

A Case Study Series of the Feasibility of a Group Based Cognitive Remediation Therapy Program for People with Psychosis

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ABSTRACT

Background: Cognitive deficits for psychosis are common but a neglected treatment domain. There is evidence that cognitive remediation (CR) programs can remediate the cognitive deficits of psychosis and together with mental health rehabilitation programs improve function. Implementing CR as part of routine psychosis care is complicated by infrastructure costs, the need to upskill staff and service structures that have not been designed around psychosocial treatments. There is a need to examine the adaptation of therapies into these real world environments. This study examines the adaptation of a CR therapy, Computerized Interactive Remediation of Cognition Training for Schizophrenia (CIRCuiTS), to a group format for consumers with psychosis.

Method: Eighteen participants who met ICD-10 and DSM-IV-TR criteria for schizophrenia, schizoaffective or schizophreniform disorder were recruited from Metro South Health Service Mental Health (MSHSMH) site in Brisbane. Four participants completed the CR program. Complete data was available on three participants analyses due to >50% missing data. The primary outcome measure was the change in neuropsychological assessment using the Cambridge Neuropsychological Test Automated Battery (CANTAB). Secondary measures of self-reported self-esteem, meta-cognition and interview based assessment perceived cognitive deficits were completed.

Results: Three of the 4 participants completing the program improved in some domains of cognition based on the CANTAB. Three of 4 participants showed improvements in metacognitive awareness based on scores for the MCQ. Participants showed no difference in scores on the SCoRS and R-SES on completion of CR compared with prior to CR.

Conclusion: CIRCuiTS appears to lead to improvements in cognition and metacognitive awareness. Providing CR in a group format has potential benefits in terms of staff costs. However, careful attention needs to be paid to the baseline participant factors that could potentially influence attrition and outcomes especially self-esteem and perceived cognitive deficits.

Keywords: Schizophrenia; Psychosis; Cognitive remediation; Cognitive deficits; Self-Esteem; Metacognition

Abbreviations: CR-Cognitive Remediation; CIRCuiTS-Computerized Interactive Remediation of Cognition Training for Schizophrenia; MSHSMH-Metro South Health Service Mental Health; CANTAB-Cambridge Neuropsychological Test Automated Battery; ICD-10-International Statistical Classification of Diseases and Related Health Problems Version Ten; DSM-IV-TR-Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision; SCoRS-Schizophrenia Cognition Rating Scale; MCQ-Metacognition Questionnaire; SES-The Rosenberg Self-Esteem Scale

INTRODUCTION

Despite advances in psychopharmacology, schizophrenia remains a severely disabling illness. It is now appreciated that cognitive impairment mediates in part the functional disability associated with the disorder. Neurocognitive deficits are common, affecting 75-90% of people diagnosed with schizophrenia compared with population norms [1]. Furthermore it has been estimated that nearly 100% of consumers with schizophrenia demonstrate difficulties relative to their own premorbid cognitive functioning [2-5]. Deficits have been found in several cognitive domains including attention, executive functioning, processing speed, and verbal learning and memory [6-10]. The general profile of deficits reflects the heterogeneity of cognitive deficits within the population of people with psychosis.

These cognitive deficits can affect daily functioning and contribute to chronic disability in the areas of employment, social functioning and independent living. Furthermore, these difficulties

have been found to be more impairing to quality of life than the negative and positive symptoms of psychosis [7, 8,11]. Unlike psychotic symptoms, cognitive difficulties do not seem to improve during periods of remission and alter minimally with antipsychotic medication [12]. Given the significant impact that cognitive impairment can have on functional outcomes, and the prevalence with which these difficulties present, researchers have been developing strategies to rehabilitate cognition with the aim of improving an individual's functional capability and overall quality of life [3,13].

Cognitive Remediation (CR) has been used as a means of improving cognition in people with schizophrenia. CR is defined as, a " behavioural training based intervention that aims to improve cognitive processes (attention, memory, executive functioning, social cognition or meta cognition) with the goal of durability and generalization" [14]. It is a therapeutic approach that improves cognition and when combined with other rehabilitation strategies improves real world functioning [13]. CR uses compensatory and restoration strategies to facilitate improvement and remediation of cognitive functioning. Compensatory approaches seek to make improvements in a person's functioning by avoiding areas of impairment and using other intact cognitive domains, or by creating a supportive external environment. Cognitive restoration is designed to stimulate new learning or re-learning of cognitive tasks through drill and practice techniques and are therefore aimed at enhancing domains of difficulty [15].

There is now evidence from a number of meta-analytic studies that cognitive remediation is effective in remediating the cognitive deficits of psychosis. McGurk and colleagues [16] conducted a meta-analysis of 26 randomised controlled trails and found mean effect sizes of 0.41 for cognitive improvement, 0.35 for functional outcome, and 0.28 on symptom measures. Similarly, a meta-analysis (2104 participants) of 40 CR studies conducted between 1973 and 2009 demonstrated a mean global cognitive effect size of 0.45 and the outcomes were not significantly affected by the quality of trial methodology [14]. In addition , significantly stronger effects were found when CR was provided together with other rehabilitation strategies. The authors concluded that CR benefits people with schizophrenia and when combined with other psychiatric rehabilitation, can boost the effects of therapy.

One of the benefits of CR is that it is relatively cheap to administer and has few side-effects when compared with pharmacological intervention [17]. Computerised CR has particular benefits in that it is widely thought that intensive and prolonged intervention is required [18], and access to psychological therapists can be difficult [19]. There are various types of CR approaches which may rely solely on computerised exercises or therapist-guided instruction, or combine computer exercise with verbal discussion to link training exercises to everyday life [3]. Furthermore, CR can be delivered as a package that provides standard set of exercises or be tailored to suit individual need [2013].

Many different computerised CR programs have been used with the common therapeutic factors being the predominant use of strategy based learning coupled with psychosocial rehabilitation. One such program specifically designed for individuals with schizophrenia is the Computerized Interactive Remediation of Cognition Training for Schizophrenia (CIRCuiTS) [20]. CIRCuiTS targets various cognitive domains but also focuses on massed practice of metacognition and the learning of strategies to enhance task completion and for use in day-to-day life. For every task, the program suggests a list of metacognitive strategies that may assist in correctly and efficiently completing the task, requires that the participant select at least one and then prompts the participant to rate its usefulness upon completion of the task. This is important as programs that incorporate strategy generation and development, as well as adjunctive rehabilitation have shown more functional improvements [21]. In addition to being designed specifically for individuals with schizophrenia, CIRCuiTS was designed with both facilitator and consumer consultation. In a study of the feasibility and acceptability of CIRCuiTS, 5 consumers and 34 non-clinical participants rated the program as attractive, culturally appropriate, age appropriate and clear and understandable. Qualitative analysis showed that CIRCuiTS was seen to be a positive experience, with perceptions that cognitive functioning had improved and new strategy use in daily activities were being attempted [19]. Similarly, in a case study design, CIRCuiTS was demonstrated to be acceptable and feasible, with 3 individuals with schizophrenia improving on measures of memory and other cognitive domains [22].

A single case study of a 33 year old man with schizophrenia also showed that after completing CIRCuiTS, the individual improved on measures of visual memory, problems solving and verbal fluency [23].

Public mental health services operate within tight fiscal and accountability constraints. In this context the implementation of CR needs to be effective and efficient. Given that CIRCuiTS was designed specifically for use with individuals with schizophrenia, targets metacognition as well as cognition, provides additional measures of metacognition and the process of change, appears to be feasible and acceptable to consumers, preliminary data suggests that it improves cognition and, particularly important in terms of efficiency and fiscal constraints, is computerised and requires less specific training for therapists [19,20], it would seem that CIRCuiTS would be suitable for use in public mental health services. In Canada, USA and Australia delivering psychosocial interventions in a group format is considered efficient in terms of staff per patient ratio.

However, to date, CIRCuiTS has only been administered on an individual basis in the literature. Therefore, the primary aim of this study was to investigate the feasibility of adaption of CIRCuiTS to a group format. Consumers participated in twice-weekly CR sessions consisting of completing stages in CIRCuiTS followed by a bridging discussion. The bridging discussion was implemented to encourage participants to consider and discuss functional goals and ways to apply metacognitive strategies learnt in CIRCuiTS to their day-to-day lives in order to meet these functional goals.

Cognition was assessed prior to group participation and following the completion of all stages of CIRCuiTS using the Cambridge Neuropsychological Test Automated Battery [24]. As CIRCuiTS targets metacognition and functioning, participants also completed the Schizophrenia Cognition Rating Scale (SCoRS) [25] and the Metacognition Questionnaire (MCQ) [26] prior to and following completion of CIRCuiTS to assess changes in metacognition and functioning. The Rosenberg Self-Esteem Scale (SES) [27,28] was also completed by participants pre- and post-CIRCuiTS. A number of studies have found that improvements in cognition following CR were associated with improved self-esteem but if cognition did not improve or participants felt they had not improved, self-esteem scores post-CR were lower [29,30]. Given that a possible link has been demonstrated between outcomes following CR and self-esteem, this study also investigated self-esteem prior to and following CR.

Study Aims

To evaluate the delivery of a group based cognitive remediation program (CIRCuiTS) in a public mental health service.

Research Questions

- Do participants improve in measures of cognition and functioning following completion of CIRCuiTS?

Hypotheses

Taking into consideration the demonstrated efficacy of cognitive remediation it is hypothesised that following 40 sessions of CIRCuiTS participants would show:

- i) Improved cognition as indicated by better scores on sub-tests of the CANTAB
- ii) Increased metacognitive awareness and improved perception of their cognition as indicated by more positive and/or less negative beliefs about cognition and worry on the MCQ
- iii) Improved cognitive functioning in day-to-day life and increased deficit awareness as indicated by better scores on the SCoRS
- iv) Improved self-esteem and sense of self-efficacy as indicated by better scores on the R-SES

MATERIALS AND METHODS

Design

The study was a quantitative case study series design.

Participants

Eighteen participants who met ICD-10 and DSM-IV-TR criteria for schizophrenia, schizoaffective or schizophreniform disorder were recruited from Metro South Health Service Mental Health (MSHSMH) site in Brisbane. Four participants completed the CR program. Complete data was

available on three participants analyses due to >50% missing data (Figure 1). Participants were required to have stable symptoms and be proficient in English (Table 1). Exclusion criteria included evidence of significant brain injury, neurological disease, intellectual impairment, learning disorder and/or current substance dependence. Participants received treatment as usual throughout the study. This study was approved by the Metro South Health Service Human Research and Ethics Committee.

Table 1: Participant demographics.

Characteristic	Completers n=4
Age Mean (SD)	23.25 (6.75)
Sex (%) Male Female	1 (25) 3 (75)
Diagnosis, N (%) Schizophrenia Schizoaffective Schizofraniform	4 (100) 0 0

Measures

Pre and post-assessments were undertaken including self-report instruments such as the Schizophrenia Cognition Rating Scale (SCoRS) [2], the Metacognition Questionnaire [26], and the The Rosenberg Self-Esteem Scale (SES) [27,28]. The Cambridge Neuropsychological Test Automated Battery [24] was used to assess cognitive performance. Five subtests were used to assess domains recommended by the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) [31]. The subtests selected were: Reaction Time (speed of processing), Rapid Visual Information Processing (attention/vigilance), Spatial Working Memory (working memory), Paired Associates Learning (visual learning and memory, working memory) and Stocking of Cambridge (reasoning and problem solving). The CANTAB has been shown to have fair test-retest reliability and construct validity and has been used in a number of treatment studies in schizophrenia [24].

Treatment

All participants were assigned to the CR group. In this study, the standard CR program was Computerised Interactive Remediation of Cognition – Training for Schizophrenia (CIRCuiTS). The CIRCuiTS program [20] is a computerised, web-based CR program that includes tasks that are abstract (targets specific cognitive skills) and exercises (ecologically based task incorporating several cognitive skills). Metacognitive elements are incorporated into the program, such that participants are asked prior to completing a task to consider which cognitive strategies they will use and how long the task will take, and then upon completion of the task, to rate the effectiveness of the strategies selected.

The CIRCuITS program within the current study consisted of 40 sessions, with 5-8 tasks per session and was conducted in a group format. The bridging discussion was approximately 20 minutes each session and conducted after the computer tasks. Bridging encouraged group members to discuss their individual functional goals, the cognitive skills required to achieve these goals, the tasks in CIRCuITS which aim to remediate these skills, the cognitive strategies used to complete the related tasks in the programme, how to apply these strategies to everyday living and homework tasks that encourage the utilisation of these strategies to achieve their functional goals [26].

Procedure

Participants were presented with a copy of the participant information sheet and consent form, and given the opportunity to clarify any details. In particular, issues of confidentiality, anonymity, and the right to withdraw without reason were made explicit prior to formal test administration. Participants completed self-report measures prior to CANTAB assessment to minimise the influence of participants' perception of their cognitive abilities and their response of the SCoRS. Once testing was complete participants commended the group CIRCuITS program

Statistical Analysis

Due to the small number of participants that completed all 40 sessions of CIRCuITS, Reliable and Clinical Change Indices were calculated for the aforementioned measures. Reliable Change Index is a standardised difference score that was designed to assess the effects of clinical intervention [32]. Any change from one testing session to another is considered significant if the magnitude of change is sufficiently large in proportion to the associated error variance of the test. Error variance is calculated by accounting for the test-retest reliability and measurement error of the test [32]. Clinically significant change refers to when the individual's score has reliably changed and has changed from being within the clinical range to being within the normal range. This can be calculated as the change score being 1.96 standard deviations away from the clinical mean, within 1.96 standard deviations of the normal mean, has changed clinical status according to the intersection of the clinical and normal distributions, or all of the above.

RESULTS

Neuropsychological Functioning

The first hypothesis i) following 40 sessions of the CIRCuITS program, participants would show improved cognition was assessed using reliable change indices. Table 2 details the reliable change estimates for cognitive measures as assessed by the CANTAB. Participant 1 showed increased reaction time and a reduction in the number of moves for Stockings of Cambridge at 68.26% confidence. Participant 2 made more errors on Paired Associates Learning at 99% confidence. Participant 3 showed an increased strategy score on Spatial Working Memory at 95% confidence. Participant 4 showed increased reaction time at 99% confidence, increased number of moves for Stockings of Cambridge at 95% confidence and fewer errors on Paired Associates Learning at 68.26% confidence.

Table 2: Reliable change indices for cognitive measures.

Measure	Reliable Change Estimate	Participant 1	Participant 2	Participant 3	Participant 4
Reaction Time -		53.54 msec	-36.62 msec	-28.27 msec	148.06 msec
- 68.26% confidence (1sd)	47.96 msec	Changed	Not changed	Not changed	Changed
- 95% confidence (1.96sd)	94.00 msec	Not changed	Not changed	Not changed	Changed
- 99% confidence (2.58sd)	123.53 msec	Not changed	Not changed	Not changed	Changed
Spatial Working Memory Number of errors		-1	-1	-6	0
- 68.26% confidence (1sd)	11.62	Not changed	Not changed	Not changed	Not changed
- 95% confidence (1.96sd)	22.77	Not changed	Not changed	Not changed	Not changed
- 99% confidence (2.58sd)	29.93	Not changed	Not changed	Not changed	Not changed
Strategy Score		-1	4	12	1
- 68.26% confidence (1sd)	4.90	Not changed	Not changed	Changed	Not changed
- 95% confidence (1.96sd)	9.61	Not changed	Not changed	Changed	Not changed
- 99% confidence (2.58sd)	12.63	Not changed	Not changed	Not changed	Not changed
Paired Associates Learning Number of errors		1	21	-5	-14
- 68.26% confidence (1sd)	8.00	Not changed	Changed	Not changed	Changed
- 95% confidence (1.96sd)	15.68	Not changed	Changed	Not changed	Not changed
- 99% confidence (2.58sd)	20.61	Not changed	Changed	Not changed	Not changed

Stockings of Cambridge Minimum moves	1.36	-2 Changed	0 Not changed	0 Not changed	3 Changed
- 68.26% confidence (1sd)					
- 95% confidence (1.96sd)	2.66	Not changed	Not changed	Not changed	Changed
- 99% confidence (2.58sd)	3.50	Not changed	Not changed	Not changed	Not changed
Rosenberg Self Esteem Scale			1	0	0
- 68.26% confidence (1sd)	1.85		Not changed	Not changed	Not changed
- 95% confidence (1.96sd)	3.63		Not changed	Not changed	Not changed
- 99% confidence (2.58sd)	4.78		Not changed	Not changed	Not changed
Schizophrenia Cognition Rating Scale		2	6	6	-3
Informant Scores					
- 68.26% confidence (1sd)	7.46	Not changed	Not changed	Not changed	Not changed
- 95% confidence (1.96sd)	14.62	Not changed	Not changed	Not changed	Not changed
- 99% confidence (2.58sd)	19.21	Not changed	Not changed	Not changed	Not changed
Metacognition Questionnaire Cognitive Confidence		2	-7	2	3
- 68.26% confidence (1sd)	3.17	Not changed	Changed	Not changed	Not changed
- 95% confidence (1.96sd)	6.26	Not changed	Changed	Not changed	Not changed
- 99% confidence (2.58sd)	8.23	Not changed	Not changed	Not changed	Not changed
Positive Beliefs		-3	11	11	-1
- 68.26% confidence (1sd)	2.24	Changed	Changed	Changed	Not changed
- 95% confidence (1.96sd)	4.39	Not changed	Changed	Changed	Not changed
- 99% confidence (2.58sd)	5.77	Not changed	Changed	Changed	Not changed

Cognitive Self Consciousness		6	6	6	2
- 68.26% confidence (1sd)	3.03	Changed	Changed	Changed	Not changed
- 95% confidence (1.96sd)	5.94	Changed	Changed	Changed	Not changed
- 99% confidence (2.58sd)	7.81	Not changed	Not changed	Not changed	Not changed
Uncontrollability and Danger		-7	-7	-7	-18
- 68.26% confidence (1sd)	3.62	Changed	Changed	Changed	Changed
- 95% confidence (1.96sd)	7.09	Not changed	Not changed	Not changed	Changed
- 99% confidence (2.58sd)	9.33	Not changed	Not changed	Not changed	Changed
Need to control thoughts					
- 68.26% confidence (1sd)	1.88	-7	-7	-7	-3
- 95% confidence (1.96sd)		Changed	Changed	Changed	Changed
- 99% confidence (2.58sd)	3.70	Changed	Changed	Changed	Not changed
	4.86				Not changed

Metacognition

The second hypothesis ii) participants would show increased metacognitive awareness and improved perception of their cognition was assessed using reliable change indices. (Table 2) Details the reliable change estimates for cognitive confidence, positive beliefs, cognitive self-consciousness, uncontrollability and danger, and need to control thoughts. Participant 1 an increase in cognitive self-consciousness at 95% confidence, a reduction in positive beliefs about worry at 68.26% confidence, a reduction in beliefs about the uncontrollability and danger of worry at 68.26%, and an increased need to control thoughts at 99% confidence. Participant 2 demonstrated a reduction in cognitive confidence at 95% confidence, an increase in positive beliefs about worry at 99% confidence, an increase in cognitive self-consciousness at 95% confidence, a reduction in beliefs about the uncontrollability and danger of worry at 68.26%, and an increased need to control thoughts at 99% confidence. Participant 3 showed an increase in positive beliefs

about worry at 99% confidence, an increase in cognitive self-consciousness at 95% confidence, a reduction in beliefs about the uncontrollability and danger of worry, and an increase in the need to control thoughts at 99% confidence. Participant 4 demonstrated a reduction in beliefs about the uncontrollability and danger of worry at 99% confidence and a reduction in the need to control thoughts at 68.26% confidence.

Cognitive Functioning and Deficit Awareness

The third hypothesis iii) participants would show improved cognitive functioning in day-to-day life and increased deficit awareness was assessed using reliable change indices. (Table 2) Details the reliable change estimates for self-esteem as measured by the SCORS. No significant clinical changes in perceived cognitive deficits were found across participants.

Self-esteem

The fourth hypothesis ii) participants would show improved self-esteem and sense of self-efficacy as indicated by better scores on the R-SES was assessed using reliable change indices. (Table 2) Details the reliable change estimates for self-esteem as measured by the SES. No post assessment data was available for participant 1. Participants 2, 3, and 4 demonstrated no other significant clinical changes in self-esteem post CIRCuiTS.

DISCUSSION

The aim of this case study series was to evaluate the administering CIRCuiTS in a group format. It was hypothesised that following the standard 40 session CIRCuiTS program, participants would show improvement cognition. Our results partially support the hypothesis, as cognitive testing overall suggesting individual improvements in selected cognitive domains. However, participant 2 did not show any improvement, and indeed performance on one subtest appeared to decline. The changes shown by the other three participants, including increased reaction time, could be interpreted as improvements. While increased reaction time would not intuitively be thought of as an improvement, it could be indicative of decreased impulsivity and increased consideration of task requirements and accuracy, particularly when coupled with the improvements seen by these participants on subtests such as Stockings of Cambridge and Paired Associates Learning. Improvements on cognitive testing following CR are consistent with findings of meta-analytic studies [13,16] and with results of preliminary studies investigating the feasibility of CIRCuiTS [22,23]. However, the improvements shown by the participants of this study are not of the magnitude of previous studies of CR and CIRCuiTS. This may be because the individual nature of the improvements shown by the participants of this study is consistent with the heterogeneous nature of the illness.

A second hypothesis that following the CIRCuiTS program participants would show improvements in metacognitive awareness and perceptions of their cognition was tested. The results of this study mostly supported this hypothesis with 3 out of 4

participants showing significantly increased scores at the $p < .05$ (95% confidence) level on the cognitive self-consciousness and need to control thoughts scales of the MCQ. Furthermore, 2 participants showed significantly increased scores on the positive beliefs about worry scale and 1 participant showed increased cognitive confidence. The increased cognitive self-consciousness indicated that participants developed increased metacognitive awareness. While increased positive beliefs about worry and increased need to control would not intuitively be thought of as an improvement in metacognitive awareness, it could be indicative of the participants simply becoming more aware of their cognitions as a result of increased cognitive self-consciousness and therefore increased metacognitive awareness. This, combined with the selected improvements on cognitive testing displayed in this study, supports the hypothesis put forward by Reeder and Wykes [20] that CIRCuiTS improves metacognition, which helps to improve cognitive functioning.

It was also hypothesised that in addition to improved performance on cognitive testing and improved metacognitive awareness, participants would show a corresponding improvement in day-to-day cognitive functioning and deficit awareness. This hypothesis was not supported by the results of this study, with none of the 4 participants showing any significant change on the SCORS. This is in contrast to findings from meta-analytic studies that showed that programs that provided CR together with other psychiatric rehabilitation strategies showed greater generalisation to day-to-day cognitive functioning [33]. This may be due to the group format requiring more intensive and tailored bridging linking the concepts learnt in CIRCuiTS to the individuals' functional goals than was offered in this study. This hypothesis is supported by anecdotal feedback from participants who ceased participation in the study. Some of these participants commented that they could not see how participating in CIRCuiTS was helping, that they felt as though they were just coming to play computer games or that they felt it was too overwhelming to look at the "big picture". While none of the participants in this study who completed CIRCuiTS made such comments, difficulties with bridging in the group format may none-the-less need to be addressed in order to promote generalisation of skills.

Finally, it was hypothesised that participants' self-esteem and self-efficacy would improve following CIRCuiTS. The results of this study do not support this hypothesis, with none of the participants showing any change in scores on the R-SES. This may partially support previous research showing a relationship between cognitive functioning and self-esteem. While previous research showed that improvements in cognition were associated with improved self-esteem and a decline in performance or perceived lack of improvement was associated with decreased self-esteem [30,34], in this study slight selected improvements in cognition were associated with no change in self-esteem. This may be due to the extent of the improvements in cognition not being as great as in the previous studies, which may be associated with the lack of perceived difference in day-to-day cognitive functioning and deficit awareness and therefore may mean that participants do not show the anticipated increase in self-esteem and self-efficacy. It is also possible that this relationship is bi-directional, with a lack of change in self-esteem in turn affecting participants' ability to benefit from CIRCuiTS [35].

Limitations

The main limitation of this study is the low numbers of participants completing the program. This very much limits the conclusions that can be drawn. The high attrition rates are of concern and raise questions of how the program, designed to be used individually, performed in the group format. It is unclear from this study whether the attrition related to the program, therapist factors, group size, or other factors not considered. The strength of this evaluation lies in the implementation issues raised about minimal evaluation data sets for CR and attention to motivational factors influencing group attendance. Regardless of the therapy program, high rates of attrition are an ongoing issue in clinical delivery in mental health settings [36]. In individually delivered CR, attrition rates vary widely (0-47%; [13], with many studies reporting “dropout rates” higher than 30%. Many of the studies that have reported on attrition from CR have found no significant differences between therapy completers and non-completers on clinical, demographic and cognitive variables such as age, gender, ethnicity, education, length of illness, severity of illness, symptomatology, age at illness onset and neurocognition.

One explanation regarding the rate of attrition is “why try” theory [37] Many individuals with mental illnesses are troubled by self-stigma and the subsequent processes that accompany this stigma: low self-esteem and self-efficacy. Self-stigma comprises three steps: awareness of the stereotype, agreement with it, and applying it to one’s self [37]. Many individuals with mental illnesses are troubled by self-stigma and the subsequent processes that accompany this stigma: low self-esteem and self-efficacy. Self-stigma comprises three steps: awareness of the stereotype, agreement with it, and applying it to one’s self. As a result of these processes, people suffer reduced self-esteem and self-efficacy. Consumers may dissuade from pursuing the kind of opportunities that are fundamental to achieving life goals because of diminished self-esteem and self-efficacy. Thus, consumers may avoid accessing and using evidence-based practices such as CR that help achieve goals. The previous mentioned need to further examine bridging when administering CIRCuiTS in group format may serve to improve participant self-esteem or circumvent self-stigma and therefore improve retention rates. Wykes and Spaulding [14] also argued that CR should proceed in small increments, utilize errorless learning and scaffolding so that participants have a high likelihood of experiencing success, enhancing self-efficacy and increase the likelihood of generalization. Increased facilitator awareness and implementation of these processes may therefore lead to increased retention in the group format.

CONCLUSION

This case study series highlighted clinical issues in implementing CR in routine mental health care. While low number of participants in this study limits the conclusions that can be drawn, it would appear that CIRCuiTS may improve cognition and metacognitive awareness but that further improvements need to be made to increase the likelihood of generalisation and improved self-efficacy. As such the service plans to continue to run and research CIRCuiTS as a group. The ratio of facilitators to participants will be 4:1. Facilitators will be asked to repeatedly

reinforce participants' goals using general facilitation skills but also the goals as entered into the program and referring to their progressive scores as stored in the "library" file of the program. Consideration will be given to introductory and commitment sessions prior to commencing the program formally so as not to inflate the apparent attrition from the program.

In public mental health services any program evaluation needs to have high utility. This study has drawn attention to the benefit of routine evaluation of CR to include measures of self-esteem and metacognition in addition to measures of cognition and functioning. Auditing fidelity of CR practice should be part of clinical governance of any CR program to militate against facilitator skills drift that can occur post training.

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