Objective: Recent studies based on neuroimaging analysis, genomic analysis and transcriptome analysis of postmortem brain indicate that the pathogenesis of schizophrenia is hypothesized to be related with myelin-oligodendrocyte abnormality. But, it is still remain to examine the appearance of myelin-oligodendrocyte in postmortem brain tissues of schizophrenic patients neuropathologically. Thus, in this study, we observed the appearance of myeline protein in the superior temporal gyrus of schizophrenia compared to those of control neuropathologically to investigate how myelin-oligodendrocyte associates with the pathogenesis of schizophrenia.
Methods: Brain specimens obtained from 10 schizophrenic patients and 9 age- and sex-matched normal control brain specimens were obtained from autopsy based on the following criterion: age at death$\geqq$30 years and $\leqq$54 years for the younger groups (4 schizophrenic patients, 5 control subjects), and $\geqq$65 years and $\leqq$84 years for the older groups (6 schizophrenic patients, 4 control subjects). We identified the neocortex (from layer 1 to 6), and measured the area of certain intensity stained with anti-MOG antibody. We observed the appearance of MOG positive deposits in superior temporal cortex of schizophrenia compared to those of normal control. This study was approved by the Nagoya University of Medicine Ethical Review Board.
Results: There was no significant difference in the appearance of MOG immunopositive deposits in each layer of the neocortex in younger group. On the other hand, the appearance of MOG immunopositive deposits in the middle layer of the neocortex is significantly smaller in schizophrenia than those in control in older group.
Conclusion: The findings indicate that there is difference in myelination in the superior temporal gyrus in schizophrenia, and aging has greater effect on myelin in schizophrenia.
Policy of full disclosure: None.

P-15-004
White matter correlates of the DSM-5 schizophrenia symptom dimensions

P. Viher (UPD Bern, Neurophysiology, Bern, Switzerland; K. Stegmayer, A. Federspiel, B. Stephan, R. Wiest, W. Strik, S. Walther)

Objective: Schizophrenia is characterized as a heterogeneous disorder. Whereas in the DSM-IV subtypes of schizophrenia provide poor description of the heterogeneity, the DSM-5 uses psychopathological dimensions. This approach captures the variation in the severity of symptoms in 8 dimensions: Abnormal psychomotor behavior, negative symptoms, impaired cognition, depression, mania, delusions, hallucinations and disorganized speech. It remains unkown, whether a neuronal basis underlies these dimensions. We therefore investigated white matter correlates of the 8 schizophrenia symptom dimensions in the DSM-5.
Methods: In 40 patients with schizophrenia spectrum disorders, DSM-5 was assessed. Structural brain imaging was acquired in all patients using a 3-T MR Scanner. White matter integrity was correlated with the ratings of the severity of symptoms in the 8 dimensions in the DSM-5 using Tract-Based Spatial Statistics (TBSS) and age as covariate.
Results: In 6 dimensions we found no correlations of the severity of symptom dimensions with white matter ultrastructure. However, we detected significant negative associations at $p < 0.05$ (corrected) of white matter with the dimensions abnormal psychomotor behavior and negative symptoms. Abnormal psychomotor behavior was associated with white matter ultrastructure in the superior and inferior longitudinal fasciculus, internal and external capsule, cingulum, and the corticospinal tract. Negative symptoms correlated with clusters in the corona radiata, internal and external capsule and inferior frontal-occipital and longitudinal fasciculus.
Conclusion: In 2 out of 8 dimensions, the severity of symptoms was associated with aberrant white matter ultrastructure in schizophrenia. Abnormal psychomotor behavior was associated with regions of the motor tract and negative symptoms with relevant regions for motivation and action planning. However, in 6 dimensions no correlations with white matter were found. It is highly probable that the constructs behind the DSM 5 in this 6 dimensions are too complex for simple correlations with neurobiology.
Policy of full disclosure: None.

P-15-005
Identifying apathy in schizophrenia based on structural neuroanatomical differences

E. Opmeer (University Medical Center Groningen, Neuroscience, Groningen, The Netherlands; M.-J. van Tol, E. Liemburg, H. Knegtering, G. Pijnenborg, R. Renken, A. Aleman)

Objective: The neuropathology underlying apathy in schizophrenia is unclear. A multivariate approach would be best suited to investigate this, given that in studies of neurodegenerative disorders several regions have been associated with apathy, namely the orbitofrontal cortex, dorsolateral prefrontal cortex, parietal cortex, thalamus and basal ganglia. The aim was to identify a pattern of structural abnormalities that differentiates between different degrees of apathy in schizophrenia with a multivariate pattern classification approach. To investigate whether the basal ganglia were of specific importance, because of their role in anticipation of reward and envisioning future pleasant events, they were also investigated separately.
Methods: 93 patients diagnosed with schizophrenia or schizophrenia spectrum disorder underwent magnetic resonance imaging. A measure of apathy was derived from the PANSS based on Liemburg et al. (2014). The images were segmented and the grey matter (GM) images were further processed with DARTEL and normalized to MNI space (all in SPM12). The association between GM volume (GMV) and apathy was investigated with multivariate kernel ridge regression (KRR) implemented in PRoNTo. The relation between actual apathy measures and predicted measures based on GMV was indexed by Pearson correlation coefficient and mean square error (MSE) of the difference.
Results: GMV in the areas of interest (orbitofrontal cortex, dorsolateral prefrontal cortex, parietal cortex, thalamus and basal ganglia) could predict degree of apathy ($r = .20$, $p = .08$, $MSE = 7.14$, $p = .01$). By only including the basal ganglia, apathy could not be predicted ($r = .08$, $p = .22$, $MSE = 9.12$, $p = .12$). The ROIs excluding the basal ganglia, showed the best classification of apathy ($r = .25$, $p = .03$, $MSE = 6.83$, $p = .002$).
Conclusion: To conclude, the pattern of gray matter volume of areas previously univariately associated with apathy in neurodegenerative disorders was multivariately associated with degree of apathy in schizophrenia. The basal ganglia did not improve classification of apathy and therefore might not play such a large role in apathy as hypothesized.
Policy of full disclosure: None.

P-15-006
Disrupted thalamo-frontal white matter connectivity in patients with schizotypal personality disorder

T. Y. Lee (Seoul National University, Seoul, Republic of Korea)