

Cognitive Remediation and Spotlight on the Thinking Skills for Work Program

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Cognitive functioning (or *thinking skills*) refers to mental abilities, such as paying attention, learning and remembering information, planning ahead, solving problems, and thinking speed. All of these skills are important for learning, working, having good relationships, and living independently in the community. Mental illnesses can have a negative effect on cognitive functioning, and can interfere with the ability of people to achieve their personal goals. People often are aware of their cognitive difficulties and the problems they cause. *For example, “I don’t really plan ahead—I need to do that. I miss appointments with friends, my employment specialist, and my doctor. Making decisions for myself is difficult. I need lots of help.”* (This person is describing difficulties with planning and problem solving). Cognitive remediation programs are aimed at helping people improve their thinking skills, overcome their cognitive challenges, and achieve their work, school, social, and independent living goals.

What is Cognitive Remediation?

Cognitive remediation (also known as *cognitive enhancement*, *cognitive training*, or *cognitive rehabilitation*) is a set of treatment approaches designed to improve cognitive skills that are important for leading a rewarding and productive life. The core component of most cognitive remediation programs is practicing cognitive exercises in order to improve cognitive skills that are important for achieving community goals. Most cognitive programs provide the cognitive exercises via a computer using cognitive practice software programs. Although many software programs have been developed to help people improve their thinking skills, just a few have sufficient research evidence to support their use in improving cognition in people with mental illness, such as PositScience and Cogpack.

The practice of cognitive exercises often is guided by a trained expert, called a *cognitive specialist*, *facilitator*, or *therapist*. This specialist uses several approaches to help the person get the most out of his or her cognitive practice sessions. First, the cognitive specialist can provide coaching on strategies for improving the person’s performance on a cognitive exercise. *For example, saying the items on a shopping list out loud can help you focus your attention on each item, which can improve your ability to remember those items later, when you do not have the list.* Second, the cognitive specialist can explain how specific cognitive exercises are related to

the person's recovery goals. *For example, solving a maze requires planning (or "looking ahead"), which is an important skill for organizing one's day or prioritizing job tasks, and achieving work or school goals.* Third, the cognitive specialist encourages the person's effort and points out gains in performance on the exercises so the person is fully aware their improvement in their cognitive abilities. Fourth, in some specialized cognitive programs, such as the Thinking Skills for Work program, the cognitive specialist makes linkages between the nature of the cognitive exercise and the person's community goal. *For example, a task requiring planning an efficient route to different destinations on a street map is similar to a job as a courier delivering packages in the shortest amount of time.*

In addition, in some cognitive remediation programs, such as the Thinking Skills for Work program, the specialist also teaches self-management skills for helping people to improve their organization and thinking skills in everyday life. *For example, people often have difficulty keeping track of important belongings, such as keys or ID. Teaching the person how to select and use a "memory spot" for such items, such as a small bowl for keys by the entranceway of one's apartment, can enable the person to quickly locate their keys when leaving the house.*

Research on Cognitive Remediation

Extensive research has evaluated the benefits of cognitive remediation for people with serious mental illness. The results of this research are very encouraging. The research shows that cognitive remediation is effective at improving cognitive functioning, psychosocial functioning in areas such as work, school, and social relationships. Cognitive remediation also has a modest effect on reducing symptoms.

What Does Controlled Research on Cognitive Remediation Tell Us?

Over 50 randomized controlled trials have been conducted over the past 30 years evaluating the effects of cognitive remediation programs on people with serious mental illness. The results of this research provide solid evidence for the effectiveness of cognitive remediation, and have produced these conclusions:

- Cognitive remediation improves cognitive performance on standardized neuropsychological tests, with gains in cognitive functioning maintained over one to two years.
- Cognitive remediation improves functioning in areas such as work and school, social relationships, and community living.
- Programs which integrate cognitive remediation with psychiatric rehabilitation programs that are focused on a single goal (such as getting a job, returning to school, or having closer relationships) have stronger effects on community functioning than

programs that provide cognitive remediation as a “stand-alone” intervention, without another rehabilitation or psychosocial treatment program.

- Cognitive remediation has been shown in some studies to have small effects on reducing the severity of psychiatric symptoms.

A broad range of people with a serious mental illness can benefit from cognitive remediation, including men and women, and younger and older individuals, and people with different psychiatric diagnoses, regardless of level of education.

How Does Cognitive Remediation Work?

Nobody fully understands how cognitive remediation works, but much research is underway. Engaging people in intensive cognitive exercises and practicing more effective cognitive strategies may lead to actual changes in brain structures and efficiency—a process called *neuroplasticity*—that results in enhanced cognitive performance. Enhancing cognitive abilities in areas, such as attention, concentration, memory, and planning also may increase the ability of people to learn new information and skills, which can help them get the fullest benefit possible from psychiatric rehabilitation programs, such as vocational rehabilitation and skills training.

Thinking Skills for Work (TSW) Program, developed by researchers at the Center for Psychiatric Rehabilitation at Boston University

TSW is a cognitive enhancement program designed for consumers who want to obtain competitive employment or who want to advance within their chosen area of work. The goals of TSW are to help consumers improve their cognitive functioning (or “thinking skills”) and to optimize cognitive strengths to help them achieve their employment goals.

How does the TSW Program work?

TSW is provided to consumers who are enrolled in a vocational rehabilitation program, such as supported employment. The TSW program is provided by a cognitive specialist, who is a member of the vocational rehabilitation team and works closely with other team members to integrate cognitive and vocational services. The TSW program includes the following activities:

- Assessment of cognitive strengths and challenges
- 24 sessions of computer cognitive practice exercises with personal coaching to improve cognitive performance

- Learning individualized cognitive self-management strategies for improving cognitive functioning in day-to-day situations, including work
- Job search consultation with the cognitive specialist and employment specialist aimed at helping the consumer get a job
- Job maintenance consultation with the cognitive specialist and employment specialist aimed at helping the consumer keep a job

What does research on the TSW Program tell us?

- Six randomized controlled studies have been conducted of the effects of adding the TSW program to vocational rehabilitation vs. vocational rehabilitation alone.
- Participants in studies of TSW have high rates of program completion and indicate high levels of satisfaction with the TSW program.
- Consumers who received the TSW program show significantly greater improvements in their cognitive functioning than consumers who receive vocational rehabilitation alone, and these gains hold up over time.
- In research studies, consumers who have received TSW have better competitive work outcomes than those who received vocational rehabilitation alone, including getting more jobs, working more hours, and earning more money.

A Consumer's Experience in the Thinking Skills for Work (TSW) Program

Reggie had lost several jobs as a messenger because he had difficulty working the pager he carried for the job: the pager would beep, Reggie would press the buttons to display the number, but by the time he was ready to write it down, the number was no longer displayed and he couldn't remember the whole number. Despite repeated practice with the employment specialist in working the pager, Reggie had not improved enough to operate it in a timely fashion and he was fired. Cognitive assessment results, based on the consumer's report and observations by the Cognitive Specialist, indicated difficulties in holding information "in mind", as well as slowed response time, consistent with Reggie's problems remembering the phone number from the pager long enough to write it down. Reggie was making gains in the cognitive sessions in both of these areas, and about halfway through the training, he felt confident that he had improved sufficiently to begin another job as a messenger. The job search planning meeting was held, and Reggie declined the option to finish the cognitive training during the job search. In anticipation of the possibility that Reggie may have similar problems operating the pager in his next job, the Cognitive Specialist, Employment Specialist, and Reggie devised a plan in which the Employment Specialist would help Reggie practice using the pager while they looked for a job, using a coping strategy that Reggie had practiced with the Cognitive Specialist for holding information "in mind" for short periods of time. The coping strategy involved Reggie attempting to remember only 3-4 "bits" of information over the short term, which was an

amount of information that Reggie and his Cognitive Specialist determined he was successful in remembering, and was also a small enough amount that it did not cause Reggie stress or result in frustration. The Cognitive Specialist taught the Employment Specialist and Reggie how to apply this coping strategy to writing down information from a pager. The practice involved using the coping strategy as follows: The pager typically displayed a 10-digit phone number. The Employment Specialist prompted Reggie to have a small note book and pencil ready, display the number on the pager, attend to only the first 3 digits of the phone number displayed, and write those down. These steps were repeated until all digits of the phone number were jotted down in Reggie's notebook. The Employment Specialist and Reggie proceeded to have Reggie gradually attempt to remember up to 5 digits at a time, therefore requiring only two displays of the phone number in order for Reggie to transfer it to paper, which reduced the amount of time involved in recording the phone number. It is of note that Reggie reported that the practice he and his Employment Specialist increased the amount of information he was able to "hold in mind" in other situations. For example, he was pleased that he was able to remember a 10 digit phone number very briefly displayed on a television program advertising the sale of a music video he wanted to buy long enough to find a pencil and write it down.

Summary

Cognitive remediation programs are an exciting new development in the psychiatric rehabilitation field. These programs help people make progress towards their personal recovery goals by improving their thinking skills in areas such as attention and concentration, memory, planning, and solving problems. Access to cognitive remediation programs is growing as more research is demonstrating their effectiveness. Cognitive remediation programs can be found in a range of community agencies (such as community mental health centers, recovery or rehabilitation centers, or psychosocial clubhouses), as well as inpatient settings. Cognitive remediation also can be found in some university affiliated clinics.

The Psychiatric Rehabilitation Journal Special Issue on Cognitive Remediation is available at:

<http://psycnet.apa.org/index.cfm?fa=browsePA.volumes&icode=pri>

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