

Cognitive remediation for severe mental illness: state of the field and future directions

After more than 20 years of studies examining the methods, efficacy and effectiveness of cognitive remediation for severe mental illness, this therapy is recognized as evidence-based for schizophrenia and is emerging in clinical practice.

As with all behavioral interventions, this period of development has not been without its criticisms, trial failures, and practical concerns about implementation. Recent innovations in cognitive remediation have focused on refining treatment techniques, broadening its application from schizophrenia to other severe mental illnesses, personalizing treatment, and increasing the likelihood of transfer to everyday functioning.

The Cognitive Remediation Expert Working Group defines cognitive remediation as a “behavioral training intervention targeting cognitive deficit (attention, memory, executive function, social cognition, or metacognition), using scientific principles of learning, with the ultimate goal of improving functional outcomes. Its effectiveness is enhanced when provided in a context (formal or informal) that provides support and opportunity for extending to everyday functioning”.

There are several different approaches to cognitive remediation. Core features include using cognitive training techniques, typically computerized to enhance neuroplasticity; therapist-guided development and refinement of problem-solving strategies that can be used during cognitive training and in daily life; and facilitating the transfer of cognitive gains and new strategies to daily life.

Effect sizes have been reliably demonstrated to be medium for cognitive improvements¹. When including therapists and a context for developing living skills (such as vocational rehabilitation or social skills training), effects on functioning are medium to large¹.

Allied approaches that are generally not considered cognitive remediation therapy are cognitive training (often using only independent computer-based training) and compensatory techniques that do not focus on enhancing cognition but instead modify the environment so that the persistent cognitive deficits produce less disability.

Although the evidence for cognitive remediation is clear, there are several factors within and across diagnoses that might help guide the continued development of this therapy. Transdiagnostic issues such as anhedonia, negative attributions about cognitive abilities, and reduced access to a cognitively enriching ecosystem, are likely to interfere with the efficacy and effectiveness of the therapy, yet are not often explicitly woven into treatment procedures.

These features also help us understand that cognitive remediation is not simply brain training delivered by a computer, but a therapy that will be most successful when therapists bring knowledge of neurocognitive dysfunction and skills from cognitive and behavioral treatment techniques.

Low motivation is a cardinal feature across severe mental illnesses and a robust predictor of engagement with psychotherapies². Examination of recruitment and retention statistics in cognitive remediation studies reveals a pattern of difficulty with engagement that is similar to issues faced in other psychotherapies, with attrition rates as high as 50% and low adherence to homework. Addressing the effects of anhedonia will be critical to the successful implementation of cognitive remediation. Recent work has found that patient-determined scheduling³ and motivational interviewing⁴ can improve outcomes and engagement.

In addition to motivational issues, core negative beliefs about cognitive ability are likely to manifest within the cognitive remediation environment and may serve to suppress treatment effects. Those with severe mental illness tend to underestimate their cognitive and functional abilities, leading them to avoid cognitively challenging activities during treatment and in daily life. In the cognitive remediation treatment environment, a therapist is thus needed to play a key role in refocusing the patient on the goal of approaching cognitive challenges. Ongoing work is examining, in both experimental and treatment trial studies, the ideal techniques for addressing negative beliefs about cognitive abilities, attributions of how these abilities can be useful in daily life, and motivating patients to approach cognitive challenges.

The ultimate goal of having cognitive improvements transfer to daily life skills and outcomes is challenging for many people with mental illness who have lived for long periods of time in a cognitively understimulating ecosystem. This represents a measurement and treatment issue, since behavior change often lags behind more proximal treatment effects, and the patient’s social, vocational and home environment might not present ideal opportunities for cognitive enrichment. It will thus be critical for cognitive remediation studies to measure change in functioning outcomes that is contextualized within the patient’s environment and to continue to examine behavior change in the long term.

From a treatment perspective, future enhancements to cognitive remediation might examine how to bridge cognitive changes to daily life functioning. For patients with difficulties with memory and abstraction, it might be insufficient to rely only on discussion of how to bridge what is learned during treatment and recall it in a novel future environment.

Taken together, these findings point toward the potential of incorporating principles from more traditional cognitive-behavioral therapies into cognitive remediation. One such program, Action-Based Cognitive Remediation, uses goal setting, behavioral activation (with a focus on approaching cognitive challenges that the patient typically avoids), and role-plays to show how new cognitive strategies are used with real life tasks. Incorporating these techniques led to better retention and functioning outcomes⁵.

In addition to adding to our treatment procedures, a critical area for more work in both research and clinical environments is to examine how supplemental, continued or intermittent treatment techniques affect the durability of effects. More than sustaining immediate effects, many recent cognitive remediation studies have reported a “sleeper effect”, with larger improvements in everyday functioning in the months following treatment endpoint^{5,6}. As is typical with clinical trials, however, these follow-up periods are relatively brief with respect to what we often view as lifelong issues with functioning in these disorders.

As the field continues to grow, with several treatment programs available, health care decision makers who wish to bring cognitive remediation to the clinic should be encouraged that, although this treatment requires training and staff time, the cost-benefit analysis is favorable. Studies of cognitive remediation have systematically reported on how this trade-off affects quality of life and financial burden associated with cognitive impairment, with evidence supporting higher rates of employment⁷, reduced job stress⁵, and lower institutional treatment demands^{8,9}.

The trade-off will be particularly important to examine as even brief, low-intensity cognitive remediation demonstrates positive effects on cognition and functioning⁶, but most trials showing larger effects on functioning that are durable include a substantial role for therapists in a more treatment intensive environment^{1,5}.

The state of cognitive remediation has moved from “does it work” to “what works best for whom” across severe mental illnesses. Personalizing the treatment in everyday clinical use will continue to benefit from more experimental studies to explore the role of mechanisms mentioned herein as well as the analysis of larger datasets, including repositories of existing data and prospective multi-site projects, to examine mediating and moderating effects.

Uptake in clinical settings should be encouraged by the cost-benefit analysis of cognitive remediation, the only treatment in our armamentarium that reliably enhances the strongest predictor of functional disability – cognitive impairment.

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