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S60. A PRELIMINARY COMPARISON OF COGNITIVE CHANGE: MINDFULNESS MEDITATION V. COGNITIVE REMEDIATION

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Background: Schizophrenia spectrum disorder (SSD) typically presents with a diverse range of cognitive impairments, with the effective treatment of which is advocated as an important future focus for the field. Currently, cognitive remediation therapy (CRT) is the most widely administered form of cognition enhancing treatment, however individual responses to CRT are highly variable in SSD, warranting examination of whether alternative approaches can also enhance cognition. Mindfulness-based interventions (MBI) have shown potential in alleviating the negative impact of clinical SSD symptoms and show promising pro-cognitive treatment effects. The aim of the current study was to retrospectively compare cognitive improvements following two different CRT programs (multi-domain drill and strategy; visually intensive drill and practice) an MBI targeting persistent auditory verbal hallucinations, and a video game-based active control.

Methods: Data was retrospectively pooled for participants who completed measures of perceptual processing speed, sustained and switching attention, and inhibitory control. Twelve SSD participants completed four weekly one-hour individual sessions of the Individual Mindfulness Program for Voices, 22 completed a minimum of ten one-hour group/computer-based sessions of the multi-domain drill and strategy intervention COGPACK, 22 completed a minimum of 24 one-hour group/computer-based sessions of BrainHQ's (Posit Science) VISUAL Intensive drill and practice intervention, and 17 participants completed a minimum of 10 one-hour group/computer-based sessions of games putatively similar to exercises common to CRT (active control). Baseline/Post-treatment change effects were calculated for each intervention across specified cognitive variables and converted to standardised Z-scores based on the performance of the active control group.

Results: Unique and overlapping pro-cognitive effects were identified for each of the three intervention types compared to the active control. MBI produced moderate standardized pro-cognitive effects above the active control in perceptual processing speed (z-score: 0.62) and switching attention (z-score: 0.45). This somewhat overlapped with the change effects calculated for the visually intensive drill and practice (z-score: 0.57) CRT program. Both the visually intensive drill and practice (z-score: 0.47) and the multi-domain drill and strategy (z-score: 0.52) CRT programs resulted in moderate-to-large improvements v. control in sustained attention, whilst the MBI had no such effect (z-score: 0.10). The video-gamed based active control produced moderate improvements in inhibitory control in comparison to all three interventions (z-score: -0.37).

Discussion: Overall, these preliminary findings suggest that a brief MBI can produce similar performance enhancing effects to that of the lengthier CRT programs in a discrete subset of cognitive tests. More extensive examinations of the cognitive benefits and their translation to real world functional improvements in SSD are needed.

S61. COMPUTATIONAL MODELLING OF VISUAL MOTION PERCEPTION AND ITS ASSOCIATION WITH SCHIZOTYPAL TRAITS

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Background: Psychotic symptoms might be explained by disturbances of information processing due to errors of inference during neural coding,

and hierarchical models could advance our understanding of how impaired functioning at different levels of the processing hierarchy are associated with psychotic symptoms. However, in order to examine to what extent such alterations are temporary or stable, the psychometric reliability and validity of the measurements need to be established. Individual differences in visual perception were measured by responses to uncertain stimuli presented during a probabilistic associative learning task. Our novel contributions are the measurement of cross-modal (visual and acoustic) associative learning and the assessment of the psychometric properties of indicators derived from a perceptual decision task: we evaluate its internal consistency, test-retest reliability and external validity as shown by associations with schizotypal traits.

Methods: Participants (32 healthy individuals, 13 men, age (SD) = 27.4 (9.4)) performed a perceptual decision task twice with one week delay. They were asked to indicate the direction of perceived motion of disambiguous and ambiguous visual stimuli (640 trials), which were preceded by visual and acoustic cues that were probabilistically associated with the motion direction and were congruent (both predict the same motion) or incongruent (cues predict different motion). Schizotypal traits were measured with the short version of the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) questionnaire, which showed good internal consistency and test-retest reliability (Cronbach's alpha: 0.71 – 0.83 for subscales, test-retest correlation for Cognitive Disorganization: $r = 0.84$, and Unusual Experiences: $r = 0.79$).

Results: We found a significant difference in response reaction times between stimuli with high and low probability ($t = -2.037$; $p = 0.044$). Acoustic cues predicted the decision significantly higher in case of ambiguous stimuli in both sessions (1. $t = 4.19$, $p < 0.001$; 2. $t = 3.46$, $p = 0.002$). Congruency of visual and acoustic cue pairs had no significant effect on response times for ambiguous stimuli. Reaction times and bias towards reliance on auditory cues during perceptual decision making under uncertainty showed stability over the two sessions (test-retest rho's ranging from 0.56 – 0.72). Cognitive Disorganization scores showed weak negative correlation with response time under uncertainty (session 1: $r = -0.24$, session 2: $r = -0.28$), Unusual Experiences scores showed weak negative correlation with the bias towards reliance on auditory cues (session 1: $r = -0.21$, session 2: $r = -0.19$). We did not find relationship between general response speed and any O-LIFE subscale scores.

Discussion: The results show some intraindividual stability of individual differences in perceptual decision making as measured by our paradigm. Participants with higher schizotypal scores tend to have slower response speed under uncertainty and greater bias towards reliance on auditory cues in a small healthy sample which implies it might be useful to measure these variables in clinical population and evaluate the effectiveness of therapeutic interventions or illness progression in follow-up studies.

The presented preliminary results derived from descriptive statistics of the behavioral data. Our research group is currently working on fitting a trial-by-trial hierarchical computational model - which includes the representation of uncertainty - to find more detailed individual differences, e.g. the time course of parameter changes while learning in a visual perception task.

S62. COGNITIVE DEFICITS IN TREATMENT RESISTANT SCHIZOPHRENIA

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Background: Schizophrenia (Sz) and other psychoses are complex mental disorders, characterised by sensory, cognitive and emotional symptoms, but mainly distinguished by positive and negative symptoms. Cognitive impairment is a core feature of schizophrenia, with research into cognitive deficits indicating that cognitive impairment precedes clinical disease onset and is still evident after positive symptoms are no longer present.