



[YOU HAVE ACCESS](#) | The ASHA Leader | Academic Edge | 1 Jun 2019

CSD Program Makes College Possible After Brain Injury

An intensive rehab program prepares 20-somethings with acquired brain injury for the demands of higher education.

Lindsey Foo, MA, CCC-SLP

<https://doi.org/10.1044/leader.AE.24062019.36>



During spring break of her junior year in college, Camila was thrown from the passenger seat in a multi-vehicle collision and sustained a traumatic brain injury. Doctors set her broken bones and repaired her damaged spleen and liver. Physically, she was ready to return to school in the fall, but the brain injury affected her attention, memory, processing and problem-solving in ways that made her incapable of handling her previous college courseload. But Camila desperately wanted to return to school.

Motor vehicle crashes are the leading cause of hospitalization for young adults who experience a traumatic brain injury, according to the Centers for Disease Control and Prevention, and this group

also has increased risk for stroke. Many will struggle to attend or return to college, find meaningful employment, and achieve financial stability because of their cognitive-communication deficits.

At Boston University (BU), **the Intensive Cognitive-Communication Rehabilitation (ICCR) program**, helps these 20-somethings—from the Boston area and beyond—enter or re-enter college. Three to six students are enrolled each semester.

Swathi Kiran, professor and associate dean for research in BU's Sargent College of Health and Rehabilitation Sciences, developed the program in 2016 in response to a lack of services for young adults seeking rehabilitative services geared for college success. What better way to prepare these young adults for college, Kiran reasoned, than to provide rehabilitative treatment in the context of a college class?

The program also serves as a training ground for BU graduate and undergraduate students in speech, language, and hearing sciences.

Intensity

ICCR rehabilitation simulates college for participants by embedding metacognitive training and individual and group cognitive-communication treatment into college-level academic classes. The participants attend class at BU—two core classes and two electives curated from free, online open sources—for eight hours a day. Participants are fully immersed in the university setting while they learn strategies that will help them succeed academically and without the pressure of maintaining grades.

The intensive dose of ICCR depends on four or five graduate-student clinicians and one or two undergraduate student volunteers each semester. The master's students lead group treatment based on the course content and plan individualized treatment. Undergraduate students volunteer as teacher assistants, entering data and making class notes. All of the student clinicians participate in a rigorous evidence-based orientation on implementing intensive cognitive rehabilitation in a classroom setting.

A clinical fellow leads weekly group treatment sessions and conducts individual treatment, and a speech-language pathologist and a certified graduate student in BU's doctoral program supervise students in training.

ICCR integrates several neuroplasticity principles into an approach—especially important when considering rehabilitation for young adults with acquired brain injury—that promotes skill use through repetition and intensive practice to produce changes in brain function (see sources). Our approach incorporates repetition, intensity and salience into one design to maximize outcomes for this population.

The program

On a typical Monday morning, participants start their day with a weekly quiz on the previous week's course content (political science, for example) to assess their knowledge retention and

application of metacognitive and test-taking strategies. They answer questions to assess their level of effort prior to and during the test, complete the quiz, and then generate options to improve as a form of insight training.

Participants watch a 45- to 60-minute subtitled recorded lecture with minimal clinician input, to encourage sustained attention. Student clinicians guide a review of the material, using the course content as treatment stimuli while targeting cognitive-linguistic domains.

The review functions as group treatment, as student clinicians retrain discrete cognitive skills: attention, memory, executive function, problem-solving, language, and pragmatics. Participants are prompted to retrieve information immediately after learning, and again after a delay. They are encouraged to read aloud, and write notes to improve recall.

The student clinicians know each participant's challenges, such as difficulty sustaining attention during the lecture, remembering information, and retrieving the right words to answer questions in class. They support participants by scaffolding their communication breakdowns and reminding them of modification strategies.

The student clinicians also demonstrate behaviors that are appropriate in the academic setting and help participants use metacognitive strategies to monitor their thought processes and actions.

For example, if a participant is distracted by noise in the hallway, the clinician can remind the participant to "LEAP" (listen actively, eliminate distractions, ask questions, and paraphrase—a metacognitive strategy), to prompt the participant to make changes immediately. With enough repetitions in the meaningful environment, participants begin to adopt these strategies designed to improve their academic success.

Participants then answer review questions that assess their immediate recall and processing of the material—another opportunity to apply test-taking strategies and analyze the source of their errors.

After a lunch break, participants resume the same morning structure in an elective course, such as English literature or public speaking. The instruction is discussion-based, allowing increased opportunities for verbal expression and collaborative learning. The day ends with a technology training session, using app-based treatments to target discrete skills or listening to an English literature book via text-to-speech.

We also incorporate common disability accommodations such as written notes and extra test-taking time, to provide participants with a realistic experience of how they can successfully complete coursework and tests as expected in post-secondary education.

Student clinicians pull participants from class throughout the day for one-on-one treatment sessions tailored for each participant's profile of impairments and functional goals. Impairment-based approaches focus on discrete cognitive-linguistic skills—for example, attention targeted through Attention Process Training (APT-3). Function-based approaches target everyday skills and compensatory approaches—for example, metacognitive strategy training (see sources). We use Goal Attainment Scaling, an evidence-based method of measuring progress toward independence (see sources).

Transition

Cognitive-communication function batteries are administered at the start and the end of the semester to assess each participant's progress. They demonstrate improvement in several domains, such as attention, memory and verbal expression after consecutive semester participation (see sources). We track progress in academic skills through weekly quizzes, and participants report improvement in life participation—they feel more independent and satisfied with their lives as they participate in the program and when they return to formal education.

Four participants from the program have returned to two- or four-year colleges, taking a reduced course load. Camila, who was in ICCR for three semesters, returned to the familiarity of her four-year college, living independently on campus. She takes three classes each semester, works closely with disability services to support her learning, and continues to receive speech-language treatment.

Our hope is to steadily grow each semester with new participants, and eventually bring this model of rehabilitation and academic support for students with cognitive-communication impairments to other universities.

Author Notes

Lindsey Foo, MA, CCC-SLP, is a research speech-language pathologist at Boston University's Aphasia Research Laboratory. lfoo@bu.edu

