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Podcast Script
Interview with Dr. Thorn

Part 2: Gate Theory

Jessica

Global Healthy Living Foundation welcomes you to Pain Explained, an introductory podcast session on Gate Theory and the brain's influence on pain signals. I am your host, Jessica Boles, Licensed Social Worker with Global Healthy Living Foundation and ArthritisPower. We'll be joined by our guest, Dr. Beverly Thorn. Dr Thorn is a former professor and chair of the department of psychology at the University of Alabama and she and her team have done some fascinating research on how patients can better understand and manage chronic pain. So, we will talk more about this is a few moments today, but welcome Dr. Thorn and thank you for joining us.

Dr. Thorn

Well, thank you for having me. It's a pleasure.

Jessica

Great, so I'd like to start by asking you, if you don't' mind, could you give us a brief background on your research in chronic pain. Maybe tell us what you have learned through your experience with it.

Dr. Thorn

Sure! So, I have been doing chronic pain research for well over 30 years and it has evolved overtime, but mainly what I've been interested in is how we can help people with real pain through psychological principles that have to do with how the brain processes pain and how we can help people with various medical disease processes that are associated with pain, how can we help them harness the power of the brain to work for them instead of against them. What we know from many years of research now, some mine but mostly other peoples, is that the brain is not a passive recipient of pain signals that come from let's say you smash your toe the brain isn't just sitting there passively receiving signals. It's actually filtering them, processing them, and it that pain signal goes through a lot of areas of the brain. The important thing I think to psychology and mental health is that it goes through areas of the brain that involve emotion and goes to the area of the brain that involve memories and also our thought processes. It

filters and it sits through and it changes that pain signal. It can make that pain signal bigger or it can make the pain signal smaller. So, given that we know that how can we help that filter, filter out more pain signals.

Jessica

I know that you've done a lot of work in this area. In our online session we even share that the brain and the spinal cord have these neurological gates and we've provided this analogy, a lot from what we learn from you, about this relationship in being somewhat like a mailbox or a gate sending and receiving signals, but what I'm wondering is if you could expand on this a little bit and talk about the value of this to our chronic pain patients.

Dr. Thorn

Sure! So, the surprising thing about the Gate Theory, which has been by the way it was proposed in 1965 this Gate Control Theory, before then everyone thought the amount of tissue damage that you have, like if you smash your toe, a lot that's going to produce more pain signals that go up to the brain and give you a big *Ouch* but if you just stub your toe that's going to produce just a few pain signals that go up to the brain and give you a little *Ouch*. Well, the amazing thing about the 1965 theory that they proposed was that the brain is not just passively receiving these signals. The brain is doing things itself and the amazing thing to me is, and what's been found in research overtime, is that the brain is monitoring what's going on with not just pain signals but all kinds of signals coming up from the body through the spinal cord. Before it even gets to the brain, the brain is monitoring below, below the brain it's monitoring in the spinal cord for example. So, the key components of the Gate Control Theory is that first of all the brain is not a passive recipient and second of all the brain actually monitors and has an inhibitory power over those signals coming up to the brain or depending on your thoughts and feelings and experiences it can actually amplify the pain signals. So, those are the two points I think are very very important. The brain is really the seat of pain and it's the brain that decides whether something or someone is in pain or not. That explains a lot of things of that previously have gone unknown. For example, how can a soldier on the battlefield who's just had their arm blown off not be feeling pain? What's found is that a lot of it has to do with the context and for those soldiers on the battlefield, and it’s not just independent of them going into shock either, those soldier on the battlefield are saying to themselves, “I'm going home. I'm getting out of here”. That can explain a profound disruption in the pain signals, so what's going on the brain can make a huge difference.

Jessica

So, I heard you mention about amplifying pain, but from what I'm hearing from you, does this mean that in terms of gate theory that we can stop these messages? That we have any sort of control over that?

Dr. Thorn

Well, we talk about it in our pain management groups because we use the gate control idea. We talk about *closing the gate* to pain signals an *opening the gate* to pain signals. More accurately, what we're able to do is reduce the number of pain signals. So, it's like narrowing the gate or widening the gate to more pain signals. Our brain has the power to do it either way. So, when we're saying to ourselves, for example, “Oh God, this is the worst I can't tolerate this. I'm not going to survive” your brain is actually opening the gate to more pain signals. Most of our patients will say, when they are stressed out, when they get very very anxious, they feel more pain. Well, that's the brain opening the gate to more pain signals. So, can you entirely close it, who knows? Maybe some people can, but if you can narrow that gate to fewer pain signals that's usually worth a lot to people.

Jessica

And you know, you made me think of something, a lot of our patients they really try to be proactive and do everything they can possible to try not to experience pain, but how much control do we potentially have or not over levels of pain?

Dr. Thorn

I think it's a very natural reaction for those of us who have chronic pain. It's a very natural reaction to say, for example, “This hurt when I move. I went for a mile walk yesterday and now I hurt” - so I'm not going to go for a mile walk today because that may be hurt and so I'm going to be proactive and not do that. The problem with that is we start actually being afraid of moving and the problem with that with arthritis or any chronic pain condition is we become deconditioned and our muscles, which are really our body armor and protecting and lifting our joints and easing the burden on the joints, our muscles become deconditioned. We actually in the long run cause more pain than less pain. It's a difficult concept for people to get when they're hurting. I understand that when I'm hurting I don't want to move or I don't want to do anything that I feel like is causing me pain, but in the long run we have got to keep our muscles as strong as possible because that's what's lifting those joints and that’s what’s taking the burden off those joints.

Jessica

I'm just wondering can be what works for individual patients or there are some things that work for all patients or do you have examples of any that work?

Dr. Thorn

One of the things we like to do when we first introduce the Gate Theory is, we have a drawing of the brain up on the board or on the flip chart, we've introduced the gate theory and then we talk about: What do you think might open the pain gates to more pain signals? and What do you think might close the pain gates to fewer pain signals? Everybody generates a list. So, for

example, people will always say, “When I'm stressed the pain gate is more open” and people will say, “When I'm relaxed the gate is not as open.” So, we generate a whole list of possibilities and what's interesting is that people will say, “When I'm depressed” or “When I'm anxious I feel more pain,” so we know that those are opening the pain gates. There are really some common ones that open the pain gate, when we're stressed, when we're anxious or depressed, or when we catch ourselves saying very negative things about ourselves or about our situations. Those kinds of things are going to open the pain gate. What kind of things close the pain gate or narrow the pain gate? Relaxation exercises. So, we train people to do muscle relaxation exercises quite a bit, breathing exercises. There's an interesting one: resting. Resting will close the pain gate, unless we rest too much then our weakness takes over and it will actually open the pain gate. Here's another interesting one: medication. Does medication always close the pain gate? What people, who come to my groups, will say is, “I've been taking medication for years and it's really not working much” and so it's not necessarily doing much for me except for causing side effects that I hate the side effects of. That's one of the reasons they like to come into something else that they can use. In our clinic what we do is help people generate this list of things they think might open or close the gates and we have some interesting ones, for example, exercise. If you overdo physical exercise that's going to open the pain gates to more pain signals, but if you under do and do nothing that's also going to open the pain gate to more pain signals. Another one that is interesting that can go on either side is medications. So, pain medications, especially in the short term and especially when they're taking exactly as prescribed, can close the pain gate temporarily. But pain medications, either used more than suggested or used over a long period of time, can actually backfire, and open the pain gates. So, those are two tricky ones, but we know that common ones are relaxation and positive attitude and positive mood, versus tension, stress, negativity, depression. What we do is we actually teach skills to help people work with their own thoughts and emotions so that they can narrow that pain gate. We call those techniques “gate closers” and that's were always after is closing that pain gage.

Jessica

Such great information! I know in our online session we had a lot of feedback on this, similar to things that you mentioned or massage therapy or different approaches. What do you think we can tell our patients or for those listening perhaps how they can use the information in their own care? So, is there a way that patients can talk to their care team about this, not just recognizing what works and doesn't, but how do we kind of incorporate that in the treatment process or discussions?

Dr. Thorn

So, I think it's very important to have conversations with the care team and often patients will be surprised to learn that their health care providers aren't really very familiar with the process of the Gate Control Theory or how *you* the patient can have some control over your *real* pain. So, it's very important to understand, for all patients to understand, that just because they go to a psychologist or a mental health professional that does not mean their pain is not real or it's

psychological or it's psychogenic. It is real pain and we are working with real pain signals and real brain mechanisms. When my patients have gone back to their physicians to tell them about some of the principles they're learning in the treatment program sometimes the physicians will say that they're very surprised and they see that their patients are empowered by the information that they're learning. So, yes, I think the more we communicate with the health care providers the more we're going to be able to incorporate this into our overall care plan.

Jessica

And another just kind of follow up question to that, I'm wondering why certain things might work for certain patients and not others. So, one patient actually told me work was something that she thought would help you know alleviate her stress whereas you know the next person may say work is aggravating that stress or do we know why acupuncture might provide relief for one person and maybe not another. Do you have any thoughts on that?

Dr. Thorn

Let's talk about work for a minute. Part of it, a big part of it, has to do with, the person who said work might help alleviate her stress and therefore narrow the pain gate, she may be really engaged in what she's doing. She may be distracted away from the constant barrage of thoughts that, "Oh gosh I have arthritis and there's nothing I can do about and it's only going to get worse". If she's busy and involved in something that she enjoys, or she's engaged in, that's going to be a gate closer. However, somebody else who's going to work and let's say the environment is not as friendly as it might be and the supervisors aren't as accommodating as they might be or helpful as they might be or they may even be downright negative towards their employees that's not going to be a great environment, it's going to add to the stress. So, part of what we're dealing with here is, is what you're doing working for *you* and how are you *viewing* the situation. If you view the situation as stimulating and engaging, yes, it's going to be a gate closer, and if you view the situation as hostile and negative it's going to be a gate opener. Now, acupuncture is really interesting, it's really an interesting example, because the research shows that acupuncture works to reduce pain signals. We also know that acupuncture is useful to nonhuman animals and you would not think that they would be as influenced by let's say the practitioner necessarily it's just the actual physical technique. The other fascinating thing about acupuncture is that it works much better if the patient has an acupuncturist who's very interested in them and engaged with them and positive about them and the patient feels like the acupuncturist is on their side and working with them collaboratively. So, that's another interpretation right there. When we view something positively it can have a huge impact on whether it's closing the gate or opening the gate. And I have come to experience acupuncture once when I hurt my back pretty seriously and I thought well why not try it and no offense to the acupuncturist but I felt like she could have cared less and guess what that acupuncture didn't do a thing for me.

Jessica

So, I know that you've been doing *a lot* of great work in this area, but you know I'm curious if we could talk a little bit about what you think about the future work might be in this area. So, if you had to guess what do you think might be next in terms of understanding the brain's influence on these pain signals?

Dr. Thorn

Well, I think that our current research and I think our future is going to involve patients a whole lot more in helping us plan, ask the right questions, instead of just using our same-old-same-old pain scales, that may or may not be relevant to you. Like how bad your pain is been in the last week? Well, it depends on whether you ask me that this morning or you ask me that this afternoon or this evening. So, we need help from our patients and we're starting to do these research projects where we get influenced by our patients asking the right kind of questions. I think that's huge and I think it's only going to grow. I also think that the research is going in the direction of collaboration, so patients are no longer passive recipients, passive helpless recipients, of whatever care they can scrape together in the health care system when actually they are a proactive part of the health care team. The more we as patients treat the healthcare team as that's what we expect and those are the people we're going to give our business to, I think the more the healthcare team will treat patients with more respect and less of a stigma because there is a big stigma for chronic pain. I also think that we can start, some researchers already started this, but I think we could do a whole lot more with training peer skills trainers so that we can spread these techniques around. Because right now these techniques are not available widely and they are not reimbursed by health insurance widely and that is a huge problem. But if we can train peer counselors or therapists if you want to call them that, those patients who are experiencing those kinds chronic pain there's no reason why they can't be trained to administer this kind of treatment, with supervision of course, to other people. Then we can spread the techniques around and have them more widely available.

Jessica

Do you have any advice for patients about you know how they can talk to their doctor or how they can maybe even get started, or just any sort of final tips you can think of?

Dr. Thorn

There are patient books available now and podcasts and tutorials and webinars. There's more available online and there's also in literature. So, I think self-help books can be very useful and appropriate to start with. I do encourage patients to learn as much as they can about what they can do to help themselves. Then bring that into their health care provider and say, "This is what I want. This is what I want as part of my care plan. How can I get it? How can you find it for me?" and "How can I get it?" and "How can I pay for it?". I think the more we ask to be collaborative partners in our treatment the more we will be treated that way.

Jessica

Definitely, great advice! So, thank you, Dr. Thorn this has been really helpful. We'll stop there for this session, but to our listeners, to hear more about approaches to managing chronic pain we'll be learning much more from Dr. Thorn in the next section as we dive in a bit deeper into Cognitive Behavioral Therapy or what is known to many as CBT. So, stay tuned and thank you for listening.