularized L2-loss SVM was trained to classify ROP vs. HC based on rsFC. Furthermore, we investigated the relationship of the discriminative rsFC pattern to neurocognitive measures.

Results: The classification algorithm was able to differentiate ROP and HC with a balanced accuracy (BAC) of 71.3% based on rsFC. The discriminative connectivity pattern included short-range connections between left
putamen and left hippocampus, right putamen and right caudate nucleus, left superior frontal and right inferior orbitofrontal regions, as well as long-range connections between left and right occipital cortex and left cingu- late gyrus, left supramarginal gyrus and right temporal pole. Two negative correlations between the SVM decision scores for ROP and measures of the RAVLT were significant (delayed recall: \(r=-0.3\), Bonferroni – adjusted \(p<.04\); recall after interference: \(r=-0.3\), Bonferroni-adjusted \(p<.02\)).

**Discussion:** The classification performance was driven by a rsFC pattern including areas involved in memory processing, such as hippocampus and cingu- late gyrus (Allen et al., 2007) as well as regions related to language processing, such as the supramarginal gyrus (Li et al., 2009). The negative correlation of rsFC-based decision scores with RAVLT measures shows that patients whose verbal learning and memory is more severely impaired exhibit a more distinctive rsFC pattern than patients with less impaired verbal memory.

### T138. ACOUSTIC PATTERNS IN SCHIZOPHRENIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Background:** Individuals with schizophrenia are characterized as presenting atypical voice patterns: poverty of speech, increased pauses, distinctive pitch (mean and variability). Voice atypicalities may play a role in the social impairment experienced by patients, and could constitute a window into motor, cognitive, emotional and social components of the disorder. Indeed, they have already been generally associated with negative symptoms. However, the state of the evidence for atypical voice patterns and their relation to clinical features is uncertain. Studies using clinical rating scales indicate that voice alterations are severe across many voice properties. In contrast, quantitative acoustic studies seem to have found less robust and more variable results limited to specific features. We therefore systematically reviewed the literature quantifying acoustic patterns in schizophrenia, and performed a meta-analysis of the evidence. We aimed at identifying evidence for acoustic markers of schizophrenia and its clinical features, needs for further research and barriers to collective advancements on these issues.

**Methods:** We adopted the “PRISMA Statement” guidelines for transparent reporting of a systematic review. The literature search was conducted on Pubmed and Google Scholar (details and pre-registration at https://goo.gl/H1yDpm). Study selection was conducted according to the following inclusion criteria: (a) empirical study, (b) quantification of acoustic features in the vocal production of participants with schizophrenia, (c) sample including at least two individuals with schizophrenia, (d) inclusion of a comparison group, or an assessment of variation in acoustic features in relation to severity of clinical features. We identified 54 studies as eligible for inclusion and contacted all authors to obtain missing estimates and individual-level data, where possible. 34 studies availed enough information to be included in a meta-analysis. The meta-analysis consisted of mixed effects regression models, one per each relevant acoustic feature.

**Results:** Of the 37 authors contacted, 59% responded and 5% provided at least some of the requested data. Chief reasons of denials were: i) data loss (n = 8), ii) effort required (n = 5), iii) ethical concerns with data sharing (n = 1). On the results available we found significant meta-analytic effects of schizophrenia in percentage of spoken time (n = 6, d = -1.16, 95% CIs: -2.06 to -0.27) and proportion of pauses (n = 5, d = 0.56, 95% CIs: 0.15 to 0.96). After controlling for influential studies, we found significant differences also in pitch mean (n = 5, d = 0.40, 95% CIs: 0.12 to 0.68) and pitch variability (n = 6, d = -0.46, 95% CIs: -0.70 to -0.23). No effects were found for pause duration (n = 7), speech rate (n = 9), speech duration (n = 5) and pitch intensity (n = 5). We found evidence for publication bias for studies investigating pause duration and pitch variability.

**Discussion:** We found clear effects of increased pause behavior in schizophrenia and less clear effects of pitch. However, the magnitude of these abnormalities is limited and contrast with the large effect sizes reported by studies using clinical rating scales. Future research should focus on larger sample sizes, systematic assessment of multiple acoustic features and multiple speech tasks, standardized acoustic processing methods, and individual level data available. More reflection is needed on how to make data sharing possible within privacy and ethical constraints.

### T139. ELECTRORETINOGRAM ABNORMALITIES IN SCHIZOPHRENIA PATIENTS WITH VISUAL HALLUCINATIONS

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**Background:** Retinal dysfunctions have been integrated in cognitive models of visual hallucinations in several pathologies such as Parkinsonian syndromes or eye diseases. Besides, structural abnormalities of the retinal ganglion cells are documented in schizophrenia and have been associated to visual hallucinations (VH) in neurological disorders. We aim to study functional abnormalities of retinal ganglion cells in schizophrenia patients with VH.

**Methods:** We measured the activity of retinal ganglion cells using electroretinogram according to ISCEV criteria. We compared the amplitude and implicit time of the P50 and the N95 waves of the pattern electroretinogram in schizophrenia patients with VH (VH group, n = 7), Auditory Hallucinations or no hallucination (AH/NH group, n = 8) and controls (n = 30).

**Results:** Preliminary findings show a significant increase of the N95 implicit time in the HV group compared with controls (p = .05). No difference was found between the HV and HA/NH groups but a gradient appeared to emerge between the 3 groups.

**Discussion:** Functional impairment of the retinal ganglion cells appears to be more pronounced in schizophrenia patients with VH. The increase of N95 implicit time may be interpreted as a dysfunction of retinal ganglion cells rather than a cell loss. These preliminary results need to be confirmed with a larger sample.

### T140. RESTING STATE NETWORKS ALTERATION IN SCHIZOPHRENIA

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**Background:** While functional MRI and PET studies have shown altered task-related brain activity in schizophrenia, recent studies suggest that such differences might also be found in the resting state (RS). Here we usedICA based analysis to investigate RS fMRI data to connect variability of 11 well known networks (Auditory, Cerebellum, DMN, Executive Control, Fronto-parietal 1, Fronto-parietal 2, Salience, Sensorimotor, Visual1, Visual2, Visual3 network) between patients with schizophrenia and healthy controls suggesting deficits in related neuropsychological functions.

**Methods:** We obtained RS fMRI series (3T, 3x3x3mm resolution, 45 slices, TR 2.55s, 210 volumes) in 25 schizophrenia patients (mean age 30±7.3), on stable antipsychotic medication and 25 matched healthy controls (30.3±5.6). Subjects were asked to lie in the scanner keeping eyes closed with no further specific instructions. Data were pre-processed; we applied...