

Cognitive Remediation in the Supportive Housing Setting

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Introduction by the column editors: Homeless persons with mental illness lack not only shelter and reliable pharmacotherapy but also the skills to function adaptively in the community. Given that their deficits are often complicated by substance abuse and medical illness (1), support services must be provided together with housing so that these individuals can stabilize clinically and gain the skills to become functional and independent. Supportive housing programs follow this model and incorporate additional human and social services into residential settings.

Thus it is necessary to address these cognitive impairments so that support services can be utilized more effectively. However, cognitive impairments make it difficult for many persons with serious mental illness to take advantage of these services. In this month's column, Dr. Medalia and her colleagues describe a unique program in which cognitive remediation is offered with an array of on-site community services at a

supportive housing facility for the homeless mentally ill in New York City.

Cognitive remediation refers to educational and behavioral training techniques for improving cognitive functioning by targeting skills such as attention, memory, problem solving and reasoning, planning, processing speed, multitasking, organization, and time management. By aiding the recovery of cognitive skills, remediation aims to effect improvement in other areas of life, such as social, educational, and vocational activities. The intent is not only to bolster a cognitive skill, as measured by test performance, but also to facilitate real-world functioning.

A cognitive remediation program was instituted at the Prince George, a New York City-based supportive housing program, in direct response to staff observations that the consumers were not succeeding in education and vocational programs. Consumers were either not attending programs or, when they did attend, were unable to follow instructions. Residential supervisors reported that consumers repeatedly lost keys, could not remember how to operate household appliances, and generally struggled with the chores necessary to maintain their apartments.

Because Prince George tenants are encouraged to eventually start mainstream educational or vocational programs, a model of cognitive remediation termed the Neuropsychological Educational Approach to Remediation (NEAR) (2–5) was selected. This model efficiently employs individualized computer-based training, con-

ducted in group formats, that targets neuropsychological deficits as well as motivation and learning style. Considerable emphasis is placed on improving attention, concentration, memory, processing speed, reaction time, and problem-solving skills. Consumers attend a learning center where they are seen three at a time for twice-weekly 60-minute sessions. Clinicians facilitate task engagement by emphasizing the personal relevance of an activity, by providing choices and learner control, and by promoting a positive attitude about learning. A manual describing this approach is available (6).

Evaluation of NEAR

A total of 46 consumers were referred to the learning center in the first year of operation (2000–2001). Of these consumers, 40 (87 percent) were accepted into the program and six (13 percent) were not enrolled because of scheduling conflicts. The average rate of kept appointments for the first year was 82 percent, which is considerably higher than the national average for this population.

Twelve consumers agreed to complete cognitive measures to track their progress. All consumers who participated in the program were formerly homeless and had histories of chronic psychiatric illness or substance abuse, or both. The distribution of men and women in this group of consumers was even. One-third of the consumers were African American, one-third were Caucasian, and one-third were Hispanic or from other ethnic groups. The consumers' mean age was 48.3 years, and the mean number of years of education was 12.6.

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Cognition was measured with the Cognitive Stability Index, a computerized test with multiple versions that measures memory, reaction time, attention, and processing speed (7), before cognitive remediation as well as six months later. Results were analyzed with paired *t* tests. The group of consumers showed significant or nearly significant improvement in three of four outcome factors: processing speed, reaction time, and memory. Mean processing speed scores decreased from 6.096 seconds to 4.814 seconds ($t=2.82$, $df=11$, $p=.008$), mean reaction time scores decreased from 6.096 seconds to 4.814 seconds ($t=2.40$, $df=11$, $p=.019$), and mean memory slope scores increased from 7.139 to 7.194 ($t=1.74$, $df=11$, $p=.055$). Memory slope represents the change in number of correct responses over four trials of a memory recognition test and reflects an individual's ability to retain information over the short term. Improvements in attention were not significant.

After one year of the program's operation, 27 consumers had completed a six-month course of cognitive remediation at the rate of two sessions per week. Of those 27 consumers, 14 (52 percent) enrolled in educational programs such as writing and reading programs, computer classes, and General Educational Development (GED) equivalency programs. Another six consumers (22 percent) subsequently became involved in vocational training programs. Before cognitive remediation, none of these consumers had ever successfully engaged in educational or vocational programs. While engaged in the cognitive remediation program, the consumers continued to receive other, regular services offered at the Prince George, including medication and case management.

Case vignette

Mr. S, a 44-year-old single man, was periodically homeless before coming to the Prince George. Mr. S had diagnoses of schizoaffective disorder, dementia due to HIV, and polysubstance abuse. His medication regimen included methadone maintenance, clonazepam, fluphenazine, and azidothymidine (AZT). Although

he had graduated from high school, he acknowledged that he was pushed through despite his failing grades. He read at a seventh-grade level, and his work history included sporadic employment in construction.

Mr. S was referred for cognitive remediation because he was forgetful, highly disorganized, and inattentive; had poor frustration tolerance; and did not follow through on activities. Considerable staff time was being devoted to crisis management for Mr. S, because his disorganized, forgetful behavior repeatedly precipitated problems. For example, he would forget to take his medications for several days in a row, which would precipitate psychotic symptoms and associated disruptive behaviors, such as trashing his room.

Over the course of his treatment, Mr. S became increasingly able to complete tasks, focus, process, and remember information, as evidenced by the change in his ability to stay on task. At first he could tolerate only ten-minute sessions, but after several weeks this increased to one hour. His scores in various cognitive domains as measured by the Cognitive Stability Index improved significantly from baseline to six months: a Reliable Change Index (8) of 2.29 for reaction time, 2.42 for processing speed, 1.71 for memory, and 2.19 for attention. (The Reliable Change Index is a method for assessing change between test scores that adjusts for the reliability of the test and has the ability to take practice effects into account.) Staff also noted improvement in his organization, attention, and behavioral control. Mr. S was better able to keep his appointments, remember to take his medication, and maintain his grooming and hygiene. He took on new responsibilities in the learning center, including showing training tasks to other clients, writing for a newsletter, and giving tours to guests who visited the program. He also became an active member of various tenant groups and was able to successfully handle the maintenance of his room and other tenant responsibilities.

Afterword by the column editors:

Although a cause-and-effect relationship between NEAR and the cogni-

tive and social functioning improvements cannot be proven on the basis of this evaluation—because variables such as medications, case management, other therapies, housing, and illicit drug use were not controlled for—these initial data can serve as the foundation of hypotheses for generating more controlled clinical trials in the future. The encouraging preliminary results suggest that a cognitive remediation program can be used with a diagnostically mixed population of homeless persons with mental illness and effectively linked with vocational and educational programs. However, more systematic research will be needed to evaluate the efficacy of NEAR across the diagnostic spectrum and to examine its merits relative to those of other approaches to cognitive remediation. Additional research that formalizes linkages to longer-term, real-world functional outcomes—not just cognitive improvement—is also needed. ♦

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