

Center, Harvard Medical School<sup>4</sup>Massachusetts Mental Health Care Center, Harvard Medical School; <sup>5</sup>Massachusetts Institute of Technology; <sup>6</sup>VA Boston Healthcare System,

**Background:** While the etiology of schizophrenia (SZ) is still unclear, it has been characterized as a neurodevelopmental disorder because patients exhibit deviations from normal maturational trajectories that are evident prior to the onset of psychotic symptoms. White matter (WM) has been purported to play a central role in the development of SZ, however, the timing and nature of WM changes in SZ is still poorly understood. This study uses diffusion imaging from three independent Genetic High Risk (GHR) populations spanning the developmental timeline from infancy to young adulthood. The aim of this study is to understand the extent and the time-course of WM maturational pathologies as a function of age and genetic risk for psychosis. **Methods:** Two datasets of 3T diffusion-weighted images of children aged 7 to 12 (24 HC and 16 at GHR) and young adults aged 19 to 29 (26 HC and 43 GHR) were collected at the Massachusetts Institute of Technology. The third dataset of 3T images of infants aged 2 years (35 HC and 18 GHR) was collected at the University of North Carolina – Chapel Hill. Whole brain two-tensor tractography was performed and 4 bilateral WM tracts (arcuate fasciculus (AF); inferior longitudinal fasciculus (ILF); cingulum bundle (CB); superior longitudinal fasciculus-ii (SLF-ii)), were extracted utilizing an atlas-guided fiber clustering algorithm. The fractional anisotropy of the tissue (FA-t) was obtained. We carried out group comparisons of FA-t between GHR and HCs utilizing Mann-Whitney-U tests and Cohen's d effect sizes for each WM tract.

**Results:** Preliminary analyses reveal significant reductions in FA-t between GHR and HC in the right CB ( $p = 0.013$ ) in the child GHR population. This is mirrored by medium to large effect sizes in the bilateral CB in GHR children (CB-left,  $d = 0.51$ ; CB-right,  $d = 0.79$ ). Reductions in FA-t in the adult GHR population within the right CB was the largest effect observed in the adult analysis (CB-right,  $d = 0.46$ ). Effect sizes in the bilateral CB were minimal in the infant GHR population (CB-left,  $d = 0.14$ , CB-right,  $d = 0.11$ ). Significant decreases were also seen in the right SLF-ii in the adult GHR population ( $p = 0.012$ ), but not in the infant or child GHR populations, though the reductions in FA-t in the child GHR population exhibited a small effect ( $d = 0.35$ ). All other white matter tracts in the adult analysis showed minor effects ranging from  $d = 0.033$  (ILF-right) to  $0.28$  (ILF-left). The children and infant population also exhibited small effect sizes for all other tracts, with the child GHR dataset ranging from  $0.036$  (ILF-left) to  $0.41$  (ILF-right) and the infant GHR dataset ranging from  $d = 0.038$  (SLF-left) to  $0.34$  (ILF-left).

**Discussion:** Our preliminary results suggest that abnormal WM maturation may occur in the right CB and right SLF-ii in individuals with increased genetic risk for SZ, specifically after early childhood (7 to 12 years) and into adulthood (19 to 29 years). The CB and SLF-ii are highly implicated in working memory performance, an ability that retrospective studies have shown begins to decline during the peripubertal period in those that develop SZ (~7 to 9 years). The lack of structural findings in GHR infants, may suggest that WM alterations are more likely to arise later in development, thereby possibly identifying childhood as a vulnerable period. Taken together, the preliminary results of this study provide possible evidence of subtle divergences from a healthy WM maturational trajectory in the right CB and right SLF-ii in early to late childhood that may persist into adulthood and these deviations may contribute to cognitive phenotypes described in other studies.

## T202. HUMOR-SKILLS TRAINING IN PATIENTS WITH SCHIZOPHRENIA: EFFECTS ON SYMPTOMS AND SOCIAL FUNCTIONING

Irina Falkenberg<sup>\*1</sup>, Florian Bitsch<sup>2</sup>, Philipp Berger<sup>1</sup>, Arne Nagels<sup>1</sup>, Benjamin Straube<sup>1</sup>

<sup>1</sup>Philips-University

**Background:** Humor can provide a method of coping with a variety of stressful situations. Training of humor-related skills has proven effective in clinical samples, although humor training in patients with schizophrenia is relatively rare.

**Methods:** In the present study, patients with schizophrenia have been randomly assigned to either a training of humor abilities or a training of social skills. Training effects on measures of psychopathology, psychosocial functioning and stress were compared between groups.

**Results:** Preliminary analyses revealed that level of negative symptoms, stress and psychosocial dysfunction were significantly reduced in the humor group over the course of the training.

**Discussion:** These results suggest that humor training may improve important clinical and functional outcomes in patients with schizophrenia.

## T203. ILLICIT DRUGS USE AND ULTRA-HIGH RISK (UHR) FOR PSYCHOSIS STATUS IN A LATIN-AMERICAN SAMPLE

Mauricio Serpa<sup>\*1</sup>, Alexandre Andrade Loch<sup>1</sup>, Camille Chianca<sup>1</sup>, Elder Freitas<sup>1</sup>, Julio Cesar Andrade<sup>1</sup>, Tania Maria Alves<sup>1</sup>, Lucas Hortêncio<sup>1</sup>, Martinus Theodorus van de Bilt<sup>1</sup>, Wagner Gattaz<sup>1</sup>, Wulf Rossler<sup>1</sup>

<sup>1</sup>University of Sao Paulo

**Background:** In recent years, a number of investigations have evaluated the effect of cannabis use on the risk of presenting ultra-high risk for psychosis (UHR) status as well as its influences on transition rate, suggesting a dose-dependent interaction. On the other hand, the association between cocaine (snorted or smoked) - an increasing health issue in several countries worldwide - and the UHR state was not appropriately examined. Also, exposure to other psychotomimetic drugs, as amphetamines and lysergic acid diethylamide (LSD), has not been investigated yet. We sought to examine differences in the prevalence of drug use between UHR subjects and epidemiologic controls (EC).

**Methods:** Over 2500 individuals from the city of São Paulo (Brazil), aged between 18 and 30 years old, were screened with the Prodromal Questionnaire. Subjects with scores higher than 18 points in the positive subscale were invited to be thoroughly assessed with the application of SIPS (Structured Interview for Psychosis-Risk Syndromes). Drug use (lifetime use, age of first use and more intense use) was assessed using South Westminster scale.

**Results:** 100 individuals presented UHR state; other 110 were enrolled as EC. A subsample of 50 UHR subjects and 82 HC with data on drugs consumption were evaluated herein. UHR subjects history of lifetime drug use was: 19 (38%) cannabis; 5 (10%) snorted cocaine; 1 (2%) crack; 1 (2%) amphetamine; 2 (6.9%) LSD. EC history of lifetime drug use was: 20 (24.4%) cannabis; 6 (7.3%) snorted cocaine; 0 crack; 2 (2.4%) amphetamine; 1 (1.2%) LSD. No differences were observed for snorted cocaine ( $p=0.589$ ), crack ( $p=0.379$ ), amphetamine ( $p=1.0$ ), or LSD ( $P=0.167$ ). At a trend level, cannabis lifetime use ( $p=0.096$ ) was more prevalent in the UHR group. Additional analyses showed that UHR subjects initiate cannabis use at earlier age than EC ( $p=0.006$ ). In this group, 20% of subjects had used cannabis prior to 15 years of age, in comparison to 3.6% in the EC group.

**Discussion:** Our results reinforce the view that cannabis use is linked to psychosis risk and that subjects at early age of exposure are at greatest risk. Nonetheless, studies with larger number of participants are warranted to confirm our findings, particularly on the lack of association between less frequently consumed drugs and the UHR for psychosis state.

## T204. NOVEL VIRTUAL REALITY SOCIAL SKILLS TRAINING FOR INDIVIDUALS WITH SCHIZOPHRENIA

Lénie Torregrossa<sup>\*1</sup>, Laura Hieber Adery<sup>1</sup>, Megan Ichinose<sup>1</sup>, Heathman Nichols<sup>1</sup>, Alena Gizdić<sup>1</sup>, Joshua Wade<sup>1</sup>, Dayi BIAN<sup>1</sup>, Eric Granholm<sup>2</sup>, Nilanjan Sarkar<sup>1</sup>, Sohee Park<sup>1</sup>

<sup>1</sup>Vanderbilt University; <sup>2</sup>University of California, San Diego