

**STRATEGIES AND TECHNIQUES FOR
EXECUTIVE FUNCTION DEFICITS:
A FOLLOW-UP TO THE MARCH 1996 SCR
WORKSHOP PRESENTED IN PHILADELPHIA**

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Introduction

This article provides specific information about the contents and objectives of a workshop titled "Strategies and Techniques for Executive Function Deficits" which was presented at SCR's

annual conference, held March 8-10, 1996, in Philadelphia.

The purpose of presenting a more thorough treatment of the workshop in article form is to assist in clarifying any points of questioning for workshop participants and to share ideas about cognitive intervention, in the areas of executive functions and metacognition, which may be useful to those who were not present at the workshop.

The following abstract summarizes the content of the SCR workshop, including the three intended objectives. The abstract is followed by a more extensive description of the workshop, including a discussion of the role of executive and metacognitive functions in brain injury rehabilitation.

Abstract for the workshop

The prevalence of executive function disorder following traumatic brain injury has been well-documented in the rehabilitation literature. Executive function deficits may be apparent at all levels of injury severity and in all spheres of daily living, including interpersonal, social, recreational, emotional, educational and vocational areas. The fullest extent of these deficits may become most evident during tasks and situations which require higher level reasoning and creative decision-making.

Executive skills have been identified as critical components in the learning/rehabilitative process, and because of their complex nature, are commonly viewed as being difficult to remediate. However, it appears that many individuals may indeed benefit from approaches which provide a structured therapeutic regimen serving as a 'prosthetic' executive system. These approaches emphasize the establishment of routines, the development of well-practiced strategies, and the acquisition of compensatory techniques.

The purpose of this presentation is to provide participants with specific ideas for facilitating executive functions in brain injured patients.

Objectives:

1. To present a circular paradigm of executive functions which encompasses self-awareness, goal-setting, planning, initiation, self-monitoring and metacognition.
2. To introduce tasks and techniques which may be utilized to treat executive function deficits.
3. To allow participants an opportunity to practice selected tasks and techniques with a partner.

What are executive and metacognitive functions?

Executive functions are commonly defined as interrelated abilities in self-monitoring, initiation, planning, goal-setting and self-awareness (Adamovich, Henderson & Auerbach, 1985;

Van Reusen, 1987; Ylvisaker & Szekeres, 1989; Ben Yishay & Diller, 1993). Similarly, metacognitive skills are denoted to include the process of awareness, evaluation, prediction, anticipation and self-control (Brown, Bransford, Ferrara & Campione 1983; Flavell, 1985).

Metacognitive processes, which foster knowledge about one's own performance, are representative of the core of executive functioning. Thus a paradigm was presented at the workshop (see fig. 1), which incorporates metacognition with executive functions. We advocated the importance of these skills as reciprocal interchangeable processes, which are integral to achieving a comprehensive therapy program.

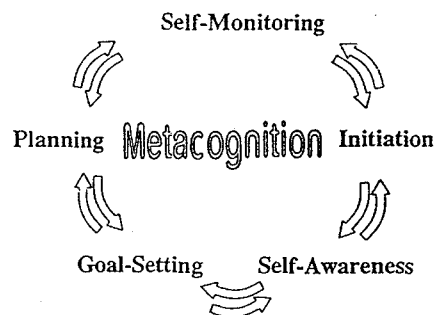


Figure 1. A circular paradigm containing executive and metacognitive components.

Assessment of executive/metacognitive functions

Specific formal neuropsychological measures of executive/metacognitive functioning includes the following: the Trail Making Test, the Category Test, the Wisconsin Card Sorting Test, Tower of London Task, Porteus Maze Test and the Tinkertoy Test. Although these measures can provide useful information regarding some of the constituents of executive and metacognitive functioning, their contrived, highly instructive and well-controlled parameters may actually detract from a thorough investigation. The use of such highly structured tasks may make it difficult to adequately determine the integrity of the executive control system because the very process of formal testing may mask existing impairments (Ylvisaker & Szekeres, 1989). Some researches have proposed that executive functions should be evaluated through naturalistic observation (Kay & Silver, 1989) and/or by less restrictive assessment protocols (Ben-Yishay & Diller, 1993; Lezak, 1995). One model, implemented at RAF Headley Court, combines data from neuropsychological measures with a purpose designed assessment. The assessment involves patient choice of 1 of 6 specific tasks intended to target executive/metacognitive functions. The 6 tasks include planning and organizing a trip for fellow patients; producing a guide brochure to the local town; constructing a toy with a moving part; planning and leading a quiz program for staff and patients; and producing a floor plan of the rehabilitation center. The patient is asked to rate how well he/she will likely complete the chosen task along the dimensions of required time and level of performance.

Performance after the task is also self-rated and compared with staff ratings. A similar model proposed by Ben-Yishay and Diller (1993) suggests observation of the patient's degree of preparation, methodicalness, and flexibility during task completion.

Treatment of executive functions

Therapeutic approaches for executive and metacognitive deficits can be classified as externally mediated, internally mediated, or as a combination of external and internal mediation utilizing compensatory and strategic training. Birnboim (1995), identifies a three-pronged metacognitive format which may be implemented to achieve autonomy with brain-injured patients: (1) learning knowledge; (2) learning skills and/or strategies; and (3) learning transfer abilities. The SCR workshop introduced components of the Executive Functions Module from the BRAINWAVE-R Rehabilitation Program [BRAINWAVE-R] (Malia, Bewick, Raymond, & Bennett, 1996) which merges this three-pronged learning model with metacognitive principles and internal and external mediation devices.

The executive Functions Module contains a triad of booklets (Introduction to Executive Functions, Clinician Manual, and Patient Workbook) which provides a ready-made package of information, instructions and tasks. The Introduction to Executive Functions can serve as a valuable tool for clinicians in helping patients, family members and other concerned individuals realize the importance of improving executive functions as a therapeutic goal. This educational emphasis is continued in the program's therapy tasks in an effort to guide patients through the three-pronged metacognitive process: (1) learning about executive functions; (2) learning about strategies to be implemented in executive functions; and (3) learning about (and practicing) methods for promoting transfer into various contexts.

The Clinicians Manual, in addition to offering sequential task instructions and explanations, provides clinical guidelines, suggestions for family involvement, score rating scales, an exercise performance summary chart and a task-question list.

The Patient Workbook provides therapeutic exercises in the following areas:

- Self-organizing
- Planning
- Strategy development (i.e., self-talk, writing lists, self-questioning, report writing)
- Problem analysis
- Cognitive flexibility

- Sequencing steps
- Time management
- Time estimation
- Selecting relevant information
- Prioritizing
- Self-awareness
- Goal-setting
- Self-regulation
- Initiation
- Developing a personal profile

Each task incorporates aspects of metacognition, and gives the patient responsibility for anticipating and assessing his/her own performance characteristics. Earlier tasks form building blocks for subsequent activities to facilitate understanding, memory and familiarity with the ideas and suggestions. The tasks also promote therapist - patient discussion about cognitive strategies. At the workshop, we provide sample sheets from the Clinicians Manual and the Patient Workbook for Self-Organizing, Planning and Strategy Development. Conference participants had the opportunity to try out the exercises with a partner. It is not possible to print these multi-worksheets in this article, but a description of each, and a manner of presentation is included here, since it may prove beneficial to any treatment plan which attempts to combine cognitive, metacognitive and executive training goals:

Exercise 1 asked the patient to read text information which described four organizational methods (writing lists, self-questioning, speaking aloud, and generating reports).

Exercise 2 asked the patient to design a visual representation (a poster) of each of the four organizational methods from Exercise 1. The posters would be used as references for problem-solving methods.

Exercise 3 asked the patient to utilize 2 of the previously described organizational methods for planning a solution to a simulated predicament.

The following sequence is suggested for completion of the three exercises:

1. Instructions are read to the patient.
2. The patient predicts his/her performance on the rating chart.
3. The patient completes the exercise.
4. The patient rates actual performance on a rating chart.

5. The therapist rates the patient's actual performance on chart.
6. The therapist transfers all ratings to the Exercise Performance Summary Sheet.
7. The therapist gives the patient feedback, and the following issues are discussed with the patient.
 - What skill was the exercise addressing?
 - What was the goal of this exercise?
 - How did you do on this exercise?
 - Were your ratings accurate?
 - If not, why do you think they were inaccurate?
 - How might this exercise help you in everyday activities?

Conclusion

There is a preponderance of literature emphasizing executive function training for brain injured patients. It is our belief that promoting metacognitive skills goes hand in hand with executive function treatment. Whether activities are commercially produced or naturalistic in style, the metacognitive/executive thread can be incorporated by expecting our patients to participate more actively in the rehabilitation process. Depending on the level of the patient, this more active role may take the form of discussions, directed questions, examination of strategies and/or self-assessment. Allowing naturalistic assessment protocols, in conjunction with establishing a routine of self-ratings and patient involvement, is one way to accomplish this important rehabilitation goal.

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