Background: Visual attention in Schizophrenia (SZ) differs from that of neuro-typical controls, and scan-path abnormalities have been proposed as a robust marker of the disorder (Nishiura et al., 2007). In free viewing paradigms, a restricted area of visual exploration has been reported as a robust atypical finding in SZ participants across a variety of depicted contents (Beedie et al., 2011), and has been shown to be a highly efficient discriminating between SZ and healthy controls (Benson et al., 2012). Moreover, speaking about what one sees during the act of looking has been shown to impact visual exploration behavior (Klein et al., 2014). Finally, despite clinical and genetic-biological relationships between schizophrenia, autism and ADHD (Owen & O’Donovan, 2017) there is, to our knowledge, yet no direct comparison between these neurodevelopmental disorders using eye tracking. The “head-to-head” comparison is the primary objective of this study.

Methods: We tested four groups of adolescent and young adults, namely early-onset Schizophrenia (SZ, N=21, 15 males, mean age ± 1 standard deviation 19.7±1.7 years), Attention Deficit Hyperactivity Disorder (ADHD, N=28, 15 males, 19.9±1.4 years), Autism (ASD, N=26, 25 males, 19.7±1.9 years), and typical controls (TD, N= 29, 12 males, 19.8±1.6 years). The ocular-motor task battery comprised of different free viewing tasks including free viewing of different kinds of social interactions in static pictures whilst solely viewing versus viewing-plus speaking (in counterbalanced order). Eye movements were recorded with 1.000Hz using the EyeLink 1000+ system and analyzed with Data Viewer Eyelink Software and MATLAB (Version R2017a, Mathworks, USA). Statistical Analysis was performed in SPSS Statistics 2.3 (IBM, USA).

Results: Visual attention of SZ patients manifested significant less gaze scatter than TD whilst merely looking at the images. During looking and speaking, however, the two groups had a similar spatial scatter of fixations. Preliminary analyses indicate that participants with ADHD and ASD did not differ from TD in this measure.

Discussion: Constraint gaze scatter in visual exploration is a robust and discriminating finding in schizophrenia that has been associated with the negative symptomatology of the disorder. The present results confirm our previous findings (Klein et al., 2014) and suggest that the act of speaking may partially counteract and compensate the restricted visual scanning performed by SZ participants, thus contributing to a better understanding of Visual Attention in SZ and its differentiation from other neurodevelopmental disorders.

S189. PREFRONTAL PARVALBUMIN INTERNEURONS REQUIRE JUVENILE SOCIAL EXPERIENCE TO ESTABLISH ADULT SOCIAL BEHAVIOR

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Background: Social isolation during developmental critical windows could be highly detrimental to proper functioning of mature prefrontal cortex (PFC) and establishment of appropriate adult behaviors. However, the specific circuits that undergo social experience-dependent maturation to regulate social behavior development are poorly understood. Social processing is a domain that is commonly dysregulated in psychiatric disorders including Schizophrenia, and is poorly treated by available psychiatric medications. In humans and rodents, portions of the evolutionarily conserved medial prefrontal cortex (mPFC) are part of a network that regulates social behavior. Many disorders with shared social processing deficits show impairments in inhibitory neurotransmission within the brain, particularly in the mPFC, suggesting a role for PFC inhibitory action in regulating social behavior. Parvalbumin expressing interneurons (PVls) are one of the major subclasses of inhibitory neurons, implicated in psychiatric disorders. Here we aim to examine a contribution of PVls in mPFC for social behavior development in mice.

Methods: We use juvenile social isolation (JSI) during a 2-week sensitive window immediately following weaning and test social behavior in adult mice using the 3-chamber test and reciprocal interaction test. To investigate the causal contribution of mPFC-PVls in social behavior of adult mice, we leveraged chemogenetic technologies. We selectively expressed hM4Di, an inhibitory DREADD (Designer Receptor Exclusively Activated by Designer Drugs), or hM3Dq an excitatory DREADD in the adult mPFC-PVls and manipulated mPFC-PVI activity acutely using the selective DREADD agonist, Clozapine-N-oxide (CNO). To test the activity of mPFC-PVls in response to social experience we used in vivo imaging of calcium transients by fiber photometry.

Results: We identified a specific activation pattern of parvalbumin-positive interneurons (PVls) in dorsal-medial PFC (dmPFC) prior to an active bout, or a bout initiated by the focal mouse, but not during a passive bout when mice are explored by a stimulus mouse. Optogenetic and chemogenetic manipulation revealed that brief dmPFC-PVI activation triggers an active social approach to promote sociability. Juvenile social isolation critically decoupled dmPFC-PVI activation from subsequent active social approach by “freezing” the functional maturation process of dmPFC-PVls during the juvenile-to-adult transition. Chemogenetic activation of dmPFC-PVI activity in the adult animal mitigated juvenile isolation-induced social deficits.

Discussion: These results demonstrate that PVI development in the juvenile mPFC is critically linked to long-term impacts on social behavior. Our study implicates mPFC PVls as promising cellular targets for future therapeutic development on social impairments in psychiatric disorders such as Schizophrenia.

S190. WHEN WORDS AREN’T ENOUGH: DANCE/ MOVEMENT THERAPY AND SCHIZOPHRENIA

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Background: Dance/Movement Therapy (DMT) is a language that transcends the verbal realm. This facet of communicating through dance and movement is significant particularly when the population you are working with often communicates in ways that are creative, unique, and not necessarily conventional. This is often the case when working with people who have been diagnosed on the schizophrenia spectrum. Although they fall under the same diagnosis, positive and negative symptoms of schizophrenia are embodied in quite different ways; as their names indicate, positive and negative symptoms are dichotomous and fall on opposite ends of a movement spectrum.

Methods: We will explore the many bodily manifestations of schizophrenia and DMT approaches to best support the specific needs associated with this complex diagnosis. The co-facilitators have each engaged in their own clinical practice and research exploring how DMT interventions can best serve the population in grounding, thought and behavioral organization, ego strengthening, and development of interpersonal relationships. As one can imagine, having a diagnosis of schizophrenia can be isolating and interrupt healthy relationship development due to stigmatization. The co-facilitators have found DMT to be a humanizing factor in this often dehumanized population. The use of creativity with people with schizophrenia allows the psychotherapeutic relationship to focus on personal strengths, individuality, and unconditional acceptance.

Results: Dance/movement therapists assess patient functioning through non-verbal indicators in everyday behavior, postural and gestural patterns, and qualitative elements that emerge during therapeutic interactions.
Oftentimes, their experiences with positive symptomatology affect their ability to relate in a shared reality base with others not experiencing these positive symptoms. Single-session DMT interventions have supported a decrease in psychological distress, and positive and negative symptomatology for people with schizophrenia in an inpatient psychiatric facility (Biondo, 2019).

Within a group DMT approach to treatment, dance/movement therapist considers movement and body-based experiences, as natural and effective sources of self-awareness and expression, which can illuminate the interrelationships between the many dimensions of human behavior (Bryl, 2018). This approach integrates movement techniques, creative embodiment, the non-verbal aspects of self-awareness and interpersonal communication and targets core specific features of chronic schizophrenia and negative symptomatology. As such it provides links to outcomes directly related to affective, cognitive, behavioral, and functional processes in the treatment for schizophrenia in residual stages (Bryl, 2018).

**Discussion:** Schizophrenia can manifest through many different representations: with positive and/or negative symptoms, and with acute episodes or chronicity. The diagnosis will interrupt healthy ego strength, the ability to relate with others, and the ability to function without supports. Dance/movement therapy is a wonderful approach to working with this population in its many forms, as it addresses the psychological, cognitive, social, and functional levels of participants. Although positive and negative symptoms often manifest quite differently on a movement level, DMT has the ability to support the many needs of those diagnosed with schizophrenia. The many limitations of psychopharmacological interventions for people with schizophrenia are evidence that inclusive, strengths-based, and body-informed therapy options would greatly benefit this population.

**S191. A SCOPING REVIEW AND PHENOMENOLOGICAL EVALUATION OF METACOGNITIVE TRAINING FOR SCHIZOPHRENIA**

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**Background:** The self-disorder (SD) approach to schizophrenia posits that although schizophrenia involves a core disruption, this alteration nonetheless leaves room for variable experiential pathways toward delusion formation, which are held to account for variation in thematic content. This view of delusions, then, complicates the picture provided by the theory and research that supports MCT, raising the question of how these separate bodies of empirical evidence might be weighed against each other and reconciled. A major point of difference between these two perspectives is on the issue of "normalizing". Given that the self-disorder approach posits anomalous alterations in self and world experience, the way the patient with schizophrenic delusions is taken as believing is radically different than the individual whose experience cannot be characterized by such anomalous experience. Thus, although the biases posited by MCT may indeed reflect some general and common errors of cognition and reasoning, there is reason to be cautious about interpreting the observation of such biases in the context of schizophrenia as implying that they play the same role as in the development of erroneous beliefs in non-schizophrenic populations. Moreover, while it is of course possible that a specific metacognitive skill taught during a MCT module may nonetheless prove useful for managing delusional ideation, the variable experiential pathways from which different types of delusions emerge may render a given type of delusion as more or less amenable to treatment by means of a specific MCT module and its corresponding metacognitive skill. However, unless MCT studies have thus far considered the relative impact of individual modules on specific types of delusions, the question of which metacognitive skills can be shown as effective for a specific type of delusion remains unknown.

**Methods:** A scoping review was conducted in order to discern if published MCT studies have examined the impact of individual MCT modules on types of delusions as they occur in the context of schizophrenia spectrum disorders.

**Results:** It was found that 2% of the 38 MCT studies reviewed provided explicit information about the types of delusions treated, with 5% of such studies reporting on module-specific effects, one study of which specified effects on paranoid delusions.

**Discussion:** This scoping review is novel in its demonstration that, overall, published MCT studies have not taken into consideration the heterogeneity of delusions, nor have they extensively evaluated whether or not there are differential, module specific, outcomes for different types of delusions. From a phenomenological perspective, this risks ignoring how differences in the thematic content of delusions emerge from differing experiential precursors. How each cognitive and affective mechanism targeted by MCT modules may differentially contribute to the maintenance or treatment of different types of delusions will be critically evaluated in consideration of the phenomenology of delusions, and suggestions for further research and practice, which aim toward the goal of individualized medicine, will also be considered.

**S192. EFFECTS OF NICOTINE INTAKE ON NEUROPLASTICITY IN SMOKING AND NON-SMOKING PATIENTS WITH SCHIZOPHRENIA**

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**Background:** Cortical plasticity – the ability to reorganize synaptic connections and adapt to environmental changes – appears to be impaired in schizophrenia patients. Results suggest the dysfunctional plasticity to be a key pathophysiological mechanism. Different non-invasive brain stimulation (NIBS) techniques have been used to modulate and induce cortical plasticity. In healthy subjects, nicotine was shown to play an important role in plasticity induction and is capable to alter cortical excitability and plasticity, induced by NIBS techniques. Our goal was to investigate the promising effects of a nicotine receptor activation done by Varenicline and the combination with anodal transcranial direct current stimulation (a-tDCS) on neuroplastic changes in schizophrenia patients.

**Methods:** Our sample consisted out of twenty-four individuals with schizophrenia, twelve smokers and twelve non-smokers. Every participant received Varenicline and Placebo, combined with anodal transcranial direct current stimulation (a-tDCS), to induce non-focal plasticity. We inferred plasticity changes by monitoring changes in cortical excitability. This was done via motor-evoked potentials (MEPs) elicited by transcranial magnetic stimulation (TMS). The MEPs were recorded before and three hours after Varenicline/Placebo intake. Following the direct current stimulation, we monitored excitability changes for up to one hour.

**Results:** Significant effects through the mere Varenicline consumption or withdrawal effects could not be found in any group. However, we observed a numeric temporary decrease of excitability after a-tDCS in non-smokers following Varenicline intake. This decrease compared to the placebo condition was visible 20 minutes after a-tDCS but vanished over time. Smokers did not show any excitability changes after a-tDCS and the nicotinic receptor stimulation did not show any influence. Excitability changes after stimulation in contrast to the baseline measurement were not evident.

**Discussion:** Our results show that an activation of nicotinic receptors in schizophrenia patients does not induce excitability changes. The modulating effect of nicotine in plasticity induction via anodal transcranial direct current stimulation could not be confirmed for patients with schizophrenia. We could show that chronic nicotine consumption in patients with schizophrenia or nicotine withdrawal does not lead to fundamental excitability changes. Acute nicotine consumption has only small effects on cortical excitability in non-smokers.