



Anusha: Hi, and welcome to DigiHealth Talks, a podcast created and hosted by the Brown-Lifespan Center for Digital Health in Providence, Rhode Island. I'm your host, Anusha Rahman. Join us as we meet some of the masterminds behind the field of digital health, leveraging the innovative technology around us to help the public improve their well-being. Today, we are interviewing Dr. Cynthia Castro Sweet, the Senior Director of Clinical Research at Modern Health. She's a clinical psychologist and has experience working in both academic research and in private industry. Thank you so much for being here! We are so excited to have you.

Dr. Castro Sweet: Yeah. Thanks for having me. I'm excited to be a part of this, and I appreciate the invitation.

A: To start us off, can you tell us a little bit about your educational background and your role at Modern Health?

C: Sure. So as you said, I have a PhD in Clinical Psychology. I did my doctoral training at the Joint Doctoral Program in San Diego, and I did the health psychology behavioral medicine specialization track. I did my internship at the Palo Alto VA and did a lot of rotations in primary care, home-based primary care. I was the lone intern who did a rotation in the locked inpatient psychiatry ward, so that was a nice departure from my regular health psychology work. And then after that, I did a fellowship at the Stanford Prevention Research Center. And I worked on research there for a couple of years as a fellow, and while I was there, I was writing grants to get me a staff scientist position. That's how I started my career as a staff scientist in a research division.

A: What does it mean to be a staff scientist?

C: Good question. So probably a lot of people are familiar with the academic track. Becoming an Assistant Professor and working your way up to a tenure-track professor position. That is an option, but there's also other options to be a scientist working at an academic medical center or at a university, and that is the staff scientist route. You can be a staff scientist, but you're not part of the faculty, and you need to be very clear about that. You don't have the same faculty privileges, but you also don't have the same faculty administrative responsibilities. Some of the downsides of faculty role that some people don't like, that they have to live with. That's not part of your life. But you are a staff scientist. You are working on research. Depending on your university, there are limits to the kinds of grants you can apply for, but your day-to-day work looks very similar to academic research.

A: And so you currently work in industry. What does that mean?

C: Yes, so I left academia, about six or seven years ago, to take a job as a research scientist in industry. What does industry mean? Basically, we're talking about the private sector. So these are companies that have their own funds, and they're building something, and they're trying to make it a viable, commercialized product, or platform, or service for different markets, and we can talk about what do we mean by markets. Essentially a lot of these companies have a product that we need to show evidence that it works and for whom it works for. How does it work? What are the mechanisms? There is a need for research and evidence-generation, and that's what I do. I work in the digital health world. There's tons of new innovations out there of ways of transforming healthcare to utilize technology to make it scalable, sustainable, get it out to people where they live, and we need to show that those platforms and products work. There's a lot of people like me, there's a lot of scientists out there that are conducting studies and running trials of these different digital health platforms and innovations, and generating the evidence. And what does that mean? It means I run studies. I write up the results, I publish, I present. I do very much a lot of the work that research scientists do in academia. But I have a different audience for what I do. So my audience are the buyers and the potential market for our products and services, in addition to just trying to contribute to the greater knowledgebase of what is out there in digital health.

A: So it sounds like there's a lot of overlap between what's in academia and what's in industry.

C: For sure, a ton of overlap, a ton of transferable skills from academic research/training into industry research. I think we probably have more in common than dissimilar, but I think we don't have a long history of researchers in academia and in healthcare. So I think there's a lot of room for uncovering some of those myths and helping people better understand and get a better line of sight into what these careers are like and see how similar and how much graduate research training is applicable to the private sector.

A: And what was the transition like, from academia to industry?

C: It was a roller coaster. So when I moved into industry, it was about six years ago and there were, you know, I had a few contemporaries that had roles like this, but they were kind of few and far between. And I didn't know a lot of people, so I didn't really know what to expect. I didn't really have people that I could ask a lot of questions and learn what their daily jobs were about. I had done a little bit of consulting, so I could see it, you know, on the other side of the academic fence as a consultant. But I really wasn't doing the work as part of a company. I would say it was a very exciting transition, scary at times. I had to learn to adapt very quickly to working in a new environment where I was one of two researchers at my company, of about 200 people at the time. And then in academia, you were one of many. So you have like a huge peer group, you all kind of know each other's work. You know how you do your work. Moving into a company, nobody really knew what I was doing or how I was doing it. They knew what I was there for but didn't really understand kind of how I conducted my work, and I had to learn a lot myself about how to be a researcher in a different environment, with different resources and

a much different pace. In industry, we move a lot faster and the incentives to produce and to conduct research much more quickly are really built in. In academia, I don't think there are the same kind of incentives, in terms of what's driving the pace of our work, and to certain extent the pace in academia is dictated by grant deadlines and budget years of grants and things like that. So, in my transition it was really kind of like learning how to be successful in a high-paced environment where there wasn't a lot of structure. There wasn't a lot of history or models to look at to shape my work, and just be really humble, and open to feedback, and try to use my instincts and my perception of "how do I think I'm doing?", "where could I be doing better", asking a lot of people to give me input. So things that might not be as commonplace in academia, I really had to learn to adapt some new communication skills and just working skills to work in a different environment. But I will say, I was able to make the transition. I loved it. I continue to love it. I think it is the right place for me. I would say I probably, I work a lot harder. I don't think I work necessarily more hours than I was working in academia, but I feel like I'm much more productive with the time that I do put into it, and it's just been a really good fit for me.

A: So you really blazed your own trail when you left academia and switched into the private industry.

C: I mean, it felt like it. Like I said, there were other people that were in industry positions, I just we didn't really have a natural home. I'm still a part of professional societies, like Society of Behavioral Medicine is my home. I'm a part of APA, APHA. And I knew there were other scientists who weren't working in academia, but I didn't really know what they were doing. I didn't have strong relationships with them. But once I moved to industry, I really invested in those relationships and invested in building a new network for myself because I needed a peer group still. I needed other people who could relate to what I was doing. I also really saw the need, there are going to be more people like me. There are going to be more new investigators coming into industry, and it doesn't have to be as hard for them. They need some role models, and they need some people who can really start blazing that trail for them and make it a smoother transition for them. So I've been tested some of my personal time and energy into doing that. And it's been super beneficial. I've benefited a lot. I think my network has grown. I know a ton of people in industry now, and I'm really proud of the fact that I know a lot of people. We're pretty collaborative, collegial. We're all in similar situations in our companies. We really do relate and support each other. I like to think we're making it better for the next generation to come so that they see role models, they see people with these positions. And maybe academia isn't for everybody. And now there's equally viable options and there's a hand willing to help them get there. So, yeah, my transition was fast and furious, but I think it's going to get a little bit more commonplace as more people like me go into industry positions.

A: Sure. Speaking of transitions, we know that oftentimes the innovations that we produce in those academic research labs don't translate well to the real world. Why do you think that is?

C: Yeah. You know, there's different resources, different drivers for how research is conducted in academia and how things are built in academia. For the most part, I would say, I think it's

probably not controversial to say, NIH funding is the primary source of financial support for the creations and discoveries that happen in academic research. Those resources are often very much constrained for certain purposes and for certain uses. I think the biggest gap or tragedy is that there's very little incentive or built-in funding to build sustainable models that are innovative. So you can build something, but you probably have a 3, 4, or 5 year grant, and then that grant ends, and your funding ends. How do you keep that product alive? It's going to continue to need Technical Support, specialists who can keep that running. Literally you need funds to keep the lights on. But that's not built into the grant mechanisms that are very much, grants have an expiration date. I think that often can limit the development of work in academic research, and it can only get so far down the road. Then it hits these natural obstacles. In industry, there's more opportunity to create sustainable models, but it does take changing things and modifying them, and what we strive to do is take the best of the essentials of academic research and build off of that. But I think we all have to accept that it's not necessarily going to look and stay exactly the same.

A: How is it different developing and evaluating programs within academia compared to within the private sector?

C: Yeah, that's the great question. I will say, one of the compromises that you have to accept doing research in academia is rarely will that product or platform, whatever you want to call it, we'll call it a product. Rarely is that in its final form when it is time to evaluate it. So oftentimes we use these analogies, like we're building the plane while we're flying it. That means we're continuing to develop the product. We're continuing to try to improve upon it while we're evaluating it. While I'm trying to test it, it's still changing. But that is inevitable. And if you think about it, there's not a good reason to want to have a product fixed in time so I could do a clean research study on it, because that's not what people are eventually going to be on the receiving end of. They're going to be on the receiving end of a product that is ever evolving. Whereas in academia, you have a lot more control, and you get the product, or the intervention, to a place where you feel like it's ready. And then you can do all sorts of very controlled, extremely rigorous testing on it. We don't have those same conditions in industry. So you have to be a little bit more pragmatic and more resourceful and also be able to put your findings, your data, in context with the stage of development that product was in when you did the test. Those are just the inevitable conditions of doing real-world research, and that you have to be comfortable with, and that you have to be good at communicating, so that people understand. It doesn't mean that we didn't do a strong test of this product. It just means it's an evolving product, and it is not going to be a fixed-in-time resource. That means some people are going to get a slightly different experience. But the core of that program is the same. The core pieces of that product are still there, and are still being evaluated. But maybe the color is different, maybe the logo has changed or maybe there are some design changes to it to make it better. So those are the very different kinds of conditions that we have within and not within our control in industry, reverses academia.

A: Are there any other major drawbacks to this process of releasing constant iterations, but then also still working on the product itself?

C: I see more need for it than reasons to not do it that way, because if you look where we are in digital health, from a historical perspective. We are right at a moment where there is an explosion of innovation going on, and there is a lot of activity happening, a lot of new products and services to really fill the need. And why is there so much motion here? Because there's such a great need for it. There's such a strong demand for it. From patients to payers, everybody realizes that our current healthcare system needs a lot of improvement. Digital health is one of the areas where we have a lot of opportunity to improve both the access and the speed of delivery of services. And we want to do it as quickly as possible. There are people's lives that are on the receiving end of these products. We're in it for the right reasons. We want to help people. So we want move quickly to do it. There are risks involved when you move that fast. And that's why we need well-trained scientists working in these companies who understand the risks that are involved and understand the ethical implications of the products that we're putting out there, the health risks involved, and be able to be a guiding light and hold those principles very strongly when it comes time to evaluate, and how do we evaluate these products, and is it the right time, what is the upside/what is the downside, what is the risk. Be able to be that strong voice in the conversation within the company. I get it, I understand the need for it, and at the same time, I think that's why we need well trained scientists to be a part of that process because we can add some expertise to make sure that the evolution of these products is done with ethical, pragmatic, and scientifically-informed guidance along the way.

A: And do you feel that as a scientist you get pushback from non-scientists when you're testing or looking at these products?

C: I wouldn't say pushback. I think there's a lot of questions because, like I said in the beginning, I'm one of few scientists in a company, and at the same time, I'm not a product designer. I don't have that expertise. I'm not a UX designer or a researcher. I don't have that expertise. I'm not an engineer, I'm not a data scientist. There's a lot of things I'm not at these companies, and I have to be just as humble and respectful and receptive to their influence as I want them to be to mine. I don't see it so much pushback, as much as questions that really help provoke conversation and collaboration. I think that's the right mindset to go into, is to have a humble curiosity about "why do we do things this way and why not some other way?" Be open to influence from others, but also be open to share your observations and curiosities and hope that that influences others in part.

A: Sure. Thank you. On top of all this awesome work that you do, you are also the chair at the Society for Behavioral Medicine's Digital Health Counsel. Can you tell us a little bit more about that work?

C: Sure. So the society of behavioral medicine is a professional society composed of mostly behavior scientists and health professionals who are focused on or experts in behavior science or the application of behavioral principles to medicine. The Digital Health Council is one of several councils within the society. All the councils that SBM are there to support, inform, and elevate the work of the members and help the Society be the premier home for professionals in

this expertise area. At the Digital Health Council, we really focus on the variety of activity that is going on in digital health, both on the industry side and on the academic side, and we're there to really help shape the society's vision, and where does digital health fit into the future of SBM, and also help elevate the work of the society members that are working in digital health, and help increase collaboration and communication. It's trying to herd all the digital health cats that are running around society and give us kind of some organized initiatives to rally around and focus our energy and show where our society can be an influential leader in digital health.

A: So also kind of going back to what you were saying earlier about sharing what it means to be a researcher in industry or a scientist in industry.

C: Exactly. And also to learn from each other and to learn what we don't know yet and where can we look outside of our society to find some partnerships and find some cross collaboration. It's a mix of connecting people within the society, but then also representing and being a good ambassador of the Society to external parties as well.

A: What advice do you have for new graduates who are maybe interested in going straight into industry and not academia?

C: I hope you are getting support for that. It is an equally viable career path. Don't think of it as an alternative, don't think of it as a lesser-than choice for you, because it's not. I think it's just a difference in the evolution of our scientific discipline, to be honest with you. Physicians have been working in industry many more decades than us. We've been there in industry, maybe a decade at the most, but that's it, because we're a relatively new scientific discipline. You have to take the long view here and look over the course of where the field of behavioral science is. These are relatively new careers, but they're not going to be that, ten years from now, 20 years from now, people will not bat an eye about careers in industry. They'll just be much more commonplace. If you're thinking about it now, good for you. There's a ton of opportunity here. You probably need to rethink some things to get yourself better set up for that. CVs, curriculum vitae, are less common in applying for industry jobs. A 1-2 page resume, you've got to be able to distill your work down into that, that's much more commonplace. And think about how to talk about the skills that you've learned so that they seem much more readily transferable to a corporate environment. Your project management skills, your budgeting skills, your people skills, your communication, your verbal communication, your ability to write. All of those things you've been trained for in graduate school. You're going to be using them everyday in your academic career. So all the training you have is what you need. Maybe what you haven't learned yet is a little bit of the healthcare business acumen. Where does this work fit in the greater world of the corporatization of healthcare in America? Some of those things are the things that you will quickly learn in industry. There might be some team design work that you might need a little bit of exposure to. So how do you work with people from other disciplines? And I'm not talking other scientific disciplines. Other professional disciplines, like engineering, design, the commercialization of a product, people who work in sales and customer support, marketing. Those are the people that you end up working with in industry, and you probably have never encountered any of them in Graduate School. But what you might have done is like worked with

other students in some of your electives. Or at least start networking so that you understand a little bit about the other kinds of disciplines you might be encountering in a corporate position. That's going really help you make a smoother transition because it's not just going be you and a bunch of other scientists. You're going be one of very few scientists, and you need to learn how to play in a sandbox with a bunch of other people who come from different backgrounds and training and have equally important expertise. But it's just different than yours.

A: That's really good advice for all the recent grads out there. I think we all really appreciate that.

C: There's a lot of us out here. We're very approachable. You know, I rarely say no to a student who reaches out and just wants to ask some questions and wants to do like an informational interview. And there's lots of other people that are like me. If you find people or look through the society, we have a consultation program where you can actually get connected to an industry researcher if you have some questions. There are ways out there where you can reach out to us and we're happy to talk because we've been in your position, and we had our questions, and we didn't have as many people to help us answer them, so it's a pretty supportive group over here.

A: Very cool. And one final very broad question. Where do you see digital health in industry say 20 or 30 years from now?

C: It's going to continue to be very widespread. Hopefully more mature. By that I mean there will be more established platforms and products that are available. I would like to believe we're going have better equity of access to digital health. By that I mean, there will be innovations and solutions for every area of healthcare. Right now, it's kind of concentrated and there's a lot of focus on chronic conditions and a lot of specialty conditions. But I want to be able to say that digital health will be more broadly developed, so that there is equity across, whether you have a rare condition or you have multiple conditions that you get better care for all of those in a more integrated way. I predict that in less than 20-30 years there will probably be some consolidation. Right now, there's a lot of people trying to do very similar things. And it's inevitable in that kind of environment that some will emerge as being the better models and exemplars of how things should be done. And that will probably trigger some consolidation where there will be less crowdedness in some of these areas. Hopefully that will continue to be great innovations, great use of new emerging technologies that we don't even know yet that are just going to help improve the experience for the people that are using these innovations and better integration with their traditional healthcare. I think traditional healthcare, we all should except that that is not going to change very quickly. It is a very big, long-standing institution of practitioners and systems, and we're not trying to overthrow it. We are just trying to improve it. I think that will always continue to be a part of health care. Hopefully a lot of the digital health innovation will be able to find a way to be better integrated and coordinated with traditional healthcare. That's my hope for the next few decades.

A: That sounds good. Thank you so much for being on this podcast episode. I learned so much, it was so informative. Thank you.

C: Thank you and great to be a part of it.

A: To learn more about the Brown-Lifespan Center for Digital Health, check us out at digitalhealth.med.brown.edu. Don't forget to listen to our past episodes, available wherever you get your podcasts.