

COGNITIVE TRAINING IN SERIOUS MENTAL ILLNESS



Cognitive Deficits in Serious Mental Illness (SMI)

Many people with serious mental illnesses (SMI) such as schizophrenia, schizoaffective disorder, and bipolar disorder have trouble with cognition. Cognition refers to mental processes that allow us to perform day-to-day functions, including:

- processing auditory and visual information
- paying attention
- learning or remembering important information
- making decisions
- solving problems
- staying organized
- planning for the future.

Have you ever had the experience of forgetting or misplacing items, having difficulty completing tasks, or not knowing how to start a task? These are examples of cognitive problems. These experiences happen to everyone, but for people living with SMI, problems with thinking, learning, and memory can be worse. They can make it difficult to

manage daily routines, do well in school, learn new skills, and apply for or keep a job. These problems can also interfere with having satisfying relationships with others.

Cognitive Training Programs for SMI

The terms “cognitive training,” “cognitive remediation,” and “cognitive rehabilitation” are often used to describe programs that aim to reduce problems with cognition. These programs are not a replacement for prescribed medications or treatments. They may, however, be a very effective addition to care.

Cognitive training can occur in many different ways. It can be in-person with the help of a mental health professional, in one-on-one sessions, in small groups, or in a combination of one-on-one and group sessions. There are also a variety of cognitive interventions that are available to do at home without the help of a mental health professional. These programs can be completed on computers, tablets, and other devices. Most cognitive training sessions are between 20 and 60 minutes, up to 5 times a week.



Mental Illness Research, Education and Clinical Center
VA Desert Pacific Healthcare Network
Long Beach VA Healthcare System
Education and Dissemination Unit 06/116A
5901 E. 7th Street | Long Beach, CA 90822



Types of Cognitive Training

Just as there are many different types of physical exercise, there are many different cognitive training approaches. The two main types are called restorative and compensatory.

COMPARING THE RESTORATIVE AND COMPENSATORY APPROACHES TO COGNITIVE TRAINING

RESTORATIVE APPROACH	COMPENSATORY APPROACH
Also referred to as targeted cognitive training or neuroplasticity-based training.	Also referred to as cognitive rehabilitation.
Focuses on the ability of neural networks in the brain to grow and reorganize (known as neuroplasticity). Primarily viewed as a treatment that promotes changes in the brain, which then leads to improvements in daily functioning.	Focuses on overcoming a wide range of cognitive deficits. Primarily viewed as a treatment that improves daily functioning that can also lead to changes in the brain.
Exercises focus intensively on basic sensory processes (i.e., processing either auditory or visual information) and progressively place demands on more complex cognitive domains, such as verbal learning and memory, reasoning, and problem-solving.	Teaches general strategies and skills to make up for a wide range of cognitive weaknesses. Usually uses multiple approaches at the same time with the goal of improving aspects of cognitive performance and behavior.
Uses computerized exercises that adapt to user performance, getting harder as performance improves. For example, programs targeting word recall and memory may include exercises in recognizing subtle changes in pitches and tones of sounds. These exercises increase in difficulty as individuals get better at correctly identifying this auditory information and using this information to remember words better.	May or may not include computerized exercises. Delivered in a classroom or via a computer or mobile application. Programs teach compensatory skills and may include teaching communication skills, social skills, and problem-solving skills and providing explicit instruction on how to transfer skills to real-world situations. For example, participants may learn effective ways to keep a calendar and to-do list.
Training occurs for 3-5 sessions per week for a total of 20-40 hours in a given cognitive domain.	Training occurs for 1-3 sessions per week for a total of 10-30 hours.

Effectiveness of Cognitive Training in SMI

A growing body of research is showing that cognitive training can be effective for improving concentration, memory, and problem-solving. Cognitive training may also reduce psychiatric symptoms (e.g., hallucinations) and improve social, work, and school functioning. These interventions can be effective for people in the early stage of illness as well as those who have been living with these conditions for a long time.

Although more research needs to be done, cognitive training shows promise as an important part of the comprehensive treatment of SMI. It is not yet known how long the benefits of cognitive training last. The data suggest that for those who experience improvement in cognition, those improvements last for at least six months after completion of training



Necessary Conditions for Individuals to Benefit from Cognitive Training

Not all forms of cognitive training work for everyone. Finding the approach that works best and matches your needs is essential. However, there are some conditions that should be met to increase the chances of benefiting from cognitive training.

It is recommended that people:

- Take medications as directed and stay engaged with their mental health and medical treatment providers. As with any exercise or physical rehabilitation program, cognitive training works best when it is part of a comprehensive recovery program.
- Have the time and support to commit to a full program, which requires several hours a week for up to three months depending on the program. Cognitive training is most effective when delivered in a large enough quantity and with significant intensity. For example, one hour per month is unlikely to be helpful. Similarly, passively going through the motions of hitting keys on a keyboard or sitting in class is unlikely to be helpful. Changes happen slowly and gradually so it is important to stick with the program even though it may not seem like anything is changing.
- Be alert and physically able to spend 45-60 minutes completing the exercises or attending the class.
- Do not have symptoms that require acute inpatient treatment while going through training. Cognitive training may not be successful if the person is experiencing a mental health emergency or is in the hospital.

Other things that people can do to increase the chances that cognitive training would be helpful:

- Get enough sleep and stick to a regular sleep schedule
- Eat healthy
- Engage in some amount of exercise
- Avoid alcohol or substance use.

Individuals that have an environment that supports their rehabilitation are also more likely to improve. It is recommended that people:

- Have reliable transportation to the clinic if attending in-person session
- Have reliable internet access if using a computer at home
- Do the training in a quiet place with minimal interruptions

- Have support and encouragement from family, friends, and treatment providers. The exercises can be difficult sometimes and getting external motivation can be useful. Others might notice small, gradual improvements before patients do and can help motivate the person to continue the program.
- Be in situations and environments where they can practice and apply their new skills. For example, receiving a lecture on using lists to overcome memory difficulties may translate into actual improvements only if the skill can be used in real-world settings (e.g., making a grocery list).

How to Access Cognitive Training

Cognitive training is currently difficult to find in clinical settings. If you are interested in trying it with the help of a professional, you might be able to find a research study to participate in. These studies typically happen at VA facilities or research universities.

Many commercial cognitive training programs are also available for those who want to do it on their own. It is often difficult to tell if a program is actually made to treat cognition instead of simply being a computer game. Many programs have misleading advertisements or exaggerate their results. When looking for a commercial program to purchase, look for programs that are being studied at VA facilities and research universities and have research results published in peer-reviewed, scientific journals. Search for programs that have been specifically studied for individuals with SMI rather than for the general population or other conditions.



Other Ways to Improve Cognition

Not everyone will have access to cognitive training or will want to participate in it. Other, less studied, options are available. There are several things people can do to sharpen their learning, memory, and thinking.

First, people can try to be more engaged in activities that are challenging and stimulating. For example, they can read a book or a newspaper, play a thinking game, do a puzzle, play an instrument, do volunteer work, or do any other activity that requires thinking. Second, regular physical activity can also help with brain health. Individuals who engage in any form of physical activity, even walking around the block, may have fewer problems with learning and thinking. Lastly, maintaining connections with family, friends, and loved ones – through in-person conversations, telephone calls, or by social media, mail, or email exchanges – can help improve brain functioning.



MENTAL ILLNESS RESEARCH, EDUCATION AND CLINICAL CENTER

VA Desert Pacific Healthcare Network
Long Beach VA Healthcare System
Education and Dissemination Unit 06/116A
5901 E. 7th Street Long Beach, CA 90822

VISIT US ON THE INTERNET AT:

<http://www.mirecc.va.gov/visn22>

DOWNLOAD THIS HANDOUT AT:

<https://www.mirecc.va.gov/visn22/cognitivetraining.pdf>

Noosha Niv, PhD ^{1,2}
Yash Joshi, MD, PhD ^{3,4}
Gregory Light, PhD ^{1,3}

¹VA Desert Pacific Mental Illness Research, Education and Clinical Center (MIRECC)

²University of California at Los Angeles, Department of Psychiatry and Biobehavioral Sciences

³University of California at San Diego, Department of Psychiatry

⁴VA San Diego Healthcare System

