

Alzheimer's Talks Edited Transcript

Strengthening the Resilience of your Brain with Dr. Sandra Bond Chapman

August 12, 2014

The following transcript has been edited for content and clarity.

George Vradenburg: Welcome to [Alzheimer's Talks](#) and thank you all for joining us this afternoon, at least this afternoon East Coast time. We're excited today to have [Sandra Bond Chapman](#) as our guest.

My name is George Vradenburg and I'm a co-founder of [USAgainstAlzheimer's](#) and deeply committed to this cause because of the loss of a family member to this darn disease. We have over 500 people, probably actually close to 550 people, registered today for this call from 40 states and the District of Columbia - including a large number from Texas where our guest is based in Dallas, Texas with her very important work at the [Center for BrainHealth](#). Additionally over 1,700 people could not join the call live today but have expressed a strong interest in both obtaining a summary of the call and a transcript, which we'll send to everyone who's registered for the call too. So you don't need to take notes, you're going to get the copy of the transcript.

Just a word about USAgainstAlzheimer's, for those of you not familiar with the organization. We were founded in 2010 and we are what we characterized as a disruptive, relentless entrepreneurial force committed to ending Alzheimer's by 2020. The founders are driven by the loss of family members and we're driven by the suffering of millions and tens of millions of families with this disease. We seek change through collaboration, we seek to bring the movement together, we collaborate with all those ready, willing and able to join with us. But we work specifically through six networks: [women](#), [African-Americans](#), [Latinos](#), [clergy](#), [researchers](#), and one by the thousands and thousands of [activists](#) across the country who were doing things in their own community, or indeed nationally, themselves to affect change and we bring them together so they can feed off each other's energy. This is a team sport, defeating Alzheimer's will require all of us, hence the name

USAgainstAlzheimer's because it's going to take all of us to stop this disease. We really regard taking on this issue as the transcendent moral issue of our time. The numbers of people who are suffering and dying from this disease is enormous, 5 million people currently in the United States but it's over 40 million now globally. Most of them are in low and in middle-income countries. So this is now a disease that is more prevalent than HIV/AIDS, cancer and now more cost than either of those diseases, and that is only going to grow in the coming years as the populations of the world age. So this is a cause that we have to take on, it is a compelling cause and obviously a cause that is personal, at least to all of the founders of USAgainstAlzheimer's and probably to most of you on the phone and to millions of people across the country.

With that introduction, thank you again for joining us today to learn more about Sandra Bond Chapman's really quite exciting and groundbreaking work. We're also grateful today to the generous support of Rita Hortenstine, whose generosity makes this call possible. Rita is a member of the Texas Council on Alzheimer's Disease and Related Disorders, a national voice for Alzheimer's disease research and caregiving. Rita serves on the Board of Advisors for the Darrell K. Royal Research for Alzheimer's Fund. For those of you who are football fans, Darrell K. Royal was a legendary coach of the University of Texas, demonstrating that not withstanding an extraordinary agile mind and physical fitness this disease can get you. Rita is also a member of the steering committee for the Friends of Alzheimer's Disease Center at UT Southwestern Medical Centers on the Advisory Board for Sandra Bond Chapman's Center for BrainHealth. Rita and our esteemed expert, Doctor Chapman, are both founding members of the WomenAgainstAlzheimer's Network, a national network of women in private and public leadership positions who believe that disruptive and innovative advocacy and action is necessary to bring an end to Alzheimer's disease. You can get more information about WomenAgainstAlzheimer's by checking out the website at WomenAgainstAlzheimers.org or by pressing 1 on your phone and someone will send you information after this call.

With that introduction and with thanks to Rita Hortenstine for her support today, it's my pleasure to introduce you to Doctor Sandra Bond Chapman. She's the Founder and Chief Director of the Center for BrainHealth at the University of Texas in Dallas and author of a very, very sharp book called [Make Your Brain Smarter](#). Spearheaded by Doctor Chapman, research at the Center for BrainHealth focuses on building brain resilience, inciting brain cell regeneration and identifying biomarkers of brain health and biomarkers to aid in the detection and treatment of Alzheimer's disease. Doctor Chapman is a cognitive neuroscientist, who focuses on brain health. Staving off and slowing cognitive decline in

health, injury, and disease obviously is of utmost importance to all of us. So I'm really quite excited to have Doctor Chapman with us today and look forward to her comments.

Just one note for all of you on the call, if you have a question during the call please press star 3 on your phone, by pressing star 3 you'll be placed into a question queue. Have your question ready to share briefly with a member of our staff and we'll try to get you live on the air with Doctor Chapman as soon as possible when we open up for questions.

With that introduction, I'm looking forward Doctor Chapman to your remarks today.

Dr. Chapman: Hi, thank you, George, for your global efforts on what is such an urgent fight against Alzheimer's disease and, really for each of you on the phone, to extend your own brain health span. If you don't know George, it doesn't take 2 seconds for any of us to be in this presence to feel how relentless and entrepreneurial he is to end Alzheimer's and so all of us join you in this noble goal of USAgainstAlzheimer's. And I, too, am very grateful to Rita Hortenstine's support for making this call possible and her tireless efforts.

Let me begin by saying that we've made so many breakthroughs. Think about this, we can fix hearts, we can replace them, we can even restore hearing and deafness. So for me, I think all of us, it's really time for us to get wildly ambitious to figure out how is it that we can strengthen and fix brains. There's a multitude of directions we can go in the next big scientific thing. Moneys can go for global warming or figuring out alternate fuel or stem cell for cancer cures but truly none are more impactful, more urgent, or more exciting than figuring out how can we discover how to build brain resilience and regeneration when there are diseases such as Alzheimer's disease.

My personal story, I entered the science of Alzheimer's disease and related dementias almost 25 years ago today. And I have to share with you that I was really a reluctant researcher because I thought it would be too depressing and so hopeless. But I was interested in what is it that we can do to promote the aging brain. And so I felt compelled to understand what happens in Alzheimer's disease because healthy aging and Alzheimer's are very distinct. To date now, I've seen thousands of individuals with Alzheimer's disease and truly more than 10,000 healthy people through our work in brain health. And as we launched our research in individuals of Alzheimer's disease and their families, I quickly learned how much can be done, how much needs to be done, and that gains are not only possible but they're real. And that's what we're dedicated to.

So here's something that I want to lay on the table, think about this, 1/3 of Alzheimer's cases worldwide might be attributable to potentially modifiable risk factors and this just

came out in [Lancet this month](#). So there's things that we can do this very day to help stave off Alzheimer's by strengthening our brain resilience, by inciting brain regeneration and as incentivizing ways to prevent brain decline.

One of the reasons that we're very unique here at the Center for BrainHealth in Dallas is we are focused on how can we promote risk reduction and how can we extend each person's life of cognitive health. I'm going to share some of our research with you. And George, I don't know if you can eventually put a link onto your website but the science I'm going to share with you today was recently published in the last few months that we could share with everyone.

The science is truly mounting and I want all of you to embrace this not just about your family member but to make brain health personal to you, that there are things you can do every day. A lot of it relates to how you use your brain to think, to enhance brain health and reduce the risk of cognitive decline that happens over our age span. The problem is, as I'm sure many of you on this call have read, you know there's really little agreement into whether there are effective protocols. What is it we should be doing? How can we use our brain? What are the things that are helping us? What are the things that may be more toxic to our brain in terms of how we're using it? Our evidence clearly suggests that all types of mental activities are not equal.

Let me just begin by sharing right now some of our work in healthy aging. In studying in healthy aging it's important to know that our lifespan, and this is exciting for us because as a nation and as a world one of the greatest achievements of this century is the doubling of the human lifespan. Think about this someone born today, if you have a grandchild or someone born today, can fully expect to live to be a hundred. The problem is nothing has been done to extend our brain span. So the peak brain span in terms of when we were at our highest, in terms of cognitive performance right now, is about age 40 to 42. Well quite frankly that's not acceptable for all of us to live half of our lifetime with our brain in the state of decline whether it's health or in early Alzheimer's or even full-blown Alzheimer's. So let me share with you what some of the brain losses that we've been able to, and other researchers around the globe have been able to, document that happens even in healthy people.

First of all, we know that in health we start losing about 1.7% of our brain blood flow every decade starting in our 20s. So already in our 20s we're starting to lose brain health, part of our brain function. The second thing we know is that white matter tracts start declining in our 40s. The third thing is that the speed of synchrony as different parts of our brain are communicating very rapidly starts declining in our 30s and 40s. So you think

why is she telling me this news, each of us realize and fears the seriousness of these loses and it's going to be a high economic cost as George alluded to. But what you're going to hear about now is that we can do so much about this. As life expectancy increases we literally now know we can do more to change our brain than almost any other part of our body but we haven't really known that to date so we haven't incentivized what that means. So that's where I think we need to go with big brain health, big issues. Our brain is the most complex engine. It drives everything we achieve. It has so many backup systems. When you think of how dynamic, repairable, adaptable, trainable it is. It is really an exciting time and the possibility exists for every one of us into the early stages and perhaps moderate to advance approaches to elevate our intellectual capacity. It's not only through cognitive training but it's probably going to be multifactorial, physical exercise, what we eat, different drugs, possibly RTMS and epigenetics. There's going to be a whole or momentum of things that we can do.

So let me share some of the science that we have discovered with our research team at the Center for BrainHealth. Literally, we take individuals where they are and precondition their brain to see if they can regain part of the capacity. So in a randomized trial, people 50 to 75, these were healthy individuals, people that have cognitive health. And then I want to share a study showing people that are in the earliest stages of Alzheimer's disease with Mild Cognitive Impairment.

In this [first study](#) of healthy people, we randomized them either into high performance brain training or to aerobic physical training or a weightless control group. We train them for 12 hours over a period of 12 weeks, teaching them how to do complex reasoning, synthesize meanings, as you're listening to this talk what are the big ideas that you're taking away, we taught individuals how to constantly use high level thinking strategies. And the changes were pretty dramatic. We were able to find changes in brain at all levels of functionality. Remember I said that our brain blood flow decreases about 1.5% every decade starting in our 20s, individuals were able to get 8% to 12% increase in whole brain blood flow from pre- to post- training after this trial. Now this is really exciting to realize that when you use your brain in a certain way, it can literally make the neurons healthier and requiring brain blood flow. And when we looked to see where that was, where did we get these increases in brain blood flow, it was in areas of our frontal lobes which we're very interested in the frontal lobe networks. That's the part of our brain that supports our decision-making, our planning, our problem solving, being able to conduct our lives. The second really key area that we found was individuals were able to significantly increase the speed of communication across broad based networks across the brain by as much as

30%. When we have these kind of senior moments where your brain feels sluggish, is because our brain in terms of the cell communication has slow down so individuals were able to get as much as 30% increase in the speed of communication. This is really a very dramatic increase in brain health. The third area was in literally growing the white matter and this was something I hadn't really expected to find. One of the reviewers of our grant had actually said 'what about the white matter?' So we went back and found that not only did we get increase in brain blood flow but the speed of connections, but the white matter from the memory center which we know is very severely impacted as we age but also in Alzheimer's disease to the frontal lobe; this white matter tract showed 14% to 15% increase in integrity over this very short interval. When the neurophysicist working with us saw this data, he said Sandi, I hope you realize how dramatic these changes are. When we see brain changes, the brain moving to healthier states, for us, that's exciting because so much of what we read about as we age or we move to diseases, is the continual loss of these areas. It's important to realize that we can in fact regain and build resilience. In addition to these findings we're not just interested in fancy brain imaging changes but we want people to know cognitively did they get better cognitively. So we did a comprehensive battery of mental tests and we found that their abstract thinking, their reasoning, their innovation, their flexibility of thinking got better and they corresponded with these changes we were getting in brain capacity.

So for me, as a scientist, one thing that has really been lacking is finding clear markers that we can measure in the brain to say yes, the brain is moving to higher levels of functionality. It's been more of a guess, and I think a lot of individuals or scientists, as we look at some of the medication trials, we haven't known if they weren't efficacious or is it blocked more by the sensitivity of our measures. So we're leading the country in terms of beginning to find markers of the brain moving to higher levels of functionality in health and in disease and in injury.

Another component of this study that we found interesting was people that were adopters, that use the strategies of how to think improved more. So it's not like a quick fix, like you can go off and spend these 12 hours and you're done, no. When you use your brain, it's something that you have to constantly do, use in these high-level ways and stop doing the toxic things that can take away the capacity.

George mentioned earlier my book, *Make Your Brain Smarter*, these strategies are all spelled out in that book that you can get on amazon.com. We know that our brain through our science has a preferential bias for getting big picture meanings. So in summary of the healthy aging study, what I want you to take away is that your brain in health, the more resilience you build which is least likely to show symptoms of general anesthesia or

chemotherapy and even in the early stages of Alzheimer's may push out the symptoms maybe 2 years, maybe 5 years that's something that we're looking into how long can these changes as people use this adopt. But finding brain health in this area is truly exciting. What we know is that the brain changes moment to moment by how you use it. I ask people when they say I'm doing this type of game or that type of game, intuitively you know if that is something you want to get better at because the brain strengthens by how we use it.

You've probably heard the saying, 'neurons that fire together, wire together' and that's why we got this significant strengthening as well as the increase in brain blood flow. We also know that neurons that fire together, wire together, expire together. So in both Alzheimer's disease and even in healthy aging, the reason we're at peak performance at 40 is that we quit using our brain in this higher order or complex ways. So as we improve our brain when a neuron is healthy, it requires the brain blood flow to come to it and that's why we're getting higher rates and it's also increasing levels of protein and lipid synthesis. So it's an exciting time to be thinking about ways to move there. As a brain scientist working on healthy aging that's important.

One of the scientists that I was working with [Doctor Mudar](#) wanted to move into Mild Cognitive Impairment because we had shown very significant cognitive changes in individuals in mild to moderate stages when we kept them mentally active. We worked with these individuals for 2 months and followed them up to a year. We showed individuals were able to maintain significant levels of cognitive function much more so than those who were not in the cognitive stimulation group and only on the drug alone. So we wanted to see what if we do these higher order cognitive strategies with people in these earlier stages. Again, I have to admit, that I said, you know I don't know if it's going to work with someone that's in a progressive brain state. I was really again a little bit reluctant to start there but you know we started the study about a year and a half ago and we've just gotten the results, we're in the process now of writing them up, which I'm very excited about. And for those of you who don't know what Mild Cognitive Impairment is, individuals with Mild Cognitive Impairment are those that we feel like are at high risk of being in the earliest, earliest phases of Alzheimer's. They show memory problems but they fail to meet the full criteria for dementia. And we have strong evidence that this early stage of Alzheimer's may be a prime time to provide interventions whether it's cognitive training, physical exercise or drug trials to take advantage of brain plasticity and reduce the cognitive decline. So we wanted to know, do individuals have the same type of brain plasticity that we know now that healthy people have until the end of life? Our brain has

the most amazing backup systems that can help to be strengthened and rewired. We didn't really know how much this capacity continues when we have progressive brain diseases particularly in these early stages. And so we did a classic control-randomized trial and individuals were either put into our advanced reasoning training group or they were put into another memory training group, where they learned fascinating facts about the brain. So one group tried to learn information about the brain versus our high performance brain training program called SMART or strategic memory advanced reasoning training group where they learned to synthesize information. And the results again were very exciting for us. We found very robust findings that individuals even in this early, early stage of Alzheimer's, Mild Cognitive Impairment showed significant improvements across a broad based area of cognitive performance, strategic attention, abstraction, memory both immediate and delayed, and this one in particular surprised me because memory as you know is what's the most impaired and it can be the most resistant and while we didn't train it, we taught people how to synthesize, take the big picture and how to innovate. Individuals got better, really across the board in cognitive areas. And we also found that individuals that were in the advanced reasoning training group showed changes on our EEG moving their brain in this area of attention to a more normal level of functioning.

So are we stopping the process of Alzheimer's? You know, maybe not, but if we can give individuals 2 to 5 years more of higher cognitive performance, that is going to be very exciting. So we're in the process of writing major grants now to move this and to see how much we can capitalize on this form of resilience and regeneration not only that we're getting in healthy people but individuals in the earliest stages of Alzheimer's disease.

So I'm going to stop there and see what questions that you all may have.

George Vradenburg: Thank you very, very much Sandi. I will tell you that is really exciting cutting edge stuff and it's reinforcing an increasing body of work that is really exploring how best to use non-pharmacological, non-drug approaches to strengthening the brain or slowing the onset or progression of the disease. But your research is unique and we look forward to it and I just want to make sure that everyone on the call knows that we will put the links to Doctor Chapman's research into the transcript of today's call so that you will be able to look at these studies directly. I take it that the first one is published and the second one is being written up and will be published soon. Is that the state of these two papers Doctor Chapman?

Dr. Chapman: Yes, I actually have about 3 that we can put online that are published. You know in terms of cognitive enhancement and also the physical training impact

George Vradenburg: And of course, people can have access to your book and that it seems to me is an important way to get more insight into precisely what is it that people can do to take advantage of your research.

Just a reminder, if you a question, please press star 3 on your phone. By pressing star 3 you'll be put into a question queue, you'll talk to a member of our staff and we'll get you on line with Doctor Chapman quickly.

A number of people sent in questions before the call. And a number of calls are coming in now and getting screened, but a number of questions came in before the call to us. And a number ask the question about what your work may tell us about whether or not games generally or Lumosity in particular are effective means of the kind of mental training that you've been talking about in your studies.

Dr. Chapman: Yes, so I think that's probably one of the most popular questions I get, what games should we be doing? And I think it's important for us to realize that our brain changes by how we use it. And what we've found that these games help you with improving specific processes like speeding up how you do mental math or visual spacial processing but what we don't find is that it generalizes up to what I would consider high order executive functions like figuring out how to pay bills or figure out which insurance to do. And really more these advanced cognitive tasks that we do in our everyday life and it actually expends some of your cognitive energy. So I think it's important to think about, and most people intuitively know is this really what I want to get better at, so just like doing crossword puzzles, I tell people it makes you better and better at crossword puzzles but it doesn't make you a better decision maker, problem solver, and planner that's important for everyday life.

George Vradenburg: You know one question that came in before the call is whether or not continued working into your older ages is a way to keep your brain resilient, alert and perhaps address the question of higher order brain function?

Dr. Chapman: Yeah and I love that question because you know the whole idea of retiring at 65 was when our average lifespan was 63. So you know to be retiring at 65 when we're living to 85, 95 and 100 probably doesn't make sense in terms of healthy brain function. One of the healthiest things we see is that the longer people work, particular if they're passionate about what they do, the longer their brain function stays healthy. I see a very sharp drop off when people retire, now why would that be? If our brain changes by how we use it, it makes sense that if you're doing something you love I would definitely say work as long as you can.

George Vradenburg: Let me ask you about diet and exercise accompanying your cognitive training activities. Do diet and exercise add to the impact of your cognitive training work?

Dr. Chapman: Yeah, so I think one of things that's interesting is the [trial that we did](#) was randomized because we wanted to see what is the effect of advanced reasoning training versus physical, aerobic exercise not combined so we just differentially wanted to see. There's a lot of evidence that physical exercise indeed, helps individuals and one of the key areas is memory function. And since we know that memory is one of the earliest signs of Alzheimer's disease in terms of cognitive loss, if we can keep people exercising it looks like it triggers neurogenesis in the hippocampus, it's the area that with our physical exercisers that we saw changes in with increased brain blood flow and healthier neural health. So think about combining physical exercise then with complex mental activity. You get the executive function plus the memory, absolutely good. Staying brain healthy is going to be multi-factorial, it's going to be what you eat and you know there's evidence, as you know, the Mediterranean diet helps us to have healthier vascular system, reduces some of the risk factors. And one of the things that's interesting that I started this call with, to think that 1/3 of the incidence of Alzheimer's disease could be stopped by our lifestyle -- how we think, how we move. One of things I like to say 'eat, sleep, move your feet', eat well, get your sleep, and move your feet, and meet people.

George Vradenburg: So our first call that we're going to take today is from Ernest Heinzer from California. Ernest could you ask your question please?

Question: Yes, I've just ordered your book while you were talking. And I would like to know will it specifically tell me the things to do that help improve brain activity? And also I would like to know something about DHA, I was told that that is something is beneficial but there's also some risk to pancreatic cancer in men. So I was curious to know and I read on the internet, I need the both sides of that story.

Dr. Chapman: Yes, the book will give you specific strategies. What we do is we try to get individual using these strategies on things that they love to do. So finding out activities, but we spell out the 9 strategies and those strategies you use whether it's a dinner table conversation, or an article, or political view or a movie. So there are activities at the end of each chapter. In terms of the other question, I didn't understand the other part of your question.

Question: I was curious to ask about the DHA is that beneficial or is it outrun by the risk of cancer, are there risks of cancer?

Dr. Chapman: Yeah I don't know the risk of cancer with that. I mean I think with the DHA is that what you're talking about?

Question: Yes.

Dr. Chapman: I think with the omega 3, you know people are taking them. There hasn't been any big evidence that it's harmful to take. There's a little bit of evidence that it helps blood flow. It doesn't look like there's a big change in terms of cognitive improvement in individuals, especially in healthy people. So it's kind of equivocal right now.

Question: All right, thank you very much.

George Vradenburg: Our next question going to take today is from, is it Jeton Kellogg? Jeton are you with us?

Question: Yes. I'm here, can you hear?

George Vradenburg: Yes.

Question: Okay, I have been reading your book rather I've been listening to it on audio and in your book you say that multitasking is not good for the frontal part of your brain. And I'm an artist and I paint all the time and I listen to books as I paint. And one of my favorite things is multitasking. I listen to books when I'm driving in the car, when I'm cleaning house, but especially when I'm painting, the better the book the better the painting. So I wanted to ask you about that.

Dr. Chapman: Well obviously, when I talked about multitasking, the evidence is very clear when you're doing two things that require deeper level of thinking, it makes the brain toggle back and forth between those two things. When you're doing a task that they may be synergistically working towards the same goal, it's not as disruptive. So when you're talking about painting and listening to a book and it inspires you, for me those are working together for you and when you're cleaning the house and listening to a book on tape, cleaning the house hopefully doesn't take a lot of high-level complex mental activity when you're doing that. But when you're driving and talking on the phone, that's not good. If you're driving your car and listening to a book as long as the traffic doesn't have any major problems, you can usually do that. But again your brain really doesn't do two things simultaneously it quickly toggles back and forth. And so you're using a lot more brain energy and it increases the cortisol, which is a stress hormone that pours toxicity on the

hippocampus area. But it sounds like you found a way to inspire your art so I would say keep doing it.

Question: Well I do know that when I come to something in my painting that I have to really think about, I have to turn the book off.

Dr. Chapman: Thank you. That says it all right there. Thank you.

Question: And then sometimes I have to back up on the book but to me it's working both sides of your brain it's a different thing so I was little concerned about that when I read your book.

Dr. Chapman: The whole idea of our brain, using different sides of your brain is really not right. This idea of left-brain / right-brain when you can see now the complex networks across our brain working together. When you're creating some art piece or understanding the deeper meaning of a book it is really our whole brain working synergistically together. And some of the times when we are our most creative and innovative in deeper level thinking is when things are perfectly quiet. That's when it allows our brain to do really deeper thinking and innovation and have our aha moment. Thank you so much.

George Vradenburg: Thank you Jeton. Our next question is from Martin O'Sullivan. Martin, you have an interesting and good question, please ask it.

Question: Yes, good morning to everybody. We live in a senior living community here in Phoenix, Arizona and probably the median age is around 80. And there's probably not a resident among the 350 here who aren't concerned about maintaining their brain health and we do have a lot of activities here that are directed generally in that direction. But I wanted to tap into the best of your research and your book and provide that information to our staff here because we do have staff members who are focused on these programs to see what we could learn and I wondered could you again tell me the name of the book.

Dr. Chapman: Yes, the book is Make Your Brain Smarter and it's available on Amazon.com or Barnes and Noble, Make Your Brain Smarter. And there's something for every generation into the end of life as well as early Alzheimer's. There's a chapter on some of the things that we've done to make people healthier.

We've worked a lot with senior retirement places to kind of shake up the idea, the idea of keeping your brain healthy is not just keep it busy but to continue to expand it in terms of advanced reasoning, innovating new ideas. I think one of the things that we haven't

realized as a society and really worldwide is how important innovation is for our brain. When we watch little bitty kids 3 and 5 and 7 years old you can see them creating new knowledge and then we leave it behind very early on. But when I see people in their 80's and 90's that are still innovating new ways of thinking, new perspective, new paintings, new ways of seeing things that's really what our brain was wired to do and we see much faster brain changes in individuals who are doing innovative things. So yeah we'd be happy to talk to them and help with some of the activities.

Question: Well that's wonderful. I particularly picked up on your comment about the importance of having quiet time and I relate this back to, you know we're all familiar with the work of Albert Einstein and some of the other folks who did what I'll call mind games where they in their quiet time reflected on relationships at a broad level and were able to see things in an innovative way that no one else in the history of the earth had come up with. So I think that's a very important key and I want to thank you for making the observation that simply having a lot activities and a lot of action going on doesn't necessarily move our brains forward.

Dr. Chapman: Yes and that's a big point that we make, we call it the brain power of none and we get individuals to find at least 5 to 7 times a day that you make sure you walk around you clear your mind. When we're working with executives around the country, I say how many times do you shorten your meetings, make them quick 15 minutes powerful and then have step out and then have people come back in, because when your brain stops pushing and listening is, you know what's fascinating is when different areas of the brain can connect to form higher level ideas and very new ways of taking things on. And it actually increases the speed with which we can see brain health so the brain power of none is a very powerful way to strengthen brain function.

Question: Thank you so much.

Dr. Chapman: You bet, thank you.

George Vradenburg: Martin's question causes me to ask, to what extent are you or are others taking your learnings and trying to get them considered and then implemented in senior living facilities or in the population more generally? You're doing such great research. You've now put it out there in terms of actual concrete lessons, to what extent is there someone out there getting it adopted in the community?

Dr. Chapman: Yeah thanks George for that. That's really our big push now. At the Center for Brain Health, we are a research institute and we're focused on index of brain health.

What kinds of things need to be done. We have over 135 scientist research clinicians but it's like having a secret formula that we want to get out so we are now launching the headquarters for the [Brain Performance Institute](#), the headquarters will be here but we have mobile training teams where we're trying to make individuals every single day think what should I be doing to get brain health checkups each year and to have a marker of hey did I get better this year and not to accept slippage as, oh I'm, 5 years older or 2 years older than I was last year, but to make sure that we maintain these incredible levels of brain function that we can.

So we're also working with public policy and that's why your work George is so important. With this network, we had a summit in Washington DC which you attended, we're speaking before congress. We're working as broadly as we possibly can. We also know that it matters early, the exciting thing about brain health is that it looks like it matters every single age that you are, starting young matters. Twenty year olds aren't developing the level of higher order thinking that they used to. So we're working at all levels to get individuals and get the word out there. At the Brain Performance Institute, we're doing train the trainer models with teachers. We're doing a lot with the military right now. We've trained kids in poverty, teenagers and we've reached, in the last three years, close to 27,000 because we know that education and poverty is something that's very at risk for later emerging cognitive impairment and Alzheimer's. We want to start early and we want to keep our motor going strong.

So we're working as hard as we can to integrate the science, the translation, to meet people we're looking at technology to have online brain health physicals so people can stay monitored. And for me what might be the push right now is that we could train doctors, is what is an index for this person's brain moving to healthier levels and not just guessing.

George Vradenburg: That's encouraging. Gail Cohn has an interesting question given the trends of the day. Gail, please ask you question.

Question: Thank you for the information. This is been absolutely fascinating. I wondered if you found any relationship between brain health, memory and medical marijuana?

Dr. Chapman: We actually have a scientist here doing research in marijuana, not from the path maybe that you take it but with adolescence at risk and young adults. And we do see if someone is a short-term user that they're may be some heightened cognitive functions but longer-term users maybe not so much. So again, I don't think we know long-term what

it means in terms of what's happening, so I don't really know the answer outside of that. But I think it's definitely an important question to address.

Question: Thank you.

George Vradenburg: We have a question here from someone who's lost their voice but ... 'does your treatment work with patients with severe hearing impairment?' Maybe the more general question is what comorbidities may impede the ability of people to take on your cognitive training approaches?

Dr. Chapman: Yeah that's kind of the big Kahuna for us. [We've been able to show](#) the way you engage the brain in these higher order ways of thinking can be generalized and that's why we say in terms of brain health, brain health injuries, different injuries and diseases. So we're showing it with ADHD, depression. We're now looking at multiple sclerosis, bipolar disease. My career almost 30 years ago first started in deafness and I think it's kind of set me on this track as I saw individuals with deafness, because they didn't get all the pieces of information, tended to be really good naturally at getting big picture ideas. That made me think about smartness in a whole different way. So, absolutely, I think these strategies would help individuals with deafness. When you have sensory loss, it's really hard when you struggle to get every piece of information and so by developing higher order thinking, it fills down to make you a smarter thinker, so absolutely.

George Vradenburg: Let's go to someone who is asking a question about your other studies in MCI so it's Jan. Jan, I don't have a last name for you but you hopefully will recognize your name.

Question: I do recognize my name. Hi ,Doctor Chapman this is Jan Haber from Dallas. I'm just calling to see whether or not you have any ongoing studies in Mild Cognitive Impairment for those who are younger than 55. It's seems that all the studies are 55 and older. I'm wondering if you're targeting any of the younger people?

Dr. Chapman: Absolutely. What's exciting for me is once we get the Brain Performance Institute, we'll be able to help people regardless. I've seen individuals in their 20s that are diagnosed with frontotemporal dementia, Alzheimer's disease. We started a group for people in their 40s and 50s with early MCI. But we do have a current study right now [Audette Rackley](#) heads that up. So if you go on our website [CenterForBrainHealth.org](#) and ask for information about it. We'd love for you to get information and see about that.

Question: Thank you very much.

Dr. Chapman: You bet.

George Vradenburg: And we had a number of questions before the call about whether or not genetics seems to have any impact on the ability of your work to improve cognitive performance.

Dr. Chapman: Yeah, we're looking at the genetics. Let me just say that when people have genetics for heart problems, we know that the more you do cardiac healthy things, the more you may be through epigenetics to stave it off. So with Alzheimer's disease we're looking at that, if someone happens to have two allele fours, can some of this training help to push it out even though they may be at risk. I think we don't know the answers to that. For me when you have the genetic risk factors it means do more not do less and it's fait accompli. I think we're going to be learning a lot more. In brain injury, which is another area where I'm doing a lot of work, it looks like the allele fours, which is a risk factor for Alzheimer's disease, is also a risk factor for brain vulnerability so people don't recover as well from brain injuries. But when we do more extensive training we actually get the same levels of recovery. So there is an interaction and it's an important factor. The science that we're looking at is looking at how can we see, who is a responder, and then maybe some individuals in a research trial, right now I didn't mention this but the training we were doing with mild cognitive impairment was only 4 sessions, 2 hours each, so 8 hours. And so to get this level of cognitive change at that short a period of time when we interface in there, the genetics of it, I think that we will be able to help individuals regardless of their genetic risk.

George Vradenburg: Another question that had come in is a question of how your brain training works in those who may have other psychiatric diseases or depression and anxiety due to caregiving. I just thought I would put that out there for you.

Dr. Chapman: Yeah, that's an excellent question. You know one of the side benefits that I really hadn't expected from the training is that we see a significant decrease in depression symptoms. We see less stress, less anxiety, we see better sleep as a side benefit. We have just now started a training for spouses of people with post-traumatic stress and TBI. We've had some ongoing training with caregivers. You know we hadn't really thought about the caregivers taking this high performance brain training but you're absolutely right George, why not, or whoever asked the question. I think that the more skills you have to see options because the stress of caregiving is so relentless, so tiring and exhausting the brain capacity of individuals is certainly something that we need to address to keep them healthy in the meantime and not let them be the forgotten victim in all of this.

George Vradenburg: Let's have, just the last question from one of our callers. Justin, you attended the brain training at UT. So why don't you ask your question?

Question: Hi Doctor Chapman. My name is Justin and I'm here at Dallas. I did the TBI training at the Center and I've had great success with that, I'm still doing a blog and a Facebook page that was part of my project in that. And so I've noticed a lot of great steps forward from my injury since I did the training, absolutely I've seen benefits from that. But my mother's mother and my mother both had symptoms, with my grandmother they call it dementia and my mom they are probably calling it the MCI or maybe early onset Alzheimer's, I'm not sure what's going on there yet. But with a TBI and a family history like that with the training that I've already done through the TBI program. Am I at higher risk for starters since I've already got a family history and then secondarily because I've had the training and I'm seeing good results from that in my own processes, do we feel like that is something that even though I wasn't necessarily training for the Alzheimer's aspect of it. Will it be beneficial in that regard?

Dr. Chapman: Yeah, that's really wonderful because we have shown brain regeneration after brain injury whether it's 1 year, 10 years, 20, 30 years, there's no limit. Now that we're showing that the brain can regenerate after these injuries. And so there's a lot of fear now as we know that one of the risk factors for Alzheimer's is brain injury. But what we believe and I just in fact submitted a white paper for a grant to look at it, I think that if we can get people healthier in these earlier stages like you are and rebounding the brain, building resilience, and not giving up that indeed it maybe protective against later emerging dementia but we need to track those studies. I would encourage you to keep up the strategies and maybe come back for booster sessions to keep ramping it up. So for us I mean the good thing is you're never too young to start building resilience and you're never too old to strengthen this cognitive reserve. So thank you for being part of our studies and we look forward to continuing to help you to stay on the path of higher brain health.

George Vradenburg: Thank you Justin. Thank you for participating and I'm glad to see that you're getting good results from Doctor Chapman's work.

With that we're about to run out of time. I want to thank all of you again for participating today's call. And thank you, in particular to Doctor Chapman for joining us today.

She said at the outset that she is wildly ambitious but I think not only is she wildly ambitious but she gives us a wildly hopeful look at what we can do today, way before we get any pharmacological or drug or medicine treatment for this disease. So it's a wonderfully, hopeful message and wonderfully rigorous intellectual backing for your work and for the fact that we can do some stuff today, Sandi, so thank you for that.

I also want to thank Rita Hortenstine for her generous support, which made this call possible. So Rita I know you're on the phone, thank you so very much.

Thank you all for participating in this Alzheimer's Talks. In about a week we'll have a copy of this recording and a transcript on our website for you to share with your friends. And as I mentioned earlier we will put the links to Doctor Chapman's work in that transcript so that you can examine her work more closely.

Dr. Chapman: George, can I just add, also for all of you that are interested, there's also brainhealthdaily.com that is a website we manage with breaking news around the world. You just need to register and in your mailbox everyday will be the latest information on Alzheimer's or healthy aging or brain injury. So I would encourage you to register for that as well.

George Vradenburg: What is your website Doctor Chapman?

Dr. Chapman: And our website is CenterForBrainHealth.org.

George Vradenburg: Terrific, thank you for that addition. As always, for anyone on this call please stay on the line if you'd like to leave us a message with a question or a comment either for us or for Doctor Chapman, we're particularly interested in what you would like to discuss on future calls.

We've had a continued growth in the attendance on these calls as we have talked to researchers who are advancing the state of knowledge in the field but we want to make sure that we're reflecting your interests into any of these topics as well.

Again thank you all for joining us today, thanks to Doctor Chapman and to Rita Hortenstine and all of you have a good afternoon.

Dr. Chapman: Yes, thank you George.