



Complete Transcript: HALO Talks with Dr. Bechara Saab
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Pete Moore [00:00:04]:

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Pete Moore [00:00:46]:

Have a great season. Let's go. This is Pete Moore on Halo Talk to NYC. I see I have the pleasure of bringing doctor Bashar Assad to the podcast and to the halo sector. This, I feel, is going to potentially blow you away. It will be one of our top 5 podcasts 2023. No pressure, but we are gonna talk about solving mental illness through technology, which seems to be something that Could not be done, and you are now doing it. So welcome to your 1st Halo talks.

Dr. Bechara Saab [00:01:28]:

Thanks so much, Pete. Pleasure to be here.

Pete Moore [00:01:30]:

Awesome. So as I was reading through your company and looking at what you guys are trying to solve and how you're going about it. I got really energized Because it seems everyone has a phone and a camera. Mhmm. You guys are actually using that technology not to create albums and, collages, with music behind it, but actually to diagnose stress, diagnose mental illness, diagnose Probably a litany of other things that, are behind the curtain, so talk about your background. Qualified person ever on Halo Talk, so I'll give you that accolade to start. But, fire away, the short version.

Dr. Bechara Saab [00:02:11]:

Short version is, I classically trained as a chemist. I did a PhD in neuroscience at Mount Sinai in Toronto, and then eventually I opened my own laboratory as a principal investigator at the University of Zurich, ex psychiatry hospital. I mostly worked my research lab really focused on understanding the circuits and the

molecules that Really give us this motivation to explore. And along the way, I discovered that this is actually very relevant to mental illness because across Virtually, the entire board of mental illness, there's a dearth of exploratory drive or at least exploratory behaviors. And at the same time, I was growing very frustrated Being situated in a psychiatry hospital that my colleagues who I admired and adored and loved to work with didn't have the ability to use objective tools As they delivered medicine in the same way that other disciplines of medicine do. And, you know, it's held psychiatry back for 100 of years, and Now we actually have the ability to treat the brain like the organ it is, measure it objectively, and then iterate our therapy accordingly.

Pete Moore [00:03:14]:

So when you talk about molecular science, how much of that is the DNA, and how much of it is training, discipline, you know, could be enhanced over time.

Dr. Bechara Saab [00:03:27]:

Very interesting question. So everybody is born with a completely unique Brain. This is absolutely certain. The complexity of the brain mathematically indicates that there not only are no 2 brains alike Today, but there have never been any 2 brains alike in the history nor will ever be no matter how long we exist as a species. And so there's always gonna be variation that's inherent to, what we start out with, and much of that it's determined via genetic factors. However, The plasticity of the brain never stops. There's a famous study that looked at, you know, when plasticity in the brain really begins to end, and the oldest they examined was 26. But even in the 26 year olds, they saw a very, very strong plasticity, and now it's generally understood that the brain is always changing.

Dr. Bechara Saab [00:04:10]:

And not only is the brain always changing, But a change is actually much quicker than we previously thought possible because what determines the strength of communication through the brain is Not actually select the neuroarchitecture or the pathways themselves, but actually the expression of receptors that are used for communication, These proteins that are present on neurons, they can be turned up and down just the quantity that are there, and that has a huge influence over how the brain, connects with itself and therefore our plasticity.

Pete Moore [00:04:42]:

So through your research, you've been determining what motivates people, What gets them on a healthier path? What is some of the takeaways that people should be doing, you know, whether it's nutrition, Whether it's a certain amount of exercise, whether it's walking, whether it's, you know, playing backgammon or chess. You know? How do you kind of Give somebody a road map if you will. I'm a big gap backgammon player. I had to throw that in.

Dr. Bechara Saab [00:05:07]:

Of course. I I'm a big chess player. My dad loves backgammon though. By far and away the most important thing you can do for your brain, and all sorts of exercise, strength training as well as cardio training. In addition, good night sleep and a healthy diet. I mean, these are general things that just have such incredible potential to Overall, just slow the aging process, including the aging of the of the brain.

And we can get into how the brain ages, in a bit later if you like. But the main thing that I will say that maybe isn't often mentioned is just how you can really rewire your brain.

Dr. Bechara Saab [00:05:49]:

In fact, we're constantly rewire our brain And we do this, every time we engage in any activity over and over again. That activity becomes easier to do. The threshold to engage the neural circuits that drive that activity, start to go down. And so when you do specific types of meditation training, you can really Induced plasticity that can help you be more resilient to stress, to focus better, to get over certain phobias, the same way that you exercise constricting your muscles. The other, you know, really key thing to mention is that the brain is not just what's in your head. The brain is in constant communication with the body and uses the body itself to understand what is happening. And one of the most important connections Is through your breathing. When you're breathing really quickly, that can tell your brain that you're very excited about something.

Dr. Bechara Saab [00:06:49]:

And so by having control of your breath, Often by slowing it down, which you can easily do just by breathing through the nose, you're able to, you know, modulate brain states then create a positive feedback loop to help you breathe more slowly, more frequently. So those are 2 things. There's plasticity, but through repetition, and there's mind body connections, which really just is part of the mind itself.

Pete Moore [00:07:14]:

Got it. So there's obviously been some Non FDA approved, you know, whether it's supplements, you know, or drugs that, you know, will help you focus. The health club industry and the fitness industry has never gotten to the point of, you know, brain development, brain optimization. That seems to have been kinda covered more on the medical side. And, also, I think in some of the franchises that have that have been popping up related to whether it's escape rooms to really challenge yourself, whether it's, you know, some of the, you know, human math, if you will, or some of the, you know, Princeton Review. So if you were to advise a Health club operator or a fitness studio operator to infuse, you know, brain optimization as part of their, exercise or their marketing or their programming. How would we be able to go about that? Well,

Dr. Bechara Saab [00:08:13]:

We've shown in a study that that's still not published but will come out soon that just through classical mindfulness training, we're able to Increase how quickly people can recover mentally from extremely strenuous, exercise. In addition in those same participants in the study, we were able to get them to actually push harder so they could push further in terms of endurance, and they recovered mentally more quickly. So if there are Partnership possibilities with companies that provide meditation platforms, or if you can have you can work meditation into some of the classes The way that, yoga studios tend to do, I think that can have a lot of benefits on how on how effective people's training turn out to be.

Pete Moore [00:08:54]:

And are you able to quantify what is going on in the brain, you know, pre workout, post workout, and actually provide that data Go ahead, individual.

Dr. Bechara Saab [00:09:05]:

One of the one of the number one things when it when it comes to strenuous activity is just the fatigue that sets in. So you know that when you get start to get really tired, it's much harder to focus. And so if you're really pushing yourself super hard, there's gonna be a period afterwards Where you maybe have less, you know, overall oxygen or less, glucose available to the neurons, and then, you know, the system becomes fatigued. And when the brain's in a situation like that, it tends to, prioritize the lower level structures. So these more subcortical nuclei, because those are the basic ones which really keep you alive, you know, drive all your subconscious processes and regulate your body, but also allow you to quickly respond to dangers in the environment. But when that happens, you start to lose a bit of your cognitive control, and it's your cognitive control that's really gonna help you push further And, it's gonna help you respond, in in the modern world. So that's really what's going on, but when you when you train with meditation. You just because you reduce the threshold for concentration and focus, you can actually meet make it so that it's less difficult to continue enduring, and so, essentially, you're making your brain more

Pete Moore [00:10:20]:

efficient. Gotcha. Now you talk about mental illness, and there's 800,000,000 people affected worldwide. Talk about how you're using the camera on a phone to diagnose mental illness and how that technology is either already built in or you've layered some additional technology on top of that.

Dr. Bechara Saab [00:10:42]:

Yeah. This is some really interesting work that we've that we've done, and I must say that I was not a real believer in the power of artificial intelligence when we started on this journey. But it turns out that we've now been able to build a neural network that can take Some biomarkers extracted through computer vision as we, image the face. So we use the front facing camera on the phone. The human face, then we start extracting out biomarkers in in real time. We don't even have to store the videos or transfer them anywhere. And then these biomarkers are then sent to a cloud where a neural network does its computation. And we train this neural network on a large series of data where we actually know the amount of time that people have spent in contemplated practice.

Dr. Bechara Saab [00:11:30]:

And then by restricting the neural network In order to analyze those data from people who were meditating a lot and therefore able to give us accurate self-assessments, We were then able to use the biomarkers to objectively predict somebody's level of stress. That's what we've done so far, it's really incredible how it works because you see it diverge from the self-reports. One great example is when people first start to, begin a meditation practice, They always self-report that their stress is going down. But what we've discovered through our unbiased objective measure of stress is that their stress actually goes up. And that's much more typical because meditation is hard when you first get into it. You shouldn't really be expecting your stress to go down, but because of But in the zeitgeist, everybody does expect to go down and they've reported as such, but that's just an expectation bias is what we call it. The computer picks up on that. It shows the difference.

Dr. Bechara Saab [00:12:24]:

And because it's unbiased and because it doesn't have these subjective setbacks, We're much more, able to then identify what specific forms of meditation or psychotherapy are effective for each individual, And then we can predict what forms of therapy will work with them, and it only takes, 2 to 3 weeks before we're able to make those accurate predictions.

Pete Moore [00:12:47]:

I mean, if you think about, you know, health insurance companies to get ahead of this, they actually pay for meditation classes, pay for yoga classes. That's, you know, The golden goose, I think, for bricks and mortar providers to have people realize that exercise is not optional. Yoga is not only for people that, you know, are yogis. Meditation is not something that you should do on an app for 5 minutes if you have time. If you could quantify that, then I think you get the capital and the and the revenue opportunity behind it to show, hey. Look. This is actually what's going on. I feel like that's the part that's been missing in our industry of saying, like, I wanna quantify it

Dr. Bechara Saab [00:13:28]:

for me. So the great thing and the reason why we were really so focused on integrating into the health care ecosystem is because Precisely of that reason. If we have an objective way to indicate how this is impacting people's mental well-being, well, then it's something that can be paid for. And because it's unbiased and it can't be skewed by some subjective reports, like, you can't just go into the doctor's office and say, oh, I feel I feel bad. No. No. No. We're gonna find out how you feel by measuring you.

Dr. Bechara Saab [00:13:58]:

So there's all sorts of weird, you know, philosophical and ethical questions surrounding this. At the end of the day, nobody, You know, goes in and lies about their blood sugar level or, you know, their, you know, their heart function or how big their tumor is. They rely on the tests that are done in order to measure that stuff, and I think we really need to treat the brain that way before we start getting this stuff paid for in a meaningful That matter.

Pete Moore [00:14:20]:

So explain, to the layman here, including myself. When you're looking at biomarkers, Is this like an augmented facial recognition? Do you have I've do I have some, you know, something with my eyes are dilating, or I've got you know, it looks like I haven't slept. You know, what are some of the what are some of the biomarkers just so we understand

Dr. Bechara Saab [00:14:42]:

how it's being calculated? Of information in the face. So You know that when you look at somebody, you can get an idea for how they're feeling. You can generate tell if they're feeling blue, if they're feeling super stressed just by looking at their face, And that tells us something. That tells us that there's information in a person's face that is that is, you know, interpreted by our brains and gives us a signal. Our brains are able to do that, then why can't we turn a computer to do the same thing? And the approach that we've taken at MobioInteractive Is we look at how does the human brain analyze another human's face. We extract out those particular data, And then we use them to train neural networks to

essentially do the same thing that some part of our visual system and cortex is doing. Now the types of biomarkers that are there, you're absolutely right. You can get micro expressions particularly around the eyes.

Dr. Bechara Saab [00:15:32]:

Very, very important. Human brain doesn't really care what's going on with the mouth or other regions of the face when it comes to judging how people feel. And we also look at some things that we're probably not picking up on, with our eyes, such as the heart rate and the heart rate variability. And we can get this out through color changes in the face because as your heart beats, your arteries will dilate and contract in synchrony. All this information is available, within the face itself and can be leveraged to train neural networks to objectively, unbiasedly quantify mental states.

Pete Moore [00:16:03]:

So, obviously, there could be some bad actors in that area. You know, I'm only gonna hire people that, you know, score very high on the ability to manage stress and the ability to be optimized at all times. I think over the last 5 years, you know, mental health has definitely been at the forefront and accepted. When I was growing up going to a therapist was, you know, only one of my cousins went to that. He was little bit off the wall. So if you have to go to therapy, you know, that was a worst case scenario Yeah. For you. Now it's obviously, become mainstream.

Pete Moore [00:16:41]:

Do you see companies like, I think there's, like, bet is it Better Health or There's, like, 4 or 5 mental health coaching apps that are out there. Are they coming at this from a counseling or, you know, advice standpoint, or are they coming at it from the medical and clinical side like you guys are?

Dr. Bechara Saab [00:17:02]:

There's 2 types. I mean, some of them are more just focused on a b two c place. They're really going after the consumer themselves and offering them something that that may be of comfort, And people decide, with their with their pay with their pocketbooks as to whether or not it's useful for them. And then there are companies that mostly are pairing, and then there's companies like ours, which is really focused on highly scalable solutions on demand, asynchronous, no medical professional that's involved, after the initial recommendation or

Pete Moore [00:17:40]:

prescription. So from a standpoint of your company, Bobio, are you trying to become basically, you know, the industry standard or the testing

Dr. Bechara Saab [00:17:56]:

platform. Yes. So, Art, we have a base platform which itself is not regulated. That's used for remote patient monitoring, And it's used as a patient support tool and to give some data back to clinicians so they can take their take better care of their patients And more quickly come to decisions because they have access to the subjective data that they may not be able to extract out of a patient, in in such high

resolution, or ever really. And from that platform, we then have a series of interventions that are for very specific medical conditions. We have something for, kids with traumatic brain injury. We have something for cancer survivors. We have something for postpartum depression.

Dr. Bechara Saab [00:18:33]:

And these are clinically validated step by step dedicated programs that contain a lot of psychoeducation relevant for the particular medical condition, and we target certain types of therapy in order to induce the types of neuroplasticity that will result in healing for that particular medical condition. And those are released only after a prescription, and they need to be FDA cleared, and we're going for reimbursement for these from the public private payers.

Pete Moore [00:19:00]:

So I wanna shift over to, a new, acronym. We use HALO. You've got now SAMD, software as a medical device. Why don't you explain that to, to everybody listening

Dr. Bechara Saab [00:19:13]:

here. And so this term really comes, out of the fact that the regulatory agencies have always This made a distinction between what's pharmacological and what's hardware. What's, you know, what what's with device. And then as this new class of medicine emerged, Software as a medical device he's called now, also often referred to as digital therapeutics. They needed to put it into some category, And they decided to pair it with medical the medical device category because there was already creeping into the medical device category software that ran the hardware that was medical device. And so that's why it sort of fit into them more quickly. But in many ways, it's a misnomer where it's not a device like most people think of as a device. It's just pure software that runs on a phone.

Dr. Bechara Saab [00:20:02]:

The phone itself, obviously, is the device, but it's not what's regulated. It's the software

Pete Moore [00:20:07]:

itself. Got it. Well, I like I like the new acronym. I like software as a. So you filled

Dr. Bechara Saab [00:20:13]:

in the note, though. MD., I know. It's

Pete Moore [00:20:15]:

Adlibs. I think it's a name of that. Yeah. It's good. So let me ask you a question On running a business, you know, potentially changing the world. At the same time, you know, talking to investors, I'm assuming, about funding this and what the revenue model is and how much you could potentially earn by also changing the world. So how do you think about that as an entrepreneur, And how do you kinda manage through investor presentations where they might say, you're not charging enough, and you say, well, you know, I'm changing the planet. Is that is that enough for you to get involved?

Dr. Bechara Saab [00:20:51]:

Yeah. It's interesting. You know, we've been very careful to design our, revenue strategy such that we can make more money the better we deliver care. And so really trying to design the structure of the entire business to work better and to be more successful. When people are healthier, that's a tough thing to do. You know, health care should really be called sick care because we're actually getting paid when people are sick. And the more people get sick, the more money that is made in the industry, and that's something that I think we can help shift. And there's a lot of people that want this to shift. Right.

Dr. Bechara Saab [00:21:29]:

From the governments, you know, to the patients themselves, to the health care people operating the health care sector. There's only a few players that are really, you know, working in the other direction. So I think, you know, it will happen eventually, and we're happy to be a part of that driving force.

Pete Moore [00:21:46]:

And just talk a little bit about your company, you know, the size of it, where, you've got personnel located, some of the research that you're doing, what's in We're pretty

Dr. Bechara Saab [00:21:56]:

pretty closely. So we've got, I think, 14 people full time with the company, and then we've got another 60 or 70 Clinical psychologists, psychiatrists, meditation guides from around the world that that work with us, and then the expanded clinical team, and other partners probably puts us up to around 250 people that are that are really helping us get done what we need to do on the deep tech and the and the clinical side and commercialization. Our headquarters are in Singapore. There's some strategic reasons for this because we really see Southeast Asia as being a digital gold mine for lack of a better term, in the near future, but most of our attraction is actually in North America as we've signed deals with some major hospitals and telehealth providers in the states and in Canada. We're really just kinda getting started in Asia on the on the commercial

Pete Moore [00:22:43]:

front. That's great. And have you got outside funding, or is it internal?

Dr. Bechara Saab [00:22:48]:

Yeah. We've raised a little over 3,000,000 so far, so still quite early days. And we have another, open round right now that we're trying to close over the next few months. And, You know, we've got some really great investors. You you're asking earlier about the conversations we have. This this kind of I'm and I grew up my investors in 2 categories. There's ones that No science and the ones that don't. And the conversations I have with them are very different because of and you don't know the science.

Dr. Bechara Saab [00:23:14]:

It's really hard it's really hard to truly appreciate, the technical aspects of what we're doing in addition to, you know, why it's so hard, why it hasn't been done before, why it's different from other companies. And when you, you know, when you don't know the science, then, you know, we really got to focus on other aspects, like the go to market strategy, the financials, the upside, the traction that we have, etcetera. And so that's how we have to differentiate those conversations. Yeah. We've got some great funding, like, from medical doctors, and from, you know, health tech funds, even from governments. Oh, it's

Pete Moore [00:23:47]:

good. Oh, well, please share the, the materials with us. I've got some people to introduce. From a standpoint of you know, you started off on the clinical side, research side. You've been a, you know, a capitalist entrepreneur now, if I could use that term with you, you know, for about 6 years. How do you feel about how it's maybe changed you? Maybe lessons that people that, you know, maybe were in your path and wanna make the leap to actually build a business and not build, you know, case studies.

Dr. Bechara Saab [00:24:19]:

Yeah. The, you know, the leap is a is a is a good word. You know, I think that the biggest thing that I did, which I shouldn't have done is I quit my job And start, you know, pushing full time with the company before we secured any sort of meaningful financing. In retrospect, I could have waited a little bit longer, continued working, at the psychiatry hospital, and then gotten some bigger investment. But, You know, it's hard to say, you know, how that would have impacted things because, you know, sometimes you just get comfortable where you are. First, but, you know, I don't regret anything that I've done so far. I don't know how much it's changed me. I've had many, you know, difficult periods in my life.

Dr. Bechara Saab [00:25:14]:

I spend, a lot of time extreme skiing, Which, you know, puts me in life and death situations, multiple times per year. So I'm pretty good at dealing with, stress and staring down a gun or a bear.

Pete Moore [00:25:28]:

Gotcha. Well, stick to, stick to this versus the skiing so we can make sure that you're, you can accomplish this, sir, your big mission. Awesome. Man. Well, look. We're, we love what you're doing. It's a big issue in the industry. We think exercise and health clubs and studios are the Solution.

Pete Moore [00:25:49]:

That should be the first point, before anyone gets on any kind of pharmaceuticals that are high margin and recurring revenue on their own. They've got a business that they know what they're doing. We've gotta combat it. So great to have you on. Doctor Saab is going to be part of the halo sector as of this podcast. Thanks for coming on, man. Awesome. We love what you're doing.