



Cognitive Remediation Therapy (CRT)

Experiences of implementation
in inpatient rehabilitation services

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Plan

- Introduction to CRT & CIRCUITS
- Our service context
- Experiences (Phase 1 of CRT implementation)
- Solutions (Phase 2 of CRT implementation)



Why CRT

- Adaptive functioning and recovery influenced by neurocognition
 - Memory domains
 - Executive functioning
 - Speed of information processing
 - Attention

Origins of cognitive deficits?

REVIEW

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The traumagenic neurodevelopmental model of psychosis revisited

John Read^{*1}, Roar Fosse², Andrew Moskowitz² & Bruce Perry⁴

Practice points

- Multiple studies and reviews have found a causal relationship between childhood trauma/adversity and psychosis.
- The 2001 traumagenic neurodevelopmental model of psychosis identified similarities in the brains of traumatized children and adults diagnosed with schizophrenia.
- Subsequently, 125 publications have provided indirect support for, or direct confirmation of, the traumagenic neurodevelopmental model.
- Many studies have now demonstrated the relationship between psychosis and over-reactivity to stress of the hypothalamic–pituitary–adrenal axis and the dopaminergic system.
- Studies of the frontal lobes and hippocampus also support the traumagenic neurodevelopmental model.
- Two lines of evidence link prior stress and brain alterations to cognitive deficits in individuals diagnosed with psychotic disorders.

Evidence Base

- Wykes et al (2011): Meta-analysis – CRT has medium effect size for improving overall cognition (.45) and daily functioning (.42)
- Sign of CRT reducing depression which impacts of subsequent cost of care (Reeder et al, 2014)
- Small to moderate effect of CRT on “negative symptoms” (Cella et al, 2017)
- Acceptability to service users of CIRCUITS evaluated (Reeder et al, 2015)



CIRCUITS

- Computerised Interactive Remediation of Cognition Training for Schizophrenia (Reeder & Wykes, 2011)
- Computerised web-based CRT programme
- We attended 2-day CRT workshop in London, Institute of Psychiatry, Kings College London



The process of CRT Using CIRCUITS

....the following is an example of a typical
CRT task in CIRCUITS

...these are not included in handouts

Practice using a simulation is a common learning technique?





CIRCUITS principles

- Errorless learning
- Is a psychological therapy and therapist role is integral
- Massed practice (3 sessions a week, 5-8 tasks in sessions, 40 sessions is standard programme)
- Cognitive formulation & Cog-SMART goal



CIRCUITS Principles

- Development of *metacognitive knowledge* & *metacognitive regulation* are key targets in CIRCUITS, to enhance generalisation to everyday life
- “supplementing drill and practice with strategy instruction” leads to better CRT outcomes (Medalia et al, 2016)



Meta-cognitive knowledge

- (1) one's own cognitive abilities (strengths and difficulties)
- (2) the sorts of cognitive abilities needed for a task
- (3) knowledge about thinking in general
- (4) own non-cognitive factors which affect performance (mood, sleep, medication, arousal levels)

Cella et al (2015)

Metacognition type and level	Proficiency level
Knowledge 1	The person is aware that cognitive operations are necessary for accomplishing everyday life tasks
Knowledge 2	The person has an understanding of the mental processes necessary to complete specific tasks
Knowledge 3	The person understands the impact of specific cognitive operations and associated difficulties on everyday life tasks and operations
Regulation 1	The person has suboptimal adjustment to compensate for cognitive difficulties
Regulation 2	The person can anticipate some demands, shows limited degree of adaptation and planning
Regulation 3	The person regularly uses strategies, adapts cognitive effort to task demands and can improve performance given practice and feed-back (e.g., learning from experience)

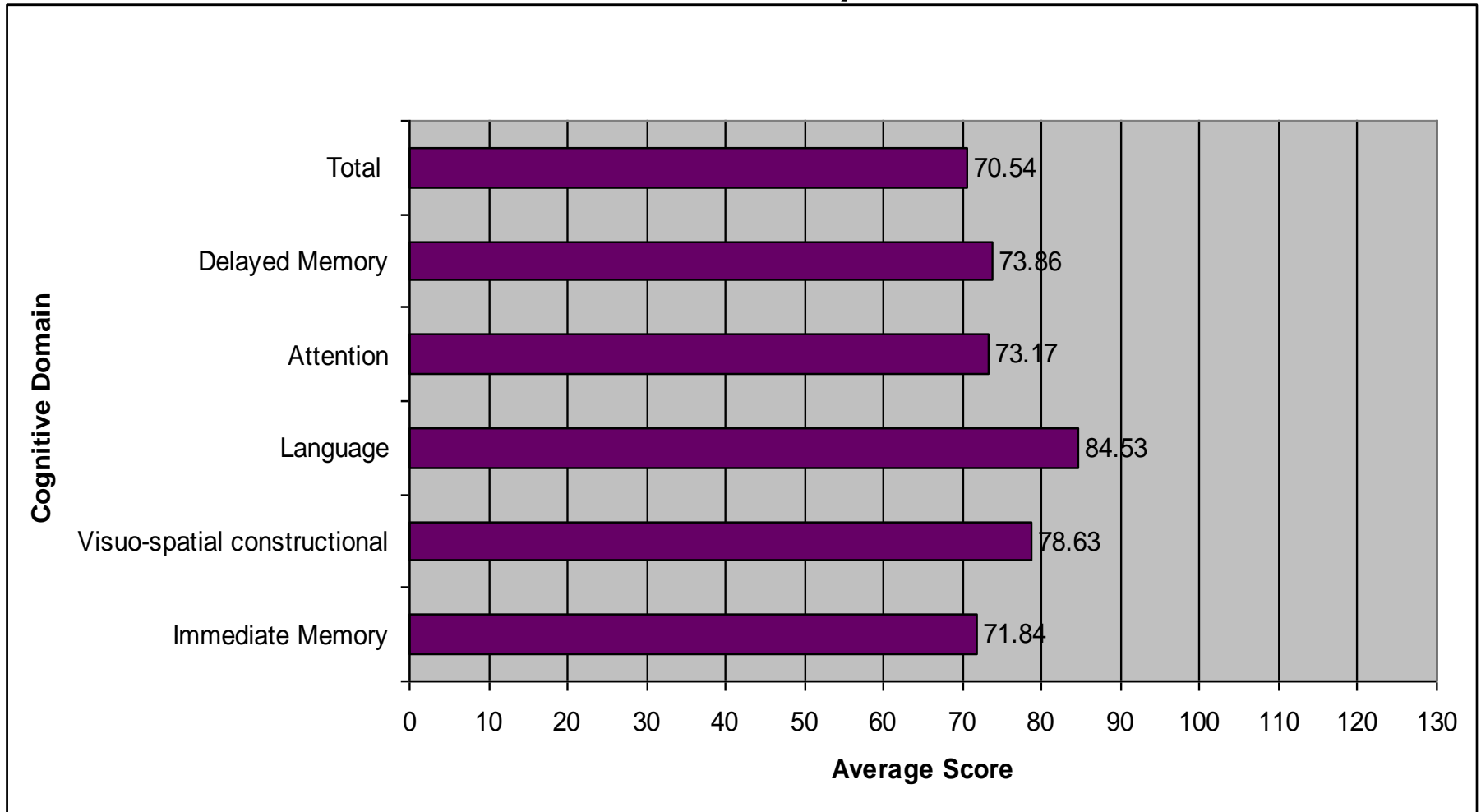


Service context:

Inpatient rehabilitation

- Long-term mental health service contact
- High case complexity (including physical health morbidity, significant substance use histories, adversity & trauma)
- Majority on CTO
- Repeated admissions / long duration of admission / previous supported accommodation
- On-going difficulties
- 24-hour inpatient care
- Aim – preparedness for community residence & reducing risk of re-hospitalisation

RBANS average scores (Wilk et al, 2004)



10 cases

- Average total RBANS score of score of 72 (borderline range)
- Sustained / ongoing CRT = 3
- Suspended CRT = 4 (clinical instability)
- Attrition rate = 2
- Early engagement = 1



Phase 2 of CRT Implementation

- Issues to address:
- Enhancing engagement
- Deployment of metacognitive regulation strategies is variable
- How do we increase potency of CRT in reducing the causal factors that led to readmission and maintaining factors in concern about community adjustment?
- Supervision of therapy process in developing cognitive formulation, cogSMART goals, development of metacognition

Intrinsic motivation to engage in CRT

- Choice & autonomy
- Perceived relevance & perceived utility (task enjoyability, utility value, attainment value, cost)
- Success expectancies (competence)
- Relatedness
 - Saperstein & Medalia (2016)

Enhancing metacognitive regulation strategy use

- Systemic intervention – cognitive rehabilitation focus
 - 24/7 carer proximity & support can lead to external regulation > self-regulation of behaviour
 - Enhance opportunities to apply cognitive skills in more autonomously managing life
- Protocol for using implementation intentions



Special issue paper

Does forming implementation intentions help people with mental health problems to achieve goals? A meta-analysis of experimental studies with clinical and analogue samples

Agoro Toli, Thomas L. Webb* and Gillian E. Hardy

University of Sheffield, UK

Objective. People struggle to act on the goals that they set themselves, and this gap between intention and action is likely to be exacerbated by mental health problems. Evidence suggests that forming specific if-then plans (or 'implementation intentions') can promote goal attainment and a number of studies have applied such techniques in clinical contexts. However, to date, the extent to which planning can help people with mental health problems has not been systematically examined.

Method. The present review used meta-analysis to investigate the effect of if-then planning on goal attainment among people with a DSM-IV/ICD-10 diagnosis (i.e., clinical samples) or scores above a relevant cut-off on clinical measures (i.e., analogue samples). In total, 29 experimental studies, from 18 records, met the inclusion criteria.

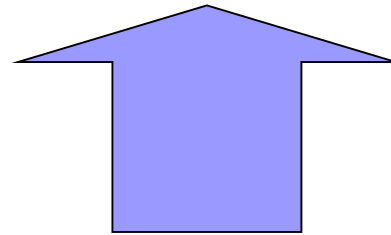
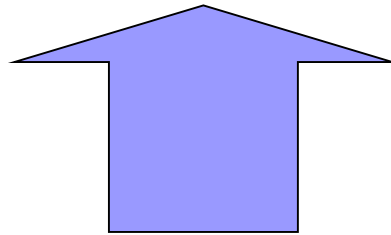
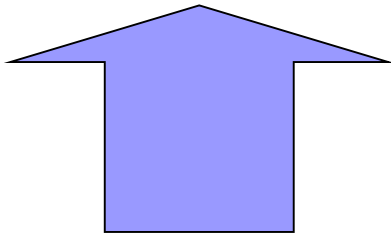
Results. Excluding one outlying (very large) effect, forming implementation intentions had a large-sized effect on goal attainment ($d_+ = 0.99$, $k = 28$, $N = 1,636$). Implementation intentions proved effective across different mental health problems and goals, and in studies with different methodological approaches.

Conclusions. Taken together, the findings suggest that forming implementation intentions can be a useful strategy for helping people with mental health problems to achieve various goals and might be usefully integrated into existing treatment approaches. However, further studies are needed addressing a wider range of mental health problems.

Implementation Intentions (IIs) – Gollwitzer (1993)

- Implementation intentions are ‘if-then’ or ‘when-then’ systematic plans
- Forming implementation intentions serves to overcome the problem of poorly elaborated intentions by describing when, where, and how goal striving will take place
- Chen et al (2016): emerging evidence that IIs can improve prospective memory in psychosis
- There are enhanced techniques to develop verbal-visual implementation intentions (Burkard et al, 2014)

Encoding of Intention -What -When - [personally relevant]	Retention -“holding in mind” during a delay	Retrieval - time, activity, event based cue is recognised	Execution - action carried out	Evaluation - outcome is monitored, further intention may be created
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Distraction, absorption, interference, stress, displacement effects etc. threaten prospective memory

Burkard et al 2014

TABLE 1
Examples of scenarios used for training the verbal component of implementation intentions

<i>Domain</i>	<i>Description</i>	<i>Example</i>
Simple PM	The protagonist knows exactly when which action has to be performed; scenarios include single and repeated behaviours, and the use of verification strategies.	Paul wants to call his sister back after having lunch/Ann must remember to take her medicine every morning when she gets up/John must remember to check that he bought everything on his list before arriving at the supermarket cashier.
PM with planning	The protagonist does not know exactly when the action must be performed.	Julia has to pay some bills before the end of the month.
Time-based PM	The action has to be performed at a specific time.	Mary wants to call the hairdresser when the salon opens at 2 p.m.
Inhibition	A behaviour that was previously learned/appropriate must be inhibited.	Stephen would like to quit smoking.
Action initiation/ apathy/ procrastination/self- efficacy	<p>The initiation of an action is perceived as difficult, delayed, or omitted.</p> <p>The protagonist feels unmotivated (sad, lonely, bored, inefficient in the face of a task) and therefore remains inactive.</p>	Christine still has to complete her tax return.



Increase potency of CRT?

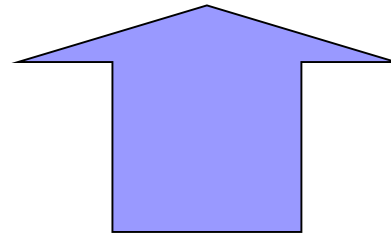
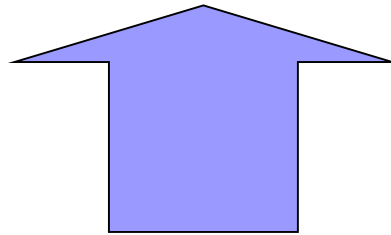
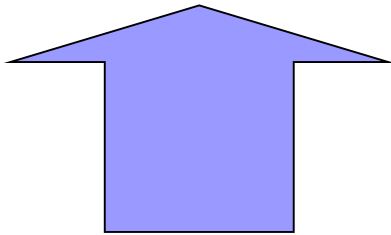
- Maximising the potency of CRT to address cognitive factors implicated in 'relapse', readmission, difficulties sustaining community residence
- Is prospective memory a key candidate factor for rehabilitation in this inpatient population?



Prospective Memory

- Event-based PM, in which memory to perform an action is cued by an external cue
- Time-based PM: memory to perform an action at a specified time
- Activity-based PM in which memory to perform an action is cued by one's own action.

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Distraction, absorption, interference, stress, displacement effects etc. threaten prospective memory

Prospective memory difficulties in psychosis

- “the effects of PM deficits on quality of life are not minor, including greater decline in instrumental activities of daily living (iADLs), reduced financial capacity, impaired medication management and poorer health-related quality of life (Ordemann et al, 2014)
- “....attention should be paid to this type of memory disturbance in rehabilitation” (Au et al, 2014)

Prospective memory 'failures' & relapse/readmission?

- Health / welfare related omissions
- Remember appointments (risk of 'not engaging' attribution)
- Disorganisation in sequencing
- Safety concerns (e.g. while cooking)
- Missed opportunities (discussing problem with therapist)
- Lack of execution of a part of staying well plan (e.g. sleep hygiene)
- Cumulative daily hassles and stressors (e.g. bills, strain on relationships)



Supervision / Practitioner Development

- Therapist competency in supporting development of metacognition
- Hierarchy of cogSMART goals – ensure progress to higher potency cogSMART goals
- Formulation of cognitive factors (e.g. in timeline to readmission / difficulties sustaining community residence)
- Strategies for enhancing event, time, and activity based prospective memory



Questions?