

# COGNITIVE REMEDIATION AND PSYCHOSOCIAL REHABILITATION FOR INDIVIDUALS WITH SEVERE MENTAL ILLNESS

GUEST EDITORS: SUSAN R. MCGURK, SHAUN M. EACK, MATTHEW KURTZ,  
AND KIM T. MUESER





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# **Cognitive Remediation and Psychosocial Rehabilitation for Individuals with Severe Mental Illness**

Rehabilitation Research and Practice

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Rehabilitation for Individuals with Severe  
Mental Illness**

Guest Editors: Susan R. McGurk, Shaun M. Eack,  
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## Editorial

# Cognitive Remediation and Psychosocial Rehabilitation for Individuals with Severe Mental Illness

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Individuals with severe mental illnesses (SMI) such as schizophrenia are more likely to have impaired cognitive functioning in areas such as attention and concentration, psychomotor speed, memory, executive functions, and social cognition. These cognitive challenges are strongly associated with reduced psychosocial adjustment, such as the capacity for independent living, work or school, and social relationships, as well as the ability to benefit from rehabilitation programs targeted at improving outcome in these areas of adjustment. Cognitive remediation is the systematic use of methods aimed at improving cognitive functioning through the practice of cognitive exercises on either computer-based or paper and pencil tests, teaching more effective strategies for addressing cognitive challenges, and teaching coping or compensatory skills to reduce the effects of cognitive impairment on psychosocial functioning.

For over 30 years, research has examined the feasibility and effects of cognitive remediation on cognitive functioning and psychosocial adjustment in people with SMI. Recent meta-analyses of controlled research have shown that cognitive remediation is associated with significant improvements in both cognitive functioning and psychosocial adjustment. However, these reviews of research have also found that the impact of cognitive remediation on psychosocial adjustment is contingent upon the provision of adjunctive or integrated psychiatric rehabilitation, such as supported employment or social skills training. That is, studies that have added or

integrated cognitive remediation and psychiatric rehabilitation programs have been found to improve psychosocial functioning more than psychiatric rehabilitation alone, whereas studies that have added cognitive remediation to usual services have found little to no differences in psychosocial outcomes compared to usual services alone. This issue on cognitive remediation and psychiatric rehabilitation brings together six papers addressing topics critical to improving the long-term psychosocial functioning of people with SMI.

Four of these papers provide pertinent reviews of research that point the field in important new directions, and two papers are original research contributions. While the research suggests that combining cognitive remediation with psychiatric rehabilitation is more effective at improving psychosocial outcomes, very little is known about how such programs should be combined. The review by R. Penadés and colleagues addresses this question by providing a framework and hierarchical flowchart for integrating cognitive remediation with other evidence-based psychosocial interventions. D. L. Roberts and D. L. Velligan review relevant research suggesting that programs specifically developed for and targeting social cognition (e.g., emotion recognition, ability to infer other's mental states) may be more effective and efficient than broad-based cognitive remediation programs. This review has important implications for developing or refining cognitive remediation and psychiatric rehabilitation interventions in order to maximize their cost effectiveness.

N. Contreras and colleagues provide a theoretical review of strategies for improving workforce participation in people with a SMI, with a particular focus on the Australian context. The review highlights the Individual Placement and Support (IPS) model of vocational rehabilitation, the most empirically validated program for improving employment outcomes in people with SMI, which has recently been combined with cognitive remediation in the USA. The authors suggest that Australia may be in a prime position to implement such combined interventions.

N. Boycott and colleagues also focused in their review on the IPS model, with a particular aim at evaluating the effects of supplementary interventions on work outcomes, including cognitive remediation. While prior research has evaluated the impact of adding cognitive remediation to vocational rehabilitation for people with SMI, scant attention has been paid to integrating cognitive remediation with supported education for this population. The paper by S. A. Kidd and colleagues addresses this lacuna by providing encouraging pilot data from such an integrated program, supporting both the feasibility of integrating cognitive remediation with supported education, and suggesting benefits in education-related outcomes. Finally, the research paper by M. N. Levaux and colleagues provides a useful case illustration of how cognitive remediation can be individually integrated and tailored into helping a person accomplish everyday life tasks.

We believe that the papers compiled in this issue make an important contribution to the cognitive remediation field by providing useful syntheses of the research literature, suggesting new directions for research and clinical implementation, and presenting new data on promising programs and approaches to integrate cognitive remediation and psychiatric rehabilitation into people's daily lives.

*Susan R. McGurk  
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## Research Article

# An Individualized and Everyday Life Approach to Cognitive Rehabilitation in Schizophrenia: A Case Illustration

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*Objective.* The effectiveness of an individualized and everyday approach to cognitive rehabilitation for schizophrenia was examined in a case study. *Method.* After cognitive and functional assessment, concrete objectives were targeted for the person's everyday complaints. Strategies were constructed based on an analysis of the cognitive profile, daily life functioning, and processes involved in activities. They included a memory strategy for reading, a diary to compensate memory difficulties, and working memory exercises to improve immediate processing of information when reading and following conversations. Efficacy was assessed with outcome measures. *Results.* The program had beneficial effects on the person's cognitive and everyday functioning, which persisted at a 3-year follow-up. *Conclusion.* Findings provide suggestive evidence that an individualized and everyday approach may be a useful alternative in order to obtain a meaningfully lasting transfer of training to daily life, compared to the nomothetic ones which dominate the field.

## 1. Introduction

Cognitive rehabilitation therapy refers to “a behavioral training based intervention that aims to improve cognitive processes . . . with the goal of durability and generalization” [1]. Recently, two meta-analyses in schizophrenia [1, 2] revealed that cognitive rehabilitation has a positive, small-moderate effect on overall cognition (resp., 0.41 and 0.45; 0.43 at follow-up [1]), psychosocial functioning (resp., 0.35 and 0.42; 0.37 at follow-up [1]), and symptoms (resp. 0.28 and 0.18; no longer significant at follow-up [1]). Moreover, stronger effects on psychosocial functioning were found when cognitive rehabilitation was provided together with psychiatric rehabilitation [1, 2]. The effect size on functioning was larger in Wykes et al. (.59, [1]) than in McGurk et al. (.47, [2]), while the number of studies both evaluating psychosocial functioning and combining it with cognitive rehabilitation were increased in the recent meta-analysis [1]. The analyses indicated that the studies which did not have a significant impact on functioning were

providing cognitive rehabilitation in “stand alone” cognitive programs with no functional interventions [1, 2]. Thus, the combination of cognitive rehabilitation and psychosocial rehabilitation served to significantly enhance the response to cognitive intervention.

Generalization and the ability to produce a meaningfully lasting effect represent two major goals of cognitive rehabilitation. Unfortunately, however, a large number of cognitive rehabilitation studies have overlooked both issues. In terms of the ability to produce a meaningfully lasting effect, Wykes et al. [1] report that only 28% and 30% of studies included in their meta-analysis comprised a follow-up assessment for global cognition and functional outcome, respectively, and only 23% of studies included such an assessment for cognition in McGurk et al. [2]. Moreover, when follow-up periods are included, they are many times limited to only few weeks or months.

The issue of generalization has also been neglected by studies, yet the ultimate goal of remediating cognitive deficits is not simply to improve cognitive test scores but to

generalize improvements to durable real-world application [3]. In Wykes et al. [1], only 48% of studies evaluated psychosocial functioning, and, in McGurk et al. [2], this was only 42%.

In our opinion, there are at least two major reasons why cognitive rehabilitation, until now, has had a limited effect on functional outcome. First, specific difficulties in patients' everyday lives have not been given the importance they deserve when designing and proposing cognitive rehabilitation programs, yet it is these difficulties that should be the main focus of interventions. Few current cognitive remediation programs take functioning into account in their design. Persons with specific functional difficulties (rather than cognitive difficulties) are included in two of these programs. Among those, the "Thinking Skills for Work program" by McGurk et al. [4, 5] has worked as the primary outcome and combines cognitive and vocational rehabilitation, which consists of comprehensive assessment of obstacles to employment, identification of cognitive and behavioral strengths and weaknesses, provision of restorative and compensatory cognitive remediation strategies that are individualized, tracking of functioning, and full integration of work services so that employment specialist can help the client adapt compensatory strategies learned in the intervention to the specific work place. The "Attention Training" intervention by Silverstein et al. [6] is another example, which is fully integrated into social skills training with the goal of improving social functioning. Second, previous studies and interventional strategies have not taken into account the vast heterogeneity inherent in schizophrenia. Taking both these issues into account will hopefully render cognitive rehabilitation programs even more effective, especially in terms of improvements in psychosocial functioning.

Thus, in addition to identifying the impaired and preserved cognitive domains in a patient with schizophrenia, it is equally important to define the consequences of the cognitive deficits on daily life activities and to develop ecological rehabilitation strategies (i.e., which can be transferred to real-world situations) based on concrete objectives in daily life. Consequently, the efficacy of a cognitive rehabilitation should be based not only on the results of cognitive measures but also on everyday life measures. Moreover, cognitive rehabilitation programs have generally not focused on the real-world difficulties of persons with schizophrenia, but rather, on patients' cognitive difficulties. This has been based on the supposition that the trained cognitive tasks share some common cognitive processes with daily life activities, such that improvement of performance on a cognitive task will lead to beneficial effects on everyday functioning. However, due to the complex nature of the relations between cognitive and real-life functioning, such an approach might not necessarily lead to a significant improvement in daily life functioning. Therefore, we favor an approach which identifies patients' difficulties on everyday activities and endeavors to understand the nature (cognitive or otherwise) of these difficulties and thus to be able to identify which (cognitive or otherwise) processes to remediate (see [7, 8]).

Secondly, schizophrenia is unmistakably a vastly heterogeneous disorder (e.g., [9, 10]), but this fact has not been

taken into account in most cognitive rehabilitation studies, where the same program is administered to all patients. Detailed analyses of the profiles of persons are not carried out, even though people with schizophrenia clearly differ in terms of the degree and type of their cognitive deficits (e.g., [11, 12]), and on a large number of other dimensions including, for example, difficulties in everyday activities, goals, coping capacities, and environmental contexts. The adoption of a single-case methodology is one manner of taking this heterogeneity into account. Indeed, in light of evidence of the heterogeneity of people with neurological lesions, the neuropsychological literature also advocates the use of a single-case methodology in cognitive rehabilitation [13]. In schizophrenia, this approach was primarily used by Velligan and collaborators [14, 15] who developed a Cognitive Adaptation Training (CAT) that utilizes compensatory strategies and supports (such as pill containers with alarms, organization of belongings, and activity checklists) in the home environment and tailored to the specific cognitive impairments of each participant.

In sum, the beneficial effects of cognitive rehabilitation in schizophrenia could be improved by adopting an approach that individualizes treatment and that directly focuses on decreasing the person's everyday difficulties. For this purpose, we concretely propose four steps. (1) The patient's goals and needs are identified, in addition to specific activities that pose problems in everyday life. This information can be assembled using various methods such as open discussions (e.g., with the patient, the patient's caregivers, the clinical team), observations (e.g., of the patient in various contexts or when performing performance-based tasks of everyday activities), or questionnaires of psychosocial functioning. (2) Detailed evaluations are carried out, which include cognitive assessments of both defective and intact processes and the identification of the optimizing factors (i.e., strategies that may improve or facilitate cognitive performance). (3) Based on these cognitive and functional evaluations, reasons are established as to why the patient might have difficulties in the various everyday activities. (4) Ecological rehabilitation strategies, which are combined and chosen according to the rehabilitation objectives, are then proposed to the patient and a "rehabilitation contract" is mutually agreed upon between the patient, and the mental health professional. Such a contract may include information such as what will be remediated and why, how it will be remediated, and the duration and frequency of sessions. In this approach, the patient's needs are directly addressed in a treatment context, thus undoubtedly increasing intrinsic motivation, which is a central issue in treatment programs [3]. What follows is a description of a case study, which will serve as an illustration of this individualized and everyday life approach to cognitive rehabilitation.

## 2. Case Illustration

D.S. is a 42-year-old woman without a profession and who lives with her husband. She completed one year of superior studies in chemistry when her first psychotic

episode appeared at 22 years of age leading to a diagnosis of paranoid schizophrenia according to DSM-IV criteria. She has had approximately 20 hospitalizations; the last one being approximately two years before the rehabilitation program. During acute phases of the disease, D.S. presented delusions, visual and auditory hallucinations, stereotypies, and obsessions. D.S. was clinically stable for at least six months before the rehabilitation apart from occasionally experiencing auditory hallucinations. At the time of the study, her treatment consisted of two atypical antipsychotics (olanzapine:  $2 \times 10$  mg; quetiapine:  $1 \times 200$  mg) and one benzodiazepine (lorazepam:  $1 \times 2.5$  mg), and she was seen by her psychiatrist about twice a month.

*2.1. Daily Functioning Complaints.* D.S. expressed a desire to be more autonomous and to not have to rely on her husband all the time. She described a number of difficulties in everyday activities: following and retaining television or radio programs, following and retaining conversations, reading and maintaining text information (e.g., from a book or newspaper), remembering appointments, dates, activities (forcing her to write everything down on sheets of paper in order not to forget). These difficulties had a deleterious impact on her everyday functioning, such as social withdrawal. For instance, D.S. did not dare communicate with others as she feared that she would not be able to follow and understand the discussions. Also, if she constantly asked people to repeat what was said, she feared this will get on peoples' nerves or lead them to suspect that she is insane.

*2.2. Pre-Rehabilitation Cognitive Assessment.* An extensive cognitive battery was administered to D.S., which covered various aspects of cognitive functioning (see Table 1). A score indicating a deficit was set at  $<-1.65$  for the  $z$ -score and at  $<10$  for the percentile score (in order to be less strict in comparison to a threshold  $<1.96$  and  $<5$ ; some scores were presented as  $z$ -scores and others as percentiles, depending on the given norms for each test). Performance was impaired on working memory tests assessing processing load and updating, while storage was preserved. Analysis of executive functioning revealed deficits related to flexibility and planning, but not inhibition. Performance was impaired on the verbal episodic memory tests, but not on the visual episodic memory test. Performances in divided and sustained attentional functions were all impaired. Processing speed was slow, but not impaired.

### 3. Treatment Study

*3.1. Design.* The rehabilitation consisted of two 90-minute sessions per week (20 in total) and lasted three months. The intervention plan was designed to evaluate the effect of cognitive rehabilitation on functional targets. For this purpose, outcome measures at two different times were used: pre-rehabilitation and post-rehabilitation assessment.

*3.2. Targets and Strategies.* Based on an analysis of D.S.'s daily functioning complaints and cognitive assessment, three

rehabilitation target objectives were defined to improve her daily life functioning. Rehabilitation strategies were constructed according to processes involved in these target activities, analysis of preserved and impaired processes, and the optimizing factors.

*3.2.1. Macrostructure Use.* Based on cognitive assessment, D.S. presented verbal episodic memory deficits, and in particular encoded text information in an unsystematic way. These impairments could explain difficulties she had in reading and remembering the contents of books or newspapers. In order to improve her memory for texts, a structured encoding strategy was proposed to D.S. This involved extracting the main information of a text in an organized manner, by omitting unimportant details and by highlighting significant elements. This strategy could help D.S. both at encoding and consequently at retrieval of a text (i.e., the use of a macrostructure at retrieval could serve as a cue that elicits recall of the text).

*3.2.2. Working Memory Training.* D.S. also expressed difficulties in following conversations, and TV or radio programs. These difficulties, in addition to difficulties in maintaining information from texts from books or newspapers, could be related to a reduction of working memory resources observed in D.S. Thus, improving D.S.'s capacity to process immediate information in working memory could favor the extraction of main information and the binding between external information and mental representation in reading or conversational activities. Consequently, working memory training was implemented with several processing load and dual-task monitoring exercises.

*3.2.3. Diary Use.* Memory (working and episodic) and planning deficits were observed in D.S., which were implicated in her difficulties to remember and plan everyday activities. Thus, an external aid was proposed to compensate for memory and planning deficits and to decrease the anxiety related to forgetting. A personalized diary was created, which was structured with various headings according to her activities, and was implemented in D.S.'s daily life.

### 3.3. Tasks and Stimuli

*3.3.1. Macrostructure Use.* The macrostructure consisted of six headings: (1) title; (2) spatial context (where?); (3) temporal context (when?); (4) person(s); (5) facts; (6) results and conclusions. Two types of texts that D.S. had particular difficulties with were chosen by her: chapters from a book and newspaper articles. These texts did not differ according to their difficulty, length, and number of essential information contained in the six headings. In total, 17 chapters and 13 articles were used for the rehabilitation sessions (1 chapter and 1 article per session). They were analyzed in order to extract the total number of essential information contained in each of them and in order to construct a scoring grid (according to the six headings).

TABLE 1: Pre-rehabilitation, post-rehabilitation, and follow-up cognitive assessment.

Cognitive tests	Pre-rehabilitation	Post-rehabilitation	Follow-up
<i>Working memory</i>			
Storage			
(i) Digit span (forward) (MEM-III)	-0.7	0.49	-0.7
Processing load			
(i) Digit span (backward) (MEM-III)	-1	0.76	0.17
(ii) Number of trials for digit span (MEM-III)	-2.33	0.33	-0.33
(iii) Letter-number sequencing (MEM-III)	-1.33	-0.66	-0.66
Updating			
(i) Working memory (TAP): median RT/SD RT/omission(s)	P84/P50/ <b>P4</b>	P79/P50/P18	P76/P50/P18
<i>Executive functions</i>			
Inhibition			
(i) Go/no-go (TAP): median RT/SD RT/error(s)	P14/P27/P<46	<b>P1</b> /P38/P42	P34/P46/<P42
Flexibility			
(i) Flexibility (TAP): median RT/SD RT/error(s)	-P10/ <b>P7</b> /P27	<b>P7</b> / <b>P2</b> /P82	P12/P16/ <b>P8</b>
(ii) Verbal fluency: phonological/semantic	-0.33/-1.42	0.18/-2.37	0.16/-0.71
Planning			
(i) Six Elements Test: total score/error(s)	-1.48/-1.5	-2.62/-0.08	0.01/0.32
<i>Episodic Memory</i>			
Explicit verbal episodic memory*			
(i) Logical memory (MEM-III): (I) First recall/total recall/ learning curve/theme	-1.33/-1.67 -1/-1	/	/
(II) Total recall/retention%/theme	-1.67/-1/-1	/	/
(ii) California Verbal Learning Test:			
First recall A/fifth recall A/total recall A/ Short-term recall A/cued recall A	-1.93/ <b>P5-25</b> /-2 -1.6/-1.67	0.2/P50/-0.91 -0.44/-1.2	/
Delayed recall A/delayed cued recall A	-2/-2.42	-1.62/-1.49	/
Recognition/false recognition	<b>P5-25</b> / <b>P5-25</b>	<b>P50</b> / <b>P5-25</b>	/
(iii) RL/RI-16: immediate recall/free recall I/cued recall I	/	/	P99/-1.5/P99
Free recall II/cued recall II	/	/	-1.84/P25
Free recall III/cued recall III	/	/	-1.57/P99
Delayed free recall/delayed cued recall/recognition (/16)	/	/	-3.6/ <b>P5-25</b> /16
Explicit visual episodic memory			
(i) Face recognition (MEM-III): part I/part II/retention	0.33/-0.33/-0.67	/	/
<i>Attentional functions</i>			
Divided attention			
(i) Divided attention (TAP): median RT/SD RT/omission(s)	P62/P42/ <b>P4</b>	P38/P14/P12	P76/P16/<P18
Sustained attention			
(i) Digit continuous ordination: mean efficiency: 0-10 min/ 10-20 min/0-20 min	-2.62 -2.72/-2.82	-2.76 -2.72/-2.79	-2.83 -3.22/-3.1
<i>Processing speed</i>			
(i) Digit symbol—coding (WAIS-III)	-1	-0.67	-0.33

\*Different episodic memory tests were used at different moments of evaluation (pre-rehabilitation, post-rehabilitation, follow-up) in order to avoid learning effects; numbers in bold indicate a deficit score ( $<-1.65$  for the z-scores,  $<10$  for the percentiles); RT: reaction time; SD: standard deviation; digit span, letter-number sequencing, logical memory (MEM-III; [16]); working memory, go/no-go, flexibility, divided attention (TAP; [17]); digit symbol (WAIS-III; [18]); verbal fluency [19]; Six Elements Test ([20]; French adaptation, [21]); California Verbal Learning Test ([22]; French adaptation, [23]); RL/RI-16 [24]; digit continuous ordination [25].

After reading a text, D.S. was asked to complete the various headings of the macrostructure (for an example from a newspaper article, see Table 3). Then, she was asked to read this macrostructure once or twice. Finally, D.S. had to recall

the text without using the macrostructure both immediately after the session and in the next session, in order to check for long-term retention of the information. The task lasted about 45 minutes and was realized in 18 rehabilitation sessions.

**3.3.2. Working Memory Training.** Several types of working memory exercises (36 in total across 14 sessions) were proposed to D.S. (2 to 4 per session, each exercise lasting about 10 minutes): (1) 10-word reconstruction exercises: a word was orally spelt to D.S. beginning with the last letter and she had to find the correct word; 10-number reconstruction exercises: a series of digits were orally read to D.S. who was then asked to provide the number formed by the digits; the words and numbers were of different lengths (4 to 6 letters; 4 to 5 digits) (1 point for each correct response; maximum score for each task = 15); (2) 3 alphabetical ordination exercises of orally presented words (3 to 4 words) (1 point for each correct response; maximum score = 10); (3) 8 exercises from a Brown-Peterson task: a number of four digits and then three words were read to D.S. who had to repeat the words and then recall the number (1 point for each recalled number; maximum score = 15); (4) 5 exercises from a market task: D.S. received a list containing the price of articles in a market. The name of a person and the purchases (2 to 3 articles) were orally presented to D.S. who had to memorize them and calculate the total price (1 point for each correct response, that is, articles, name of the person, and total price; maximum score = 40 to 50).

**3.3.3. Diary Use.** The diary consisted of four headings based on D.S.'s daily functioning: "important dates" (e.g., doctor appointments), "outings" (e.g., with friends), "shopping list," and "housework". On one sheet of the diary representing a week, the four headings were positioned on top horizontally and the days of the week were positioned to the left vertically.

During the first session, D.S. was taught how to use the diary correctly. Two main objectives were proposed: (1) to gather all the information to be remembered in one place by respecting the headings and (2) to consult this diary at the same time of the day (i.e., morning, midday, and evening). For the following sessions, D.S. was asked to bring her diary with her in order to examine whether it was used in a regular and correct manner in daily life. If this was not the case, a discussion of how to improve diary use followed (e.g., use all the headings, make changes in her diary according to her timetable). In total, interviews concerning diary use were carried out in 10 sessions and lasted about 10 minutes each.

**3.4. Outcome Measures.** Outcome measures (administered before and after the rehabilitation program) consisted of assessing macrostructure use, working memory performance, and diary use (parallel versions of macrostructure use and working memory performance were used in order to minimize practice effects). The Subjective Scale to Investigate Cognition in Schizophrenia (SSTICS, [26]) was also administered before and after the rehabilitation program to obtain an index of the person's subjective cognitive complaints for five cognitive domains (memory, attention, executive function, language, and praxis). Finally, a subjective assessment questionnaire for the three rehabilitation objectives was administered at post-rehabilitation.

## 4. Results

**4.1. Pre-Rehabilitation versus Post-Rehabilitation Comparison.** The post-rehabilitation results (see Table 1) revealed an improvement (i.e., when a performance previously impaired at pre-rehabilitation is within the norms at post-rehabilitation) in both processing load and the updating component of working memory. There was a decrease in the number of errors for planning abilities. Flexibility remained impaired. Verbal episodic memory showed clear improvement. Divided attention (i.e., number of omissions) improved slightly, but sustained attention remained impaired. Finally, working memory storage improved.

Performance of pre- and post-rehabilitation outcome measures was compared (see Table 2) for macrostructure use, working memory tasks, diary use, and the SSTICS. A statistical analysis using chi-square tests was carried out to compare the scores regarding macrostructure use, working memory tasks, and SSTICS.

**4.1.1. Macrostructure Use.** The mean immediate recall percentage for chapters and for articles was calculated. Significant improvements were noted for chapters ( $\chi^2(1) = 35.17$ ;  $P < .001$ ) and articles ( $\chi^2(1) = 200$ ;  $P < .001$ ).

**4.1.2. Working Memory.** Scores on the word reconstruction task and the number reconstruction task improved significantly (resp.,  $\chi^2(1) = 6.5$ ;  $P = .01$ ;  $\chi^2(1) = 12.53$ ;  $P < .001$ ). The scores on the Brown-Peterson task did not significantly improve from pre-rehabilitation to post-rehabilitation ( $\chi^2(1) = .08$ ;  $P = .78$ ). Finally, the market task improved significantly ( $\chi^2(1) = 56.23$ ;  $P < .001$ ).

**4.1.3. Diary Use.** D.S. used the diary and its headings correctly from the first session. After three sessions, D.S. stopped using numerous separate reminders scattered around the house as they were now centralized in her diary, and she consulted it regularly (i.e., morning, midday, and evening).

**4.1.4. SSTICS.** The total SSTICS score decreased (nonsignificantly) at post-rehabilitation ( $\chi^2(1) = 1.79$ ;  $P = .18$ ). The decrease essentially concerned attentional complaints that showed a significant decrease ( $\chi^2(1) = 28.57$ ;  $P < .001$ ), while memory ( $\chi^2(1) = .74$ ;  $P = .39$ ) and executive complaints ( $\chi^2(1) = 1.73$ ;  $P = .19$ ) did not significantly diminish.

**4.1.5. Qualitative Self-Assessment.** Based on replies on the subjective questionnaire, D.S. reported that the macrostructure headings helped her "very much" in structuring her thoughts and in concentrating when reading. Moreover, D.S. reported that she spontaneously used the macrostructure procedure. She also mentioned that she found herself talking to people more often and giving responses due to an increased ability to comprehend and follow conversations. When asked whether there was an improvement in attention when watching movies or during conversations, she answered "very much." The use of the diary helped her to plan her week in a more efficient manner (without

TABLE 2: Pre-rehabilitation, post-rehabilitation, and follow-up outcome measures.

Outcome measures	Pre-rehabilitation	Post-rehabilitation	Follow-up
<i>Macrostructure use</i>			
(i) Chapter: mean immediate recall percentage	40	81 <sup>*a</sup>	62 <sup>*b</sup>
(ii) Article: mean immediate recall percentage	0	100 <sup>*a</sup>	71 <sup>*b</sup>
<i>Working memory</i>			
(i) Word reconstruction task: correct response (/16)	6	9 <sup>*a</sup>	8
(ii) Number reconstruction task: correct response (/20)	7	12 <sup>*a</sup>	8
(iii) Brown-Peterson task: correct response (/64)	36	37	48 <sup>*b</sup>
(iv) Market task: correct response (/60)	13	45 <sup>*a</sup>	29 <sup>*b</sup>
<i>SSTICS</i>			
(i) Total score (/84)	59	51	54
(ii) Memory complaints score (/44)	27	24	27
(ii) Attentional complaints score (/20)	20	15 <sup>*a</sup>	13 <sup>*b</sup>
(iv) Executive complaints score (/12)	8	7	9

<sup>\*a</sup>Significant effect for pre-rehabilitation versus post-rehabilitation comparison; <sup>\*b</sup>significant effect for pre-rehabilitation versus follow-up comparison.

TABLE 3: Example of macrostructure training for a newspaper article entitled “Oil, the luxury product.”

Title: oil, the luxury product
Spatial context (where?): in the world, and in Belgium
Temporal context (when?): present day
Person(s): OPEP or the Organization of Petroleum Exporting Countries
Facts: the increase of oil price creates an important world problem. This is due to the fact that China buys oil so that there is no competition and, moreover, the capacities of refining are decreasing
Results and conclusions: in Europe, the European Commission is revising its forecasts (less oil production)

forgetting), thus decreasing her anxiety level. She reported being better organized when everything was gathered in one place. Finally, she had the feeling of having made progress and was very satisfied with the rehabilitation.

**4.2. Follow-Up.** A follow-up assessment took place three years after the end of the cognitive rehabilitation. During this period, D.S. remained clinically stable without any hospitalizations. As previously, she continued to see her psychiatrist twice a month, and her treatment consisted of two atypical antipsychotics (olanzapine:  $2 \times 7.5$  mg; quetiapine:  $2 \times 300$  mg) and one benzodiazepine (lorazepam  $1 \times 2.5$  mg). Moreover, she did not take part in any kind of rehabilitation (cognitive rehabilitation, cognitive-behavioral therapy, etc.) during this follow-up period.

Assessments carried out at the follow-up were the same as those for pre- and post-rehabilitation. The results of the follow-up cognitive assessment (see Table 1) indicated that the post-rehabilitation improvements in both processing load and the updating component of working memory, planning, and divided attention remained stable at follow-up. Flexibility remained impaired. Scores for verbal episodic

memory, which revealed a general improvement after rehabilitation, indicated no change at follow-up. Finally, her performance in sustained attention remained impaired.

Performance on pre-rehabilitation and follow-up baseline measures were compared (see Table 2) for macrostructure use, working memory tasks, and the SSTICS.

**4.2.1. Macrostructure Use.** The same types of texts (book chapter and newspaper article) as those used for pre- and post-rehabilitation were administered: one chapter from another book of the same author and one new article.

**Pre-Rehabilitation versus Follow-Up.** Significant improvements on immediate recall scores for the chapters and the articles persisted (for chapters:  $\chi^2(1) = 9.68$ ;  $P = .002$ ; for articles:  $\chi^2(1) = 110.08$ ;  $P < .001$ ).

**Qualitative Analysis.** D.S.’s recalls (immediate and delayed) were structured according to the various macrostructure headings and respected the chronological order of the events.

**4.2.2. Working Memory Training.** The same tasks as those carried out at pre- and post-rehabilitation were administered albeit parallel versions (i.e., different materiel) were used in order to minimize test-retest effects.

**Pre-Rehabilitation versus Follow-Up.** The significant post-rehabilitation improvement disappeared for the word reconstruction task ( $\chi^2(1) = 2.92$ ;  $P = .087$ ) and for the number reconstruction task ( $\chi^2(1) = .53$ ;  $P = .47$ ). On the contrary, scores on the Brown-Peterson task significantly improved ( $\chi^2(1) = 7.99$ ;  $P = .005$ ), and the significant improvement on the market task persisted ( $\chi^2(1) = 14.86$ ;  $P < .001$ ).

**4.2.3. Diary Use.** D.S. reported that the regular use of her diary helped her to better memorize her fixed appointments and that she continued to centralize all the important information in one place. Moreover, she has created another

diary where she noted (every evening), on the day page, the activities realized during the day in order to have a better awareness of past personal events.

#### 4.2.4. SSTICS

*Pre-Rehabilitation versus Follow-Up.* The significant decrease after rehabilitation concerning attentional complaints persisted ( $\chi^2(1) = 42.42$ ;  $P < .001$ ). Stable scores were noted on the total score ( $\chi^2(1) = .81$ ;  $P = .37$ ) and specifically for memory complaints (27/44 versus 27/44) and executive complaints ( $\chi^2(1) = 1.55$ ;  $P = .21$ ).

*4.2.5. Qualitative Self-Assessment.* The same subjective questionnaire as the one used at post-rehabilitation was administered at follow-up. First, D.S. noted that the use of the macrostructure still helped her “very much” to structure her thoughts when reading. When asked whether there was an improvement in attention when watching movies or during conversations, she answered “moderately,” explaining that she followed the news on the TV better but experienced some difficulties in concentrating during longer activities, which could be due to objective deficits in attentional functions. She indicated that the use of the diary had calmed her down because she no longer had to worry about forgetting important events, therefore allowing her to think about other things. She also expressed that she is more autonomous in her daily-life and that she is still very satisfied with the work realized during the cognitive rehabilitation program.

## 5. Discussion

Despite numerous appeals in the literature for developing other methodological approaches to cognitive rehabilitation research and practice and in light of findings revealing that “stand alone” cognitive rehabilitation programs have not hitherto succeeded in improving patients’ everyday functioning in a significant and durable manner, many studies continue to adopt the same approach. Yet, a change is unmistakably needed. In particular, we call for an individualized and everyday life approach to cognitive rehabilitation in schizophrenia in order to attain this goal. In order to do so, a number of issues need to be addressed and carried out in future studies. In particular, specific and crucial difficulties in patients’ everyday lives should be the focus of rehabilitation programs. The vast heterogeneity inherent in schizophrenia must also be considered in forthcoming interventions. It has been argued that taking both these issues into account will result in more effective intervention programs in their ability to provide improvements in patients’ psychosocial functioning.

The present case study wished to provide an example of how to work within an individual and everyday life approach to cognitive rehabilitation in schizophrenia. In particular, the study showed that it had a beneficial effect on D.S.’s everyday functioning. The efficacy of the rehabilitation program was especially demonstrated based on results from outcome measures. Furthermore, the beneficial effect of

the cognitive rehabilitation program was transferred to the person’s daily life, as disclosed in her responses to self-assessment questionnaires and subjective reports. Thus, D.S. became autonomous in the application of strategies learned during the rehabilitation program. Indeed, for instance, she spontaneously used the macrostructure procedure and expressed the fact that this strategy helped her to retain more information when reading texts. D.S. also mentioned that the use of her diary allowed her to plan her week in a more efficient manner without forgetting events and furthermore helped decrease her level of anxiety. D.S. also reported an improvement in attention when watching movies or when following conversations and discussions. This resulted in D.S. talking to people more often, compared to before the cognitive rehabilitation program. Finally, D.S. reported less attentional complaints in her daily life.

The meaningfully lasting beneficial effects were largely evident in that they were still present when pre-rehabilitation and follow-up scores were compared. However, for some of these measures, significant post-rehabilitation improvement disappeared after the 3-year period. These results suggest that the meaningfully lasting effects were less robust for rehabilitation targets that were not directly associated with compensatory interventions that D.S. still used at the follow-up assessment and/or that rehabilitation sessions aimed at refreshing acquisition would have been necessary. Moreover, D.S. had transferred the learned strategies to her daily-life on a long-term basis: she continued to employ her diary in an efficient manner and continued to structure her reading according to the macrostructure headings. Thus, compensatory approaches, which teach a strategy, have showed to produce life-long changes in function as long as the intervention is effective and the person continues to use the compensatory strategy. Additionally, D.S. expressed being more organized and autonomous—two crucial goals of any rehabilitation program.

In sum, the originality and interest of this study was to take into account the various complaints that a person diagnosed with schizophrenia experienced in her daily life and to use these as rehabilitation objectives. Different rehabilitation strategies were implemented for each of the complaints, and they were adapted according to her cognitive profile. These elements undoubtedly contributed to the fact that the cognitive rehabilitation program was well accepted by D.S. Thus, an individualized and everyday life approach appears to be an effective alternative to improving the effects of cognitive rehabilitation on both cognitive and daily life functioning in people with schizophrenia. Furthermore, these benefits were shown to be maintained at long-term follow-up.

Some limitations of the study should be mentioned. Firstly, there are limits related to an ABA design (A: outcome measures; B: intervention), which are less capable of establishing a causal relation. However, a protocol with multiple outcome measures or other designs (e.g., type ABAB) was not possible to implement for practical reasons: such a protocol requires numerous assessments and, consequently, is very tiresome and tedious for the patient and such protocol is difficult to design, especially when ecological

measures are involved. Moreover, the quality of the case study would have been improved with the inclusion of measures defining the severity of psychiatric symptoms pre- and post-rehabilitation. This will be taken into account in future cognitive rehabilitation studies.

Finally, it is also important to underline that the other psychological dimensions (such as auditory hallucinations, obsessional symptoms, social anxiety), which had an impact on D.S.'s everyday functioning, would also have been important to take into account in the individualized rehabilitation program in order to further increase its efficacy. Indeed, cognitive functioning is by far not the sole factor involved in functional outcome in schizophrenia. Fett et al. [27], in their meta-analysis examining relations between cognitive functioning (both neurocognitive and social cognitive) and functional outcome in patients with nonaffective psychosis, found that cognitive functioning explains 25% of the variance of functional status of patients with schizophrenia, and thus as much as 75% of the variance in outcome was left unexplained. There are at least two implications related to this finding. First, it is necessary that other factors significantly related to functional outcome be identified. Secondly, intervention programs must integrate strategies that remediate and improve these additional areas. Indeed, as observed in Wykes et al. [1] and McGurk et al. [2], cognitive rehabilitation approaches clearly need to be combined with other forms of intervention in order to maximize their impact on functional outcome. Studies have shown that a number of other factors are also significantly related to functional outcome in patients with schizophrenia. These factors include (but are not limited to) symptomatology (especially negative symptoms; [28]), various psychological processes such as social cognition [29], dysfunctional attitudes [30], metacognitive processes [31], poor insight [32], and finally environmental factors, such as family attitudes [33], negative stereotypes [34], and internalized stigma [35].

Therefore, we advocate an individualized, integrative, and everyday rehabilitation approach, which includes interventional strategies that help improve, in addition to cognitive factors, other factors that also play a significant role in functional outcome in schizophrenia. Further, we propose to carry out multidimensional evaluations, which include not only cognitive and functional assessments, but also comprise a large array of other dimensions. This integrative approach is important to take into account as schizophrenia is a disorder that affects many different areas and levels of functioning. Moreover, these areas are complementary and interdependent. That is, patients will have difficulties in a number of different areas (e.g., cognitive, motivational, affective) at the same time, and one area may have an impact on the other (e.g., motivational problems may negatively affect affective and cognitive functioning).

### Conflict of Interests

The authors declared no potential conflict of interests with respect to the research, authorship, and/or publication of this paper.

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## Review Article

# The Integration of Cognitive Remediation Therapy into the Whole Psychosocial Rehabilitation Process: An Evidence-Based and Person-Centered Approach

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Cognitive remediation therapies seem to ameliorate cognitive impairments in patients with schizophrenia. Interestingly, some improvement in daily functioning can also be expected as a result. However, to achieve these results it is necessary that cognitive remediation is carried out in the context of broader psychosocial rehabilitation involving the learning of other communication, social, and self-control skills. Unfortunately, little is known about how to integrate these different rehabilitation tools in broader rehabilitation programs. Based on both the neurocognitive behavioral approach and the action theory framework, a hierarchical flowchart is represented in this paper to integrate CRT with other evidence-based psychological therapies in outpatient settings. Finally, some evidence is provided in which cognitive abilities need to be targeted in remediation programs to improve functioning. In summary, to improve daily functioning, according to these studies, cognitive remediation needs to include the teaching of some cognitive strategies that target executive skills.

## 1. Introduction

Cognitive remediation therapy (CRT) has been defined as a behavioral training-based intervention that aims to improve cognitive processes (attention, memory, executive function, social cognition, or metacognition) with the general aim of durable benefits in community functioning (Cognitive Remediation Experts Workshop, Florence, April, 2010). Nonetheless, the majority of empirical findings on cognitive remediation therapies, including the meta-analysis, challenge the assumption that simply improving cognitive functioning in schizophrenia will spontaneously lead to better psychosocial outcomes. Moreover, the results of previous studies suggest that cognitive recovery is probably the best option to optimize the response of some patients to psychiatric rehabilitation programs. So CRT is not likely to be

implemented as a stand-alone therapy but as a part of a broader psychosocial rehabilitation program. Unfortunately, little is known about how to integrate the different rehabilitation tools in a broader rehabilitation program. Regrettably, they are neither standardized nor available in routine care in the majority of clinical settings. The aim of this paper is to provide an evidence-based, person-centered method for integrating CRT into the psychosocial rehabilitation process in outpatient settings.

## 2. Effects of Cognitive Remediation on Cognition and Functioning

Fortunately, convincing data about CRT efficacy in cognition and functioning can currently be found in meta-analytic

studies. McGurk et al. [1] carried out a meta-analytic study showing that cognitive remediation is an effective treatment for improving cognitive impairments in schizophrenic patients, obtaining a moderate effect size in cognitive measures (Cohen's  $d = 0.51$ ). Interestingly, cognitive remediation also seemed to produce improvement in social functioning. Although the improvement was a somewhat smaller change (Cohen's  $d = 0.36$ ), a positive effect on symptoms was also found, suggesting that there is a reduction in symptoms after rehabilitation, although the effect size is now considered to be only small (Cohen's  $d = 0.28$ ). As such, the study provided the first meta-analytic evidence for the impact of cognitive remediation in domains other than cognition. Furthermore, an intuitive but previously undemonstrated hypothesis was revealed. By adding cognitive remediation therapy to psychosocial rehabilitation, functional outcomes improved significantly. For instance, by adding cognitive remediation to vocational rehabilitation work, performance was improved and a higher level of work performance and longer-lasting employment was generally achieved. By and large, cognitive remediation impacts on functioning only when the intervention is part of a broader psychosocial rehabilitation program. In other words, the effects of cognitive remediation therapies are higher (Cohen's  $d = 0.47$ ) when acting as part of broader psychosocial rehabilitation than when applying cognitive remediation therapy as an isolated intervention (Cohen's  $d = 0.05$ ). On the other hand, CRT has been compared with active controls such as occupational therapy [2], work therapy [3], or leisure group [4], showing similar group differences to those observed when compared with nonactive controls such as support group [5], watching videos [6], or standard care. Another interesting finding is that cognitive remediation programs were more efficacious when based on strategy approach (Cohen's  $d = 0.62$ ) than when they were based on progressive exercises or repeated practice (Cohen's  $d = 0.24$ ). Strategy approach involves an explicit focus on teaching active cognitive strategies that target memory and executive functions. Typically, it is based on teaching methods including chunking information to facilitate recall and problem-solving skills to facilitate sequencing or planning.

Recently, Wykes et al. [7] carried out another meta-analytic study with similar results. This study is based on 109 reports of 40 studies in which more than 70% of the participants had a diagnosis of schizophrenia. The meta-analysis, with 2,104 participants, confirms the durable effects of the CRT intervention on global cognition and functioning. As expected, the symptom effect was small and, unfortunately, disappeared at follow-up assessment. Surprisingly, no treatment element (remediation approach, duration, computer use, etc.) was associated with cognitive outcome. Regarding the stage of the illness, CRT seemed to be more effective when patients were clinically stable. Similarly to the former meta-analysis, significantly stronger effects on functioning were found when cognitive remediation therapy was provided together with other psychiatric rehabilitation, and a much larger effect was present when a strategic approach was adopted together with adjunctive rehabilitation (Figure 1).

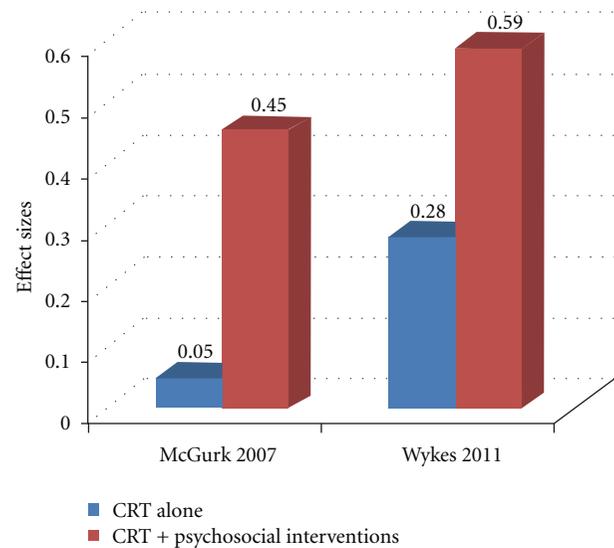


FIGURE 1: Effect sizes (Cohen's  $d$ ) of cognitive remediation on functioning. Data from the meta-analytic studies by McGurk et al. [1] and Wykes et al. [2]. CRT: cognitive remediation therapy.

### 3. Integrating CRT with Other Psychological Therapies

Unfortunately, little is known about how to integrate CRT and the various rehabilitation tools in broader rehabilitation programs. Most relevant clinical guidelines such as PORT [8] or NICE [9] and different meta-analytic studies showed that a variety of psychosocial interventions, including cognitive behavioral psychological interventions, skills training, family interventions, and supported employment all have a convincing amount of evidence that supports their implementation in psychosocial rehabilitation programs for individuals diagnosed with schizophrenia.

Thus, with the basic aim of providing a method for the implementation of CRT in the context of the whole psychosocial rehabilitation process, we have relied on Action Theory framework [10]. Action theory provides a comprehensive theoretical framework that describes how everyday decisions are made and has been applied to the process of prescribing medication treatments [11]. It distinguishes between (1) *action planning*, which is based on theoretical knowledge, experiential knowledge, assessment of the situation, and anticipations; (2) *decision making*, which includes the development of an intention, emotional assessment, and goal setting; (3) *operation*, which refers to the implementation of action, effect control, and feedback. Different points need to be taken into account to facilitate the choice of treatments.

(a) *Overview of Available Options.* When deciding on which treatment should be prescribed next, there must be a list of all available treatment options which can be used in the treatment of the present illness, be they first- or second-line options.

(b) *Hierarchical Sequence of Options.* The available options must then be brought into a hierarchical order with respect to the effectiveness of treatments, side effects, costs, and so on. Such hierarchies can be based on guidelines or the scientific literature.

(c) *Feasibility in the Given Context.* Next, context information must be taken into account, for example, whether an option is feasible in the specific case and treatment situation.

Reasons for nonfeasibility may include nonavailability of the treatment in a certain setting, costs, and so forth.

(d) *Utilization.* Now, information from the individual patient has been taken into account. Treatment options which have already been used in the past with the individual patient need to be clarified.

(e) *Effectiveness of Previous Treatments.* How the individual patient responded to treatments that have previously been used must be assessed.

(f) *Tolerability.* Similarly, tolerability must be assessed. Were there any side effects?

(g) *Appropriateness and/or Aggressiveness of Application.* To evaluate positive and negative effects during pretreatments, how they have been applied must be clarified. What was the maximum prescribed dose? Was it high enough for the treatment to have a chance of being effective? In summary, a judgment has to be made on the appropriateness and aggressiveness of previous treatments.

(h) *Patient Acceptance.* Important factors in treatment selection are preferences or rejections on the part of the patient. Patients like some drugs or dislike others. Whatever the reason may be, rational or irrational, this will influence patient cooperation and medication compliance.

#### 4. Information for a Rational Selection

*Overview of Available Options.* To consider various psychological interventions as possible candidates for inclusion in the whole rehabilitation process, two criteria have been established. Firstly, it needs to be an evidence-based intervention with at least one published meta-analysis showing efficacy. Secondly, although it is not a necessary condition, it is valuable to take into account the studies that combine or compare CRT with other distinct psychological interventions. Surprisingly, most clinical studies included in CRT meta-analytic studies have not tested these combinations and have focused primarily on CRT as a stand-alone treatment (Figure 2). Nonetheless, at least some of these interventions can be considered as good candidates. It should be mentioned that this selection is not intended to provide a general guideline for psychosocial rehabilitation interventions and for that reason it does not account for all evidence-based interventions. It is only a proposal on how to integrate CRT

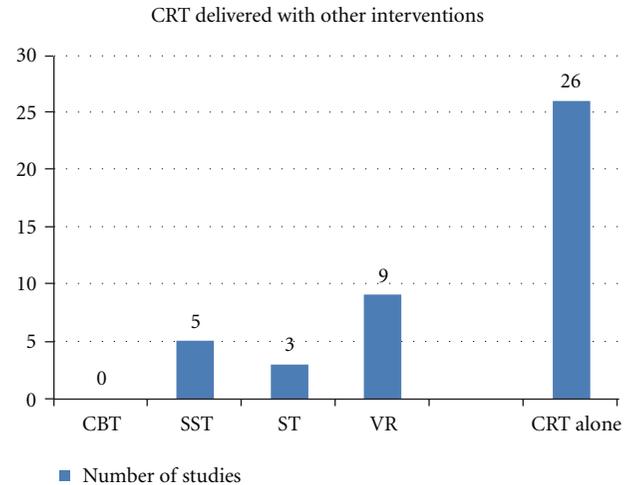


FIGURE 2: Data from the meta-analytic studies by McGurk et al. [1] and Wykes et al. [2]. CBT: Cognitive behavioral therapy; SST: social skills training; ST: skills training; VR: vocational rehabilitation; CRT alone: cognitive remediation therapy as stand-alone therapy.

with other psychosocial interventions to make CRT more effective.

*Social Skills Training (SST).* Kurtz and Mueser [12] conducted a meta-analytic study with outcome measures from 22 studies including 1,521 clients. Results reveal a large weighted mean effect size for content-mastery exams (Cohen's  $d = 1.20$ ), a moderate mean effect size for performance-based measures of social and daily living skills (Cohen's  $d = 0.52$ ), moderate mean effect sizes for community functioning (Cohen's  $d = 0.52$ ) and negative symptoms (Cohen's  $d = 0.40$ ), and small mean effect sizes for other symptoms (Cohen's  $d = 0.15$ ) and relapse (Cohen's  $d = 0.23$ ). These results support the efficacy of social skills training for improving psychosocial functioning in schizophrenia. More interestingly, some aspects of the subanalysis performed by the authors led to the conclusion that there is enough evidence for the generalization of social skills training interventions from the training environment to the more complex spheres of everyday functioning.

*Social Cognition Training (SCT).* Kurtz and Richardson [13] recently conducted a meta-analytic study to assess the efficacy of behavioral training programs designed to improve social cognitive function. A total of 19 studies consisting of 692 clients was selected from the published literature in the most important databases. With respect to social cognitive measures, weighted effect size analysis revealed moderate-large effects of social cognitive training procedures on Facial Affect Recognition (identification, Cohen's  $d = 0.71$  and discrimination, Cohen's  $d = 1.01$ ) and small-moderate effects of training on Theory of Mind (Cohen's  $d = 0.46$ ), while effects on social cue perception and attributional style were not significant. For measures of generalization, a weighted effect size analysis was performed and it revealed

that there were moderate-large effects on total symptoms (Cohen's  $d = 0.68$ ) and observer-rated community and institutional function (Cohen's  $d = 0.78$ ). In summary, although the effects of social cognitive training programs on positive and negative symptoms in schizophrenia were nonsignificant, positive effects were found on different measures of affect recognition and various theories of mind components.

*Cognitive Behavioral Therapy (CBT).* Wykes et al. [14] explored the effect sizes of current CBT trials including targeted and nontargeted symptoms, modes of action, and the effect of methodological rigor. Thirty-four trials with data in the public domain were used as source data for a meta-analysis and investigation of the effects of trial methodology using the Clinical Trial Assessment Measure. The authors found overall beneficial effects for the target symptom (33 studies; Cohen's  $d = 0.4$ ) as well as significant effects for positive symptoms (32 studies), negative symptoms (23 studies), functioning (15 studies), mood (13 studies), and social anxiety (2 studies) with effects ranging from 0.35 to 0.44. Surprisingly, improvements in one domain were found to be correlated with improvements in other domains. Recently, a further meta-analytic study was published with special emphasis on followup. When CBT was compared with other psychological treatments at followup, there was strong evidence (with small treatment effect) that intervention has an effect on positive, negative, and general symptoms. Therapies for schizophrenia patients of at least 20 sessions had better outcomes than those that were shorter.

*Hierarchical Sequence of Options.* A number of reasons lead us to consider a hierarchy in which CRT might be the first treatment option to be considered. Firstly, cognitive impairment can act as a barrier to the other interventions [15] such as skills training [16], cognitive behavioral therapy [17], or vocational rehabilitation [18]. Neurocognitive impairments in schizophrenia have been linked to treatment response, employment status, social relationships, living status, insight into illness, therapeutic alliance, and community functioning [19, 20]. Thus, it is reasonable to suppose that cognitive impairment can also be a rate-limiting factor in some psychological treatments and that the severity of cognitive impairment may also limit its clinical benefit. Secondly, cognitive remediation therapy seems to potentiate the efficacy of other psychological interventions [21]. Finally, it has been suggested that the CRT posttraining period could be opening a critical window for aggressive adjunctive psychosocial rehabilitation [22]. On the other hand, together with work therapy, CRT plus SST is the most-tested combination and outcomes are better when they are combined [1, 2]. Consequently, social skills training (SST) and other skills training could be the second line of treatment. Finally, but just as importantly, cognitive behavioral therapy represents the next line of treatment in the flowchart. Despite convincing evidence in favor of cognitive behavior therapy (CBT) for psychosis in schizophrenia with regard to symptoms [14], its effects on functioning are not as good and for that reason some limits to its use may need to be established to optimize its implementation in clinical settings.

*Feasibility in the Given Context.* One of the most worrying deficiencies in clinical practice is the lack of access to most evidence-based psychosocial interventions. In spite of the existence of clear recommendations in the clinical guidelines for the implementation of evidence-based psychological treatments, they are certainly not sufficient. Research indicates that passive dissemination of clinical guidelines alone is generally insufficient for affecting successful implementation and improving patient outcomes [23]. Some barriers such as severe workload, time pressure, and the need for specialist staff have been described. In addition, pessimistic views of recovery for clients with psychosis have also been expressed and may affect implementation [24]. As such, providing specific flowcharts and checklists based on the guidelines that allow collaborative decision making between patients and clinicians can be of some help. Finally, although some promising data on economic considerations associated with CRT have already been published [25], studies analysing cost-effectiveness are conspicuous by their absence.

*Utilization and Effectiveness of Previous Treatments.* It seems absolutely necessary to establish a complete history of previous treatments and how effective they had been. Moreover, a comprehensive history of education, social activities, and work history can be of help in choosing the right interventions to establish the hypothetical relationship between cognitive deficits and functioning when taking all the contextual variables into account. Experience in previous rehabilitation programs can provide relevant information which allows personalization of the intervention program. Some decisions about the use of paper-and-pencil or computer tasks, group or individual format, or even the characteristics of the cognitive exercises can be made using this personal information. Furthermore, their social and work history might help to define daily functioning goals in a more personalized way.

*Tolerability and Appropriateness or Aggressiveness of Application.* Unfortunately, no study has specifically tested the question of the optimal dose of treatment in terms of number of sessions or hours of treatment. Nonetheless, some data on the question of treatment intensity have been published by the Alice Medalia group [26]. In a study where patients followed cognitive training, they compared the change in standard scores between those patients taking less than 128 days and those taking more than 128 days to complete the training, the median being 128 days/4.5 months for the whole sample. It was found that patients taking longer than the median time to complete training benefited significantly less than those completing the training in a shorter period of time. The effect size for patients undergoing high-intensity treatment (completing training in less than 128 days) was quite large (Cohen's  $d = 1.46$ ), whereas the effect size for the group of patients receiving lower-intensity treatment (more than 128 days) was small ( $d = 0.26$ ). What this remarkable difference in effect sizes underscores is the important role that treatment intensity has in the gains patients make in cognitive remediation. Thus, it is important to stress that

CRT should be delivered intensively at least two days a week over four months.

*Patient Acceptance.* High rates of early dropout from psychosocial rehabilitation programs have been described [27]. For cognitive and social rehabilitation programs different causes of attrition have been proposed: age at start of treatment, number of hospitalizations, and verbal fluency were linked to the ability of clients with schizophrenia to participate in community-based, intensive cognitive and social rehabilitation programs, even when other demographic, neurocognitive and symptom variables were accounted for. Race and ethnicity, sex, education, parental education, age at onset, symptoms, and cognitive factors of sustained attention, verbal memory, and problem solving were not related to attrition status in the current study. Medalia and Saperstein [28] suggested that voluntary attendance is a measure of intrinsic motivation for treatment and this indicates that motivation is an important patient characteristic when aiming for a positive treatment outcome. Thus, case formulation and intervention based on Action Theory can be of some help in enhancing motivation. However, when motivation is so low that it prevents participation in the rehabilitation process, it will be necessary to previously target it directly.

## 5. The Neurocognitive Behavioral Approach

Taking into account the aforementioned discussed data on the variety of treatments and the whole psychosocial rehabilitation process, an evidence-based, person-centered approach for delivering cognitive remediation with other psychological treatments is presented here. There are many treatment guidelines which summarize general scientific evidence on how to treat a particular illness. However, they can not take into account individual patients and their particular treatment history. This guideline is based on the principals of the neurocognitive behavioral approach established elsewhere by Penadés and Gastó [29].

- (i) It is an empirical approach that incorporates any sort of methodologies, learning techniques, rehabilitation programs, software, or paper-and-pencil tasks provided that their efficacy has previously been demonstrated in controlled studies.
- (ii) Rehabilitation treatment should focus on improving neurocognition but the main target is to ameliorate associated psychosocial disability.
- (iii) Rehabilitation treatment must be customized for each patient and should focus on those targets considered to be important by the patient.
- (iv) Rehabilitation targets should be agreed with the patient and should be based on their capabilities, needs, and current social environment
- (v) This approach is called “neurocognitive behavioral” since it proposes comprehensive treatment of neurocognitive aspects but does not overlook emotional, functional, and psychological ones.

The use of flowcharts based on these principles can also support patient cooperation in the whole rehabilitation process. It allows clinician and patient to make a rational decision together on what to do next, which is the core idea of shared decision making. Thus, to integrate CRT into the whole psychosocial rehabilitation context, the following steps might be considered.

- (1) Comprehensive initial assessment: along with neurocognitive functioning, other aspects such as history of education, work history, social skills competence, presence of interfering symptoms, expectations of self-efficacy, and motivation level need to be assessed. Additionally, other aspects influencing daily functioning need to be taken into account in the form of a functional analysis. Therefore, characteristics regarding current social and familial network, availability of community resources, and, above all, patients’ personal preferences also need to be considered.
- (2) Identification of personal goals: patient and therapist must define relevant goals in a collaborative framework not only in terms of neurocognition but also in terms of daily functioning. By paying special attention to the relationship between cognitive deficits and subsequent problems in functioning, the therapist will be able to help the patient to create a problem list. It is essential that patients consider the goals of the intervention as being truly relevant to their daily lives.
- (3) Case formulation and tailoring of the intervention: formulation is a way of generating a hypothesis that could be tested through the application of treatment interventions. Thus, after the identification of personal goals, an intervention plan can be formulated taking into account both the initial assessment and the interventions flowchart (Figure 3). Both action theory framework (action planning, decision making, and operation) and the characteristics of the various psychosocial interventions (efficacy, intensity, methods, suitability, etc.) need to be discussed with the patient to set up the tailored intervention plan.

## 6. Specific Cognitive Abilities That Should Be Targeted to Improve Functioning

As has been suggested before, improved cognitive function can lead to improved daily functioning in the context of psychological interventions. However, the identification of the cognitive domains that have to be targeted to improve functioning is still incomplete. As mentioned above, the impact of CRT on functioning is important because the primary rationale for this therapy is to improve not only cognition but also psychosocial functioning [30]. Surprisingly, most CRT clinical studies have not tested this hypothesis until recently and have focused primarily on cognitive performance [1, 2]. Obviously, an understanding of the links between cognitive change and functional improvement can be crucial in

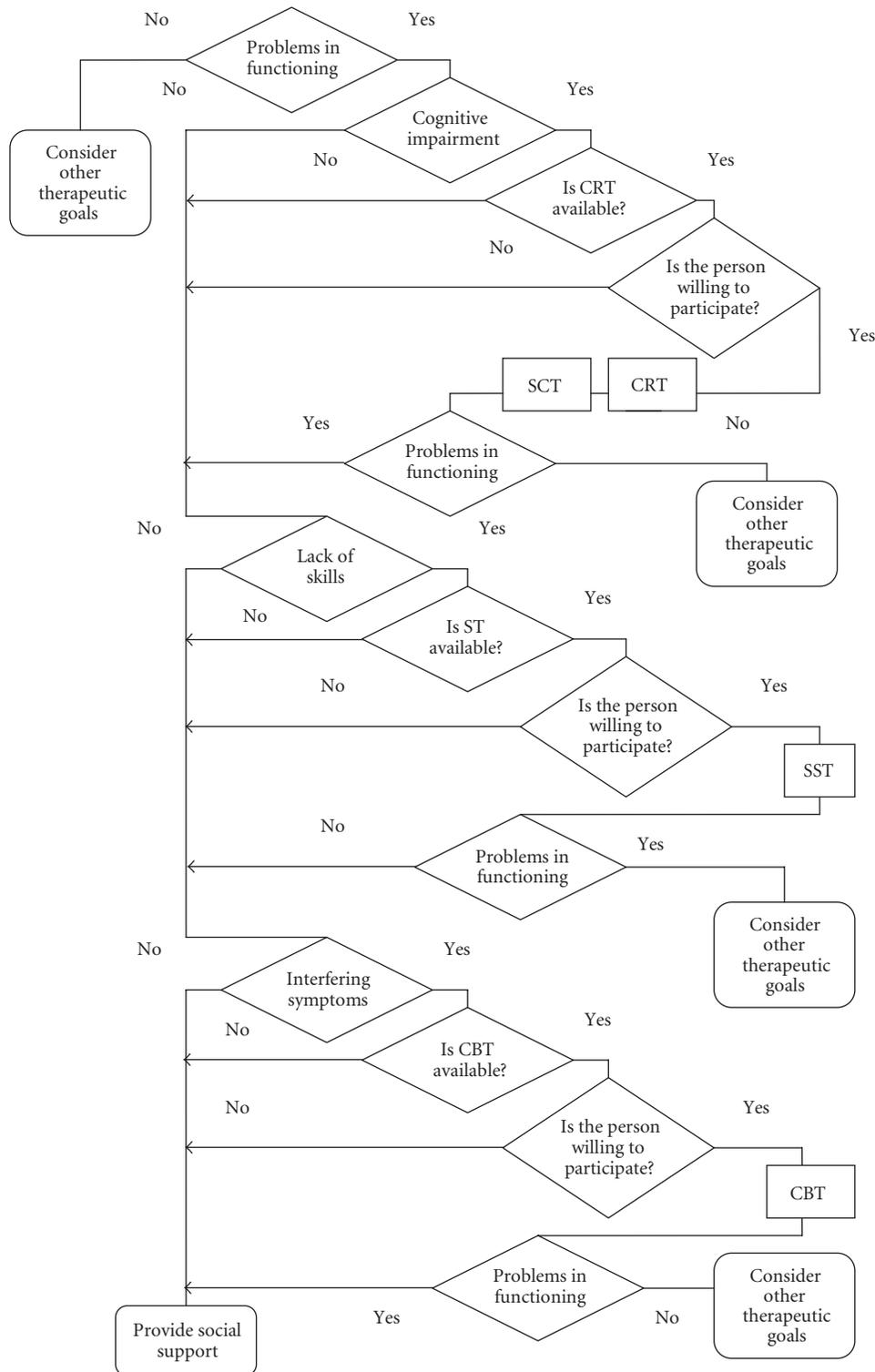


FIGURE 3: Flowchart to integrate cognitive remediation with other psychological interventions. CRT: cognitive remediation therapy; SCT: social cognition therapy; SST: social skills training; CBT: cognitive behavioral therapy.

identifying appropriate cognitive targets for treatment leading to functional improvement.

In two studies, Reeder et al. [31] published some surprising results. Cognitive functions which usually show

significant cross-sectional associations with social functioning are not the same as those associated with improvement in functioning in the context of CRT. In the first study, it was found that while the “response inhibition speed” factor

was associated with social functioning at baseline, change in a different factor predicted social functioning change following cognitive remediation therapy (CRT). In the second study [32], a relationship at baseline was found between social functioning and various cognitive domains such as verbal working memory, response inhibition, verbal long-term memory, and visual spatial long-term memory, but not schema generation. Surprisingly, it was the improvement in schema generation which predicted improved social functioning. From the two studies, it can be concluded that cross-sectional associations between cognitive functions and social functioning may not be an appropriate approach for selection of cognitive targets for intervention. Even though selecting the CRT cognitive targets on the basis of cognitive skills that appear to predict functional outcome in schizophrenia sounds logical, it could be misleading. As such, while it has been generally assumed that improved cognition will lead to improved functional outcome, the nature of this putative link is far from clear.

Penadés et al. [33] conducted research to investigate the neurocognitive changes occurring in the context of CRT and tried to identify which of those changes leads to improvements in daily functioning. This study used data collected as part of a randomized, controlled trial investigating a CRT program in a partner study [34]. The trial recruited 52 schizophrenia patients between the ages of 27 and 42 who had been in touch with psychiatric services for at least 10 years; composing sample with predominant negative symptoms and cognitive impairments. Of these participants, 40 were randomized to receive either CRT or a control psychological treatment (CBT) where neurocognition was not targeted. At baseline, daily functioning was significantly associated with verbal memory. Surprisingly, improvement in executive function, but not in verbal memory, predicted improved daily functioning among people with chronic schizophrenia who had current negative symptoms and evidenced neuropsychological impairments. Notwithstanding, the statistical mediation model found that social improvement caused by executive changes is expressed indirectly through improvement in verbal memory ( $F_{(2/31)} = 33.308$ ,  $P < 0.001$ ). Thus, the direct model, as the name suggests, represented the prediction of social improvement from the change in executive function directly. None of the executive measures, such as change in psychomotor speed, change in nonverbal memory, or change in working memory add significant explanatory power to the effect of executive change in the social improvement function equation. These results confirm that there is no evidence for a simple direct relationship between cognition and separate aspects of social functioning. Consequently, even if people have impairments in multiple cognitive domains, executive functioning still needs to be the target of the intervention.

## 7. Conclusion

It has been established that with CRT neurocognitive impairments can be ameliorated and some improvement in social functioning can also be expected. To achieve these results it is crucial that CRT is based on the teaching of cognitive

strategies and that it involves some cognitive practice. CRT needs to be carried out in the context of broader psychosocial rehabilitation involving the learning of other communication, social, and self-control skills. Unfortunately, little is known about how to integrate the different rehabilitation tools in a broader rehabilitation program. Based on the neurocognitive behavioral approach and action theory framework, and obviously on published meta-analytic studies, a hierarchical flowchart has been provided to integrate CRT with other evidence-based psychological therapies. Finally, it is important to take into account that to improve functioning with CRT together with other impaired cognitive functions, executive function also needs to be specifically targeted.

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## Review Article

# Enhancing Work-Focused Supports for People with Severe Mental Illnesses in Australia

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Persons with severe mental illness (SMI) have reduced workforce participation, which leads to significant economic and social disadvantage. This theoretical review introduces the strategies that have been implemented to address this issue. These include Individual Placement and Support (IPS) services, the most widely researched form of supported employment, to which cognitive remediation has more recently been recognised in the USA, as an intervention to improve employment outcomes by addressing the cognitive impairments often experienced by people with SMI. The authors review the international literature and discuss specifically the Australian context. They suggest that Australia is in a prime position to engage clients in such a dual intervention, having had recent success with increasing access to supported employment programs and workforce reentry, through implementation of the Health Optimisation Program for Employment (HOPE). Such programs assist with *gaining* and *maintaining* employment. However, they do not address the cognitive issues that often *prevent* persons with SMI from effectively participating in work. Thus, optimising current interventions, with work-focused cognitive skills development is critical to enhancing employment rates that remain low for persons with SMI.

## 1. Introduction

High unemployment amongst people with severe mental illness (SMI) has become an area of much concern in the mental health and public policy [1, 2] sectors alike. Numerous studies have concluded that employment status is highly correlated with social, economic, and health outcomes and overall quality of life. From a personal perspective, employment promotes a sense of purpose, self-esteem, independence and greater satisfaction with finances [3, 4]. It provides daily routine, social involvement, and personal achievement [5] and provides opportunities to affirm one's ability and

feel useful to others [6, 7]. Stable employment has also been associated with a decreased level of risk for exacerbation of psychiatric symptoms [8, 9] and less frequent substance abuse [10]. It is thus not surprising that the vast majority of individuals experiencing SMI express a desire to work and consider it as a key aspect of their life [11, 12]. Despite the clear benefits of a paid vocation for this subgroup of the community, unemployment rates in people with SMI worldwide are high. In the UK, unemployment rates for this group are estimated to be between 61%–73%. This rises as high as 75%–85% in the United States [13]. In Australia, workforce nonparticipation rates for people with

SMI are estimated to be between 70–78%, with many not having access to vocational rehabilitation or support to gain (and importantly, maintain) employment [13]. Of particular concern, workforce non-participation rates in Australia have remained stable despite low national unemployment rates and an increased policy focus on promoting employment opportunities for people with SMI [14].

Many aspects of life are contingent upon the income and relationships sustained by paid employment [6]. In addition to the financial ramifications, lack of work has negative effects on people's health, daily routines, sense of worth, social inclusion, and civil participation. Prolonged unemployment serves to worsen the constant strains imposed by poverty, isolation, and loss of self-respect and identity [15, 16]. There are enormous challenges in enabling individuals experiencing SMI to access employment and, once gained, helping them to sustain their positions. In spite of the existence of some comprehensive supported employment programs, a great deal of more research needs to be completed to better understand and improve their efficacy.

Much of the research in this area, reviewed below, has emanated from the United States and the UK; there is a paucity of empirical literature on employment outcomes for people with SMI in an Australian context. It will thus be of critical importance for future research to investigate the validity of these current international research conclusions in Australian settings.

## 2. From a Prevocational Training Model to an Individual Placement and Support Model

Historically, prevocational training, transitional employment and supported employment, programs have been the principal approaches to assist persons with SMI to commence or return to work [17]. Traditionally, prevocational training programs aimed to involve clients in work-related activities on the assumption that training and preparation are the first steps to achieving a permanent and paid job. This approach assumed that participants required training in a less demanding and supervised environment prior to attempting paid employment [18].

In the 1950s, a small group of clients and social work volunteers met outside of the ward of a mental hospital to provide a place of social support, activities, and introducing patients to vocational environments [19, 20]. As with other prevocational trainings, this "Clubhouse model" was based on the principle that all persons with SMI could accomplish work-related needs by promoting their autonomy in an integrated environment [17]. Clients were encouraged to participate in two arms of preparation. Firstly, a prevocational "work-ordered day" included assisting with basic daily activities (e.g., kitchen duties, welcoming others or visiting patients at the hospital), working side by side with members of staff and taking responsibility for maintaining the clubhouse [20]. Secondly, a "transitional employment program" provided participants with part-time and time-limited job placements, with supervision and minimum

salary. The ultimate goal was to help clients acclimatise to the work environment, develop job skills and increase their confidence before entering the competitive job market [18, 21].

Fountain House, located in New York, is considered the pioneer of clubhouse-style employment support for persons with an SMI. Its stated aim was to place clients with SMI in work situations as a primary way of overcoming employment-related barriers and discrimination. Its approach also established strategies and principles that over the years have broadened into other eclectic vocational services. Despite these, good quality research has concluded that the Fountain House model had relatively modest outcomes in returning participants to work in real life settings. For instance, international surveys (ICCD 1996 Clubhouse Survey (USA)) reported that 19.6% of clients from all 173 clubhouses located in the United States succeeded in working in transitional employment, whereas 17.5% of members participated in independent competitive employment [22]. Extensive prevocational training, the lack of contact with real work settings, lack of continuity in the same job and consideration of employers' preferences over employees' needs have been weaknesses associated with the pre-vocational model [17].

"Supported employment" (SE) is a widely recognised evidence-based practise (EBP), developed as an alternative approach to increasing persons with an SMI capacity to contribute to the workforce. SE is focused on providing clients with assistance to enter the mainstream workforce [23], operating as part of a formal mental health service or as an independent agency. Internationally, SE programs take many forms including Individual Placement and Support (IPS) services, the open employment model and others [24]. Of these, IPS is the most extensively researched model and has demonstrated showing superior competitive employment outcomes in comparison to other models [25]. The IPS model, established by Robert Becker and Deborah Drake in the 1990s, is based on seven evidenced-based principles:

- (i) supported employment services focus on helping clients to achieve competitive jobs,
- (ii) eligibility is based on client choice,
- (iii) rapid job search,
- (iv) integration of mental health and employment services,
- (v) attention to clients' preferences,
- (vi) individualized job supports, and,
- (vii) personalized benefits counseling [23, 26].

The IPS Fidelity Scale has been developed to ensure that these principles and procedures are replicated with precision and reliability across different sites [23]. The scale is a 15-item tool developed in 1995 by Gary Bond and his colleagues to evaluate services' quality and feedback areas for improvement to their practices [27]. Many authors have proposed that the incorporation of fidelity and quality

control measures might improve vocational outcomes and enhance the probability of IPS' success [23, 27–29].

In contrast with the pre-vocational and transitional employment models outlined above, IPS has been shown to reduce the length of the prevocational training phase [18], encouraging participants to learn new skills in real work settings, as well as keeping participants active, motivated, and engaged in job-seeking. An essential key for this model has become the integration of an “employment specialist” into the mental health service who will support the client to find a job matched to his or her preferences and provides support to the employee once in the work setting [30]. Ideally, employment specialists are integrated into the client's treatment team, so as to facilitate communication between the mental health service, client, and employer [31, 32]. Thus, the role of the employment or vocational specialist is considered a crucial feature in supported employment services, working in collaboration with clinical specialists as part of a comprehensive multidisciplinary and holistic treatment approach [33]. The employment specialist's success will be determined partially by their expertise in communicating with members of the clinical team, external employment agencies, potential employers, and government support services. But also, it will depend on negotiating effective supports with clients and people's disclosure issues, for instance, if clients want health information shared with employers. For participants who have experienced severe mental health issues, IPS emerges as meaningful and proactive support in which vocational goals and non-vocational domains like self-esteem, control of psychiatric symptoms and quality of life are positively affected [34].

Abundant evidence has indicated the effectiveness of supported employment programs (particularly IPS) in helping people with SMI to achieve employment in the last two decades. Many literature reviews [9, 35, 36], systematic reviews [26, 37–40], more than twelve randomized controlled trials [23, 41, 42] and longitudinal follow-up studies [43, 44], albeit mostly in the United States and Europe, have demonstrated that supported employment provides sufficient tools and support to clients to obtain jobs, with benefits persisting over the years [44, 45]. Further, it has been shown that IPS offers considerably more positive outcomes than a variety of other traditional models [46], including psychosocial rehabilitation programs [47] and sheltered workshops [34, 48, 49]. For instance, studies find that people participating in IPS programs earn higher wages, work more hours per month, have lower attrition rates [31, 37, 47] and less frequent visits to mental health services [43] than participants in comparison programs.

These positive aspects of the IPS model are well recognized, but research has consistently shown that the benefits of IPS in assisting participants to maintain their employment for lengthy periods are modest [26, 50].

### 3. Job Tenure

Brief job tenure continues to be a problematic issue for workers with SMI. Despite supported employment showing

improvements in general vocational performance in people with SMI and higher competitive employment rates than prevocational approaches (50%–70% compared with 35%) [34, 46, 50, 51], several studies confirm the low percentage of participants who experience sustained benefit from it, with the majority of workers experiencing brief job tenure and unsuccessful job endings [52–54]. Empirical research has shown that, on average, clients with SMI maintain their jobs for six months [18, 48, 55]. Yet there is great variation, with some clients remaining employed for a longer time (9–11 months) [34, 56] and others lasting only a few months or weeks [31, 47].

The high rates of job termination in clients with SMI pose questions regarding the efficacy of the IPS model. Supporting people to sustain employment has proven more challenging than job acquisition. Significant factors contributing to the failure to support sustained employment are postulated to be insufficient attention to the lifestyle and attitude adjustments that may be required to adapt to working life; lack of specific knowledge, strategies and supports for managing mental illness, and sources of stress within and beyond the workplace; financial barriers, poor matching of jobs to worker interests [6, 57, 58] and lack of specific skills in managing cognitive impairments that are directly associated with poor vocational outcomes [59].

People with SMI who find employment that matches with their job preferences are more likely to stay in their jobs for longer [52, 54]. Thus, motivated and satisfied participants employed in positions that fulfil their personal preferences have been shown to stay in their jobs twice as long as participants in roles that do not personally interest them [54]. Higher sense of self-confidence, on-the-job permanent support, professional qualifications [56], and cognitive performance [60] have been other variables predictive of better vocational performance and longer job tenure.

## 4. A Supported Employment Program in Australia

In Australia, the National Mental Health and Disability Employment Strategy [61] forms a significant part of the government's social inclusion agenda. It acknowledges that for people living with a disability, exclusion from employment and social participation persists even as the country enjoys its lowest unemployment rate ever in a time of significant economic growth and labour shortages. During the past decade, the Australian Federal Government (composed of six states and two territories) has focused its mental health reforms on the promotion of key services. These include increasing evidence-based treatments and the improvement of integrative practices between employment and mental health services. Nonprofit, nongovernmental organizations have also contributed to these reforms through the development of new employment and educational policies, providing major social inclusion for clients participating in these various settings [62].

Since 2006 the supported employment model (also referred to as Open Employment [63]) has been

implemented in Australia with comparative employment results within the international sphere. Consistent with research conducted in other comparable Western countries, Australian and New Zealand studies have reported employment rates for people with SMI between 46% and 65% [64–66]. In spite of these positive outcomes, the system still presents structural weaknesses leading to diminished quality and outcomes of the overall service. The incorporation of vocational assistance into the public mental health service still remains as the central challenge for the mental health plan [31, 62, 67]. In 2006, seven pioneers within mental health provided support employment programs to job seekers with severe mental illness located in four different states in Australia. Subsequent studies have shown that according to each site's report, the main difficulties that professionals encountered were the time taken to incorporate the “vocational specialist” into the mental health program, the lack of training for both the specialists and the rest of the mental health team, lack of resources to accomplish the specialist's requirements, and organizational culture differences [62].

These observations are comparable with the results of studies done worldwide. For example, in England between January 2010 and March 2011, nine sites implementing the IPS model (some of them more experienced than others) participated in a fidelity research as part of a national programme undertaken by the Centre for Mental Health. Consequently, and based on 16 IPS fidelity reviews, Shepherd and colleagues (2012) concluded that some of the system's weaknesses and, therefore, areas to be improved were related to the process of integration of the Supported Specialist into the clinical team; the phenomenon of resistance, cultural differences, and professional prejudices; the process of obtaining referrals and the importance of a good quality training for supervisors [68].

The findings demonstrate the need for further policy and program development to establish effective and durable relationships between employment and health providers, firstly to enhance the overall IPS programs' outcomes and secondly to enable improved delivery to people with SMI to gain and maintain competitive employment.

## 5. LEAP-HOPE

In 2009, the LEAP (Local Employment Access Partnerships) were established by Social Firms Australia (SoFA) as part of a program funded by the Australian Department of Education, Employment, and Workplace Relations. The LEAP project was initiated to improve the delivery of services to job seekers with an SMI by enhancing the communication and collaboration between relevant support services. Clinical mental health services, psychiatric disability rehabilitation services, and disability employment services are engaged in the partnerships. These three service systems work with the same client cohort (people with SMI) and all have a role in assisting clients to achieve their vocational aspirations. However, the services have varying approaches to program delivery, different methods of measuring outcomes and

are funded by different state and federal agencies, creating difficulties for collaboration. Historically, the lack of coordination between these services has reduced their ability to assist job seekers with a mental illness to secure or retain employment.

LEAP now operates in five Melbourne locations and one regional Victorian area. A total of 43 agencies are engaged with the LEAP partnerships.

Working through the LEAP partnerships, SoFA (Social Firms Australia) delivers the Health Optimisation Program for Employment (HOPE). HOPE is a ten-session psychoeducational group program for jobseekers with a “mental health issue” that aims to offer them a better understanding of the situations and stressors that affect their health, and to learn new strategies to manage their illness in the context of securing work. The HOPE program was adapted by SoFA and St Vincent's Health from an existing evidence-based program developed by Professor David Castle [69].

The core program—health optimisation—has been run in a variety of settings with a range of different populations over the past ten years. Evidence has shown that the program is effective in reducing symptomatology and duration of hospitalisations [69]. HOPE is delivered as a collaborative activity of the LEAP partnerships and centrally administered by SoFA. Participants are recruited through LEAP partner agencies and must be current clients to ensure that they receive support if issues arise while participating in HOPE.

To date, 198 participants have completed the program with overall positive vocational outcomes: 33% of clients who participated in the program achieved employment and an additional 34% secured volunteer work or returned to study. A statistically significant increase in self-efficacy was reported and was sustained over time. Despite its positive vocational outcomes, there are still a significant number of consumers that do not manage to return to any competitive employment after the HOPE program and sustaining employment is likely to continue to be a challenge. The inevitable question then raised is what new approaches have recently evolved to address these issues?

## 6. Thinking Skills for Work

People with SMI present a wide range of cognitive deficits; they are most pronounced in the areas of attention, memory, processing speed, and executive functions [70–74]. In many cases individuals are aware of these deficits and complain about severe difficulties in solving simple daily life problems, paying attention to social activities and responding to educational and vocational opportunities. Cognitive impairments are highly associated with poor social functioning, specifically in the capacity for reasoning, processing of social information and solving interpersonal problems [75–77]. In the last twenty years, advances in psychological interventions have explored the field of innovative rehabilitation technology, focusing on the enhancement of thinking skills as central to improved functional outcomes.

Cognitive Remediation Therapy (CRT) is an empirically well-supported model which considered a skill-training

intervention that facilitates cognitive improvements, by providing training in memory, attention, and other cognitive abilities [73, 78]. Several studies have shown that CRT provides additional psychosocial benefits for those clients who participate in comprehensive rehabilitation programs, including social skills training or supported employment [79, 80]. In recent years, Susan McGurk has developed a novel program called “Thinking Skills for Work (TSW)” that integrates the training of cognitive functions and the development of strategies to manage the persistent cognitive difficulties in real job settings with support received from an employment consultant [81]. For these purposes, the TSW includes the computer-based cognitive training CogPack 6.0 software, in addition to permanent support with job search planning, finding work and coping with daily challenges arising in the workplace. During the last decade McGurk and her colleagues have conducted a number of randomized controlled trials [76, 81, 82] and longitudinal follow-up studies [83] with positive results. Clients that received vocational training plus the cognitive remediation therapy, compared with those that only participated in the vocational rehabilitation program, reported more hours of work, higher wages, and improvements in cognitive skills, especially in verbal learning, memory, and executive functions. These studies have supported Cognitive Remediation as a reliable tool in improving cognitive and vocational functioning in participants attending TSW programs. Also, this comprehensive rehabilitation program (CRT+IPS) has been associated with significant improvements in depression and autistic preoccupation. The most relevant conclusion from this body of research for this paper, however, is the strong (but as yet unrepeated) finding that improvements in cognitive functioning predict longer job tenure and reduced job termination rates.

## 7. Conclusion

A number of different training programs and support initiatives have been trialled to address restricted workforce participation in people with SMI and improve their vocational outcomes. Despite advances in the area, unemployment remains high, and job tenure continues to be short-lived even after intensive support. Estimates suggest that only 10–20% of mental health service clients are working in mainstream employment settings [13, 63, 84]. Clearly there is much more work to be done.

Supported employment has shown success internationally in increasing employability, but less well developed are programs to address the cognitive impairments that likely play an important part in job sustainability in this population. A focus on cognitive remediation was largely born in response to mental health service clients’ reports of struggling with severe cognitive impairments on the job. The *Thinking for Work* program offers a potential new way to address these underlying issues with the wider goal of increasing job tenure over time. This program has already been shown to be effective overseas, and it is appropriate to attempt to replicate these successes in Australia.

Much more research in this area is needed. There is still no consensus in the literature on the role or importance of motivational factors or which specific facets of cognition are relevant to vocational stability. It is for these reasons that investigating the utility of Thinking Skills for Work in an Australian context becomes a crucial area of interest.

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## Review Article

# Can Social Functioning in Schizophrenia Be Improved through Targeted Social Cognitive Intervention?

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Efforts to use cognitive remediation in psychosocial intervention for schizophrenia have increasingly incorporated social cognition as a treatment target. A distinction can be made in this work between “broad-based” interventions, which integrate social cognitive training within a multicomponent suite of intervention techniques and “targeted” interventions; which aim to enhance social cognition alone. Targeted interventions have the potential advantage of being more efficient than broad-based interventions; however, they also face difficult challenges. In particular, targeted interventions may be less likely to achieve maintenance and generalization of gains made in treatment. A novel potential solution to this problem is described which draws on the social psychological literature on social cognition.

## 1. Introduction

Over the past twenty years, it has become clear that front line treatments for schizophrenia, in particular medication, do not yield sufficient improvement in functional outcome in this population [1]. Thus, treatment developers have sought new intervention approaches. Prominent among these has been neurocognitive training (We use the term “neurocognitive” rather than “cognitive” to draw a clearer contrast for the reader between neurocognition and social cognition.), which aims to improve basic cognitive functions (e.g., attention, memory, and executive function) through compensatory strategies and/or remedial practice. Although still a relatively young field, research now suggests that neurocognitive training can enhance cognitive functioning among individuals with schizophrenia, and there is growing evidence that it can improve functional outcomes [2, 3]. Importantly, the effect of neurocognitive training on functional outcomes appears to be greatest when it is bundled within a broader treatment package that includes more functionally proximal interventions, such as vocational placement [4].

Recognizing the importance of targeting functionally proximal domains in treatment, some researchers have incorporated *social cognition* as an intervention target in psychosocial treatment for schizophrenia. Social cognition refers to the mental operations underlying interpersonal functioning [5]. In schizophrenia research, it most often is seen as comprising *emotion perception* (the ability to infer others’ emotional states), *theory of mind* (ToM; the ability to infer others’ mental states), and *attributional bias* (individual tendencies in explaining the causes of social events [6]). As a treatment target, social cognition has the advantage of being conceptually more proximal to, and more strongly correlated with, social functioning than are traditional neurocognitive domains [7]. Social cognition also appears to mediate the relationship between neurocognition and social functioning [8]. Thus, social cognition is a highly promising treatment target for improving social functioning in schizophrenia.

Despite the promise of social cognitive intervention, this is a young research area that is facing several important obstacles. These include inconsistency in the conceptualization and measurement of social cognition [9] and equivocal

support for the efficacy of emerging social cognitive interventions [10, 11]. The current paper addresses one particular problem facing social cognitive intervention research: the generalization and maintenance of treatment gains. Specifically, we examine whether improvements in social cognition generalize to social functioning improvements and are maintained through time, or whether it may be necessary to bundle social cognitive intervention with behavioral interventions, as has been successful in neurocognitive training programs.

## 2. Social Cognitive Intervention for Schizophrenia

To date, social cognitive intervention techniques have combined elements of neurocognitive training with elements of cognitive psychotherapies. Elements adapted from neurocognitive training include highly domain-specific computerized drill-and-repeat practice, as in various face emotion perception training programs (e.g., [12]). Cognitive therapy elements include graded confidence judgments (e.g., “I am 70% sure that the woman in the picture is happy.”) and psychoeducation regarding the interaction of thoughts, cognitions, and feelings (e.g., [13]). However, social cognitive interventions can be distinguished from traditional cognitive therapy in the former’s emphasis on cognitive process rather than content. Where cognitive therapy places relatively greater emphasis on static beliefs (e.g., the core belief, “I am unlovable.”), social cognitive therapy places greater emphasis on content-neutral processing capacities (e.g., the ability to infer mental and emotional states) and processing biases (e.g., the tendency to jump to conclusions [14]).

Social cognitive interventions can be divided roughly into *broad-based* and *targeted* interventions [15]. Broad-based interventions combine social cognitive treatment with social skills training, neurocognitive training, case management, and other intervention techniques. As such, they overlap considerably with the type of successful broad-based neurocognitive training packages noted above and have the potential to enjoy the same benefits to generalization and maintenance of gains that are conferred through such intensive and multilevel intervention packages. On the other hand, targeted social cognitive interventions focus treatment solely on the remediation of one or more social cognitive domains at the exclusion of neurocognition, behavioral social skills training, or other intervention modalities. There is hope that these targeted approaches may confer greater benefit to social functioning than targeted neurocognitive approaches due to the closer relationship of social cognition to social functioning [6].

## 3. Broad-Based Interventions

The first modern interventions to attempt to remediate social cognition in schizophrenia were broad-based interventions, including Cognitive Enhancement Therapy (CET [16]) and Integrated Psychological Therapy (IPT [17]).

CET and IPT differ from one another in several respects, such as the fact that CET is built on a neurodevelopmental model while IPT’s theoretical model is not developmental. However, the common features of CET and IPT are more salient in summarizing their role in the broader literature. Both espouse a hierarchical model in which neurocognitive abilities are seen as a foundation upon which high-level social cognitive skills are built. In IPT, social cognition is explicitly posited as mediating the relationship between neurocognition and functional outcome [18], a model that has received growing empirical support in the research literature [8]. In both CET and IPT, neurocognitive intervention takes place largely through computer-based training while social cognitive intervention is provided via group didactics and exercises designed to capitalize on secondary socialization and group process. Both conceive of social cognitive improvement as emerging from the combination of highly specific training exercises and mechanistically diffuse social learning experiences. Through this combination, it is hoped that patients will build specific capacities while also gaining the flexibility and “wisdom” necessary to navigate an ever-changing social world in which the rigid lessons of primary socialization (e.g., *always* say “please” and “thank you”) are not sufficient [19].

Several intervention techniques from CET and IPT have been widely adapted in subsequent social cognitive interventions and are illustrative of typical intervention approaches in the field. For example, IPT uses a stepwise progression from conceptually simpler and less emotionally evocative training elements (e.g., guessing the intention of a character in a comic strip) to more complex and potentially emotionally arousing elements (e.g., learning to regulate one’s own emotions). In CET, the final phase of social cognitive treatment is designed to help participants to generalize social cognitive skills to their everyday life. This approach is used in subsequent targeted interventions such as Social Cognition and Interaction Training (SCIT [13]), in which participants are taught to apply newly acquired social cognitive skills to upsetting or confusing social events in their day-to-day lives. IPT also uses a range of social stimuli—including photographs, audio and written vignettes, and videos; this use of social stimuli has become the standard for later social cognitive interventions (e.g., [13, 20–23]).

Another technique originally developed in IPT that has subsequently been adapted in newer social cognitive interventions (e.g., [13, 23]) is the practice of distinguishing between the facts of a social situation and one’s interpretation of those facts. For example, a photograph of a person receiving a gift may include the *fact* of the recipient smiling, which may lead to the participant’s *interpreting* the recipient as feeling happy. Distinguishing between facts and interpretations is widely seen as a core skill that spans the link between social cognition and metacognition. It requires metacognitive awareness to recognize that a strongly held view may be an interpretation rather than a fact, as well as metacognitive control to inhibit endorsing an interpretation as if it were a fact [14].

Separating facts from interpretations is at the core of a broader family of intervention techniques that can be termed

the “social detective” approach [15] which is used in a range of targeted interventions. This approach teaches patients to analyze social situations carefully and systematically, as if they were detectives. In addition to separating facts from interpretations, patients are taught to spend time gathering additional behavioral and contextual information to use as a basis for judging their confidence in competing explanatory hypotheses. The social detective approach is applied to multiple social cognitive domains. In emotion perception training, patients are taught to interpret facial expressions (e.g., smile, raised eye brows) as “clues” as to the underlying emotion that a person may be feeling [13]. In ToM training, patients are taught to use contextual facts (e.g., a birthday cake on the table) as a basis for predicting people’s thoughts and feelings (surprise, happiness). And in attributional bias and jumping-to-conclusions training, patients are taught that a careful, logical approach can buffer them against the perils of hasty judgment [14].

Both CET and IPT have shown moderate to strong evidence of improving both social cognition and social functioning [24, 25]. The effects of CET and IPT on social functioning likely result from the combination of social cognitive training with other treatment elements, including social skills training and neurocognitive training. Mechanistically, this may work in several ways. For example, improvements to memory may enable patients to retain learned social cognitive skills for longer and to recall and deploy these skills when necessary in real-world contexts. Social skills training provides opportunities to practice drawing on improved memory and social cognitive skills in vivo.

By addressing social cognition as one of several treatment targets, CET and IPT leave unanswered a central question of the social cognitive treatment project: is it possible to improve social functioning solely by way of improving social cognition? That is, can the strong and independent relationship between social cognition and social functioning be leveraged such that interventions which target social cognition at the exclusion of neurocognition lead to enhanced functioning? This question is important practically because interventions such as CET and IPT are labor, time, and resource intensive, rendering them unfeasible in a range of treatment settings. In contrast, targeted social cognitive interventions tend to be much simpler, less expensive, and thus potentially available to a wider cross-section of patients [26].

#### 4. Targeted Interventions

The first interventions to target social cognition at the exclusion of other domains were laboratory-based proof-of-concept trials that demonstrated the modifiability of social cognition through highly specific interventions but did not evaluate the long-term maintenance of improvement or the effect of improved social cognition on social functioning (e.g., [12, 27–30]). The majority of these interventions targeted the social cognitive domain of face emotion perception, which lends itself to drill-and-repeat practice. For example, Silver et al. [27] demonstrated that it is possible to improve schizophrenia patients’ performance on tests

of emotion perception through repeated practice judging still images of human faces. However, the authors did not evaluate the generalization of these improvements to social functioning. In a refined approach, Wölwer et al. integrated this type of drill-and-repeat practice with principles of errorless learning, verbalized self-instruction, feature abstraction, and positive reinforcement [12]. In a treatment trial comparing this intervention to neurocognitive training, emotion perception training led to significant improvements in emotion perception but not in neurocognitive domains. Meanwhile neurocognitive training led to improvements in verbal memory but not emotion perception [28]. As in the Silver study, generalization to functional outcome was not assessed.

Beginning in the early 2000’s, targeted social cognitive interventions expanded beyond narrow laboratory trials, intervening on a wider spectrum of social cognitive domains and endeavoring to link social cognitive gains to improved social functioning. For example, SCIT and Social Cognitive Skills Training (SCST [23]) target emotion perception, as well as ToM, jumping to conclusions and attributional style and also include intervention techniques designed to aid patients in applying improved social cognition to real-world social functioning.

SCIT is designed as a weekly group intervention lasting for approximately 20–24 sessions. It is divided into three phases which, like IPT, are designed to be easier and less stressful early on and to become increasingly difficult and emotionally challenging later. Phase I of SCIT introduces the concept of social cognition and provides emotion perception training that draws heavily on techniques validated in laboratory settings. These include drill-and-repeat practice, as well as psychoeducation, facial mimicry [31], and attention shaping toward emotion cues [32]. Phase II of SCIT addresses ToM deficits and attributional bias using a combination of established techniques, such as separating facts from interpretations, and novel techniques. For example, patients play a modified form of the game *20 Questions* to improve their data gathering within a social detective framework. Departing from laboratory-based-targeted interventions, Phase III of SCIT provides patients with a set of techniques for applying social cognitive skills in their day-to-day lives. During this phase, patients bring examples of real interpersonal difficulties from their lives into the SCIT group and use an integrated technique to evaluate the situation, make an action plan to improve understanding and reduce interpersonal distress, and practice the action plan during group.

SCST consists of 12 weekly group sessions that integrate didactic presentation and exercises. Sessions are divided into a first phase, addressing emotion and social perception and a second phase, addressing social attribution and Theory of Mind. Like SCIT, SCST incorporates established training techniques from previous targeted interventions (e.g., [13, 16]). SCST also expands upon previous interventions in several ways, including newly developed training exercises to enhance recognition of behavioral social cues, such as gesture, and a range of new pictorial, video, and audio stimuli.

SCIT, SCST, and other similar interventions have shown evidence of efficacy in improving both social cognition and

social functioning (e.g., [33]); however, results have not been uniformly positive (e.g., [23, 34]). Given the nascent status of the field of targeted social cognitive intervention, it is a high priority to address challenges facing these early targeted interventions in order to refine and improve them [35].

## 5. Challenges Facing Targeted Interventions

In order for a psychosocial intervention to meaningfully improve a patient's social functioning, gains must generalize to the range of social and community situations encountered by the patient, and gains must also be maintained through time. Social cognition is a promising treatment target from the standpoint of generalization, because the domain is conceptually proximal to and statistically correlated with global measures of social functioning [7]. Thus, theoretically, social cognitive gains may confer real-world benefits across social domains with limited need for further generalization tools.

However, training will only yield real-world functional improvement if patients are able to maintain and apply social cognitive gains in real-world contexts. Due to cognitive deficits, individuals with schizophrenia often struggle to transport skills and lessons from the treatment environment to their day-to-day lives [36]. This hurdle has been addressed in at least three ways in existing psychosocial interventions: (1) Neurocognitive training, (2) overlearning, and (3) environmental supports.

*Neurocognitive training* may improve patients' ability to transport and apply lessons via improved cognitive abilities [37]. Thus, enhanced memory function may improve patients' ability to recall strategies and to deploy them across varied real-world situations. Similarly, enhanced executive functions may improve patients' ability to use skills flexibly, enabling them to apply skills across a range of real-world settings. These benefits of neurocognitive capacity may contribute to the beneficial effects of neurocognitive training approaches, especially when combined with other interventions, including broad-based social cognitive treatments like Cognitive Adaptation Training (CAT [38]) and IPT. Unfortunately, targeted social cognitive interventions do not aim to improve neurocognition, and there is little evidence that they yield improvement in this domain ([12]; although see [33]).

Regarding *overlearning*, Kern et al. [39] have suggested that drill-and-repeat approaches lead to maintenance of skill by shifting demand from explicit, controlled processing, which is typically deficient in schizophrenia, to implicit, automatic processing, which is relatively intact [40]. Through repetition, using overlearning and errorless learning principles, patients have been able to learn vocational and interpersonal tasks to the point of relative automaticity and to maintain these gains through time [39, 41]. Overlearning techniques have been used in targeted social cognitive interventions, primarily in emotion perception training. There is evidence linking these interventions to skill maintenance (e.g., [35]); however, to date, there is not compelling evidence that improving the highly circumscribed

skill of face emotion perception leads to improved social functioning [26].

Drill-and-repeat techniques have been used in interventions that target ToM [42] as well as interventions that target multiple social cognitive domains (e.g., [13, 23]). However, these applications have struggled to operationalize the skill being taught with sufficient specificity, or to include sufficient repetition, to achieve true automatization of the targeted skill. For example, participants in SCIT learn the skill of separating facts from interpretations (described above) in order to decrease attributional bias and jumping to conclusions. However, this skill is taught more as a psychoeducational lesson about the importance of not jumping to conclusions, with practice conducted to ensure comprehension rather than to achieve automaticity of the skill.

It is unlikely that this limitation could be fixed simply by increasing repetition of ToM and attributional bias interventions because these interventions are conceptually incompatible with the goal of achieving automaticity of skill. These interventions teach patients to slow down their thinking and emphasize conscious, careful deliberation in order to avoid mistakes and maximize accuracy (e.g., [14, 42]). By definition, slow, controlled thought cannot be done quickly and automatically [43].

*Environmental supports* are a third approach to facilitate the maintenance of treatment gains in patients' community living environments. Whereas neurocognitive training and overlearning improve patients' ability to recall and deploy acquired skills, environmental interventions, such as Cognitive Adaptation Training [38], modify patients' physical environments in order to bypass cognitive deficits and cue adaptive functional behavior. For example, a specialized alarm may sound the verbal alert, "It is 10 AM, remember to take your medication." For patients with diminished inhibitory control, their home environment may be decluttered to decrease distractors. For patients with prominent apathy, important functional items, such as clothing and hygiene products, may be made more visible and accessible through prominent placement and colorful instructional signage. CAT has been found to produce durable functional gains among outpatients with schizophrenia [38].

To date, we are aware of no social cognitive interventions that use physical environmental manipulations to cue adaptive responses. Given the success of CAT in improving domains such as medication adherence and community engagement, environmental supports may be a promising direction for future research on enhancing social cognition. For example, one can imagine a patient having a small card or medallion with the letters "JTC" that she carries in her pocket, and which functions as a frequent reminder to resist jumping to conclusions in social situations (possibly, cuing the thought, "If a person says something unclear, do not assume it is hostile. Ask for clarification.").

In sum, without the benefit of improved neurocognition, overlearned skills, or environmental supports, it is unclear how in-session gains achieved through social cognitive interventions will be transported to, and maintained within, patients' real-world living environments.

## 6. A Social Psychological Approach to Social Cognition

In an effort to address this issue of treatment effect maintenance, we have recently designed a novel social cognitive intervention that aims to impart durable improvements in ToM, attributional bias, and jumping to conclusions using principles from social psychology. The social psychological literature provides an empirically robust alternative to the *social detective* school of social cognitive training. In fact, fifty years of social psychological research suggests that the *social detective* approach may be incompatible with normal, healthy social cognitive functioning [44]. Further, not only is slow, effortful social cognition abnormal, but the literature suggests that it actually may hinder adaptive interpersonal interaction and reinforce the types of dysfunctional judgments that it was meant to minimize.

The social detective approach has two key problems from a social psychological standpoint. First, it encourages slow, labor-intensive thought. And second, it aims to enable patients to make correct judgments. The problem with encouraging slow, laborious thought is that such thought is experienced by the thinker as difficult, and the social psychological literature clearly shows that when thinking is experienced as difficult, the product of this thought is experienced as bad, invalid, or incorrect. This phenomenon, which falls within the domain of *metacognitive experience* [45], has important implications for clinical intervention.

For example, consider the technique of *generating alternatives* [41], which is widely used in cognitive therapy for psychosis [46] and is a pillar of the social detective approach. *Generating alternatives* is used when a patient is harboring a distorted judgment or belief (e.g., “I know my boss hates me because she passed me without saying Hi.”). By generating alternatives (e.g., “Maybe she was in a rush or did not notice me.”) the patient is led to appreciate that other explanations for an event are possible, diminishing his certainty in his (distorted) interpretation. However, the *metacognitive experience* literature has shown that if the patient experiences the process of thinking up alternatives to be cognitively difficult, this experience in itself will function as evidence against the new alternatives. Experientially, it is as if the patient says to himself, “It was so hard for me to think up alternatives to my initial judgment that my boss *must* hate me—otherwise it would have been easy to think up alternatives!” Thus, ironically, the more alternatives a patient generates, the more convinced he may be of the validity of his initial judgment. Because people with schizophrenia typically have cognitive deficits, they are particularly vulnerable to experiencing the process of carefully, laboriously gathering and evaluating social information as effortful and thus of having *generating alternatives* backfire. Thus, teaching careful social cognition may further entrench social cognitive problems in this population rather than helping them.

A second problem with extant social cognitive interventions is that they teach patients to make “*correct*” judgments. From a social psychological standpoint, this is problematic because normal social cognition is not characterized by accuracy. In fact, average humans’ accuracy in judging

others’ thoughts and feelings hovers around 50% [47]. This poor showing is thought to result from the fact that others’ thoughts and feelings are fundamentally intangible to the subject [44]. That is, people are not good at judging others’ thoughts because we cannot observe their thoughts. We must make guesses based on limited often misleading, information and thus we are often wrong.

If the social psychological literature suggests that normal social cognition is neither careful nor accurate, then what is it? The evidence suggests that healthy social cognition is characterized by *fluidity*, *flexibility*, and *tolerance of uncertainty* [44]. To operate efficiently in the fast-paced world of social interaction, people foremost are motivated to use a style of social cognition that is quick, efficient, and fluid. Because our capacity for careful, analytic thought is scarce and slow [48], we therefore employ a range of rough-and-ready *heuristics*, or rules of thumb, to enable us to generate serviceable social impressions in real time. In addressing the potential inaccuracy of these impressions, we do not carefully evaluate their empirical support, as social detective training would have us do. Rather, normal people maintain an epistemological stance of openness to uncertainty in which we are willing to abandon one impression and generate a new one in response to changing inputs. Rather than carefully weighing the accuracy of competing impressions, we achieve interpersonal adaptiveness through our ability to flexibly inhabit different perspectives from one minute to the next and to resist committing rigidly to any one.

This social psychological perspective suggests a reframing of the problems of ToM deficit, attributional bias, and jumping to conclusions. ToM deficit may be better understood as reflecting an impoverished ability to generate representations of others’ mental states, rather than diminished accuracy [35]. Regarding attributional bias and jumping to conclusions, this social psychological perspective would agree with the social detective approach that rigid adherence to one perspective is problematic, but would differ in its favoring rapid impression formation over slow, careful impression formation.

## 7. A Social Psychological Treatment Approach

Based on this social psychological conception of social cognition, we developed a novel treatment strategy called Mary/Eddie/Bill (MEB). MEB is designed to provide patients with a quick and easy heuristic for generating impressions about others’ mental states (to enhance ToM) and for flexibly juxtaposing multiple impressions (to address attributional bias and jumping to conclusions). MEB is based on the *generating alternatives* technique that is used in existing interventions but is modified to make the process more rapid and rote, so that it may be overlearned and to make the experience feel easy rather than difficult, so that its products are judged by the subject to be valid rather than invalid.

To simplify *generating alternatives* we teach patients to generate only three alternatives, and we teach the three alternatives ahead of time in generic form. The three generic alternatives that are taught correspond to three orthogonal attributions that exhaust the universe of potential causes

for negative social events. Namely, when a negative or confusing social event happens, one can either blame oneself, blame another person, or blame the situation/bad luck. It is assumed in MEB that patients with ToM deficits have limited capacity to generate these three perspectives, while patients with dysfunctional attributional style and/or a tendency to jump to conclusions tend to rigidly adhere to one of these three prototypical styles at the exclusion of the other two. Thus, some patients rigidly blame themselves across negative situations, conforming to a depressive attributional style [49], some rigidly blame others, conforming to a hostile or externalizing/personalizing attributional style [50] and some rigidly blame situational factors, conforming to responsibility-avoidant style.

To enable patients to easily recall and use these three attributional styles across social situations, each style is taught in the form of a prototypical character who embodies the style's reasoning, emotional, and behavioral characteristics. Thus, *My-fault Mary* always blames herself, feels sad or guilty, and performs actions such as hanging her head, crying, and saying, "This is all my fault!"; *Blaming Bill* always blames other people, feels angry or suspicious, and performs actions such as pointing his finger, glaring, and saying, "You are to blame for this!"; *Easy Eddie* always blames bad luck, tries to feel comfortable and relaxed, and performs actions such as grinning, shrugging, cocking his head, and saying, "Oh well!"

Patients initially practice applying these three characters to pictures and videos of social situations using a forced-choice paradigm ("If you *had to* say, is the person on the left acting most like Mary, Eddie or Bill?"). This simple exercise enables patients with ToM impairment to generate working guesses regarding others' inner states in a way that integrates thought, feeling, and behavior. Because thoughts, feelings, and behaviors form a predictable and coherent scheme within each prototypical character, knowing any of the three domains enables easy identification of the other two (e.g., "He is *acting* like Bill, so he is probably *feeling* angry and *thinking* that somebody has wronged him."). The forced-choice and exhaustive applicability of the MEB heuristic facilitates generalization across social situations. Patients are taught that in *any* situation, each person can be thought of as most closely matching Mary, Eddie, or Bill. This principle of generalization is practiced in session and homework assignments by assigning the three characters in pictures and videos depicting a wide range of social situations.

To facilitate social cognitive fluidity and flexibility, MEB patients are taught that it is more important to be able to see different perspectives in social situations than to make correct judgments. Thus, after basic MEB training, patients are taught to "flip it," which consists of imagining how an actor may view a social situation from the perspective of any of the three prototypical characters. For example, "He is smiling, so my first guess is that he is feeling content and not blaming anybody, like Easy Eddie. But if I flip it, he could also be smiling sarcastically, and really be feeling mad at the person on the right and blaming her for causing the spill."

The aim is for patients to be able to easily recall and use MEB outside of session because of the colorful character

prototypes that link action, emotion, thought, and behavior, the characters alliterative names, and the use of overlearning exercises during in-session training.

We have conducted a 6-session pilot trial of MEB among twenty-four outpatients with schizophrenia or schizoaffective disorder [51]. Posttreatment assessments were conducted one to two weeks after the final MEB session. To assess whether the intervention imparted a memorable cognitive heuristic, patients were asked, "Can you recall the names of the three characters we talked about in the group, and can you tell me how each one of them would think, act and feel?" All 16 treatment completers recalled the three characters' names, 14 were able to accurately recall and assign characteristic feelings and actions, and 13 accurately recalled and assigned all three characteristic attributional styles. To evaluate patients' metacognitive experiences associated with use of the MEB heuristic, completers were asked to rate whether MEB was "hard," "easy," or "very easy" to understand and use. None rated it as "hard" and nine rated it as "very easy." These findings provide initial support for the theoretical model underlying MEB, which aims to teach a heuristic strategy that is memorable enough for patients with schizophrenia and cognitive deficits to recall and simple enough to be experienced as easy.

As a preliminary evaluation of the potential efficacy of MEB, patients also completed measures of social cognition and social functioning at pre- and posttreatment. Although these data must be interpreted very conservatively due to lack of appropriate comparison group and blinding, and small sample size, it is worth noting that statistically significant within-group improvements were observed on measures of ToM, social cognitive overconfidence, and self-reported social engagement [51].

## 8. Conclusion

Targeted social cognitive intervention for schizophrenia is a young area of inquiry. Extant targeted interventions show promise, but none includes a clear and theoretically supportable model by which maintenance and generalization of gains may be achieved. MEB is a novel targeted intervention that is based on a social psychological model. This model is rooted in robust empirical research and posits a heuristic-based mechanism for generalization and maintenance of gains. Initial research with MEB is promising, but more research is necessary to test this new approach. The need for novel interventions to improve real-world social functioning in schizophrenia is great. To meet this need, treatment developers should build on established intervention techniques, such as overlearning, and also explore novel approaches, such as environmental supports and approaches suggested by allied fields of research, such as social psychology.

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## Review Article

# Additional Interventions to Enhance the Effectiveness of Individual Placement and Support: A Rapid Evidence Assessment

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*Topic.* Additional interventions used to enhance the effectiveness of individual placement and support (IPS). *Aim.* To establish whether additional interventions improve the vocational outcomes of IPS alone for people with severe mental illness. *Method.* A rapid evidence assessment of the literature was conducted for studies where behavioural or psychological interventions have been used to supplement standard IPS. Published and unpublished empirical studies of IPS with additional interventions were considered for inclusion. *Conclusions.* Six published studies were found which compared IPS alone to IPS plus a supplementary intervention. Of these, three used skills training and three used cognitive remediation. The contribution of each discrete intervention is difficult to establish. Some evidence suggests that work-related social skills and cognitive training are effective adjuncts, but this is an area where large RCTs are required to yield conclusive evidence.

## 1. Introduction

Individual placement and support (IPS) has been developed as a standardised approach to supported employment aimed at helping people with severe mental health problems find competitive work [1]. IPS defines the essential principles of “supported employment” programmes, such that these programmes may be rigorously described and studied in different settings across the world, although these terms are often used interchangeably in the literature [1]. IPS directs that supported employment programmes should include seven core elements: (1) a focus on competitive employment, (2) acknowledgement of the individual’s personal interests, (3) a rapid job search, (4) integration of mental health and employment services, (5) programme entry based on client choice, (6) time-unlimited client support, and (7) benefits counselling [2]. IPS has proven very effective in improving vocational outcomes amongst people with severe mental illness when compared to other vocational services, with a recent review reporting that 61% of participants enrolled in IPS programmes gained employment, compared to 23% of those on other vocational programmes [3].

IPS does have limitations, however. As the results above would suggest, around 40% of people on IPS programmes do

not gain employment despite the support. A second criticism of IPS relates to job tenure of the people employed through these schemes, which tends to be short [4–7]. One review reported average longest job tenure to be 22 weeks [3], while a more recent review of job tenure reported an average length of 9.96 months worked at first job gained through IPS programmes [8]. Therefore, it has been suggested that the next step for development and evaluation is to augment IPS with other interventions which may increase employment rates and improve job tenure [9]. For instance, cognitive skills training programmes may help to overcome the illness-related difficulties in attention, memory and executive functions which can have an impact on vocational outcomes, and rates of competitive employment [10]. Cognitive behavioural therapy (CBT) has also been tried as an adjunct to supported employment in order to manage associated stressors [11, 12]. Murphy et al. [5] proposed adding an educational component to improve a person’s work skills.

The aim of this rapid evidence assessment was to identify studies which have sought to improve on the effectiveness of standard IPS by adding a supplementary intervention. The aims are to answer the following questions: (1) what supplementary interventions have been used with IPS? (2) What are the results and what is the quality of those studies?

(3) Do supplementary interventions improve employment rates and job tenure compared to IPS alone? (4) Are any supplementary interventions superior to others? Throughout this paper, country or region will be noted, as differences in labour markets, unemployment rates, and welfare systems have been shown to affect the results achievable through IPS programmes [13].

## 2. Method

**2.1. Rapid Evidence Assessment.** A Rapid evidence assessment provides an overview of existing research on a specific research topic, as well as a simple extraction and synthesis of the relevant data. The methods used to search for and appraise the research are systematic and rigorous, but the depth of the search is limited by the development of search terms and breadth of resources searched. This type of assessment is particularly useful to quickly gather existing evidence in a research area and determine what future research needs to be done [15].

**2.2. Inclusion and Exclusion Criteria.** The search was for empirical studies conducted from 1980 to July 2011. Studies were considered for inclusion if they: involved people with a severe mental illness; indicated the use of IPS or IPS core principles; involved supplementary interventions categorised as skills training, education, cognitive training, or psychotherapeutic techniques. Studies meeting these criteria were only included if the design compared IPS alone with enhanced IPS. Studies involving men and women of any age were included, providing the above criteria were met. The outcomes of interest were competitive employment rates, defined as the cumulative number of people working in a competitive job across the duration of the study, and job tenure, defined as the longest duration worked in the same job over the study. It should be noted that recorded job tenure may be affected by length of followup for each study.

Only publications in English were considered. Book chapters, narratives, and editorials were excluded, as were systematic reviews and meta-analyses, although references were screened for further relevant studies. The reference lists of included studies were also examined for potentially relevant papers. All included papers were evaluated for quality using the Maryland Scientific Methods Scale (SMS) [26], which identifies five categories: (1) correlational studies between an intervention and the outcome; (2) pre- and post-designs with no control or comparison group; (3) comparison studies, where measures are compared for unmatched comparison groups; (4) as in category (3) but using matched controls or controlling for confounding variables; (5) randomised controlled trials (RCTs), where participants are randomly allocated to experimental or control groups. The scale demonstrates the extent to which threats to internal validity have been controlled for, such as causal direction, confounding factors, chance factors, and selection bias. The strength of the IPS part of the intervention can be ascertained through the application of a standardised fidelity scale, so

the use of this scale was also noted in appraising the studies' quality.

**2.3. Search Strategy.** The search used combined terms from each main concept regarding severe mental illness, IPS, and additional interventions of skills training, cognitive training, education or psychotherapy, (e.g., (severe mental illness or schizophrenia) and (individual placement and support or IPS) and (skills training or social skills training)). The following electronic databases were searched: Embase, Medline, PsycInfo, Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, ISI Web of Science, Applied Social Sciences Index and Abstracts (ASSIA), and Google Scholar. One reviewer (N. Boycott) screened all titles and abstracts of potentially relevant studies. A second reviewer (A. Akhtar) screened over a third of the titles to establish consistency in application of inclusion criteria. Where the two reviewers did not agree, a third reviewer (J. Schneider) was asked to judge the study's relevance.

**2.4. Data Analyses.** Data regarding employment rates and job tenure were extracted directly from the papers. Odds ratios were calculated where possible using data on participants employed/not employed per experimental group in each study. Where necessary, authors were contacted for further clarification or information.

## 3. Results

In total 627 papers were identified and 246 remained after duplicates were removed, of which 241 were excluded at this stage (reasons are given below). References of the 5 included papers and relevant (excluded) systematic reviews were screened for potentially relevant titles, which identified a further 15 records for screening once duplicates had been removed. Of these, 6 further papers met the inclusion criteria. In total, 11 papers were included in the review and 250 papers were excluded (Figure 1).

**3.1. Excluded Studies.** Of the 250 papers which were excluded, 108 were not empirical studies: 29 were systematic or literature reviews; 69 were narratives, editorials, or book chapters; 10 were other types of publications, such as practice guidelines, commissioning frameworks, or grant proposals). There were 136 empirical studies of which 81 did not involve IPS or did not specifically assess the effectiveness of IPS, and 39 did involve IPS but without any supplementary intervention. Furthermore, 16 empirical studies were excluded for other reasons: in 8 the population was not people with severe mental illness; 7 were conference abstracts, and 1 did not measure vocational outcomes. The nature of 1 article could not be established, as it was written in Japanese. Finally, 5 papers were excluded as they were not comparative studies of IPS alone versus enhanced IPS (either they did not employ a control group or the control group was not strictly IPS).

**3.2. Included Studies.** The 11 included articles covered 6 distinct studies, since eight were multiple publications relating

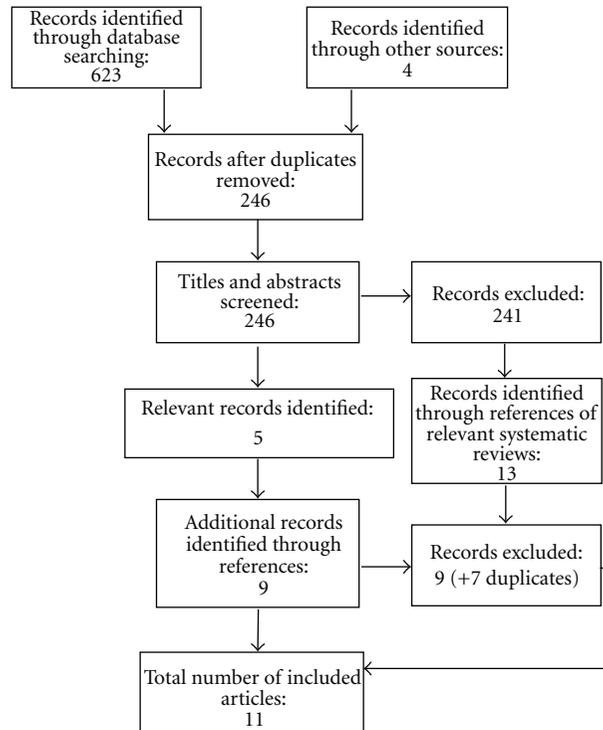


FIGURE 1: Flowchart of review process. Note: flowchart based on PRISMA flow diagram [14] with amendments.

to three studies. Table 1 contains information about the included studies. Three studies used skills training, and three used cognitive remediation.

3.3. What Supplementary Interventions Have Been Used with IPS?

3.3.1. Skills Training. Skills training consisted of two approaches: a work-related social skills package from Hong Kong, which was combined with IPS to create Integrated Supported employment (ISE) [27]; workplace fundamentals training (WFT) [7], which was used in three studies based in the USA. Both programmes were taught using demonstration, role-play, homework assignments, and problem-solving techniques.

The ISE programme aimed to help participants learn social skills related to retaining a job, such as developing good relationships with colleagues and supervisors, and handling interpersonal conflicts and potentially difficult situations at work. These skills were taught over 10 group sessions, and included training on verbal and nonverbal communication, conversation skills, appearance and assertiveness. Ongoing support was offered in order to generalise the skills learnt into work-life.

The WFT module covered skills such as problem solving in order to cope with stressors, symptoms and health concerns, and learning how to interact successfully with colleagues and supervisors. The number of sessions offered to participants varied by study, although the authors of the module suggested biweekly sessions for 8–12 weeks.

3.3.2. Cognitive Rehabilitation. Three cognitive training techniques were described: neurocognitive enhancement therapy (NET), errorless learning, and the thinking skills for work program [24].

NET consisted of computer-based cognitive training, a social information processing group, and a work feedback group. Cognitive training took place for up to 10 hours per week for a year, with exercises of progressive difficulty targeting attention, language, memory and executive functioning. Participants received specific feedback after job specialists conducted workplace-based observations and interviews with supervisors. In the social information processing groups, participants were taught to give work-based presentations to each other, ask questions, and give feedback.

Few details are available for errorless learning training, however, errorless learning posits that stronger learning can take place through repetitively practising tasks whilst eliminating mistakes during the learning process [28]. Errorless learning has regularly been used with people with learning disabilities [29], dementia [30], and schizophrenia [28].

The thinking skills for work program was conducted by a cognitive specialist in conjunction with the employment specialist and as part of an employment team. A cognitive assessment was completed and information on employment history was gathered, followed by a total of 24 hours of computer exercises covering attention, memory, executive functioning, and other cognitive domains. The specialist also provided cognitive remediation, job search planning, and job support to clients, taking into account the participant’s cognitive strengths and the cognitive challenges of the job.

TABLE 1: Primary outcomes of included studies.

Supplementary intervention type	Study (Area of origin)	Study design	Experimental condition(s) (n)	Control condition (n)	Primary outcomes	Statistics
Skills training	Tsang et al. [8, 16–18] (Hong Kong)	RCT	ISE (58)	IPS and TVR (65) (66)	ISE = Higher employment, longer job tenure, fewer interpersonal conflicts than IPS and control at 3 year followup	Employment rate: $\chi^2 = 6.78$ , $df = 1$ , $P < 0.01$ Tenure: $F = 9.53$ , $df = 4316$ , $P < 0.01$
	Wallace and Tauber [19] (Santa Barbara, USA)	RCT	IPS + WFT (19)	IPS alone (18)	No differences in earnings or hours worked. More job turnover and less job satisfaction in control group	Employment rate: $\chi^2 < 0.01$
	Mueser et al. [20] (Dartmouth, USA)	RCT	SE + WFT (17)	SE (18)	Better knowledge of WFT, no differences on vocational outcomes at 18 months	Tenure: $Z = 0.30$ , $P = 0.53$ Effect size: 0.16
Cognitive training	Greig et al. [21, 22] (Connecticut, USA)	RCT	VOC + NET (38)	VOC alone (34)	*Higher competitive employment and more hours worked in VOC + NET group	Employment rate: $\chi^2 = 3.57$ , $df = 1$ , $P < 0.05$
	Kern et al. [23] (Los Angeles, USA)	RCT	IPS + errorless learning*	IPS alone*	No differences in job placement or tenure. Twenty people employed	
	McGurk et al. [24, 25] (New York, USA)	RCT	SE + CT (23)	SE (21)	More likely to work in SE + CT group, worked more hours, more jobs and higher earnings at 2-3-year followup	Employment rate: $\chi^2 = 18.00$ , $df = 1$ , $P < 0.01$

Note: results are reported to 2dp. Acronyms: IPS; Individual placement and support; ISE; integrated supported employment; TVR; traditional vocational rehabilitation; WFT; workplace fundamentals Training; SE; supported employment; VOC; vocational programme; NET; neurocognitive enhancement therapy; CT; cognitive training. \*Results taken from Bell et al. [22]. \*Numbers in each condition unknown,  $N = 45$ .

3.4. *What Are the Results and What is the Quality of the Studies?* All studies included in this paper are reported in Table 1, along with their primary outcomes and relevant statistics.

3.4.1. *Skills Training.* Four papers from Hong Kong reported RCTs of IPS versus ISE versus traditional vocational rehabilitation (TVR) [6, 16–18]. These four papers cover the same project and have been treated as a single study for the review, referred to as Tsang et al. They reported higher competitive employment and longer job tenure for the ISE group compared to IPS and TVR. It was a well-conducted RCT (SMS 5), with blind assessors, good length of followup, good to fair fidelity to IPS standards, and use of intent-to-treat analyses. However, the selection criteria resulted in more severely impaired individuals being excluded and employment specialists were not blind to group allocation.

Wallace and Tauber [19] report a small-scale RCT from Santa Barbara, California, of IPS plus WFT versus IPS alone (SMS 5), as yet unpublished [31]. No differences were reported in employment rates between groups, although lower job satisfaction was reported in the control group. The

study was limited by the small sample size and the lack of blind assessors, but fidelity to IPS was assessed.

Mueser et al. [20] also published a small RCT from Dartmouth, New Hampshire, of supported employment plus WFT versus supported employment and treatment as usual (SMS 5). No differences were reported for the time worked or wages earned between the groups. The supported employment programme was not termed “IPS” in this paper, but the authors described monitoring the programme for the standards of supported employment, even though no formal fidelity scale was applied and there was a lack of co-location of vocational and mental health services, which would normally be expected in IPS. However, the authors felt that the programme offered could be considered as IPS (Mueser, personal communication, September 6, 2011). This study was limited by sample size, and only recruited people who had obtained a job in the previous two months, which could introduce bias and limit the generalisability of the findings.

3.4.2. *Cognitive Rehabilitation.* Two papers referred to here as Greig et al. describe the same RCT (SMS 5) undertaken

TABLE 2: Cumulative employment rates and job tenure across studies.

Supplementary intervention type	Study	Competitive employment—IPS alone or control % ( <i>n</i> )	Competitive employment—enhanced IPS % ( <i>n</i> )	Odds ratio 95% CI	Job tenure (weeks)—IPS alone or control Mean (SD)	Job tenure (weeks)—enhanced IPS Mean (SD)	Followup (months)
Skills training	Tsang et al. [8, 16–18]	61.5 (40/65)	82.8 (48/58)	3.00 (1.29, 6.98)	36.17	46.94	39
	Wallace and Tauber [19]	94.4 (17/18)	89.4 (17/19)	0.50 (0.04, 6.05)			18
Cognitive training	*Greig et al. [21, 22]	38.2	60.5	2.48 (0.96, 6.40)	22.05 (15.6)	20.3 (16.0)	24
	McGurk et al. [24, 25]	14.3 (3/21)	69.6 (16/23)	13.71 (3.03, 62.14)			#26.8

Tsang et al. results taken from [18]. \*Greig et al. results taken from personal communication (Bell, September 20, 2011). #Average length of followup.

in Connecticut, of a vocational programme alone versus a vocational programme plus NET [21, 22]. Participants were found to obtain and maintain higher rates of employment in the group receiving NET compared to controls. The authors of the study regarded the vocational programme to be IPS (Bell, personal communication, August 17, 2011), and reported fair implementation of IPS standards. However, transitional funding was also made available to participants to help them start work more quickly, which is not consistent with the core focus of IPS on competitive employment. This study was fairly well conducted in terms of baseline comparability of groups, using concealed allocation and intent-to-treat analyses. However, assessors and employment specialists were not blind to allocation.

An abstract by Kern et al. [23] detailed an RCT from Los Angeles, California, of IPS versus IPS plus “errorless learning training” (SMS 5). No differences in employment rates or job tenure were found. No further information could be obtained on this study.

McGurk and colleagues [24, 25] published two papers about a study in New York which combined the Thinking Skills for Work Program with supported employment versus supported employment alone (SMS 5). Inclusion criteria stated that participants had to have a history of job failure, such as leaving a job or being fired from a job, held for less than three months. Nonetheless, employment rates and earnings were found to be better in the experimental group at 2-3-year followup. Although IPS was not specifically mentioned in the abstract, fidelity to the programme was assessed, with fair to good implementation. This study had an impressive follow-up rate of 100%, although with a modest sample size, and blind assessors were not used.

**3.5. Do Supplementary Interventions Improve Employment Rates and Job Tenure Better than IPS Alone?** There were four studies which reported cumulative competitive employment rates. Two studies reported mean job tenure. These results are presented in Table 2. The study by Mueser et al. [20] was not included in the table, as participants had to have obtained a job in the previous two months, and therefore cumulative employment rates were 100% for both groups.

Ratios of job tenure for IPS versus enhanced IPS are as follows: 1:1.3 (ISE; Tsang et al.) and 1:0.9 (NET; Greig et al.). Mueser et al. [20] reported job tenure measured in days for first job obtained: 288.5 versus 331.6 (control versus enhanced IPS, resp.).

Calculated odds ratios varied from 0.5 to 13.71. Apart from the study by Wallace and Tauber [19], odds ratios showed that odds of gaining employment was 2.48 to 13.71 times more likely with enhanced IPS interventions than without. Wallace and Tauber’s enhanced intervention (WFT) resulted in odds of employment being half of that in the IPS alone group.

### 3.6. Are Any Supplementary Interventions Superior to Others?

Median rates of competitive employment were 49.85% (mean 52.1%) for IPS or control groups and 76.2% (mean 75.58%) for enhanced IPS groups in this paper. Separating these results according to types of supplementary interventions, for skills training mean employment rates were 86.1% versus 77.95%, and for cognitive training 65.05% versus 26.15% (enhanced IPS versus IPS alone or control, resp.).

Odds ratios for skills training interventions showed improved odds of employment in one study ( $\times 3$ ; Tsang et al.), but not in another ( $\times 0.5$ ; Wallace and Tauber). Cognitive training interventions showed improved odds of employment by 2.48 to 13.71.

## 4. Discussion

As the included studies vary in the outcome measures used and level of detail reported, and some studies are only preliminary reports or abstracts, it was difficult to synthesise the results. Averaging across the employment rates reported by four studies, enhanced IPS does appear to produce higher rates of competitive employment compared to IPS or control groups alone. The average enhanced rate of 76% would also appear to be higher than the average IPS employment rates reported in previous reviews [3], and this difference is accentuated when focussing on studies using skills training, where on average the employment rate is 25% higher. In addition, rates were moderately higher than previous reviews for studies involving cognitive training.

Caution needs to be taken when assessing the significance of the improved employment rates in some of these studies, however, as the employment rates reported for the IPS alone groups are substantially lower than would be expected in the Greig and McGurk studies [21, 22, 24, 25]. This may call into question the fidelity of the IPS programmes being used in the control groups and hence alter our conclusions about the apparent effect sizes in these studies. Again, it must be noted that Greig et al. were not using IPS in the strictest sense, as transitional funding was made available, and the selection criteria used in the McGurk studies resulted in only clients with a history of job failure being recruited, which may have adversely affected the employment rates in both groups.

Another important outcome is job tenure, although care must be exercised because results regarding job tenure will be affected by the length of followup for the study. Of the two studies which reported mean job tenure, Tsang et al. [6, 16–18] reported longer tenure than IPS alone in one review [3] but not another [8], and Greig et al. [21, 22] reported tenure as roughly the same as a previous review [3].

The odds of gaining employment were improved by the supplementary interventions in the majority of studies and some potentially promising evidence was found for each type. In particular, cognitive training appeared to increase the probability of gaining employment by a considerable degree. However, for Greig et al. [21, 22], the confidence intervals just overlap 1, meaning that it is possible there is no difference between the odds of employment for the two groups. Also, the poor employment results achieved for the IPS alone groups will have influenced the calculations of odds ratios.

It must be noted that due to the restricted number of studies found in this rapid evidence assessment, and some final reports not being available, the evidence is too limited to draw conclusions on which type of supplementary intervention may be superior in terms of employment rates, job tenure, and odds of gaining employment. However, absence of evidence is not evidence of absence, and there is some suggestion that enhancements of IPS may improve outcomes, as well as ideas for further research and development (see Future Research below).

*4.1. Clinical Implications.* The hypothesis remains that enhanced IPS may improve the chances of competitive employment beyond that of IPS or vocational services alone. However, the current status of the literature makes it impossible to draw any firm conclusions. In the studies presented in this paper, skills training and cognitive training showed improved employment rates over IPS alone or control groups, and skills training may also improve job tenure.

Although the results are limited and in some cases only preliminary, the most promising results are for work-related social skills training to take place alongside IPS as described by Tsang and colleagues [6, 16–18]. Skills taught through workplace fundamentals training and the Thinking Skills for Work Program may also prove helpful.

Further support or training may be necessary to enable some service users to prepare for and manage a job. The

studies may suggest that this training is best provided in conjunction with employment services rather than prior to seeking employment support, when the client is aware of the potential challenges involved in competitive work. Although this may prove more costly in terms of setting up training programmes or providing extra support to clients, it may make IPS programmes more cost-efficient if they are able to produce better results.

*4.2. Limitations.* The limitations of this review, as in any paper, lie in the search terms and strategy employed. If a study used only the generic term “supported employment” to refer to an intervention that was actually IPS, it might have been omitted, although the co-authors’ familiarity with the field guards against this risk. Studies did not always specify how rigidly the IPS criteria were adhered to, so the potency of that part of intervention may sometimes be weak, leading to superior results for the enhanced arm.

Combining employment outcomes to calculate means does not take into account the different contexts in which they were generated. Therefore, the results from individual studies in a given labour market or mental health service context may not generalise to real-world effectiveness in other countries.

As with any review, publication bias may have been an issue, as some studies may have gone unpublished due to negative findings or quality-related issues. However, as described above, authors of the included studies and prominent authors in the area were contacted to identify any unpublished studies on this subject, therefore minimising the risk as much as possible.

*4.3. Future Research.* During the search for relevant articles, five further studies of enhanced IPS were identified, although these were not included as they were not comparative in design and so the contribution of the enhancement could not accurately be judged. Of these studies, one was a further case study of ISE [32], one was an RCT of IPS and WFT versus standard vocational rehabilitation [33], and another study examined assertive community treatment (ACT) and IPS [34]. The latter study consisted of two staff teams: ACT and IPS, who tailored and coordinated care to address individuals’ mental health and vocational needs. This coordination of care is now a core element of IPS programmes and so would no longer be considered as an enhancement. Furthermore, one study enhanced IPS with motivational interviewing [35], which aims to resolve individuals’ ambivalence for change [36], and one study documented a trainee project, which combined parental support, promotion, and supervision with IPS techniques [37]. Although the latter two studies have not been tested with large-scale RCTs, they may still suggest the potential for future research in this area.

The area of enhanced IPS research and evidence is at an early stage of development and questions about generalisability, effectiveness and costs have yet to be addressed systematically. Now larger, better-controlled studies are needed to test the cost-effectiveness of the most promising approaches. These studies also need to be clear and precise

about the terms used, such as IPS or supported employment, and be more descriptive of how faithful their vocational programmes are to the IPS model. A useful next step would be to compare the different adjuncts to each other and IPS alone in order to determine whether one supplementary intervention is superior to others.

## Disclaimer

The views and opinions expressed here are those of the authors and do not necessarily reflect those of the CLAHRC-NDL programme, NIHR, NHS, or the Department of Health.

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## Research Article

# Cognitive Remediation for Individuals with Psychosis in a Supported Education Setting: A Pilot Study

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Cognitive remediation (CR) is a treatment approach that is being increasingly examined as a means through which the cognitive impacts of schizophrenia might be ameliorated. While CR has demonstrated good outcomes when paired with supported employment, little is known regarding how it might be integrated within supported education contexts. In this study CR was examined in a supported education context with 16 individuals with psychosis. The findings indicated that CR aligned well with the academic curriculum with very low attrition, was found useful by students, and showed similar pre-post differences on cognitive measures as those found in previous work.

## 1. Introduction

A large body of research has demonstrated the presence of significant cognitive challenges among persons with schizophrenia with demonstrated abilities, on average, 1-2 standard deviations lower than the general population in areas of problem solving, attention, and memory [1]. These cognitive impacts of schizophrenia tend to be persistent and are minimally impacted by psychotropic medication [2]. Their impact is felt in numerous domains including interpersonal functioning, independent living, occupational functioning, and skill acquisition in psychiatric rehabilitation [3, 4]. Cognitive challenges are particularly salient in work and school settings, which require people to multitask, sustain attention, and recall material presented in a range of formats. Given the central role of education and employment in the recovery of many persons with severe mental illness [5], there is a pressing need to identify effective treatments that address

the challenges that can limit progress in these functional domains.

Cognitive remediation is a promising approach for addressing the cognitive impacts of schizophrenia. Cognitive remediation (CR) refers to interventions in which cognitive tasks are practiced to improve attention, memory, and problem solving abilities. Randomized controlled trials have consistently shown beneficial impacts on both cognitive and psychosocial functioning [6]. Key findings include (i) moderate effect sizes for improvements in attention, memory, and problem solving [6, 7], (ii) more modest impacts on psychosocial functioning with better outcomes observed when CR is paired with supported employment [2, 6, 8], (iii) a relatively low impact on psychosis symptomatology, though self-esteem has been found to improve [6, 9], and (iv) maintenance of improvement for periods of up to 2 years after intervention [8]. Examination of nonspecific effects has indicated that CR leads to significant benefit over and above

tasks that capture nonspecific factors (e.g., computer skills training) [10].

Building from criticisms of the narrow scope of earlier CR studies which looked only at pre and post measures of cognitive functioning and their questionable association with “real world” outcomes [11], there has been an increasing emphasis upon pairing CR with evidence-based psychiatric rehabilitation interventions. In the research literature, this pairing has primarily been undertaken in the context of employment-based interventions with evidence suggesting that CR can enhance their effectiveness [6, 8, 12, 13]. However, we have been unable to locate any report of the impact of cognitive remediation training when paired with a supported education intervention for persons with mental illness or any other population. Supported education settings incorporate assistance, preparation, and ongoing support to adults with psychiatric disabilities who wish to pursue postsecondary education or training, with the first example developed in the 1980s at the Boston University Center for Psychiatric Rehabilitation [14]. Outcome studies of supported education programs have found better enrolment in postsecondary education and longer terms of competitive employment [15]. While widely used, however, the evidence base for supported education has lagged behind other similar interventions (e.g., supported employment) due to a lack of randomized trials and variability between education programs.

Given the importance of supported education in psychiatric rehabilitation, and the close association between supported education and supported employment suggesting transferability, we conducted a feasibility study to examine the impact of cognitive remediation when paired with a supported education intervention.

## 2. Methods

*2.1. Cognitive Remediation and Supported Education.* This study employed a pre-post measure design that examined changes in cognitive functioning and symptomatology over the course of an academic term among individuals with psychosis who took part in a CR intervention while enrolled in a supported education program. To facilitate the comparability of the results, the measures used were adapted from those of McGurk and colleagues [16]. This evaluation also included a qualitative component to evaluate participant impressions about the intervention.

The study took place in Toronto, Ontario, at the Redirection Through Education (RTE) program which is situated within a mainstream college setting—George Brown College. Note that in the Canadian context the term “college” (as opposed to “university”) refers to a postsecondary program with a greater emphasis on training for skilled trades and professions such as Chef and Dental Hygienist. Redirection Through Education is a supported education program for adults, 19 years of age and older, who are facing challenges with mental health and/or addictions issues. The RTE program provides students with the opportunity to assess and improve their academic skills to facilitate entry

into employment and nonsupported training and education settings. Students enroll in credit courses such as College English, Computer Skills, Speaking with Confidence, Strategies for Student Success, and Psychology of Human Relations. These courses can lead to eligibility and/or exemptions in postsecondary programs depending on the grades achieved. Other noncredit courses include Foundational Skills in English. Students take 8-9 mandatory classes per semester along with any electives they might choose with work and volunteer placements occurring in semesters 2 and 3 of the 3-semester program. In addition to classes, students are provided with individual counselors to assist in their developing effective study skills, goal setting, and coping with the stresses of an academic environment. RTE students also engage in vocational assessment and exploration to help determine their interests and strengths and to address areas of challenge. For further details about George Brown College and RTE go to: <http://www.georgebrown.ca>. While there is some variability from one academic term to the next, approximately 30% of RTE students have psychosis. The program typically has between 120 and 240 students enrolled, most of whom are young adults. The overarching goal of this program is to help students explore valued nonillness identities, build confidence, and reengage with their communities.

The CR intervention was integrated within the course structure of RTE and took place in college classrooms. The intervention had two components that were completed over the course of 10 weeks within the academic term. A total of 20-, 45-minute computer-based cognitive exercise sessions were held twice a week using COGPACK (COGPACK, version 6.0, Marker Software, Ladenburg, Germany, <http://www.cogpack.de/>). This computer program facilitates practice across a broad range of cognitive functions, including attention and concentration, psychomotor speed, learning and memory, and executive functioning. The protocol for the COGPACK exercises was manualized with a general progression from easier to more difficult tasks and through cognitive domains in the order described above. Generally, two cognitive exercises were practiced in each session with their receiving encouragement and suggestions about strategies for improving performance. There was, however, flexibility in the protocol allowing for individualized instruction and support. While all participants completed exercises in all cognitive domains, some were more readily able to progress to more difficult levels than others. Additionally, while there was a general progression through functional domains across sessions, there was some variation. For example, a difficult problem solving task might be accompanied by a less demanding attention task which has more of a readily engaged video game format. They all received performance scores on their accuracy and speed after completing each exercise, which were recorded in the computer and used to reinforce them for progress on their performance. COGPACK sessions were cofacilitated by a Clinical Psychologist and an MA level Psychology graduate student and were held in groups of 4-5 participants to facilitate individualized feedback.

In addition to computer exercises, participants took part in 10 weekly group discussion sessions (approximately 60 minutes in duration) attended by all 16 participants. Topics in the group sessions included the role of cognitive factors in academic performance, the development of compensatory strategies for dealing with challenges in academic settings (e.g., study strategies, means of addressing attention difficulties), and strategies for managing difficulties such as anxiety and psychosis symptoms in school settings (e.g., breathing exercises, and mindfulness). These sessions were cofacilitated by a Clinical Psychologist and an education specialist affiliated with RTE. Group sessions were also manualized, drawing from evidence-based practices wherever possible (e.g., CBT skills for managing anxiety) with computer and discussion sessions synchronized such that group discussions aligned with COGPACK tasks.

**2.2. Measures.** All of the quantitative measures used are commonly employed in CR studies and have excellent psychometric properties. Quantitative measures were administered immediately before and after the CR intervention. *Symptoms of psychosis* were assessed using the Positive and Negative Syndrome Scale (PANSS) [17], and *self-esteem* was assessed with the Rosenberg Self-Esteem Scale [18]. The Wide Range Achievement Test (WRAT-III) reading subtest [19] was used to *evaluate premorbid educational attainment*. *Psychomotor speed* was measured using the Trail Making test part A [20], and *short-term memory* was evaluated with the digit span subtest of the Wechsler Adult Intelligence Scale-III [21]. *Verbal learning and memory* was assessed with the California Verbal Learning Test (CVLT) [22], and *executive functioning* was assessed with the Trail Making Test, Part B and the Wisconsin Card Sorting Test (WCST) [23]. *Sustained attention/vigilance* was examined using the Digit Vigilance Test [24]. Through a focus group at midpoint and brief individual interviews at the end of CR, a semistructured inquiry format was used to explore what aspects of CR participants found helpful and unhelpful including attention to the training, the groups, and the logistics of completing CR while attending school. Interviews were audiorecorded, transcribed verbatim, with a thematic analysis used to determine common themes across responses [25].

**2.3. Participants.** Of the 30 RTE students with psychosis who registered for the summer term, 17 enrolled in cognitive remediation. Of those 17, 16 participants completed the CR program. These 16 participants were comprised of 12 males and 4 females with a mean age of 30 years (range 18–54) of whom 11 were white, 2 East Asian, and 3 of African Caribbean descent. All participants had been identified as having psychosis as per their chart diagnosis documented in referral information (11 Schizophrenia, 5 other psychoses), and all were taking psychotropic medication for psychosis. The average amount of time since first diagnosis was 9.1 years (range 1–28 years). Eleven participants lived with family with a range of living circumstances across the other participants. They had an average of 12.3 years of education (range 8–16 years) and reported that alcohol and substance use was

minimal. Mean alcoholic beverages consumed in a typical week was 1.0 (range 0–8) and mean marijuana use per week was 0.69 (range 0–7) with all other substance use denied. The pre-CR WRAT Reading Subtest mean standard score was 68 with a range of 49 to 86. While the WRAT scores of some participants were somewhat low, it is of note that none had a chart diagnosis of an intellectual disability. It is possible, however, that reading difficulties may have led to additional challenges in the completion of some CR tasks. On average, participants attended 16.4/20 computer training sessions and 7.7/10 group meetings.

### 3. Results

Table 1 summarizes pre-post evaluation findings. Mean and standard deviation statistics are provided along with significance test findings using the Wilcoxon Signed Rank test. Effect size calculations were made using Cohen's *d* for repeated measures. Significant improvement was noted on the Trail Making B test, verbal learning on the CVLT, the time component of the Digit Vigilance Task, and on the general psychosis symptomatology measure, the PANSS. Moderate effect sizes, but not statistical significance (likely due to the low sample size), were also seen on the Digit Span backwards subtest, and in decreases in the number of errors on the WCST and Digit Vigilance tasks.

With respect to qualitative commentary about CR, the themes that emerged through the content analysis revealed extremely positive feedback. Of the 16 participants, 12 said that they found both computer and group sessions very enjoyable and 13 described experiencing an improvement in cognitive functioning, particularly memory and concentration. Most described these improvements as having generalized to other areas of functioning, particularly in the school setting.

*"I enjoyed the computer games. I liked the challenge. It showed if I have a test that I have the techniques to retain it all and keep it in there. Especially the scenes tasks, it helped my thinking process and showed me how take in a lot of information . . . I used to have a hard time trying to concentrate and focus on one person and the training showed me how to do that. For example in class, it helped me to learn how to keep my mind clear and be able to focus and listen to the teacher."*

*"I remember you telling me to make a mental picture of things I needed to remember. When I did that, my memory improved by like 15–25% which was a really big deal for me because normally I was just writing stuff down and that was it."*

They stated that they found it rewarding and confidence-building to see the progress they made on tasks. Five participants described specific benefits from the group meetings, including being able to share struggles with others in a similar position, and improvements in mood and anxiety.

*"I also like the discussion group where people share different ideas, different experiences on how to do*

TABLE 1: Pre-post evaluation of cognitive remediation.

Instrument	Pre mean (SD)	Post mean (SD)	Z	P	Effect size <i>d</i>
Digit span (WAIS-III)					
Forward	9.25 (2.27)	9.68 (2.52)	-0.84	.403	0.32
Backward	5.81 (1.76)	6.44 (1.86)	-1.68	.093	0.63
Trail making					
Part A	36.25 (14.41)	38.00 (19.22)	-0.70	.485	-0.19
Part B	109.00 (43.48)	87.25 (42.21)	-2.05	.041*	0.96
California verbal learning test					
Trial 1	5.06 (.93)	6.06 (1.44)	-2.32	.021*	1.04
Trial 1-4	28.00 (2.45)	29.93 (3.77)	-2.34	.019*	1.16
Long delay free recall	6.81 (1.56)	7.13 (1.75)	-0.93	.353	0.37
Wisconsin card sorting test					
% Perseverative errors	20.31 (14.52)	15.31 (8.59)	-1.34	.181	0.52
% Conceptual level responses	45.88 (24.75)	48.50 (25.16)	-0.37	.711	0.22
Total categories	2.13 (1.59)	2.38 (1.59)	-1.10	.271	0.38
Digit vigilance test					
Total time	478.75 (131.31)	434.00 (96.95)	-2.07	.023*	0.64
Total errors	7.67 (7.60)	5.33 (5.23)	-1.37	.172	0.65
Rosenberg self-esteem scale	17.50 (6.47)	17.75 (5.70)	-0.21	.838	0.13
PANSS (total score)	56.19 (6.76)	49.50 (8.73)	-2.28	.023*	0.91

\*  $P < .05$ ;  $N = 16$ ; (effect size strength: 0.20: small; 0.50: moderate;  $\geq 0.80$ : large; Cohen 1977 [29]).

*well with the computer activities... what really grabbed me is when your colleague said the brain is like a muscle and the more you exercise it the more efficient it is. That really grabbed me and that sort of influenced me to really take the enhancement study seriously."*

Only 3 participants stated that they were unsure of whether or not CR had been beneficial for them. None of the participants described having a negative impression, and none expressed serious reservations about having participated.

#### 4. Discussion

This study has demonstrated that Cognitive Remediation (CR) can be readily integrated within a supported education setting. The students enjoyed CR, and most found it very helpful in improving their concentration and memory and, generally, learn and practice strategies that can ameliorate the cognitive impacts of their psychosis. Outcome findings were promising, with improvements noted over the course of the academic term in learning, concentration, and some aspects of executive functioning. Improvements in psychosis symptomatology were also seen. While the degree to which these changes might be attributed to CR cannot be determined in this study due to a lack of a control group, the general pattern of improvement is consistent with the impact of CR as observed in controlled trials [6]. One exception was the lack of change observed in self-esteem which has been found in other CR trials [6, 9]. Generalizability to other settings is difficult to determine

due at least in part to supported education models being much less standardized than interventions such as supported employment [15]. The RTE program does, however, have many of the components common to supported education settings in other jurisdictions [26]. Finally, these findings must be considered in light of possible practice effects with respect to use of the testing instruments and the potential influence of demand characteristics.

#### 5. Conclusions

There is a compelling need for the ongoing development and enhancement of strategies to improve the quality of life of individuals with schizophrenia. While, for many, psychotropic medications assist in the reduction of the positive symptoms of the illness such as delusions and hallucinations, the negative symptoms and cognitive impacts pose a tremendous challenge in the recovery process. These factors can impede progress in most areas of functioning and impact the effectiveness of psychiatric rehabilitation interventions including supported employment [27] and supported education. In RTE, for example, teaching staff routinely see less success in course and program completion among students with psychosis, particularly for individuals with schizophrenia. It is in this context that restorative strategies such as CR and compensatory strategies such as Cognitive Adaptation Training [28] have the potential, as an adjunct to other interventions, to improve the likelihood of attaining better outcomes.

The present study would seem to complement the inroads that other investigators have made in examining the manner in which CR can enhance the impact of supported

employment [6, 8, 12, 13]. We have demonstrated that CR is readily embedded in a supported education program and would seem to look promising in regard to effectiveness—certainly to an extent that further investigation using randomized trial designs is warranted. Those trials will be crucial in determining if the impact of CR warrants an investment in its implementation in supported education settings. Engaging in an economic analysis will be critical to gaining the support of administrators in funding relatively resource-intensive CR interventions in increasingly resource-scarce contexts.

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