

Dr. Nancy: I'm Dr. Nancy and I'm here today with Dr. Yip to talk about a very interesting topic today, brain mapping. She's going to let us know what that is. But first, I wanted her to introduce herself to you. Welcome Dr. Yip. Want to tell everybody about ... a little bit about your background?

Dr. Yip: Thank you for having me. I graduated with PhD from University of Newcastle Australia. Thereafter, I joined Eli Lilly and Company and did research in neuropharmacology. So worked on Cymbalta in a team. After that I went to Boston University and still working as a researcher looking at the brain. And these I went from animal models, that means rat brain into human postmortem in the work that I did with Dr. Blatt and Dr. Bauman and Kemper on the circuitry in the brain that is affected by autism. Basically we just took postmortem samples of autistic versus normal brain and look at the difference. We look at some genetic markers and have shown that there are some second messenger transcriptional changes in brains of autistic individual.

Dr. Yip: Now during that time my nephew was diagnosed with autism. He's non-verbal. He is aggressive. He's not aggressive anymore, but he's still non-verbal. And I became very interested in the treatment side of things. I went ahead and became board certified. I'm a board certified behavioral analyst, and this allowed me to do autism treatment. It's a recognized gold standard treatment.

Dr. Yip: Now one of the things that I found was that as I work with the clinical population is that a lot of parents came to me with not only autism, all kinds of problems in their children, behavioral problem, defiance, emotional meltdowns, and learning problems, and I thought that you know what, I have studied for by that time decades, took me a while to finish my PhD, it's my fault, but it took me a while to understand the circuitry of the brain and there's a lot out there that-

Dr. Nancy: There's a lot.

Dr. Yip: We can catalog a lot in a positive way. So I thought why don't I use existing technology that has been FDA approved, that is available to capture brain wave information. So I used the qEEG. It's available. Why reinvent the wheel? I combined that with my knowledge of brain circuitry.

Dr. Yip: I now have two businesses. One is called Indiana Brain Mapping. With that I specialized in looking at circuitry that's disturbed. So basically qEEG information is fed into a program, and then we then analyze it based on circuitry information and we're able to tell the extent of deviation from norm in any area of brain functioning. For example, let's say a kid has attention problem. How bad is it I can tell from the brain map. Or let's say a kid is not paying attention, but the medication that's been prescribed is not working. Well, you know what? If you look into their brain, it's not the problem with the medication. The underlying problem with the attention deficit is not classical attention deficit per se, but it has something to do with anxiety. So they are not perceiving the instruction properly. All they see is their anxiety and they are into fight and flight. We are able to tell that from the brain mapping.

Dr. Yip: Combined with the behavioral analysis side of things, I then come up with a treatment plan for the parents. For example, this kid has anxiety. Let's look at where it is in the circuitry. Is it amygdala over activation? In that case bringing it down, help with coping, make it ... deliver it in a way that is friendly, that is fun, that is reinforcing, and then we also measure attention span. Is attention span five minutes? Less than five minutes? If it is two minutes, good, we're going to present information in two minute bite size, which is what we call advertising anyway. So we will do that and then the kid will go and do what they like and then they come back.

Dr. Yip: When we combine a behavior protocol with medication in fact we are able to achieve greater effectiveness. A lot of parents tell me that they don't feel comfortable putting their young child, sometimes they can be as young as three years old, on psych meds because these psych meds have not gone through the whole ... We are not supposed to test drugs on children. So when the pharmaceutical company that does drug testing, they actually do not test it on children. It's tested on adults. We know the brain of adult and children are different. We also do not have information on long-term usage of those drugs, especially heavy duty drugs like antipsychotic medication and [inaudible 00:06:00].

Dr. Yip: What I want to do is to measure brain activity. Let's say you are on drug X. Okay, after six months, what does the brain look like? So we are going to combine that with some kind of behavior protocol and we will change it. And if there's meltdown, look at what triggers it and help the client deal with that better.

Dr. Yip: My model works best with collaboration with other disciplines and the psychologist, the counselors, chiropractors, because each discipline offers something. At the end of the day, it all comes back to the organ of the brain because we do all our thinking and personality development through the brain. The end point is that piece of flesh which is three pounds in the body and it's a very important piece of flesh because you lose it, you don't ... It can grow back to some extent, but it's very well what you call that balance. So we really need to take care of it. That's my message to everybody. We need to understand how it impacts the brain.

Dr. Yip: I would like to propose a more rational way of, well, because I come from neuropharmacology which means drugs, psych meds, and I am not against psych meds. I am for using psych meds in a rational way and measuring the impact on the brain. That's it in the bottom line.

Dr. Yip: Currently I'm developing an app to allow me to better collaborate with other disciplines. The app will be whatever ... Since I'm a scientist I like data, and so I would like the parents to collect data on their phone to make it really easy for them. It will be analyzed automatically for them via a website. So other professionals who work with them can then key in what they have done. That way we can rationally look at the effects of all these intervention on their growth. I hope this is not too complicated but ...

Dr. Nancy: No.

Dr. Yip: That's what I do in a nutshell. In other words, to make it simple, I am a data driven person, I measure brain activity, and I use the modality of course that I'm qualified in which is behavior analysis, but I do reach out to other professionals to collaborate, and then I hope that this collaboration will impact, will have good impact on brain, on development which we can really measure those outcomes.

Dr. Nancy: Do you measure with electrodes on the head? How do you do the brain mapping?

Dr. Yip: Yep, electrodes on the head. It's easy. They put a cap on their head and it's noninvasive. Basically you just wear a shower cap and I have to put gels through the holes because I have to make the contact with the scalp. It's electrical signals. Then that get connected to an amplifier and the amplifier goes to a computer for analysis. That's all. All they have to do is sit there for 10, 20 minutes.

Dr. Nancy: Okay. That's hard to do for a ADHD kid, right?

Dr. Yip: We actually train them up if they need to. We do have a protocol that can train them up.

Dr. Nancy: Since you've been doing brain mapping, have you seen a pattern of part of the brain that's getting affected the most?

Dr. Yip: Yes. Most of the clients that come to see me have autism and the pattern that I see most is the social integration area parietal lobe, the higher integration centers, and they tend to be hit when wiring is obstructed. You can see it as difficulty adjusting to life. People tell them to do something. They tend to rebel or freeze, retreat. So just like getting out the door, mom and dad says put your shoe on and there is a battle and that kind of thing. Those are the social integration center.

Dr. Yip: Another center that I see that's quite common it's called the default mode, and that governs the ability to assess social reality appropriately. You can see that that is they not see. They are not able to tell the difference between authority. Everybody is on the same level. Sometimes not able to tell the difference between strangers and really good friends that you hug and you sit on their laps and that's a ...

Dr. Nancy: That's why there's that, some autistic kids or kids on the spectrum have space issues with people.

Dr. Yip: Yeah, personal space. Personal space, social cues. The reality perception center allow us to predict also, through the software that I have I can also predict delusion. Though delusion is another level of danger that we need to ... all professionals should take precaution on because delusion combined with aggression is what we see in all these shooting cases. So it is possible for us to intervene before it gets to a level that we don't want to happen before tragedy strikes. It is possible. And that's what I'm excited about.

Dr. Nancy: Yeah, that you can make ... map it all and find where the issue is. That's great. A great tool. What ages do you start with this?

- Dr. Yip: Well actually I can, as long as I can put a cap on people and they're willing to wear it for at least 10 minutes, I can measure it. I've measured infant. I can get custom cap made for the head size. So basically from infancy to 82 because our database only goes up to 82.
- Dr. Nancy: Would it be a benefit for a mom to maybe get their infant just brain mapped to see how development is? Is there ... Or do they need to have an issue to come in?
- Dr. Yip: I don't do infant a lot. I know that what is called that Tufts Medical School in Boston and the Harvard Medical School, they do have research on infant to show early biomarkers for autism and I know they also do EGG. That's a research thing. I tend not to look at infant because we ...
- Dr. Yip: Actually there's something I would like to show you guys which is another topic that I feel like is important, is also research from the Harvard University Child Development Research Center. What it is is that usually when they come to me, they are at least three. And if they are not talking by three, that's a red flag. They should start communicating from two and have some words.
- Dr. Nancy: Is there anything else? I mean, great information that you shared with us today. Is there anything before we sign off that you want to leave our parents with? Anything you feel they should know?
- Dr. Yip: Okay, absolutely. I don't know. Maybe I can also scan and send you this paper if you give me an email later?
- Dr. Nancy: Okay.
- Dr. Yip: I feel like this is the piece of research done by Harvard University. They call it the five numbers. First number, when an infant is born the growth of the neurons in the brain is really fast, 700 connections per second. By the time they are two years old, I don't know if you can see that, they have gone from this much to this much.
- Dr. Nancy: Wow.
- Dr. Yip: They are two years old. That's one number. By the time they are 18 months old, oh, you can see the graph, right?
- Dr. Nancy: Yeah.
- Dr. Yip: This discrepancy. The one that is on the top are college educated parents, and that's a number of vocabulary that they recognize. The line at the bottom are working class and welfare parents. So social economic background predict development.

Dr. Yip: Another thing, point number three, 92% to 100% chance of development or delay when a child experience six or seven of the adverse risk factor, which is poverty, single parent, low maternal education, child maltreatment.

Dr. Yip: And the other thing, the final thing that I really want to say is early intervention, early detection. For every dollar that you spend in early intervention, you get \$4 to \$9 back. So you get 400% to 900% gain. Do not wait until they are 12, 13, 16 because it's a lot harder to do anything about. We need if ever you wonder that something is wrong ... Is not easy to get diagnosis. A lot of people miss the criteria which is why I do brain mapping again.

Dr. Yip: I can measure things before behavior happens. I can measure things as early as infancy. But is hard to predict in infancy because they are still growing. Two years old is really good. Do something quickly and by the time they've grown up, you're not going to see any difference between somebody who has autism and somebody who's typically developing. I know because I have watched it.

Dr. Yip: Finally, I'm not expecting you guys to buy this book, but this is a book that I have co-authored with Dr. Michael Fitzgerald and it is called Autism: Paradigms, Recent Research and Clinical Application. These are research work on clinical treatment that is used in autism.

Dr. Nancy: Oh great. Okay. We'll put the link in the comments below so that they can have that information, as well as your website. Do you have a website you want to say for our podcast listeners?

Dr. Yip: Yes, I have two. It's autismparentcare.com. AutismParentCare is one word. The other one is indianabrainmapping.com.

Dr. Nancy: Okay great. Well, thank you Dr. Yip. I really appreciate you coming on. And sorry for the technical difficulty we had today, but it's great information I think that everybody really needs to hear and then we'll get you some people to get their brains mapped.

Dr. Yip: Yes. And I don't just brain map people with autism. I brain map anybody who have brain problems. And it's not only children, also adults.

Dr. Nancy: Okay. Great. Well, thank you for all the information. We really appreciate it.

Dr. Yip: Thank you for having me.

Dr. Nancy: You're welcome.

Dr. Yip: Okay. Bye.

Dr. Nancy: Bye-bye.

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