Background: 22q11.2 deletion syndrome (22q11.2DS; also known as DiGeorge syndrome or velocardiofacial syndrome) is characterized by increased vulnerability for neuropsychiatric symptoms, with approximately 30% of the individuals with the deletion developing schizophrenia. Clinically, deficits in executive function have been noted in this population, but the underlying neural processes are not well understood.

Methods: Using high-density electrophysiology (EEG), we investigated the neural dynamics of inhibition of a prepotent response (a critical component of executive function) in individuals with 22q11.2DS with and without psychotic symptoms. Twenty-seven individuals with 22q11.2DS (14-35 years old, 14 with at least one psychotic symptom) and 27 age-matched nonpsychiatric controls participated in a go/no-go task while EEG was recorded. Analyses were focused on the P3 go/no-go response and error-related positivity (Pe).

Results: Behaviorally, individuals with 22q11.2DS were slower and unable to inhibit prepotent responses as the controls, with significantly more false alarms. Atypical inhibitory processing was confirmed by significantly reduced P3 no-go responses in the 22q11.2DS group. Such reductions were particularly marked in those with psychotic symptomatology. Pe was likewise significantly decreased (regardless of the presence of psychotic symptoms), suggesting impaired ability to register errors (i.e., false alarms) in 22q11.2DS. Both Pe and P3 correlated with clinical measures of inhibition (DKEFS and CPT).

Discussion: To our knowledge, this is the first study looking at electrophysiological measures of response inhibition in 22q11.2DS. P3 and Pe reductions, which have also been shown in schizophrenia, suggest diminished error registration and awareness in 22q11.2DS and, possibly, a consequence difficulty in adjusting response strategies.

M77. USE OF TESTING TO IMPROVE LONG-TERM MEMORY RECALL IN PEOPLE WITH PSYCHOSIS

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Background: Rather than solely assessing participant knowledge, memory tests can also facilitate long-term storage and retrieval, thereby improving episodic memory for newly studied information compared to having participants spend equal amounts of time re-studying that same information. This so-called “testing effect” has been widely promoted in educational settings as a way to improve delayed recall of new information but, to our knowledge, has not been investigated as a way to improve memory in people with psychotic disorders. The goal of this study is to determine if the testing effect can be used to improve well-documented deficits in delayed recall in people with early psychosis spectrum disorders.

Methods: In this within-subjects design, 20 participants within 5 years of onset of a psychosis spectrum disorder (schizophrenia, schizoaffective disorder, schizophreniform disorder) and 13 demographically matched healthy controls were studied at two time points. During the first visit, a three-part 45-minute PowerPoint presentation on “what is?”, “what causes?” and “how do we treat?” psychosis was presented in small group settings. After each of the 3 parts of the presentation participants were required to re-study half of the information that had just been presented and tested on the other half of the presented information. This re-study/test procedure was repeated again a second time to promote learning and participants were instructed to return again in one week for final testing. During the second visit participants were given a final recall test on all the information included in the original presentation. Percent recall scores were examined for main effects of group, practice procedure (re-study/test) and group by procedure interactions using one-way analysis of variance (ANOVA).

To account for any group differences in overall recall, a Testing Effect score was also calculated by dividing the difference in recall for information that had been tested versus restudied, by the average recall across the two conditions.

Results: All participants understood the task and completed both sessions. Reflecting the overall testing effect, ANOVA revealed a main effect of task [F(1,31)=8.2, p<.01] with all participants showing better percent recall after one week for information that had been tested (Mean+SD=47.2 ± 14.0) versus re-studied (Mean+SD=34.1 ± 14.8) during their first visit. There was also a main effect of group [F(1,31)=8.1, p<.01], and a task by group interaction [F(1,31)=4.3, p<.05]. To further investigate this interaction, the Testing Effect score was examined, which did not reveal any group difference [(t(32)=.35, p=.73] in the percent recall improvement following testing versus re-study between patients (Mean+SD=36.6 ± 45.2) and controls (Mean+SD=41.5 ± 32.0).

Discussion: When group differences in overall memory performance are accounted for, initial results suggest that people with psychotic disorders show the same benefit from being tested on recently studied information as do healthy participants. Simply testing patients on new information versus having them spend the same amount of time re-studying that information led to the same improvement in free recall following a one-week delay as what was seen in healthy volunteers. These results suggest further investigation of how the testing effect might be incorporated into cognitive remediation efforts as well as future neuroimaging studies to identify neural correlates of this positive outcome.

M78. CREATIVITY, EXECUTIVE FUNCTIONS, AND THEORY OF MIND IN SCHIZOPHRENIA: A MEDIATIONAL MODEL

Abstract not included.

M79. COMPONENTS OF VISUAL SEARCH IN EARLY-ONSET SCHIZOPHRENIA, ADHD AND ASD: AN EYE TRACKING STUDY

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Background: Superior visual search is a replicated finding in the literature on Autism Spectrum Disorder (ASD). Conversely, results from the literature on Attention-Deficit/Hyperactivity Disorder (ADHD) are more mixed, with some studies showing typical performance and others pointing out less efficient serial search in ADHD. Finally, most studies on visual search in Schizophrenia highlighted deficits in focal attentional processing. However, similarities between attentional impairments in the three clinical groups have also been reported. The primary goal of our study is to determine the diagnostic specificity of search deficits. To our knowledge, the literature systematically comparing the visual search performance in patients with ADHD and Schizophrenia is limited to one study, while no study has so far included an ASD group in the comparison.

Methods: Four groups of young adults, namely 29 typically developing (TD; 19.8±1.6, 41% males), 26 with ASD (19.7±1.9, 96% males), 28 with ADHD (19.9±1.4, 54% males) and 21 with Early-Onset Schizophrenia (SCZ; 19.7±1.7, 71% males) were presented a visual search task in which they had to quickly detect a target item among several similar-to-target distractor items. Eye movements were recorded binocularly with the Eye Link 1000+ system. Participants were matched on age and full-scale IQ. The ocular-motor behaviour was analysed using Data Viewer 3.2 and SPSS 2.3.
Results: Initiation of search – latency of the first saccade on the search grid – was typical in all participants except those with SCZ, who had significant higher intra-subject variability (ISV) than both TD and ADHD, but no delay in initiating search. Within search, ASD manifested significantly reduced mean and ISV of total search duration – between the first saccade on the grid and the last fixation on target – and of the first part of search – between the first saccade on the grid and the first fixation on target – in comparison with all other groups, including TD. Conversely, SCZ and ASD were significantly more variable than TD and ADHD regarding the duration of first fixation on target, while also being, to a lesser extent, slower than ADHD but not than TD. Additionally, SCZ needed a higher frequency of fixations on target than ASD, but not compared to ADHD or TD, before making a decision. In the post-search phase – between the onset of the last fixation on target and the button press on the keyboard – SCZ were the slowest and most variable group, followed by ASD and ADHD who differed non-significantly from controls. The overall search performance – between trial onset and button press – resulted in typical manual mean RT in ASD and ADHD while being atypically longer in SCZ, compared to all other groups. Compared to TD, ISV was at par in ADHD, lower in ASD, and higher in SCZ.

Discussion: Results suggest that the ability to extract individual targets is intact in ASD and ADHD. However, ASD only show a bias toward local information, as indicated by more variable first fixation duration, despite intact global processing. By contrast, lower search efficiency in SCZ might be explained by both (a) abnormal global processing due to impairment in the guidance mechanisms that affect the time until the first fixation on target, and (b) a deficit in central discrimination, with resulting difficulties in extracting critical features of the target.

M80. ALTERATIONS IN TEMPORAL PROCESSING AFFECT SCHIZOPHRENIA AND BIPOLAR PATIENTS AT DIFFERENT TEMPORAL SCALES

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Background: Previous work suggested that patients with Schizophrenia (SZ) and Bipolar disorder (BP) both show anomalies in temporal cognition, although at different temporal scales. Recent results suggest disruptions in the processing of sensory information in time in SZ at the sub-second scale, including temporal order processing (100 ms). On the other hand, BP patients often report tachypsychia or racing thoughts, a subjective acceleration in the production of thoughts, which points towards temporal anomalies at the (supra-)second scale.

Methods: To further investigate the proposed temporal abnormalities which differentially affect the two groups, 11 SZ patients, 14 BP patients and 21 healthy controls (HC) performed two tasks. First, subjects’ ability at ordering events in time was evaluated in a Temporal Order Judgment task. Participants were presented two squares separated by either a sub-threshold 17ms or a supra-threshold 100 ms asynchrony, or two squares appearing simultaneously on a computer screen. They were instructed to respond, by clicking on one of two response-buttons, to the side of the first stimulus and their accuracy was recorded. In a second task, subjects were presented the ambiguous Necker cube figure and were instructed to report, via button presses, each time their perception of the figure changed between the two possible interpretations. Two attentional conditions were used: a “Spontaneous” condition where subjects reported perceptual changes that occurred spontaneously (without any attentional control), and a “Focus” condition where subjects were asked to focus on and mentally maintain one of the two interpretations of the figure for as long as possible and switch back to it in case of perceptual reversal. Eye movements and manual responses were recorded during this task and were used to compute two measures: “manual windows” based on subject’s explicit responses and reflecting time intervals of stable percepts of the figure, and “ocular windows” based on oculair fixations and reflecting implicit and automatic alternations between the two interpretations of the figure. The rates and durations of the two “windows” were compared in the two attentional conditions.

Results: We present preliminary results. In the Temporal Order Judgment task SZ patients’ accuracy was significantly lower than that of HC for visible 100 ms asynchronies. BP patients’ performance had intermediate values and did not differ from the other groups. For sub-threshold 17 ms asynchronies no significant difference was found between groups. In the Necker cube task, similar rates of “manual windows” were found in all three groups, however there was a tendency towards an increased window duration in the Focus condition in BP patients. The rate of “ocular windows” was significantly higher in BP patients compared to HC and SZ patients, with decreased “ocular window” duration in BP patients compared to HC. BP patients’ rate of “ocular windows” increased mainly in the “Focus” condition.

Discussion: The findings in the Temporal Order Judgment task replicate results in the literature showing an impaired temporal order processing in SZ patients for supra-threshold asynchronies at the scale of 100s ms. The results of the Necker cube task suggest that BP patients cannot help oscillating between the two interpretations of the Necker cube. Complementary results obtained in a larger group of BP patients suggest a link with tachypsychia. Our present results support the idea that temporal cognition is altered in both SZ and BP patients but at different temporal scales.

M81. IQ DIFFERENCES BETWEEN PATIENTS WITH FIRST EPISODE PSYCHOSIS IN LONDON AND PALERMO REFLECT DIFFERENCES IN PATTERNS OF CANNABIS USE

Abstract not included.

M82. GROWING BURDEN OF DISEASE: THE PREVALENCE OF CHRONIC HEALTH CONDITIONS AFTER A FIRST EPISODE OF PSYCHOSIS

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Background: Over 12% of Canadians live with two or more (2+) co-occurring chronic physical health conditions or multimorbidity. This proportion is expected to rise with increased exposure to risk factors for these diseases. People with psychotic disorders often have co-occurring chronic physical health conditions; however, to date there has been a paucity of research on the prevalence of multimorbidity among people with psychosis. The objective of our study was to examine the prevalence of multimorbidity ten years after a first episode of psychosis (FEP) utilizing data from a retrospective cohort study based on health administrative data.

Methods: The health administrative dataset has been linked to data from the Prevention and Early Intervention Program for Psychoses in London, Canada to enable identification of FEP patients (n=445). FEP patients were compared to a randomly selected comparison group from the general population (n=1,783), matched on age, gender, and neighbourhood. This cohort has been followed for a 10-year period in the health administrative data to ascertain the prevalence of physical comorbidities.

Results: Preliminary analyses on 2,238 patients (557 females, 1,681 males) at 10-year follow-up, reveals that 32.1% (95% CI 28.0%, 36.5%) of FEP patients have 2+ conditions, as compared to 15.1% (95% CI 13.6%, 16.9%) of people without psychosis. Full results on risk factors for multimorbidity will be presented.

Discussion: The findings from this study will facilitate increased surveillance and recognition of the common physical health conditions faced by people with psychosis, including those contributing to premature mortality.