

Effectiveness of a community-based cognitive rehabilitation programme for patients with schizophrenia and schizoaffective disorder

Background

Schizophrenia and Schizoaffective disorder

- Both are psychotic disorders that are characterised by positive (+) and negative (-) symptoms including:
 - (+) Hallucinations, delusions, disorganised thoughts/ speech
 - (-) Poverty of speech, avolition, social withdrawal, etc.



Cognitive impairment associated with schizophrenia

- Studies consistently show patients with schizophrenia exhibiting deficiencies in areas of cognition such as speed of information processing, memory, attention, reasoning and social cognition. [1,2]
- These cognitive abilities predict the patients' ability to work, live independently and socialise [2], thus highlighting the importance of cognition remediation in patients' recovery and reintegration to society.

Methods

Participants



- Patients diagnosed with schizophrenia or schizoaffective disorder from three psychiatric rehabilitation centres under Singapore Anglican Community Services (SACS)

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> Adults aged 21 to 60 At least 10 years of formal education in English No neurological conditions 	<ul style="list-style-type: none"> Hospitalised within past one month Global Assessment of Functioning (GAF) score ≤ 30

Research aims

- To investigate the effects of NEAR on neurocognition, social cognition and functional outcomes of patients
- Explore mediators for change (e.g. negative symptoms)

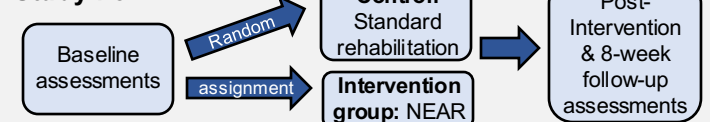
Cognitive remediation

- Cognitive remediation is an evidence-based intervention that aims to improve cognitive functioning of persons with serious mental illness.
- Factors such as motivation, contextualisation and strategy-learning approach appear to influence the impact of cognitive remediation on functional outcomes [3].

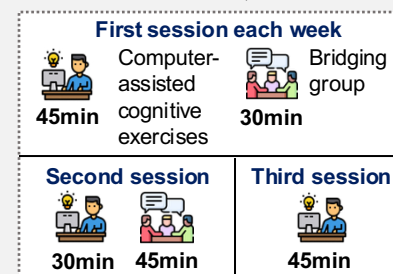
Neuropsychological and Educational Approach to Remediation (NEAR)

- Developed by Prof Alice Medalia
- Incorporates concepts from neuropsychology, educational psychology, theories of learning and self-determination in the delivery format and instructions [4].
- For e.g., participants have the autonomy to choose their cognitive games to create a motivating learning process
- In this study, NEAR is adapted to include the Multicontext Approach developed by Prof Joan Toglia, so that participants learn to apply their strategies to different situations [5].

Study flow



NEAR: 36 sessions in total, 3 sessions/week



Assessments

- Neurocognition: BACS²
 - Social cognition: BLERT³
 - Executive functioning (Planning): WCPA⁴
 - Clinical interview measuring symptoms: PANSS⁵, BNSS⁶
 - Functional outcomes: SOFAS⁷, COPM⁸
- ²Brief Assessment of Cognition in Schizophrenia; ³Brief Lyaker Emotion Recognition Task; ⁴Weekly Calendar Planning Activity; ⁵Positive and Negative Syndrome Scale; ⁶Brief Negative Symptom Scale; ⁷Social and Occupational Functioning Assessment Scale; ⁸Canadian Occupational Performance Measure

Results

Participants

- N = 26 who completed Post-Intervention sessions (PostInt)
- Control = 15, Intervention = 11
- Female = 13, Male = 13
- Mean age = 44.8
- Mean GAF score = 62.5

Discussion

- Results were consistent with studies showing improvements of some psychiatric symptoms in patients with schizophrenia [6], which could be related to changes in neurocognition [7]. However, no improvements in cognition or functioning were demonstrated.
- In another study, facial emotion recognition abilities of patients with schizophrenia is also correlated with neurocognition. This could be attributed to overlaps in brain regions required for both emotion recognition and neurocognitive tasks [8].
- Similarly, the link between executive functions and negative symptoms can be explained by the underlying biological changes to the brain, such as disruptions of the fronto-subcortical circuits [9].

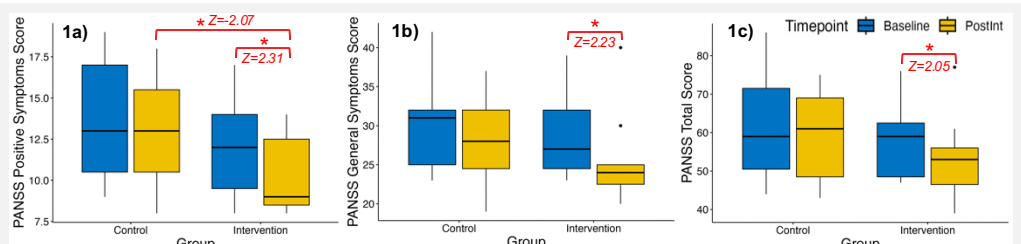


Fig.1 Boxplots showing comparisons between Control and Intervention group at Baseline and Post-intervention for (a) PANSS Positive Symptoms Score; (b) PANSS General Symptoms Score; (c) PANSS Total Score. Wilcoxon rank sum and signed rank tests showing significant pairwise differences ($p < 0.05$) are indicated with (*).

Pearson correlation test (normal distribution)			r	Description
BACS Baseline Composite	BLERT Baseline Score	0.58	Moderate positive association between neurocognition and facial emotion recognition	
BLERT PostInt Score	0.63			
BACS PostInt Composite	BLERT Baseline Score	0.55	Inverse moderate association between executive functioning and negative symptoms	
BLERT PostInt Score	0.67			
Spearman correlation test (non-normal distribution for WCPA)			ρ	Description
WCPA PostInt Efficiency Score	PANSS Baseline Positive Symptoms Score	-0.50	Inverse moderate association between executive functioning and negative symptoms	
(Note: Higher efficiency score indicates longer time spent or lower accuracy on planning task)	PANSS Baseline Negative Symptoms Score	0.57		
	BNSS Baseline Score	0.65		
	BNSS PostInt Score	0.53		

Fig.2 Table showing significant pairwise correlations ($p < 0.05$) between outcome measures.

These are only preliminary findings based on a small sample size. More data is needed to determine the effectiveness of adapted NEAR in community settings.

References

- Reichenberg, A., Harvey, P. D., Bowie, C. R., Mojtabai, R., Rabinowitz, J., Heaton, R. K., & Bromet, E. (2009). Neuropsychological function and dysfunction in schizophrenia and psychotic affective disorders. *Schizophrenia bulletin*, 35(5), 1022–1029.
- Keefe, R. S., & Harvey, P. D. (2012). Cognitive impairment in schizophrenia. *Handbook of experimental pharmacology*, 213, 11–37.
- Wykes, T., & Spaulding, W. D. (2011). Thinking about the future cognitive remediation therapy—what works and could we do better? *Schizophrenia bulletin*, 37 Suppl 2(Suppl 2), S80–S90.
- Medalia, A., & Freilich, B. (2008). The neuropsychological educational approach to cognitive remediation (NEAR) model: Practice principles and outcome studies. *American Journal of Psychiatric Rehabilitation*, 11(2), 123–143.

- Toglia, J., & Foster, E. R. (2021). *The Multicontext Approach to Cognitive Rehabilitation: A Metacognitive Strategy Intervention to Optimize Functional Cognition*. Ohio, Gatekeeper Press, Page 80.
 - Bark, N., Revheim, N., Huq, F., Khalderov, V., Ganz, Z. W., & Medalia, A. (2003). The impact of cognitive remediation on psychiatric symptoms of schizophrenia. *Schizophrenia research*, 63(3), 229–235.
 - Gharaeipour, M., & Scott, B. J. (2012). Effects of cognitive remediation on neurocognitive functions and psychiatric symptoms in schizophrenia inpatients. *Schizophrenia research*, 142(1-3), 165–170.
 - Sachs, G., Steger-Wuchse, D., Kryspin-Exner, I., Gur, R. C., & Katschnig, H. (2004). Facial recognition deficits and cognition in schizophrenia. *Schizophrenia research*, 68(1), 27–35.
 - Orellana, G., & Slachetky, A. (2013). Executive functioning in schizophrenia. *Frontiers in psychiatry*, 4, 35.
- Icons: FlatIcon.com