Background: Traditionally, attention was thought to be directed by either top-down goals or bottom-up salience. Recent studies have shown that reward history of a stimulus feature can also act as a powerful attentional cue. This is of particular relevance in schizophrenia, where both motivational and attentional deficits are common.
Methods: Forty-eight people with schizophrenia (PSZ) and 34 healthy controls (HC) participated in a visual target discrimination task where they had to detect if a small gap was at the top or bottom of a circle. People were initially pretrained to associate one of two colors with reward receipt. In the experimental task, 2 circles were presented. In 2 blocks, targets were equally likely to appear on the left or right. In 4 blocks, the target was 75% likely on one side.
Results: Patients had slower overall RT than controls. Both groups showed statistically robust effects of spatial probability and reward history with faster RTs on rewarded color cue trials as well as more likely location trials. There were no significant 2- or 3-way interaction effects. More severe positive and negative symptoms correlated with RT slowing, but there was no selective symptom reward history effect correlations.
Conclusion: Patients demonstrate RT slowing but fully normal RT facilitation on the basis of reward history and spatial probability. These results are conceptually similar to prior findings by Heerey et al (2008) showing intact reward bias effects on the discrimination task of D. Pizzagali suggesting that implicit (but not explicit) reward processing may be surprisingly intact in PSZ.

207. THE SYNERGISTIC EFFECTS OF PHYSICAL AND COGNITIVE EXERCISE IN SCHIZOPHRENIA

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Background: Emerging research highlights the potential cognitive benefits of physical fitness programs for schizophrenia. Physical exercise (PE) is a safe, nonstigmatizing, and side effect-free intervention that has the potential to mitigate neurocognitive dysfunction in psychosis. To date, only two recent studies have explored the possibility of combining PE and cognitive training therapy (CT). While both studies found a signal showing that combining PE and CT may improve cognition more than CT alone, the conclusions were limited by lack of randomization, no examination of biological factors, no study arm with PE only, low power due to small sample size (N < 22), or significant attrition during the physical exercise intervention (i.e., only 75% completed the PE regimen).
Methods: In our randomized pilot with 82 outpatients, we examined the individual and synergistic effects of PE and/or CT using treatments designed to improve motivation for treatment and retain patients for the entire PE (and CT) intervention. This 3-arm study employed a self-determined PE regimen intended to improve motivation for exercising and neurofeedback-aided CT that monitored a biophysiologic gauge of motivation to maximize cognitive gains. Participants were allocated to 18 hours of either: (A) PE regimen where patients chose from a menu of activities for 12 weeks with each activity designed so participants would reach volitional exhaustion—a commonly accepted physiological gauge of strenuous exercise—at least twice per week; (B) tablet-based neurofeedback CT focused on processing speed and working memory, or (C) a combination of PE and CT, matched for total duration and treatment time. Assessments of cognition and symptoms were conducted at baseline, post (3 months), and follow-up (5 montha).
Results: At post, all three groups showed significant improvements in working memory, with the PE group surpassing the other two in working memory and processing speed improvements. However, at 2-month follow-up, gains in the PE only group disappeared, and it was the PE+CT group that showed significant improvements in both cognition and negative symptoms. Notably, attrition for all three groups was only 4%–7% and even those with low baseline motivation attended as many sessions as those with high motivation while both saw improvements in cognition and negative symptoms.
Conclusion: This pilot is the first study to show that combining PE and CT leads to lasting effects that are superior to those of either intervention alone. Moreover, our approach to PE and CT was well tolerated, and the low dropout rate may have further maximized the benefits of both types of interventions.

208. PREDICTORS OF CANNABIS-INDUCED PSYCHOSIS

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Background: The endocannabinoid system (ECS) has been implicated in the pathophysiology of psychosis and epidemiological studies demonstrate an association between exposure to exogenous cannabinoids and acute as well as delayed psychosis outcomes. Family history of psychosis represents a nonmodifiable risk factor for psychosis, while cannabis exposure is a modifiable one. Individuals with a family history of psychosis (FHP) are at a greater risk for a psychotic disorder such as schizophrenia, psychosis associated with cannabis use, and enhanced sensitivity to the acute psychotomimetic effects of THC. In fact, it has been suggested that enhanced sensitivity to cannabis' psychotomimetic effects may be a marker of familial risk for psychosis.
Methods: Data will be presented from ongoing studies systematically examining the ECS in FHP individuals compared to those without a family history of psychosis (FHN) using a multidimensional approach. Cannabinoid 1 receptor (CB1R) availability was measured using the reversible ligand [11C]OMAR and High Resolution Research Tomography PET. The acute response to delta-9-tetrahydrocannabinol (THC) was measured in randomized, placebo-controlled, double-blind, acute pharmacological challenge study designed to examine the effects of intravenous THC on a wide range of subjective, cognitive, and electrophysiological biomarkers of psychosis. FHP and FHN subjects were matched on a number of relevant variables such as age, education, BMI, cannabis use histories, other substance exposure, and so on.
Results: Data will be presented demonstrating that compared to FHN, FHP have (A) ↓ CB1R availability ([11C]OMAR VT)), (B) ↑ THC-induced psychotomimetic effects (Positive And Negative Syndrome Scale [PANSS] positive subscale), and (C) ↑ THC-induced cortical noise (Lempel-Ziev complexity scores) compared to FHN.
Conclusion: These data are the very first to examine the confluence of the endocannabinoid and exogenous cannabinoid hypotheses in the risk for psychosis. Preliminary data suggest that a family history of psychosis is associated with lower CB1R availability and altered response to THC, a pattern of effects similar to that observed in individuals with a psychotic disorder. Future studies should aim to develop a stratification of the risk of exposure to cannabinoids in individuals with a family history of psychosis and inform public health policies. This is particularly important given that cannabis exposure is the main modifiable risk factor for psychosis.

209. RISK OF VIOLENCE IN ATTENUATED PSYCHOSIS SYMPTOMS SYNDROME AND ITS RELATIONSHIP WITH SYMPTOMOLOGY

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Background: Contrary to popular belief the majority of patients with schizophrenia will never commit an act of severe violence. Highest risk for violent offending appears to be during the first episode of psychosis (FEP), a meta-analysis by Large and Nielssen (2010) reporting that about a third of patients in the FEP exhibited some violent behavior before initial treatment. However, most acts involve minor violence and fewer than 1 in 100 patients committed assaults resulting in serious injury. Risk of violence in clinical high risk populations, those with attenuated psychosis symptoms (APS) remains unexplored although recent findings by Marshall and colleagues (2016) suggest that a significant amount of APS involve violent content although most is self-directed violence. The aim of the current study was to explore risk of violence in individuals with attenuated psychosis symptom syndrome (APSS). We were also interested to investigate whether risk of violence as assessed was associated with symptomology.
Methods: The Structured Assessment of Violence Risk in Youth (SAVRY) was completed for 285 individuals who met criteria for APSS as well as 44 Healthy Controls. The SAVRY is a clinician rated assessment tool and provides a clinical risk rating for each individual by assessing multiple domains including Historical Risk Factors, Social/Contextual Risk Factors, and Individual/Clinical Factors.
Results: Violence risk was significantly different between the two groups with healthy controls assessed to be at a lower risk than individuals in the attenuated psychosis symptoms group, $\chi^2(2) = 13.03$, $P < .001$. Only 2 of the APSS group and none of the healthy controls were rated to be at high level of risk for violence. Violence risk was not different between men and women, $\chi^2(2) = 4.58$, $P = 1.01$. A between-group ANOVA conducted to compare severity of attenuated psychotic symptoms and risk of violence within the APSS group showed that symptom severity was significantly different across levels of violence risk, $F(2, 235) = 6.32$; $P < .002$. This was largely driven by negative symptoms severity. Individuals with low risk for violence as compared to moderate level of violence risk had lower negative symptoms, $F(2, 235) = 13.42$; $P < .000$. Severity of positive, disorganized, or general symptoms independently did not differ across levels of violence risk. This relationship remained unchanged when income level was adjusted. Level of income, age, ethnicity, or parental education was not associated with level of risk.
Conclusion: To our knowledge this is the first study to assess violence risk in individuals with APSS. While, the APSS group was assessed to be at a higher risk for violence as compared to healthy controls, the majority were judged to be at a moderate risk and high risk ratings were rare. In the APSS group higher risk was associated with symptoms. Specifically, results suggest that negative symptoms uniquely contribute to risk of violence.

210. NEURAPRO: A MULTI-CENTER RCT OF OMEGA-3 POLYUNSATURATED FATTY ACIDS VERSUS PLACEBO IN YOUNG PEOPLE AT ULTRA-HIGH RISK OF PSYCHOTIC DISORDERS: MEDIUM-TERM OUTCOME

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Background: A number of interventions have been trialed in the ultra-high risk for psychosis population with the aim of preventing onset of psychotic disorder and improving outcomes. Among the most promising has been dietary supplementation with long-chain omega-3 polyunsaturated acids (PUFA), which in a single-center study involving 81 participants, was shown to significantly reduce the risk of transition to psychosis over a 12-month period as well as improving symptomatic and functional outcomes, an effect that persisted long term (median 6.7 years). The current trial aimed to replicate these findings in a large-scale multicenter study. The objective of the RCT was to determine whether treatment with PUFA, in combination with a high-quality psychosocial intervention, cognitive–behavioral case management (CBCM), is more effective than placebo plus CBCM in preventing transition to psychosis and improving outcomes in young people at ultra-high risk for psychosis. Here we report the medium term (>2 years) outcome of the trial.
Methods: A randomized, double-blind, placebo-controlled trial was conducted in 10 specialized early psychosis treatment services in Australia, Asia, and Europe, involving a total cohort of 304 participants. The intervention consisted of a daily dose of 1.4g omega-3 PUFA or placebo (paraffin oil), plus up to 20 sessions of CBCM over the 6-month study period. The primary outcome was transition to psychosis status at 6 months, as defined by the CAARMS. The secondary outcomes were general levels of psychopathology and functioning, as assessed by the BPRS, SANS, MADRS, YMRS, SOFAS, and the Global Functioning: Social and Role scales.
Results: The 6-month and 12-month outcome data showed no difference in transition rates between the 2 groups. This failure to replicate the findings of the original single-center trial was possibly due to the lower than expected transition rate (11% in the whole sample) and a substantial improvement in outcome in both groups. The >2-year outcome data are currently being analyzed and will be presented at the conference. Medium term outcome data (in-person assessment or hospital record data) is available on approximately 90% of the sample, with equal follow up between the treatment and comparison groups.
Conclusion: The 12-month outcome data are consistent with omega-3 PUFAs lacking efficacy. However, the low transition rate inhibited our ability to test the main hypothesis that omega-3 PUFAs are effective in reducing the risk of first episode psychosis. The low transition rate could be because the sample was insufficiently enriched or that the other treatments received produced a ceiling effect, beyond which omega-3 PUFAs did not confer additional benefits. The medium-term outcome may shed light on whether omega-3 PUFAs may be beneficial in a subsample of ultra-high risk cases.

211. RESTING-STATE PERFUSION IN THE LANGUAGE NETWORK IS DISTINGUISHABLE LINKED TO FORMAL THOUGHT DISORDER DIMENSIONS IN SCHIZOPHRENIA AND ASSOCIATED WITH FUNCTIONING AFTER 6 MONTHS

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