



2020

Innovation Accelerator

Annual Report

In partnership with





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DIRECTOR'S CORNER INNOVATION ACCELERATOR

With the aim of speeding up development, testing, and dissemination of evidence-based interventions for Mild Cognitive Impairment (MCI), the Innovation Accelerator (IA) engages the Georgia Tech and Emory communities alongside members and care partners of the Cognitive Empowerment Program at Emory in exploring ways to improve life for people with MCI and their families. We do this through:

- Empowering members to share their experience, to participate in design and to collaborate on solutions
- Inspiring researchers to consider MCI based research and funding opportunities
- Expanding the impact and reach of the Cognitive Empowerment Program's research efforts
- Providing students with real world projects that cultivate empathy skills, ensure the understanding of MCI, and prepare for potential post-grad applications

We ask people to connect, collaborate, and contribute to the acceleration of this movement.

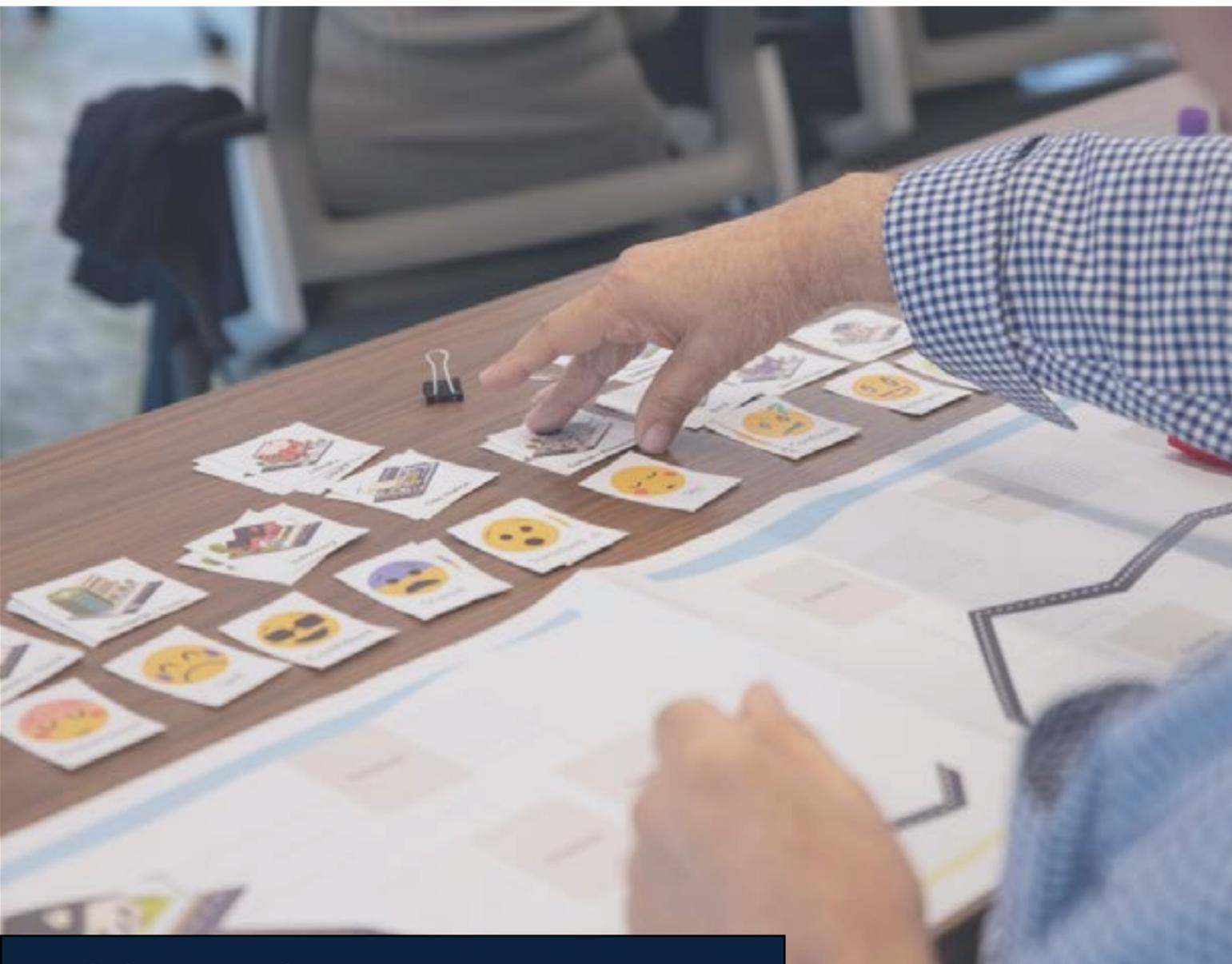
A MESSAGE FROM: JENNIFER DUBOSE

DIRECTOR OF THE COGNITIVE EMPOWERMENT PROGRAM'S INNOVATION ACCELERATOR

This was a very big year for us at the Cognitive Empowerment Program. After two years of planning, we opened the doors of our amazing space in Executive Park. The first cohort of members began programming at the end of January 2020. Together we developed a rhythm of weekly IA sessions to allow the research teams and members to collaborate on creative solutions. The flexibility and creativity of all was put to test with the need to shift to virtual programming in March just as we were hitting our stride.



While this transition slowed things down for a bit, we have made up most of the lost ground and accomplished a lot. The CEP community continues to grow. By December of 2020 we had 6 cohorts of members actively participating in research projects through weekly video conversations, newly dubbed Think Tank. The previously funded seed grant projects are wrapping up and will be sharing their results at our research symposium in January 2021.



CONNECT: NEW CONNECTIONS

The Innovation Accelerator (IA) administers an annual seed grant program to encourage new collaborations and make connections around research based on mild cognitive impairment subject areas: therapeutic programming, technology, and the built environment. The funded projects aim to result in innovative solutions, strategies, and methodologies developed through a culture of collaboration among students, researchers, clinicians, and those with MCI in less than 12 months' time.

2021 NEW CONNECTIONS

The year saw another strong set of creative proposals. The research teams were invited to meet with members and care partners through the Think Tank sessions to help ground their proposals in the needs of CEP community. Based on feedback from the members and a thorough vetting of the review committee from the leadership of the CEP, four projects were selected for funding in 2021.

The Right Steps II Project

PI(s): Anthony Y. Stringer, Ph.D, Rosa Arriaga, Ph.D

Collaborator(s): Margo Adams Larsen, Ph.D

The Right Steps II Project will develop a user-friendly, iPad application (app) for people with MCI to aid their memory for things they often forget such as numbers, appointments, the location of belongings, grocery lists, conversations, routes, and names and facts about new people. The app will aid users in organizing this information and will provide strategies and practice to help people learn the information if they wish. The app will put the user in control of what they learn vs. what they just store for later retrieval.

Impact of design on speech perception in Mild Cognitive Impairment (MCI): Learning from the sound environment in the Cognitive Empowerment Center

PI(s): Selen Okcu, Ph.D, Gabrielle Campiglia, Clayton Feustel, Amy Rodriguez, Ph.D

Collaborator(s): Craig Zimring, Ph.D

Speech is not only the interaction between the speaker and the listener. The physical environment plays a significant role in making it easier or harder to understand speech. This project aims understand how the sound environment impacts speech perception for people with mild cognitive impairment.

Music for Memory, Mood, Togetherness

PI(s): Grace Leslie, Ph.D, Maureen Burke, Carson Myers

This project seeks to empower participants with MCI and their caretakers to create their own therapeutic music listening sessions through an interactive iPad app that asks the music listener and their caretaker to identify positive moments from their past and music they may associate with these powerful memories. The app will capture musical memories when they are at their most vivid and play back the music when it can still provide solace and calm. This iPad application will be released in the Apple Store for use by the wider MCI community.

Daily Memory, Sleep, Stress and Individual Factors Among DYADS

PI(s): Emily Lustig, Christopher Hertzog, Ph.D, Ann Pearman, Ph.D

Collaborator(s): Amy Rodriguez, Ph.D

This study will investigate everyday memory, sleep, and stress by collecting daily reports from members and their care partners along with objective measures of heart rate, sleep, movement, and activity. The goal of this study is to be able to (1) better understand how dyads' lived experiences affect each other in terms of cognition, sleep, and affect; (2) to provide feedback on sleep quality to members and their partners; and (3) generate knowledge regarding everyday memory techniques, sleep adjustments, and/or technology that can lead to general recommendations on how to empower people diagnosed with MCI as well as their care partners.

COLLABORATE: CLASSROOM COLLABORATIONS

We worked with professors and students to provide real world problems, access to our prior research findings, and opportunities to connect with members and care partners to create educational opportunities with the potential to have real world impact in addition to positive experiences for members and care partners. In total there were 17 different projects across 4 classes.

2020 | CLASSES & PROJECTS

- Collaborative Capstone Studio for Industrial Design Minors - *Leila Aflatoony, Ph.D*
 - 6 Projects
- Healthcare Design of the Future - *Craig Zimring, Ph.D and Herminia Machry, Ph.D*
 - CEP members virtually participated in the Healthcare Design of the Future class on two occasions. Members joined the class to answer questions about their healthcare experiences and returned at the end of the semester to review students' final projects. Students found the experience extremely valuable and enjoyable, saying that meeting members not only provided meaningful feedback, but also helped them grasp the impact and significance of their work in a "very real way". CEP members, on the other hand, showed excitement during both meetings and said they appreciated the opportunity to work with the students.
 - The class resulted in these healthcare related projects:
 1. Positive distractions reducing stress in inpatient settings
 2. Built environment & technology improving communication and empowerment in ED or primary care settings
 3. Socially engaging physical environments at the Cognitive Empowerment Center
 4. Light, noise, and sleep in inpatient or home settings.
- Senior Innovation Studio - *Professor Herb Velazquez*
 - 2 Team Projects
- Evidence Based Design - *Craig Zimring, Ph.D and Herminia Machry, Ph.D*
 - 8 Project Concepts
- Completed Master's Projects
 - A Framework to Simulate the Non-Visual Effects of Daylight on the Cognitive Health of Elderly Individuals by Nourhan Elsayed, MS in Architecture under Tarek Rakha, Ph.D
 - Task Management & Adherence in Populations with MCI by Blake Gruber, MS in Human Computer Interaction under Carrie Bruce, Ph.D

2020 | Selected Class Project

CATWALK

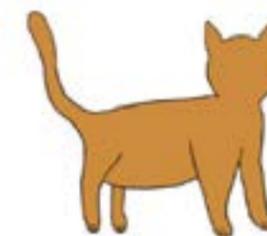
ID 4833

Raneem Rizvi, Nicole Woods, Aiza Shabbir, Ayesha Ahuja

Advisor: Leila Aflatoony, Ph.D

An interactive game for people living with Mild Cognitive Impairment.

CatWalk is an interactive game that allows for people with MCI to safely interact socially, enjoy time together, and exercise/improve cognitive skills while maintaining COVID safety guidelines. The game features four interactive and distinct colored buttons that each player receives. Each button allows for the cat on the screen to jump, hit, move right, and move left. With the interaction of these buttons and teamwork, the players will be able to guide the cat back home.



CATWALK

2020 | Selected Class Project

Facilitating Self-Expression and Social Engagement in Older Adults with MCI

ID 4071
Bonnie Sun, Mia Tomblin, Rebecca Sun
Advisor: Professor Herb Velazquez

The goal of this project is to create a digital tool to encourage and facilitate self-expression and socialization amongst older adults with MCI in the CEP. The students conducted generative research through interviews and group discussions with members and care-partners to identify needs and interests to inform the design of the tool.

The team worked on increasing social engagement on a virtual platform for people with Mild Cognitive Impairment. "It has been such a joy and insightful experience for our team to work with the members. Not only has our experience increased our awareness of MCI and socialization, but it has also helped us grow as designers. We hope that one day our work will impact the Cognitive Empowerment Program so that future and current members will be able to socialize with no boundaries."



2020 | Selected Research

Task Management & Adherence in Populations with MCI

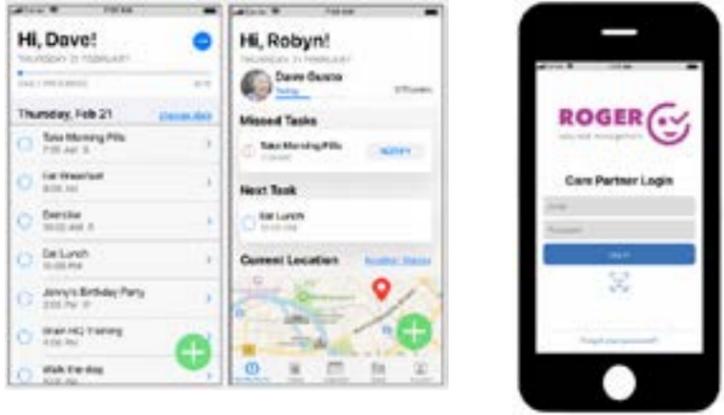
GaTech Master's in Human-Computer Interaction Project
PI(s): Blake J. Gruber
Advisor: Carrie Bruce, Ph.D

The purpose of this project was to apply the concept of a dual-sided task management platform (participants and auditors) to a new audience, MCI Populations, to see if it is a viable and beneficial tool for managing activities of a daily living.

While this project was unconventional for an MS-HCI Master's thesis, the outcome was successful. What was designed was not only applicable to the population, but it appeared to be something that was needed and could be used immediately. The process of conducting research like this is difficult, but it was an excellent experience for the student.

MEMBER TESTIMONIAL

"...Personally, it is my pleasure to work with him [Blake]. His prototype application seems farther advanced than an initial presentation. He is articulate, explains well, accepts constructive comments and seems very determined to succeed."



CONTRIBUTE: 2020 CONTRIBUTIONS

In 2020, researchers worked directly with individuals diagnosed with MCI and were able to make significant progress in their research. Please read below some of the researchers' exciting contributions.

Everyday Memory Intervention for Caring DYADS

PI(s): Ann Pearman, Ph.D, Chris Hertzog, Ph.D

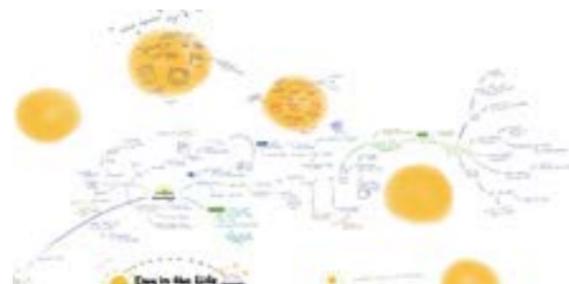
Collaborator(s): Ken Hepburn, Ph.D

Our Everyday Memory and Metacognitive Intervention for caring dyads (EMMI-D) is designed to help CEP members and their care partners learn a variety of new everyday memory skills that they can use individually and as a team. After moving our program online, we have been able to deliver our intervention to 4 CEP dyads (member & care partner) with a few more scheduled for early 2021. The program has shown a lot of promise for helping couples work together on their everyday functioning.

Identifying Barriers and Technological Interventions to Support Adherence Behaviors in Mild Cognitive Impairment

PI(s): Kayci L. Vickers, Ph. D, Felicia C. Goldstein, Ph.D, Maribeth Gandy Coleman, Ph.D, Laura Levy

This year, CEP members and care partners involved in the ADHERE study took part in virtual design sessions and focus groups to generate new solutions for engaging in brain healthy regimens. Together with our study team, CEP members and care partners defined critical barriers to adherence in MCI, shared their own strategies and ideas, and helped design two new technological supports for adherence.



Development and Testing of a Social Game with the Therapeutic Potential for Individuals with MCI and their Families

PI(s): Chantal Kerssens, Ph.D, Maribeth Gandy Coleman, Ph.D, Laura Levy

Collaborator(s): Cecile Janssens, Ph.D, Tracy Mitzner, Ph.D, Molly Pirkens, Ph.D, Suzette Binford

The Gaming project interviewed 7 dyads in-depth about their enjoyment of games and tested new game challenges with them to see what they liked and enjoyed best. They successfully created several prototype games that were well received by the members.

Feasibility of Using Tele-Technology for Mind-Body Interventions for People with Mild Cognitive Impairment

PI(s): Tracy L. Mitzner, Ph.D, Patricia C. Griffiths, Ph.D

Group mind-body classes, such as tai chi and mindfulness, have the potential to provide both physical and social health benefits. Unfortunately, there are substantial logistical, cultural, and structural barriers for adults aging with cognitive disabilities, such as Mild Cognitive Impairment (MCI), to engage in group exercise classes. Barriers include lack of transportation to classes, fear of negative stereotypes, and a dearth of instructors with appropriate training. Teletechnology, such as videoconferencing with audio and video exchange, provides the opportunity for people to deliver and attend group exercise classes remotely, with great potential to support people with MCI.

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