Work on the technology platform for The BrainHealth® Project is well underway. The Center for BrainHealth has hired award-winning technology design and development firm Dialexa to bring to life our vision for an online, personalized brain health experience. The wireframe designs were completed in early 2019, with extensive input from BrainHealth clinicians and other staff experts about the user experience. Phase One will be done by the end of the year. It includes technical infrastructure design, implementation of the secure online portal, online IRB consent forms and the Online BrainHealth Physical that will establish each participant’s baseline and measure cognitive changes each year thereafter.

Other elements include the interactive dashboard with personalized results, clinician recommendations as well as integration with our learning management system and participant journey administration tool. These critical elements will be pressure tested by the first participants. Dubbed the Pilot 200, these enrollees will register on the portal, take the Online BrainHealth Physical, and engage with features such as an online SMART training and the adoption of brain-healthy habits. Their feedback will enable us to optimize the design and interactive elements before we launch publicly in 2020 and start enrolling at least 10,000 participants each year for the next 10 years.

Phase Two will add data collection from other sources to create novel machine learning algorithms that leverage artificial intelligence. Phase Two dramatically expands the rich informative nature of the data collected by incorporating data from wearables already ubiquitous in modern-day life that allow individuals to track moment-by-moment movement, activity, heart rate, heart rate variability and sleep data. This data will allow us to see how these factors impact brain health.

Phase Two will also include the collection of biomarkers such as genetic information, data about the microbiome and the capability to incorporate, share and analyze fMRI brain scans. This additional data will help us discover how to predict potential problems, intervene early, recommend precision solutions and advance the science of brain health like never before.

The Center for BrainHealth is enormously grateful to the generosity of the funders who have enabled Phase One to launch. Thank you to Jean Ann Brock, The Joshua M. and Inette S. Brown Family Foundation, Teresa and David Diziere, Folsom Charitable Foundation, The J. Willard and Alice S. Marriott Foundation, J. Willard Marriott, Jr. Foundation, and Jennifer and Peter Roberts for making this possible.

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Technology for Good: Boosting Brain-Healthy Habits

By Lara Ashmore, PhD

How many of us have posted a photo on Facebook or Instagram, secretly hoping to get that little shot of dopamine when we hear the digital ping that signals a friend has liked our post?

HABIT FORMATION AND GAMIFICATION

Hit app and game designers have tapped into this powerful feedback loop to create intriguing products people simply can’t live without. What if we were to harness these neurological insights that compel people to routinely use apps and play games to instead help people create healthy habits to improve their brain health?

That is exactly what we are doing with The BrainHealth Project. We are applying the science of habit formation and gamification with behavioral neuroscience research to motivate people to adopt brain-healthy habits throughout the multi-year endeavor.

PHD INSIGHTS

In my PhD graduate studies in Educational Technology at the University of Virginia, my advisors repeatedly stressed the importance of basing software design features on well-articulated objectives, characteristics of the target audience and desired outcomes. Thorough needs analysis, user testing and formative feedback were required for anything we created.

In my doctoral dissertation, I took this concept further by designing a hybrid study that collected qualitative and quantitative measures of Web site usability and attempted to correlate them to specific design features that enhanced learning. The methods were arduous, and the literature was scarce. Today, we are very fortunate to have an abundance of literature and off-the-shelf tools so we no longer have to comb through pages of server-side access logs or transcribe hours of video tape to understand a user’s behavior.

IMPARTING HUMAN POTENTIAL

By Eric Bennett, CPA, CFA

The brain is the next frontier in health, and the coming 10 years are likely to see mind-numbing (pun intended) discoveries which will impact all of our lives. The Center for BrainHealth is already a global leader in neuroscience, particularly in ways that are helping people now — including military veterans, youth with autism and adolescents in low-income schools, among others. World-renowned scientists, clinicians, education leaders, military leaders, as well as state and local politicians have seen the huge impact of BrainHealth’s work in the past two decades. There are so many inspirational stories of lives transformed. When someone calls me and says, ‘the Center for BrainHealth saved my husband’s life,’ it sticks with me forever. If BrainHealth were to close its doors today (it won’t, of course), its impact would already be legendary.

As inspired as I am about its past achievements, I am even more inspired about the future of BrainHealth. As a supporter, advocate or volunteer, you will be able to witness firsthand what is happening in real time with the brain revolution. If you want a front seat, please get involved and help our cause. I know I want that front seat and am thrilled to become vice chair of the advisory board of the Center for BrainHealth.

THE BRAINHEALTH PROJECT TECHNOLOGY DESIGN

The mechanics of gamification (feedback loops, points and badges) and principles of habit formation (cue, feedback and reward) are well-researched. We know that it takes on average 66 days to develop a new habit. Dr. Amy Jo Kim pioneered the idea of applying game design to digital services and expands the popular cue-trigger-reward model as follows:

HARNESSING KINDNESS AS A BRAINHEALTH ACCELERATOR

By Julie Fratantoni, PhD

For the past several years, the Center for BrainHealth has been the kerosene to my inner flame of curiosity and passion for neuroscience. During my time here as a PhD student and clinical fellow, I was challenged, refined and shaped into a researcher and clinician.

Reflecting on those transformative years in the graduate program, I can attribute much of my success to applying our brain-healthy strategies into my work and life. It is here, in an environment rich with collaboration, innovation and positivity, that I have adopted the mindset of seeing a world without limits and am empowered to operate at my fullest potential.

Returning as a professional to the Center for BrainHealth feels like coming home. I am honored to take on the role of program manager for the Center’s new Kindness Initiative. My vision for this initiative is to better understand the science of kindness — to study how kindness and empathy affect cognitive function — and then to implement our research findings in education and public policy to cultivate a kinder world.

I am excited to uncover more about the human capacity for kindness and empathy, these valuable qualities that make life meaningful, fulfilling and enjoyable.
**New Biomarker, Technology Offer Broad Applications**

The NeuroPsychometric Research (NPR) lab, led by Dr. Bart Rypma, has made important strides to better measure and understand brain function, brain health and cognitive change. Researchers recently published two studies that significantly advance diagnosis and treatment for multiple sclerosis (MS).

**STUDY 1**

The NPR lab researchers created 3D images of MS brain lesions using a new, patent-pending technology tool, which revealed different physical properties for the two types of lesions. In collaboration with a team from UTSW led by Dr. Darin T. Okuda, they then identified blood oxygen levels as a reliable biomarker to determine which damaged regions in an MS patient’s brain have the capacity to heal, and which do not. Results were published on ScienceDaily.

“Our new technology has the potential to be a game-changer in the treatment of MS by helping doctors be more precise in their treatment plans,” said Dinesh Sivakolundu, MD, the study’s lead author and a teaching and doctoral student in the NPR lab.

The newly opened Brain Reset Room offers a calming multi-sensory environment where study participants can spend time before potentially anxiety-producing situations, such as an MRI, or after an overwhelming social experience.

Experiences include curated sights such as a Moving Art™ display by award-winning nature documentarian Louie Schwartzberg, sounds of gentle music playing in headphones, pleasant aromas emanating from an oil diffuser, and touch by sitting back in a cozy adjustable easy chair – every sense but taste.

When people are placed in scenes of nature, the brain becomes less anxious, less stressed.

Dr. Sandra Chapman

**STUDY 2**

The NPR lab assessed the stiffness of blood vessels in individuals with MS to identify the Arterial Compliance Index (ACI), a novel biomarker reflecting the extent of injury of arteries and veins along the cerebrovascular tree. The study, published in Multiple Sclerosis Journal, demonstrates that ACI performs approximately 15% better than all other currently available MS metrics combined. This could help monitor the disease, aid in treatment, and distinguish between MS patients who are prone to develop cognitive impairment and those who are not.

“By providing a predictor of future cognitive change, this groundbreaking technology creates the opportunity for early intervention,” stated Sivakolundu, the study’s lead author.

The patent-pending technology, named Vascular Integrity SysTem for Assessment and Treatment (VISTAT), will soon be available for use with MS patients and for exploration of broader applications with a healthy-aging population.

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**IN MEMORIAM**

**DR. JAMES C. BARTLETT**

A past intern Dean and a faculty member for 44 years in UT’s School of Behavioral and Brain Sciences (BBS), Jim was a long-time supporter of the Center for BrainHealth who contributed his deep expertise in cognitive neuroscience and cognitive psychology to our mission. The university has created the James Bartlett Professorship, an endowed faculty position for BBS, in his honor.

Jim was one of the pillars of BBS. Until the end, he was contributing in ways he can to support the school and faculty. His willingness to serve his students and colleagues has been an inspiration.

> Francesca Filbey

Jim was a caring mentor and a great educator. I had the good fortune to collaborate with him on several projects early in my career. He was great fun to work with and added such excitement to the research process. I will always remember his infectious laugh when he shared a witty story. He provided such spark during his time at UT Dallas. He will be greatly missed.

> Dan Krawczyk

To work with Jim was one of the most inspiring and stimulating experiences of my entire academic career. Jim served first as one of my dissertation professors, later a colleague and active research collaborator, and lastly dean. In meetings, minds were always stretched in provocative, expansive new directions. Most cherished was our decades of friendship with honesty and supportive celebration of life.

> Sandi Chapman

**H. ROSS PEROT**

Ross gave generously of his time and resources through his support of many causes, both through public contributions and in many private ways that have emerged in stories from those that knew him best. The EDs founder and politician was an avid supporter of the U.S. military and, together with his wife and children served as a powerful and compassionate advocate for the Center for BrainHealth.

It was always a pleasure to be around Ed. His quick smile, great sense of humor and excellent story-telling ability made everyone around him enjoy his company. At dinner gatherings, everyone wanted the seat next to Ed.

> Sarah Schoellkopf

Mr. Perot was a visionary and creator. He saw clearly what should be rather than what could be. He then proceeded to build that vision. His presidential candidacy in company EDS and the legendary rescue mission are affirmations of this. The country is sad because of his departure but is so much better because of the time he was here.

> Geoff Ling

Mr. Perot will forever be remembered as a great patriot, a relentless visionary in pursuit of a goal, and a man of character with a generous heart. Personally, I will best remember him for his complete devotion to family. He gave the very best of himself to each of his 5 children, his wife, Margot and each grandchild. His love of family, country and community was evident in all he did. We are fortunate that he left such clear and guiding footprints for all to follow.

> Debbie Francis

Ed was an accomplished entrepreneur and loyal patriot. He attended the United States Air Force Academy in Colorado and thereafter maintained a lifelong affiliation with military services and personnel, in addition to his successful business endeavors. Along with his wife, Julie, Ed was an early supporter of the Center for BrainHealth, with a particular passion for BrainHealth’s offerings for warriors.

> Sandi Chapman

Ed Hawes had a BIG personality and a magnetic presence that filled a room with laughter, meaningful shared stories, wic ked smartness, and passion for life, family and business. Ed loved sharing his life with Julie and his family. He was always inspired by the courage of his dad as a fighter pilot in WWII, and to honor him he supported BrainHealth because of our work with veterans. He funded the most elegant remodel of our Schlosberg Conference Room, designed by his beloved wife Julie, which is a showcase meeting room to inspire brain healthy visions for all time.

> Sandi Chapman

**EDWIN HUGH HAWES II**

Ed Hawes had a BIG personality and a magnetic presence that filled a room with laughter, meaningful shared stories, wicked smartness, and passion for life, family and business. Ed loved sharing his life with Julie and his family. He was always inspired by the courage of his dad as a fighter pilot in WWII, and to honor him he supported BrainHealth because of our work with veterans. He funded the most elegant remodel of our Schlosberg Conference Room, designed by his beloved wife Julie, which is a showcase meeting room to inspire brain healthy visions for all time.
Empowering Potential Productivity in Adults with Autism

This fall, the Youth and Family Innovations team at the Brain Performance Institute is partnering with 29 Acres (29acres.org), an innovative housing community for adults with autism, to launch a workplace experience to practice and hone social skills.

The BrainHealth Accelerator Program will provide a 24-week paid internship as well as ongoing coaching to help build skills related to social interactions, communication and problem-solving.

"People with autism may have all the technical skills for a job, but they often need additional support to build soft skills that are so important for successful collaboration with colleagues at work," said director of Youth and Family Innovations Maria Johnson, MA, CCC/SLP. "The BrainHealth Accelerator Program provides this support to accelerate the pathway to sustained employment."

Starting in September, two residents of 29 Acres will not only get the personal experience and will be present with the interview and hiring process, with the Brain Performance Institute as the employer. The program features six to eight hours per week of on-the-job coaching.

This pilot also allows the team to research the effectiveness of this approach in instilling employer practices and principles to support employees with autism, and to develop the metrics to track the employee-employer relationship over time. "What we learn with this program can inform future workplaces regarding brain-healthy ways to make the workplace more conducive to sustained employment," continued Johnson.

According to Debra Caudy, MD, president and board chair of 29 Acres, "National data indicates that the vast majority of adults with autism are either unemployed or underemployed, with estimates ranging to as high as 90%. This should not be the case, and we hope to instill meaningful change with enlightened initiatives like the BrainHealth Accelerator Program."

Digital Fight Club: To Digitally Disconnect or Not

More than 50% of what we do on a daily basis is toxic to brain health—the leading contributor is technology. How many of us are a slave to our device, instead of us being in control of it? The effort required to view a screen. Your brain is rewireing and adapting all the time; do you want to rewire it to low effort? Do you want to completely depend on technology for all the answers, or do you want to be adept at higher-order thinking? It’s up to you!

Jennifer Zientz, MS, CCC/SLP, won her fight with 93% of the votes.

Collaboration with StrongMind to Catapult Veterans’ Healthier Outcomes

StrongMind invited the Center for BrainHealth to join its national StrongMind alliance. Centered around Dr. Skip Rizzo’s Brainveteran virtual reality (VR) post-traumatic stress (PTS) exposure therapy program, StrongMind brings together expertise from USC, Syracuse University, Iowa State University and UTD’s Center for BrainHealth to deliver PTS treatment solutions to veterans at VA Centers for Innovation nationwide.

StrongMind’s VR software leverages cutting-edge VR technology to maximize the effectiveness of therapy and make it more appealing to younger generations. It includes 14 different ‘worlds,’ from a crowded Iraqi marketplace to a remote Afghan village, from a checkpoint in the desert to a forward operating base in the mountains. The therapist can choose a world and customize it, recreating the scene of the traumatic incident in the VR headset as part of a veteran’s exposure therapy.

To complement the VR software intervention, the Center for BrainHealth will provide BrainHealth Physicals and Strategic Memory Advanced Reasoning Training (SMART) for veterans. The BrainHealth Physical provides pre- and post-treatment measures in the area of cognitive performance, real-life engagement, well-being, social support and depth of relationships. The pilot will provide veteran-specific SMART workshops.

Brain-Healthy eSport

The Brain-Healthy Emerging Technologies lab recently formalized a collaboration with UTD’s School of Arts, Technology and Emerging Communication (ATEC) under the leadership of Dr. Roger Malina, Arts and Technology Distinguished University Chair, to integrate arts and technology expertise from main campus into BrainHealth’s Chairs™ VR. In addition to applying for joint internal and external funding, the Emerging Technologies lab will leverage the unique expertise of ATEC in design, culture and emerging media issues to grow the depth and breadth of its technology research, development and program offerings.

As a result of this collaboration, BrainHealth has had the opportunity to join ATEC’s new initiative for the rapidly growing esport industry in North Texas. North Texas is home to the Dallas Fuel, Team Envy, Mavs E-Gaming, Complexity and the UTD Comets esports team, all of which compete in the increasingly popular League of Legends and Overwatch, among others. Dr. Lara Ashmore and Aaron Tate proposed a comprehensive brain fitness program that includes BrainHealth Physicals, SMART, Charisma, resilience training, coaching and consulting customized to optimize the cognitive performance of professional esport teams in Dallas and beyond.

Forecasted to exceed revenues of $1 billion next year, esport players are prime audiences to reap the benefits of the Brain Performance Institute’s cognitive training programs. Our scientific research has shown that SMART improves strategic attention, integrated reasoning and innovation — all skills necessary for esport success.

"What makes this collaboration so exciting is the recognition by the players themselves of the need for cognitive training," said Stephen White, JD, executive director of the Brain Performance Institute. "The players see it as an immediate performance edge in their current gaming careers, but also understand what it means for their post-gaming health."

Our resilience training includes stress optimization and mindfulness to provide tools and techniques that can offset the potentially harmful effects of "too much technology" for the athletes who make their living online. Together, these programs have the potential to elevate esport and help players maintain their competitive edge in a more brain-healthy way.
Our BrainHealth family has lost a dear friend in T. Boone Pickens, one of our most ardent and long-standing supporters.

A prescient pioneer with a reputation for boarding the train before others even realized it had pulled into the station, he was among the earliest to grasp that the brain holds the keys to quality of life for every person, at every age.

I had the great fortune of meeting Boone in 2006, when I was establishing a physical home for the Center for BrainHealth. He instantly recognized the scientific worth of BrainHealth and was impressed by our unique goal: to unite research and interventions in an active partnership to strengthen healthy brains and restore vitality following impairment. He chose to link his name with the only institution in the country that has undertaken such a comprehensive approach to define brain health measures and to support cognitive brain health across the human lifespan. He generously contributed major financial backing to make possible the completion of the state-of-the-art home for Center for BrainHealth at The University of Texas at Dallas, which opened its doors in 2007.

Over the years, he was not only magnanimously generous to BrainHealth, but also tremendously supportive in a roll-up sleeves, in the trenches way as a core advocate, contributing his considerable brain power and effort time and again. He also served as an ideal role model for BrainHealth, combining a younger-working brain with the vast cognitive prowess, expertise and wise decision-making of a mature brain, with a retained penchant for innovation and risk-seeking.

BrainHealth remained a life-long passion for Boone; it was our privilege to celebrate his birthday each year with a personal visit and an update on our latest advances. He also generously opened his beloved Mesa Vista ranch on more than one occasion for us to share the message of The BrainHealth Project with influential corporate leaders and philanthropists from across the country.

A visionary futurist and humanitarian who was also renowned far and wide for his wise and colorful turns of phrase, we were particularly tickled that he dedicated his “Booneism #26” to our cause: “When you are hunting elephants, don’t get distracted chasing rabbits.”

On behalf of our board, researchers, clinicians and staff, we remain forever grateful for his enduring wisdom, steadfast support and eternal friendship.

Sandra B. Chapman, PhD
Founder and Chief Director
I was so sad to hear about Boone’s death, which I know affected the BrainHealth family deeply given your lovely relationship with him. He was a remarkable man – clever, generous, bold and impish. I remember so clearly the first time I met him when he reminisced for almost two hours on subjects from energy to basketball to quail shooting – he had such a wry wit and a wonderful capacity for storytelling. I remember vividly my two remarkable visits to his amazing Mesa Vista ranch, where he seemed so at home and happy giving his generosity free rein.

I feel privileged to have been named the T. Boone Pickens Distinguished Scientist at the Center for BrainHealth, and I dearly hope to live up to this award in the great work being conducted here to unlock human potential.

**Ian Robertson, PhD**  
*T. Boone Pickens Distinguished Scientist*

There are few people I know who truly fit such descriptions as “One of a kind; Giant among men; Bigger than life!” Boone was all those and more. He was tough, bold, gentle and generous – all wrapped into one. In every discussion he was direct and to the point, and yet he somehow always threw a curve ball laced with humor, while keeping a totally straight face! He loved success, and he loved the ability to help others through his success. His generosity will be long felt by many, many people. All of us at the Center for BrainHealth are forever grateful to him.

**Debbie Francis**  
*Chair, BrainHealth Capital Campaign*

I’m so sorry to hear about Boone’s passing. I know how close you were to him at the Center for BrainHealth. Not only was Boone an incredible benefactor and advocate through the years, but his deep appreciation of the vast impact The BrainHealth Project can have on humanity made him an early proponent, helping your team take the first critical steps in forming and developing this bold new initiative.

He was a good man who did great good in the world. At the end of our lives, what more could we ask people to say of us? We will keep him in our memories and our prayers.

**Adm. William McRaven (ret.)**  
*Spokesperson, The BrainHealth Project Past UT System Chancellor*